SMITHMICRO
SOFTWARE



"Agent Provocateur" by Team RENA | www.ruslanmedia.com

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POSER® PRO 2014

Reference Manual

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Singular Inversions, Inc.

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Cloth Simulation by Size8 Software, Inc.

Lip Sync Technology provided by Automatic Sync Technologies (www.automaticsync.com).

Wardrobe Wizard from Phil Cooke/Cindy Carney.

Open source components include:

Boost C++ http://www.boost.org

Bullet Physics http://bulletphysics.org

Embree http://embree.github.com

FreeImage http://freeimage.sourceforge.net

FreeType http://freetype.sourceforge.net

Geometric Tools http://www.geometrictools.com

k-d tree point cloud: Henrik Wann Jensen

libCurl http://curl.haxx.se/libcurl/

libjpeg http://www.ijg.org

libtiff http://www.libtiff.org

numpy http://numpy.scipy.org

OpenEXR http://www.openexr.com

OpenSSL http://www.openssl.org

OpenSubdiv http://graphics.pixar.com/opensubdiv

pcre http://www.pcre.org

PIL http://www.pythonware.com/products/pil

pthreads http://sourceware.org/pthreads-win32

Python http://www.python.org

SFMT http://www.math.sci.hiroshima-u.ac.jp/~m-mat/MT/SFMT

XMLRPC++ http://xmlrpcpp.sourceforge.net

XMP http://www.adobe.com/products/xmp

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A Message from Larry Weinberg

In the 1980's, my secret ambition was to become an illustrator, to draw like the great old masters. But something was lacking in my brain that kept me from being able to visualize my characters' complex poses. I knew what I wanted to draw, and I knew what was great when I saw it, but starting from a blank page just never worked. I dropped into my local art supply shop and bought one of those little wooden mannequins that I thought would be my friend. He wasn't very nice to me and never did what I asked of him. I quickly became determined to put him out of a job and thus set out to build the world a better mannequin. At the time, I was programming and animating in Hollywood, mostly for Rhythm and Hues Studios. I had built up a wealth of 3D math and computer graphics knowledge. Why not make a digital mannequin? So, while giving life to flaming match characters, Mr. Peanut, and billowing sheets of fabric softener during my day job, I began creating Poser at night.

All I wanted was a simple visualization tool, one that would be easy to pose with and quick to use for any artist. I wasn't yet thinking about high quality rendering, shadows, animation, textures, or anything else. But Poser, like old John Henry, had a mind of its own. Poser 1 was released in 1995, and grew quickly. I knew Poser could be a useful tool but the response was overwhelming and the art it helped create was mind blowing.

Throughout the subsequent version releases, Poser's community kept growing and diversifying, with people beginning to incorporate Poser into scientific, medical, architectural, CAD, theatrical, and dance-based projects and presentations. Ideas kept pouring in as more and more people joined the Poser community. Poser also evolved to include a new friendlier interface, more rendering powers, new content, and many new features.

The following that Poser attracted continues to amaze us all, as does the community's ongoing diversity, creativity, talent, and passion. The Poser artists and modelers of the world have pushed far beyond anything I thought possible. Poser has been used in award winning character animations, as design for huge sculptures, for comic books, for medical illustration and instruction, for legal reconstruction, and for unleashing the kind of astounding images that, well, move us all.

In 2000 Curious Labs took Poser's reigns. Our team began looking at where Poser and human simulation could (and should) continue growing. We knew we needed to remain committed to making products that would be easy enough for every artist to use. We also knew we needed to integrate our capabilities with the world of professional 3D graphics productions and with the new emerging Web-deployable technologies. Poser 4 Pro Pack was born of these needs, allowing Poser scenes and characters to be hosted inside high end professional packages such as 3D Studio MAX, Lightwave, and Cinema 4D. We also added Flash and Viewpoint Experience Technology capabilities for real time display via the Web.

Today, Poser has obtained huge levels of growth through the courageous efforts by many extremely talented and motivated professionals. Believe me, Poser is no longer written by me coding alone into the night. It's a powerful graphics product that is the culmination of the work of a very talented group that spans the globe.

While streamlining our interface, we've integrated a large database of scanned human heads into a phenomenal face-designing environment. We added realistic rendering capabilities far beyond where we started, with the ability to create networks of complex shading nodes for unlimited textures and materials. We also added physical simulation of cloth and hair. By combining these new powers with a new suite of human models and poses, and a new portal to allow people to find content on the internet, Poser should, well, change the world– again.

Each of us at Smith Micro Software sees what we do as a labor of love. Poser could never have gotten this far without each and every one of our dedicated staff. And, Poser could certainly never have evolved this far without the involvement of the Poser community, who has supported our efforts with enthusiasm, forum inundations, email blasts, contributions to the product, and a stream of unbelievable images.

Thanks to everyone who has touched or been touched by Poser.

Larry Weinberg
Original Poser Creator

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Part 1: Poser Introduction

Chapter 1: Welcome to Poser!

Thank you for purchasing Poser®. If you've never used Poser before, welcome! Are you upgrading from an earlier version of Poser? Welcome back!

Poser Pro is the fastest way for professional artists and production teams to add pre-rigged and fully textured 3D characters to their projects. With 5GB of included content libraries and richly varied third party Poser content, Poser Pro is the perfect link between professional production tools and ready to use 3D character assets, saving development time and resources.

Poser Pro includes intuitive posing, animation, and rigging tools all designed to make working with 3D character content as easy as possible. Poser Pro provides a node-based material system, dynamic hair, dynamic cloth, morph creation brushes and facial photo matching tools Automatic tools lipsync phonemes with imported sound files and create walk and run animation cycles. Poser Pro renders video or still images in photo-real or sketch styles. Included are an updated set of PoserFusion hosting plugins to integrate posed or animated Poser characters and scenes into 3ds Max, Maya, and Cinema 4D and LightWave. Import/ Export COLLADA content for 3D figure interchange between game engines and other 2D and 3D tools such as Photoshop, Softimage and SketchUp.

Poser Pro is optimized for 32/64 Bit and multi-core systems, better utilizing system memory and multiple threads to improve overall performance and reduce rendering times, with background rendering so you can continue working on other projects. Poser Pro's OpenGL Support takes advantage of graphics card hardware to provide realistic lighting, shadows and color. Poser Pro's Queue Manager lets you distribute and manage renderings across a Network Render Queue of cross platform systems

In Poser Pro 2014, we've included a host of exciting and powerful new features. Subdivision Surfaces via the use of Pixar's OpenSubdiv provide the most efficient and popular surface polygonal smoothing in the business. With Bullet Physics we net Soft Body Dynamics, Rigid Body Dynamics and Hair physics with Live Simulation. A new Comic Book preview node with Threshold control provides both color and black & white cartoon images and animations. Weight Maps on Magnets provides more precise control over Poser's powerful deformers. Simplify complicated materials and shaders with our new Compound Material Node. Our new Interactive Raytrace Preview provides you a raytraced thumbnail of your scene, updating with every change of the character, camera or lights. To repurpose your existing clothing content to fit any character, we've created a powerful Fitting Room so your figures

will always have something to wear. Speaking of figures, we've included 7 new cartoon characters, and 2 new humans, Rex and Roxie. Our morphing tool now will help better fit clothing, with Tighten, Loosen and Sag methods. And now Poser supports copying morphs from figure to figure. There are improvements in Raytrace rendering performance, OpenGL performance, the Grouping Tool, Symmetry, Mirroring, and even Cut and Paste operations.

Poser Pro supports HDRI output to produce images with full range of shadow, color, contrast and highlight intensities. With Gamma Correction, specify gamma values for textures and exported images for linear rendering with increased luminance accuracy. Poser Pro's improved Firefly render engine supports Indirect Lighting with Irradiance Caching for Global Illumination effects and now even supports rendering with Ambient Occlusion at the same time. New shader nodes enable Subsurface Scattering for luminescent skin tones and Custom Scatter for bioluminescent effects. Poser's physically correct light fall-off produces more photo-real final renderings. Normal Mapping adds the appearance of complexity and surface detail to 3D objects without increasing geometry resolution. Render out PSD layers for improved compositing, share final content via Facebook.

Poser Pro includes advanced Weight Map Rig support enabling vertex by vertex fine painting of joint bends and bulges, to generate better performing 3D characters that can be more easily posed with natural joints across the body. Hybrid Rigging supports both traditional Poser Sphere and Capsule zones to be used in combination. Poser Pro also supports both traditional grouped body part figures and single skin figures for interoperability. Weight Map Support for third party figures is delivered within our native poser file format, the PZ3, an open, well documented format that has been at the heart of the creative Poser community for nearly 20 years.

Poser Pro is designed with Poser Character Creators in mind and includes a suite of vertex Weight Map Creation tools including Vertex Weight Auto-transfer to permit the creation of new weight mapped figures from an existing rig, generation of new Weight Maps from existing Poser Zones of Influence, pressure sensitive painting of Weight Maps and interactive color display of affected vertices. Another advance in Poser is the ability to set-up both traditional zones and weight maps to affect body parts beyond the parent or child of the selected actor, enabling complex figures such as winged figures that need to interact with multiple body parts simultaneously. Once you've created Weight Mapped figures using Poser Pro, they can be fully integrated into Poser 9 or 10, or any of the third party host apps supported by PoserFusion.

Other basic features include Multi-Select Drag and Drop from and within Poser's Content Library, Expanded Context Menus for better workflow, new camera modes to focus on your selected area, pressure sensitive tablet support in the Morph Brush and Weight Map Painting tools. Improved Content Management system with drag and drop, auto conforming, search, metadata

support, zone strength display for figure rigging, parameter change indicator and the Recent Render palette.

Whether used a standalone character animation system, or as a critical tool in your existing production pipeline, Poser Pro is the most efficient way for game designers, 3D artists, professional illustrators, animators and graphics production teams to add 3D character animation content to any project.

What's New in Poser

Poser includes the following new features:

Figure Design

- **Fitting Room:** See "Chapter 28: The Fitting Room" on page 569
- **Subdivision Surfaces:** Choose **Figure > Skinning Method > Poser Unimesh** to create a unified mesh. Then select the Body actor for the figure to specify the amount of subdivision in the Properties palette. See "Working with Subdivision Surfaces" on page 769.
- **Group Editor Enhancements:** Select polygons by painting, or by rectangular selection. Add or remove polygons by group or material, and mirror them on positive or negative X, Y, or Z axes. See "The Group Editor" on page 681.
- **New Morph Painting Tools:** See "Using the Fitting Tools" on page 658.
- **Weight Maps for Magnets:** See "Using Magnets with Weight Maps" on page 621.

Animation

- **Bullet Physics Simulations:** Choose **Window > Bullet Physics Controls** to open the Physics Simulation Palette. You can assign each object in your scene to one of three types of objects: Choreographed, Rigid Dynamic, or Soft Dynamic. See "Chapter 23: Using Bullet Physics" on page 493

Dynamic Hair

- **Hair Room Improvements:** Now offers the choice between traditional Poser and enhanced Bullet Physics solvers. See "Bullet Physics Solver" on page 543.
- **Creating and Importing Hair in GoZ:** Allows you to import ZBrush FiberMesh as hair objects. See "Importing Hair from GoZ" on page 799.

Materials

- **Compound Material Nodes:** The new Compound node allows you to combine any Poser node type as an external input or output, providing a way to reduce clutter in the Advanced Material Room. Compound nodes allow you to add external inputs and outputs within a separate Material Room window. After you are finished with the compound node, you can return to the main window in the Advanced material room editor. See "Compound Nodes" on page 381.
- **User-assignable names for Material Nodes:** Double-click a node name to assign a new name to a material node. See "Renaming Nodes" on page 320.

Preview Rendering

- **Raytrace Preview**: See "Real-time Raytrace Preview" on page 402.
- Improved bounding box calculation performance.
- **Comic Book Preview Mode**: Use Poser's exciting new Color and B&W Comic Book Preview for static or animated toon imagery. This feature will enable you to create comic art with fantastic line control and color, or clean black and white outlines with persistent shading even when rotating or animating your point of view. See "Comic Book Preview Mode" on page 120.

Final Rendering

- Performance improvements for all raytraced effects. The new ray accelerator significantly speeds up rendering of scenes that are raytrace-heavy.
- Improved toon outlines in Firefly.
- Sketch outlines now connect across body parts.

Usability

- **Log Window:** Displays an ongoing log of commands used in Poser. The log window can be docked or floating, and can display useful information for users. Use the Log Window context menu to filter the log based on criteria such as timestamp, category, application commands, group selection, warnings, or debug information. See "Using the Log Window" on page 45.
- The ability to spawn props for use as simulation proxies in physics, hair, or cloth simulations. See "Creating Simulation Proxies" on page 240.

- Various performance improvements for bending, real-time shader updates, and animation playback.
- Earlier and more comprehensive verification of binary morph data integrity.
- **Parameters Palette:** Added an option to display parameter channels in calculation order, allowing you to correct the initial order of physics simulation parameters. See "Parameters Palette Options Menu" on page 198.

Import/Export

- Enabled export options for morph weights and sparse array KHR extensions in COLLADA.
- Support for modern media formats such as MP3, H.264/MP4 via Media Foundation (Windows 7 and 8 only).

Included Documentation

Poser includes the following documentation:

- **Poser Reference Manual**: This Reference Manual has been rewritten and Poser features added. It is included in both hard copy and in electronic PDF format on your Poser DVD.

Selecting **Help > Poser Reference Manual** from within Poser will also launch this manual.



The version of the manual accessible from the help menu is optimized for screen viewing. If you wish to print it out, your Poser DVD contains a version that is optimized for print in the documentation folder.

- **Quick Reference Card (QRC)**: The QRC is a fold-out reference that briefly describes key Poser features and includes a comprehensive list of Poser keyboard shortcuts.
- **PoserPython Methods Manual**: This manual contains an organized listing of each PoserPython method available in Poser. It is included in PDF format on your Poser DVD and is also accessible from within Poser by selecting **Help > PoserPython Manual**.
- **Quick Start Guide**: This Quick Start guide is an on-screen step-by-step interactive guide that takes users through the necessary steps to quickly create scenes within Poser.

System Requirements

System requirements for Poser installation are as follows:

Windows

- Windows XP, Vista, 7, or 8 (64-bit OS required for 64-bit installation)
- 1.3 GHz Pentium 4 or newer, Athlon 64 or newer (1.65 GHz or faster recommended)
- 1 GB system RAM (4 GB or more recommended)
- OpenGL enabled graphics card or chipset recommended (recent NVIDIA GeForce and ATI Radeon required for advanced real-time preview features)
- 24-bit color display, 1440 x 900 minimum resolution
- 3 GB free hard disk space (6 GB recommended)
- DVD-ROM drive (Physical product only)
- Internet connection required for Content Paradise
- Windows® Internet Explorer® 7 or newer
- Adobe® Flash® Player 11 or newer
- Adobe® AIR® (external library)
- Hosting plug-ins require a valid English language installation of their respective host application:
  - Maxon CINEMA 4D R10-14 (64 & 32-bit)
  - Autodesk 3ds Max 2010 - 2014 (64 & 32-bit)
  - Autodesk Maya 2010 - 2014 (64 & 32-bit)
  - Newtek LightWave 3D 9 - 11 (64 & 32-bit)
- ZBrush 4 or later required for GoZ interoperability.

Mac

- Mac OS X 10.6, 10.7, or 10.8
- 1.5 GHz Intel Core processor (Core 2 Duo or faster recommended, 64-bit CPU required for 64-bit support)
- 1 GB system RAM (4 GB or more recommended)
- OpenGL enabled graphics card or chipset recommended (recent NVIDIA GeForce and ATI Radeon required for advanced real-time preview features)
- 24-bit color display, 1440 x 900 minimum resolution
- 3 GB free hard disk space (6 GB recommended)

- DVD-ROM drive (Physical product only)
- Internet connection required for Content Paradise
- Adobe® Flash® Player 11 or newer
- Adobe® AIR® (external library)
- Hosting plug-ins require a valid English language installation of their respective host application:
  - Maxon CINEMA 4D R10-14 (64 & 32-bit)
  - Autodesk Maya 2010 - 2014 (64 & 32-bit)
  - Newtek Light Wave 3D 9 - 11 (64 & 32-bit)
- ZBrush 4 or later required for GoZ interoperability.

Poser Content Online

Poser's **Content** room includes a direct link to the online Content Paradise (http://www.contentparadise.com), which offers hundreds of figures, props, textures and other content available for use within Poser. Also, Poser's Download Manager makes the process of downloading content and installing it to the appropriate **Library** categories fully automatic, so accessing high quality content has never been simpler! See "Chapter 8: The Content Room" on page 173 for more information about the **Content** room, and Content Paradise.

Other Smith Micro Software Products

Check out these products from Smith Micro Software:

- **Manga Studio**: Manga Studio, the leading manga and comic art software, provides all the essential tools you need to create professional, ready-to-publish pages from start to finish! Manga Studio offers an intuitive interface, and delivers the best suite of ready-to-use screen tones, content and special manga and comic effects for hobbyists, experienced artists and professionals.
- **Anime Studio**: Anime Studio is your complete animation program for creating 2D movies, cartoons, anime and cut out animations. Create your own desktop animated shorts in the style of SouthParkStudios.com and JibJab.com, or use Anime Studio to produce full-length animation for film, video or streaming over the web. Anime Studio allows digital enthusiasts at home and professionals in the studio to bring their imagination to life!

When You Have Questions

As you begin using Poser for your 3D projects, you'll undoubtedly have questions or want to network with other Poser artists. You're not alone! There are many resources available for Poser artists. Here are just a few:

Need Help?

Poser includes the **Help** menu, which serves to answer most of your questions while using the application:

- **Poser Help**: Selecting **Help > Poser Reference Manual** opens the **Poser Reference Manual** in PDF format.
- **PoserPython Help**: Selecting **Help > PoserPython Manual** opens the **PoserPython Methods Manual** in PDF format.
- **About**: Windows users can select **Help > About Poser** to display the Poser version and copyright information. Macintosh users should look in the Poser Application menu, and select About Poser, to see this information. This option will be useful if you need to obtain technical support, since the Technical Support representative will need to know this information.
- The **Help** > **Content Paradise** submenu contains links to information on content from Content Paradise.

Smith Micro Software Resources

- **Online Support**: For technical support, customer service, downloads, and to visit the Smith Micro Poser community and gallery, visit us at http://my.smithmicro.com/support.
- **Using Poser:** For updates, tutorials, and Poser user stories, visit http://poser.smithmicro.com/index.html.
- **To Learn More**: If you'd like to learn more about Smith Micro Software, visit us at http://my.smithmicro.com.
- **Contacting Technical Support**: If our Web Knowledge Base does not resolve your situation, please contact us through http://support.smithmicro.com. Please refer to "Appendix A: Technical Support" on page 845 to view our technical support policy.
- **Sales**: You may reach our sales department via e-mail at: sales@smithmicro.com.
- **Other Links**: Selecting **Help > Smith Micro Web Links** or **Help > Other Web Links** within Poser lists other valuable online resources.

Third-Party Forums

You may also visit online Poser forums such as:

- **Animotions**: http://www.animotions.com
- **Renderosity:** http://www.renderosity.com
- **RuntimeDNA**: http://www.runtimedna.com



Smith Micro Software does not regulate content on third-party forums and their listing and order of appearance in this manual is not an endorsement.

Other Important Resources

Visit the following sites to learn about some of the applications and technology supported by Poser:

- **Python resources**: The following is a small sample of the ever-growing body of online and hardcopy information concerning the Python scripting language:
  - The basic Python interpreter (which allows you to write your own Python scripts for any desired purpose) as well as many in-depth documents and links to other online resources is available for free download at http://www.python.org.
  - You can find additional online resources on wxPython at http://www.wxpython.org.
  - **Learning Python, 3rd Edition** by Mark Lutz; O'Reilly & Associates; ISBN # 0-596-51398-4
  - **wxPython in Action** by Noel Rappin and Robin Dunn; Manning Publications; ISBN # 1-932-39462-1

About Your Reference Manual

Smith Micro Software strives to provide documentation that is complete, accurate, informative, and friendly. Your feedback is always welcome. Please e-mail your comments to: techsupport@smithmicro.com.

The Poser Reference Manual is for both Macintosh and Windows. By convention, Macintosh commands precede Windows commands in the text. The Poser interface for Macintosh and Windows platforms is identical, unless otherwise specified.

For clarity, this manual uses several notational conventions to present information of special importance. Lists of items, points to consider, or procedures that do not need to be performed in a specific order appear in bullet format:

- Item 1
- Item 2

Procedures that must be followed in a specific order appear in numbered steps:

1. Perform this step first
2. Perform this step second

Specific keyboard keys are depicted in square brackets and are capitalized. For example: **[ESC]**. If more than one key should be pressed simultaneously, the notation appears as **[KEY1]**+**[KEY2]**, for example **[ALT]**+[**F4**]. When a modifier key differs between the Macintosh and Windows platform, the Macintosh modifier is listed first followed by a slash and the Windows modifier key. For example, **[COMMAND]**/**[CTRL]**+[I] is equivalent to the Macintosh **[COMMAND]**+[I] and the Windows **[CTRL]**+[I].

Screen prompts, menu and window names, fields, buttons, boxes, etc. appear in **bold** type. Where you need to access a palette, command, or submenu, the syntax is **Menu > Submenu**. For example **File > Save As** means you should open the **File** pull-down menu and then select **Save As** to open the **Save As** dialog box.

Program and script code appears in standard Courier font, for example:

```
cd\letters\business\legal [ENTER]
```



Notes detail tips, tricks, and other important information.



Warnings alert you to potentially harmful consequences such as data loss.

Chapter 2: Installing Poser

Before opening your DVD holder, please take a moment to read, understand, and agree to the Poser End User License Agreement (EULA). If you do not agree with the terms of the EULA, please return your entire Poser package including the unopened DVD holder to Smith Micro Software or your place of purchase. Once you have read and accepted the EULA, you may proceed with installing Poser on your system.



The Smith Micro online store will accept the return of either physical or electronically downloaded products purchased directly from Smith Micro within 30 days of the date of purchase. Products purchased in retail stores must be returned to the place of purchase and meet their specific return policy terms. Smith Micro reserves the right to change this policy at any time.

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For technical support, please refer to "Appendix A: Technical Support" on page 845 of your Poser Reference Manual.

Using the Download Manager

The Smith Micro Download Manager allows you to selectively download and install the Poser application and content installers, as well as updates when they become available. Once the downloads start, you can pause and resume the download as needed.



Poser Pro owners will need to enter the serial number for Queue Manager separately to download and install the Queue Manager. This allows you to install the Queue Manager on every machine that you want to use as a network node.



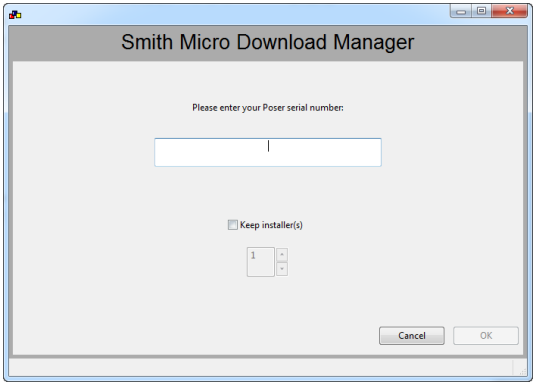
The download manger is platform-specific. If you are using Poser Pro on both Mac and Windows platforms, you will need to have both platform versions of the download manager to obtain the necessary Queue Manager installers.

When you first start the Download Manager you will be asked to enter a valid Poser serial number.

Check the **Keep Installers** checkbox if you want to retain a copy of the installers on your hard drive after installation is complete. Then increase or decrease the number of installers that you want to keep on your system.

If you do not have **Keep Installers** *checked, it will not keep the installers. This flag does not stick to the installers you have already downloaded. The Download Manager checks the status of this option and acts appropriately on each startup.*

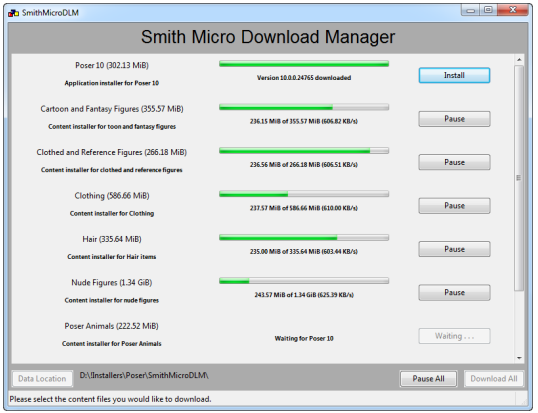
Click OK to proceed to the next screen.



Enter your Poser serial number to use the Download Manager.

A **Data Location** button appears in the lower-left corner of the Download Manager. This allows you to select a location on your system to store the files that you download. To change the location from the default, click the **Data Location** button and choose the file and folder you want to use.

If you have previously downloaded files with the Download Manager and then change the Data Location, the Download Manager will move the files that you previously downloaded into the new folder that you specify.



You can selectively download one or more installers, or download all of them.

When the Download Manager starts, it displays a list of installers, and their version numbers. You can download as follows:

- To add all of the installers to the download queue, click the **Download All** button that appears at the bottom of the Download Manager.
- To pause all of the downloads, click the **Pause All** button.
- To download a specific installer, click the **Download** button that appears to the right of the installer name, for each installer that you want to download.
- To pause a specific download that is in progress, click the **Pause** button.
- To resume a paused download, click the **Resume** button.
- To cancel all downloads, close the Download Manager window.

After all downloads are complete, you will need to install the Poser application first before the download manager allows you to install content installers. Click the **Install** button for each content installer that you want to include.



The Support Files installer must be installed to obtain Face Room support for the figures included with Poser.



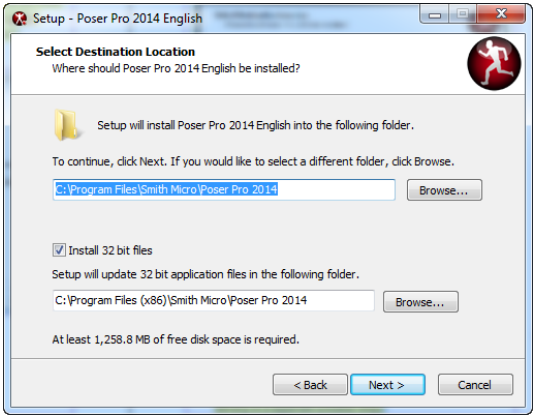
Both the Nude Figures content installer and the Hair content installer must be installed to use Roxie (her eyelashes are in the Hair content installer).

Installing Poser

Installing Poser is a straightforward process. Before inserting your DVD, be sure to save any work in progress and close all running applications, including virus-checking utilities and other "background" software. Having this "clean" environment will help the installation process proceed smoothly and will prevent any loss of data in the highly unlikely event of a problem. To install Poser, complete the following steps:

Poser Installation (Windows)

1. Click on the Poser installer to start the Installer.
2. The Welcome screen will appear, click **Next** to continue.
3. The "Poser End User License Agreement (EULA)" on page 12 appears. Select **I accept the agreement** and click **Next**.
4. The Information screen appears. Review the Readme file. This file contains information that was too recent to be included in this manual. Please take a moment to read this file, as the changes outlined therein may affect how you install and/or use Poser. When you have finished reading the Readme file, click **Next** to proceed with the installation.
5. The Select Destination Location screen appears. Use this screen to select the installation path for the Poser executable. Select the destination location where you want to install Poser Pro. You can use the default location or click the Browse button to specify another location, click **Next** to continue.
6. If you have a 64-bit computer and 64-bit Windows operating system, Setup will install the 64-bit version of Poser Pro by default. You can check the **Install 32 bit files** option to optionally and additionally install the 32-bit version of Poser Pro in its own installation folder.



Choosing an installation location.

If you are using the 64-bit version of Poser Pro, you can also choose to install the 32-bit version of Poser Pro for improved backward compatibility with add-on scripts and plug-ins that are not 64-bit capable. In addition, the 32-bit version of Poser Pro allows you the option of either docking the library or running it in a separate window, whereas the 64-bit version runs the library in a separate window only.

7. The Select Components screen appears. Choose the desired installation options from the drop-down menu:

   - **Full Installation:** Most users choose the Full Installation option. This option performs the complete installation of Poser Pro including all content and the Queue Manager.
   - **Compact Installation**: This option installs Poser Pro, the Network Queue Manager, Application Support Files, and Core Content Files. Additional content is installed if the applicable options are selected. This option is useful if hard drive space is limited.
   - **Basic Content (Clothed Figures, Props, Scenery)**: This option installs clothed figures and medical references (skeletons and muscles), Props, and Scenery.
   - **Custom Installation:** Allows you to choose the items that you want to install.
   - **Queue Manager Only:** Installs the Poser Queue Manager. Use this option for installing additional network rendering nodes.

8. Click **Next** to continue to the **Select Content Location** screen. Select the location for the Poser Pro content Runtime directory. Based on the descriptions below, select the location that works best for you and click **Next**.

- **Shared Documents Directory:** This is the default installation option. Files can be shared—useful in multi-user environment or when UAC is enabled on Windows Vista or later.
- **My Documents Directory:** The files will only be accessible to the user who installed them.
- **Poser Directory:** The content library resides next to the Poser Pro program files.
- **Other Location:** Specify the directory of your choice. This option is desirable if you want to install your content on a different hard drive or folder name.

9. If you selected **Other Location** in step 8, the **Select Custom Content Location** screen appears. Use this screen to choose the installation folder for your Poser content. By default, Window 7 users install the content folder beneath the Users > Public > Documents folder on their C: drive; however, you can browser to or enter the folder or hard drive of your choice. Click **Next** after you make your choice.

10. The **Select Start Menu Folder** screen will appear. You can use the default location or click the **Browse** button to specify another location. When you are finished, click **Next**.

11. **Select Additional Tasks** screen will appear. Options here allow you to remove, backup or reuse existing preference files that store information such as library runtimes, interface layouts, and other preferences. You can also enable the check boxes to create desktop icons for Poser and the Queue Manager (Poser Pro only). Click **Next** after you make your choices

12. Review your choices in the Ready to Install screen. Finally, click **Install** to install the Poser Pro and Queue Manager applications. When they are finished installing, click **Finished.**



Portions of Poser require that Flash Player is installed on your system. Verify that Flash Player is present before using Poser Pro.



Poser's Content Library utilizes Microsoft Internet Explorer technology. To ensure the optimal experience and compatibility for the Content Library, the installer will disable "Local Machine Lockdown" for the Poser application. This will not affect other applications outside of Poser. Details about "Local Machine Lockdown" can be found at http://msdn.microsoft.com/en-us/library/ms537641(VS.85).aspx.



The installer grants Poser components in <AppLocation > \Runtime\ui\Flex\ a Flash sandbox setting of 'localTrusted'.



Some features of Poser, such as the Library and rendering in a separate process, require that you allow local network communication to operate. The features will not work if a personal firewall prevents local network communication.

Poser Installation (Mac)



It is recommended that you install Poser on a hard drive that is formatted with HFS+ Journaled formatting. Extended Journaled formatting can be used as long as you do not make it case-sensitive.

Double-click on the Install icon.

1. The Introduction screen appears. Click **Continue**.
2. The Readme file appears. This file contains information that was too recent to be included in this manual. Please take a moment to read this file, as the changes outlined therein may affect how you install and/or use Poser. When you have finished reading the Readme file, click **Continue** to proceed with the installation.
3. The "Poser End User License Agreement (EULA)" on page 12 appears. Click **Continue**. Click **Agree** to continue the installation.
4. The Installation Type screen appears. Check or uncheck the content types you want to install (**Default Content**, **Clothed and Reference Figures**, **Clothing**, **Hair**, **Nude Figures**, **Props and Scenery**, **Cartoon and Fantasy Figures**, and **Animals**:
5. Click **Continue** after you choose the content you want to install.
6. Setup informs you how much space will be used by the installation, including the content you selected. Click the **Change Install Location** button to choose another installation location, if desired and click **Continue** to return to the previous screen.
7. Once you have made your selection, click the **Install** button. The Authentication window appears, and you will be asked to enter your user account password, or an account name and password with Administrator privileges, in order to proceed with the installation. After entering the information, click **OK** to continue.
8. When the installation is complete are finished installing, click **Quit**.

Installing Queue Manager

The Queue Manager can be installed as part of your initial Poser Pro installation using the Full Installation (Windows) or Easy Install option (Mac). You can install just the Queue Manager on remote systems by following the instructions below:

Installing Queue Manager on a Remote System (Windows)

1. Click on the Poser Pro installer to start the installation.
2. The Welcome screen will appear, click **Next** to continue.
3. The "Poser End User License Agreement (EULA)" on page 12 will appear. Accept the agreement and click **Next**.
4. Review the Readme text and click **Next**.
5. Select the destination location where you want to install the Queue Manager. You can use the default location or click the Browse button to specify another location. Click **Next** to continue.
6. Using the pull-down menu select Queue **Manager** and click **Next**.
7. **Select Additional Tasks** screen will appear. Enable the check boxes to create desktop icons for both Poser Pro and the Queue Manager, click Next.
8. Click **Install** to install the **Queue Manager.** When the installation is done, click **Finished.**

Installing Queue Manager on a Remote System (Mac)

1. Click on the Poser Pro installer to start the installation.
2. The Welcome screen will appear, click **Continue**.
3. The "Poser End User License Agreement (EULA)" on page 12 will appear. Accept the agreement and click **Continue**.
4. Review the Readme text and click **Continue**.
5. Select the destination location where you want to install the Queue Manager. You can use the default location or click the Browse button to specify another location. Click **Continue**.
6. Using the pull-down menu select Queue Manager and click **Continue**.

7. Click **Install** to install the Queue Manager. When the installation is done, click **Quit.**

Licensing

The first time you start the Queue Manager, you will be prompted to type in your name and your Queue Manager serial number in the **Queue Manager Personalize** screen. It is important to know that you can install the Queue Manager on as many systems as you wish. However, the number of systems you can use simultaneously will be limited to the number of Queue Manager nodes that are included with your Poser Pro purchase. You can determine how many nodes are available to you by looking at your Queue Manager serial number. The second set of numbers between dashes indicates how many systems (including the one on which Poser Pro is installed) can operate the Queue Manager simultaneously.

Upgrading From an Earlier Version of Poser

When upgrading from an earlier Poser version, be sure to install Poser in a separate, empty folder, so as not to interfere with existing Poser installations. Additionally, if you have large amounts of content from your previous versions of Poser, the ideal way to add this content to your Poser installation is with the **Add Runtime** feature. (See "Accessing Different Content Libraries" on page 131 for more information about the **Add Runtime** feature.) We do not recommend attempting to copy over or reinstall your content in other ways, as we cannot guarantee that the content will be properly transferred to Poser.

Registering Poser

After installation, you can choose to register your copy of Poser via the Web. Registering Poser with Smith Micro Software is required in order to receive technical support, free product updates and other benefits.

1. If you wish to register your copy of Poser, simply check the box on the authentication window that appears upon your initial launch of Poser, and Poser will automatically register your product for you with Smith Micro Software. If you use this method, this is the only action necessary on your part; the rest will be taken care of automatically.

2. Alternately, you can open your browser and navigate to http://www.smithmicro.com/support/product-registration.aspx. In the unlikely event you receive an error, please wait a while then try again. If you get repeated errors or if you do not have an Internet connection (or prefer to register via email), you may call or email Smith Micro Software to complete your registration.

3. Select the version of Poser that you wish to register from the drop-down list, and click the **Next** button to continue.

4. Enter your user information in the form that appears in your browser. Fields marked in red are required for you to register your copy of Poser. Enter your information, then click **Register** to complete your registration.

5. If one or more fields are missing information, a message will display specifying the incomplete fields. You will be asked to add the necessary information and resubmit your user information. Once your registration is successful, a summary screen will appear. Thank you for using Poser by Smith Micro Software!

Updating Poser

Smith Micro Software is committed to supporting all of our products by releasing Service Releases and other updaters that address issues present in earlier versions and/or enhance the product's usability or functionality. Poser will automatically check for product updates upon launching, and will notify you when an update is available. Please visit http://poser.smithmicro.com/updates.html to download the latest updates.

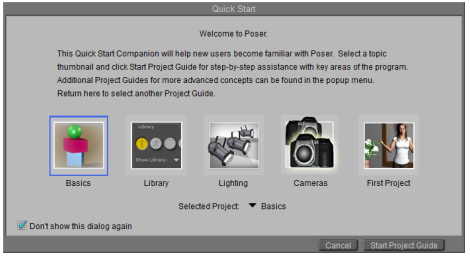
If you wish to disable the automatic update notification, you may do so by clearing the **Check for Updates on Launch** checkbox in the **General Preferences** dialog.

If you choose not to receive automatic notifications, please visit http://poser.smithmicro.com/updates.html regularly to check for product updates.

Alternately, you can click the **Check Now** button in the **General Preferences** dialog to execute an immediate update check. (See "Setting Application Preferences" on page 32 for more information about the **General Preferences** dialog.)

Project Selection

Upon launching Poser, you may want to choose **Window > Quick Start** to view the Quick Start dialog. This dialog allows you to select a Project to load into the **Project Guide** palette within Poser. A Project is an interactive guided workflow that you can use for guidance or reference as you undertake specific tasks within Poser. Click the icon for the Project you wish to select, or choose a Project from the pop-up menu for more options. Once you have selected a Project, click OK to close the dialog and complete your launch of Poser.

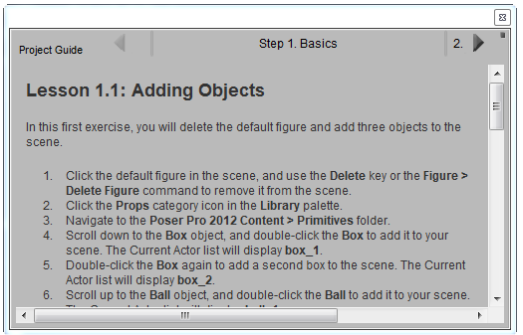


Quick Start window.

Should you choose to load a different Project once Poser has launched, simply select **Window > Quick Start** to open the **Quick Start** dialog and change the current Project in the **Project Guide** palette.

Project Guide

Use the arrows at the top of the **Project Guide** palette to navigate through a Project. Click on the right arrow to step forward through the pages of the Project, or on the left arrow to step backwards through the pages. The current page number and title will be displayed in the center between the navigation arrows. The page content, as well as any associated actions by the Poser application, will be specific to the Project you choose to load.



Project Guide.

The projects in the Project Guide are interactive workflow guides, which means that you, the user, perform the tasks described within them. However, some steps may include actions automatically undertaken by Poser to assist you in following the processes described.

The **Project Guide** palette functions in the same manner as all palettes within Poser; once enabled, it will remain open

and accessible. You may choose to interact with the **Project Guide** at your own pace, either stepping through a given Project methodically or returning to the Project intermittently within the process of your own workflow. As such, the **Project Guide** is a flexible tool designed to meet a variety of work styles and needs. Should you decide to close the **Project Guide** palette, simply click on the close icon in the upper right corner of the palette. You can then reopen the palette at any time by selecting **Window > Project Guide** from the Poser menu bar.

Chapter 3: Setting Up the Poser Workspace

This chapter discusses the ways in which you can customize Poser to suit your individual needs. Your preference settings will be stored on your system in the home directory for your user name. This allows different users on the same system to set up their own individual preference settings. For specific information on the location of the preference files on your system, please see "Poser Default File Locations" on page 850.

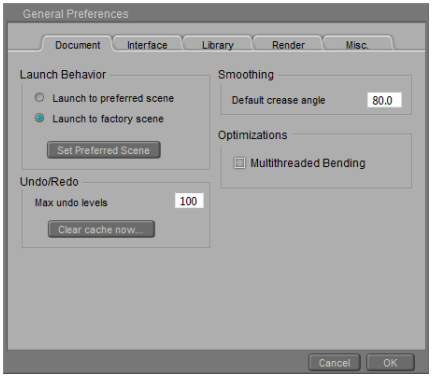
Setting Application Preferences

Poser's **General Preferences** dialog allows you to control certain global Poser settings. Open this dialog by selecting **Edit > General Preferences**. The **General Preferences** dialog appears.

Click the **OK** button when finished to save your preferences and close the dialog. The following topics describe the available preferences.

Document Preferences

The **Document Preferences** tab contains settings specific to the **Document** window. The Document Preference options are as follows:



Document Preferences.

- **Launch Behavior**: The Launch Behavior options allow you to specify whether the **Document** window will open using your customized preferred settings, or the default factory settings, whenever you launch Poser. If you customize the

Document window by resizing and/or moving it, or by changing the character that loads when you start Poser, selecting the **Launch to preferred state** radio button after you have adjusted the **Document** window will save these changes when you exit and re-launch Poser. If you want your **Document** window to revert to its default (as installed) location and size whenever you launch Poser, select the **Launch to factory state** button. Please refer to "Chapter 5: The Document Window" on page 72 for more information about the Document window.

- **Set Preferred State**: Click this button after you arrange your document window the way you like. This will save it as the preferred startup state

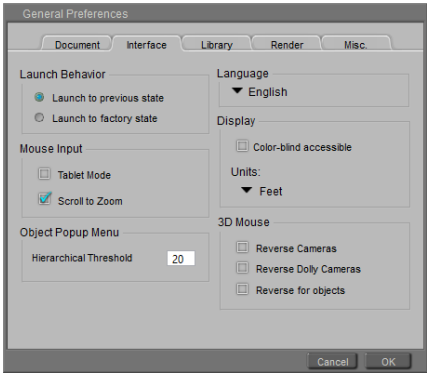
- **Undo/Redo**: The **Undo/Redo** options allow you to specify the maximum number of levels for the Undo/Redo cache. By default the cache size is set to 100 levels of Undo. You can leave this setting at 100 if you have available system resources, or you can reduce the level to conserve memory. Clicking the **Clear cache now...** button will clear the Undo/Redo cache.

- **Smoothing Preferences**: The **Default Crease Angle** setting allows you to specify the default Crease Angle to be used in polygon smoothing calculations. Please refer to "Smoothing Geometry" on page 422 for more information on the Crease Angle setting.

- **Optimizations**: The **Multithreaded Bending** setting is off by default. When enabled the feature will attempt to parallelize the computations across multiple threads during bending, this will produce faster bending by better utilizing multi-threads and multi-core CPUs.

Interface Preferences

The **Interface Preferences** tab contains application-level settings for Poser's general user interface. The Interface Preference options are as follows:



Interface Preferences.

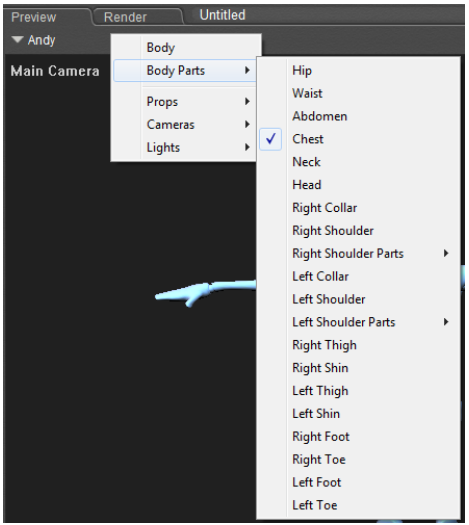
- **Launch Behavior**: If you customize the Poser interface by adding, removing, rotating, resizing, and/or hiding different elements, or by creating your own palette arrangements in any of the Poser rooms, selecting the **Launch to previous state** radio button after making your changes will save the changes when you exit and re-launch Poser. If you want your Poser interface to revert to its default (as installed) location and size whenever you launch Poser, select the **Launch to factory state** button.

- **Mouse Input**: The **Tablet Mode** option decreases the sampling rate for greater accuracy when using a graphics tablet as the input device. If your button has a scroll wheel, you can check the **Scroll to Zoom** option to zoom in and out of your scene. Uncheck the option to disable this feature.



If you wish to operate Poser with a graphic tablet, please make sure to activate Tablet Mode in **Edit -> General Preferences -> Interface -> Mouse Input.**

- **Object Popup Menu**: When you use the Object Popup menu to select an actor in your scene, the menu arranges them in a series of submenus. The value entered in the **Hierarchical Threshold** field determines the maximum number of actors that are allowed to appear in a menu item before they appear in a branch beneath the previous level. Lower values increase the number of submenus. If you want all items to appear in a single level in the hierarchy, enter a higher value such as 200.



Object Popup menu hierarchy.

- **Display, Color Blind Accessible**: Check this option to use an interface that is designed for those who are color-blind.
- **Display Units**: Poser allows you to work with real-world units, enhancing your ability to make accurate recreations. Use the **Display units** pull-down menu to make your selection. The available choices are:
  - Poser native units
  - Inches
  - Feet
  - Millimeters
  - Centimeters
  - Meters



One Poser native unit is the equivalent of 8.6 feet, or 262.128 centimeters.

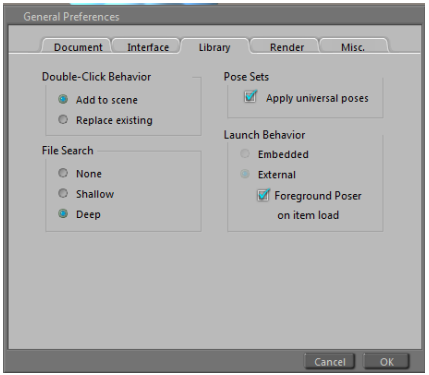
- **3D Mouse**: The 3D Mouse options control the behavior of a 3D input device such as 3Dconnexion's SpaceNavigator. Checking the **Reverse Cameras** box changes the direction the main and auxiliary cameras rotate when using a 3D mouse. Checking the **Reverse Dolly Cameras** box reverses the direction the dolly cameras rotate when using a 3D mouse. Checking the **Reverse Actors** box reverses the direction actors move when controlled with a 3D mouse.



When using a 3D Mouse (such as SpaceNavigator or similar), by default all rotation axes and translations will be transmitted. Holding down the Shift key will filter out translations, and holding down the CTRL key (Windows) or CMD key (Mac) will filter out rotations.

Library Preferences

The **Library Preferences** tab contains setting that are specific to the **Poser Library**. The **Library Preference** options are as follows:



Library Preferences (Poser Pro).

- **Double-click Behavior**: The **Double-click Behavior** setting specifies the results of double-clicking on a **Library** preset. Select the appropriate radio button to choose between adding the new preset to the scene, or replacing the selected preset in the scene. Note that the first time you double-click on a **Library** preset, a dialog will come up allowing you to specify this setting. Your selected option will then be applied to all subsequent double-click instances, unless you change the setting in the **Library Preferences** tab.

- **File Search**: When an object is loaded from the **Library**, Poser searches for all the associated files included with that object. The **File Search** options allow you to configure the extent of that search. These options are:

  - **None**: Selecting **None** disables file searching; this option is useful for content developers in testing the accuracy of newly developed content, as it checks only the file locations that are specified in the Poser files. Referenced files will also be found next to a scene document when search policy is set to **None**.

    It is recommended that content developers set the File Search to None when testing the packaging of content that is intended for distribution. Doing so will help determine if geometry files and textures appear in the correct locations and paths as designated within the library files. Error messages will display when content files are not in their expected locations.

  - **Shallow**: Selecting **Shallow** will reduce the amount of time spent searching for missing or mislabeled files, but will increase the instances of files not found. This option looks in all runtimes for the item, using the relative

path and filename provided. For example, if the file specified is **Runtime/geometries/FolderA/ObjectA.obj** but the file actually lives in an external runtime folder named **C:/MySpecialFolder/Runtime/geometries/FolderA/ObjectA.obj**, then the shallow search will find it. The Shallow search will also find **ObjectA.obj** in any directories that are already known by Poser.

- **Deep**: This is the default **File Search** setting. We recommend that you select **Deep** file searching, as this option initiates the most extensive searches for content file components, hence increasing the likelihood that missing or mislabeled files will be found. This performs a thorough search in all Runtime folders.

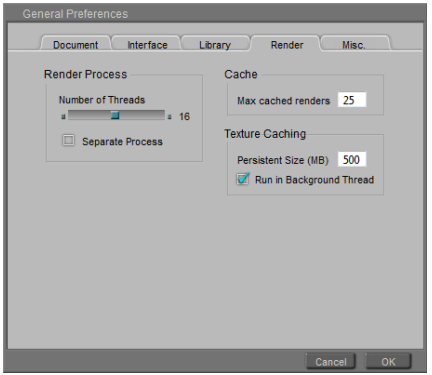


If your Runtime folders are extremely large, resulting in Deep search results that take too long to find missing files, consider changing to a Shallow search.

- **Pose Sets**: By checking the **Apply Universal Poses** box, poses saved to the library will be automatically written as universal poses, and library poses applied to figures by double-clicking will always be applied as universal poses.
- **Launch Behavior**: Controls how the library launches.
  - **Embedded**: By default, the library is embedded and works internally with Poser Pro. You can dock and float the Library Palette the same as other palettes in the interface.
  - **External**: Check this option if you want to run the library as an external application. You will not be able to dock and undock the library palette, but will be able to position it on a second monitor if desired.
  - **Foreground Poser on item load**: Check this option to bring Poser to the foreground after a library item is loaded. With the option unchecked, focus remains in the library until you manually switch to the Poser application to continue with your scene.

Render Preferences

The **Render Preferences** tab contains settings that are specific to the FireFly render engine. The Render Preference options are as follows:



Render Preferences.

- **Number of Threads**: If you have a multi-processor and/or multi-core hardware system, you can take advantage of multi-threaded rendering by setting the **Number of Threads** slider to a value greater than one.

We recommend rendering your scene with as many threads as your system possesses CPU cores. The default value for hyper-threaded CPUs is twice the number of cores that you have (because the OS sees twice as many virtual cores as there are physical cores). On CPUs that are not hyper-threaded, the OS sees only the physical cores. If you are unsatisfied with the resulting performance, or if the render fails to complete, then reduce the number of threads and/or maximum bucket size. However, if you have a single-processor and single-core system, we recommend that you set the number of threads to one, as the increased memory demand of running parallel threads may offset the performance benefits.

For more information on multi-threaded rendering, see "Chapter 19: Using The FireFly Render Engine" on page 404.

- **Separate Process**: Checking the **Separate Process** box enables running FireFly renders in a separate process on the CPU, and vice versa. This feature is disabled by default. For more information on Rendering in a Separate Process, see "Chapter 19: Using The FireFly Render Engine" on page 404.

- **Cache**: The **Max Cached Renders** setting allows you to configure the number of renders that will be cached for access via the Render Compare feature in the **Document** window's Render tab, or the number of thumbnails that are displayed in the Recent Renders palette. Please see "Render Comparison" on page 101 for more information about the Render Compare feature, and "Displaying Recent Renders" on page 102 for more information about the Recent Renders palette.

- **Texture Caching**: Cached textures are kept in the temp location specified in General Preferences, even between sessions.

- **Persistent size (MB)**: The maximum amount of memory allocated to cached textures, in between sessions. When you re-launch Poser, textures from the previous session are still cached on disk (unless you set the size to zero). If you re-open the scene you worked on previously (or one of the recent scenes, if the cache is large enough) the texture cache will be prepared already, allowing for a faster render start.

    - **Run in Background Thread**: Loads textures into the cache while Poser is running, in preparation for the first render. Any texture that is not yet in the cache, or not yet up to date in the cache, needs to be processed. If **Run in Background Thread** is enabled, this processing happens in a separate thread in the background (on multi-core CPUs only). Chances are that by the time you are done preparing the scene for rendering, all your textures are in the cache already, and rendering will start immediately.

The render cache for keeping rendered images and displaying them on the Render tab of the Document window and in the Recent Renders Palette uses the following locations to store image data:

Windows:

```
%AppData%\Poser Pro\10\RenderCache\
```

Windows XP example:

```
C:\Documents and Settings\<PoserUser>\Application Data\Poser Pro\10\RenderCache\
```

Windows Vista & 7 example:

```
C:\Users\<PoserUser>\AppData\Roaming\Poser Pro\10\RenderCache\
```

Mac OS X:

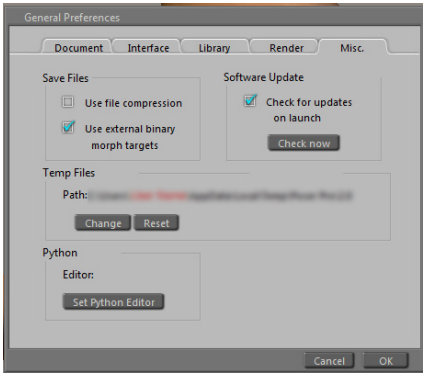
```
~/Library/Application Support/Poser Pro/10/RenderCache/
```

Mac OS X example:

```
/Users/<PoserUser>/Library/Application Support/Poser Pro/10/RenderCache/
```

You can delete the files in those folders to clear the render cache. Please note that your cached renders will be lost after doing so. If you reinstall Poser Pro and choose to back up your preferences, the render cache will be moved into its backup location along with all preferences.

Miscellaneous Preferences



Miscellaneous Preferences.

- **Save Files**: Poser offers the following options for file saving:
  - **Use File Compression**: Poser includes the ability to save compressed runtime files and scene files using "zlib compression". This compression will significantly reduce the size of your runtime directory and save valuable hard drive space. These compressed files will act identically to non-compressed runtime files when used in Poser Pro. To enable file compression, check the "Save Compressed Files" option. Poser will open both compressed and non-compressed files, but writes compressed files using specific file extensions.



Compressed Poser files can be opened by Poser versions running Poser 4 Pro Pack or later. Zlib compression is similar to gzip and zip compression methods, and can typically be uncompressed by any utility (such as WinZip) that handles either of these formats.



Please note that all content included withPoser Pro is compressed.



For more information on zlib, please refer to http://www.info-zip.org/pub/infozip/zlib/. *To uncompress a file, change the extension on the file you wish to access to .gz, then run your decompression utility. Alternatively, you can use the included PoserPython decompression script by launching Poser and opening the Python Scripts window.*



*All Poser files (scene, figure, pose, expression, hair, hand, prop, light, camera, material) can be compressed. Compressed Poser files have the extension *.**Z (*.PZZ, *.CRZ, *.FCZ, etc.). Poser prop files are saved with the extension P2Z to avoid confusion with compressed scene files.*



If you plan to distribute files for use by artists with Poser 4 and earlier, please be sure to save them uncompressed. To do so, uncheck the **Use File Compression** *option in the Misc Preferences tab.*



Poser uses standard Z-lib compression, allowing you to use any Z-lib compatible compression/decompression application to compress/decompress files.



Some advanced artists use a text editing application to directly edit Poser files. You must uncompress compressed files before editing them. To do this, you can either load a file into Poser, disable compressed file support, and save the results to a new filename or use a third-party compression utility to uncompress the file. If you use the second method, you can recompress the file when you've finished making edits.

- **Use External Binary Morph Targets**: Checking this box will enable the use of External Binary Morph Targets (EBMTs) when saving new content, or resaving legacy Poser files. Saving legacy figures to the Poser Library with this option enabled will generate new .PMD EBMT files for those figures, thus allowing you to take advantage of morph target sharing, reduced file sizes, and faster processing speeds for your legacy figures.

- **Set Python Editor**: Clicking the **Set Python Editor** button opens a standard **Browse** dialog, allowing you to select the application you wish to use to edit PoserPython scripts (such as Notepad for Windows).

- **Software Updates**: Checking the **Check for Updates on Launch** box enables the Automatic Update Notification feature (see "Updating Poser" on page 29 for more information about this feature). Clearing the box disables Automatic Update Notification. Clicking the Check Now button will execute an immediate update check.

Setting Up Your Workspace

The Poser workspace consists of the entire Poser screen, including controls, the **Document** window, and other room-specific interface elements. You can customize most of these

elements to suit the way you work and store your preferences for later use.

Docking and Floating Palettes

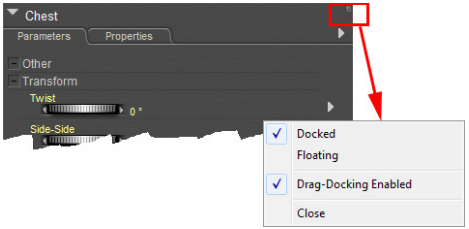
Poser's sleek interface is geared toward streamlining your workflow. You can dock, float, and arrange floating palettes in each of Poser's different rooms, to set up a workspace layout that meets your needs.

The Window menu contains commands that show or hide Poser's many palettes. If a palette is hidden, simply select the desired palette from the Window pull-down menu to display it.



The options in the **Window > Room Tools** *submenus are enabled only when the respective room is active. For example, the commands in the* **Window > Room Tools > Face** *submenu will only be enabled when you are in the Face Room.*

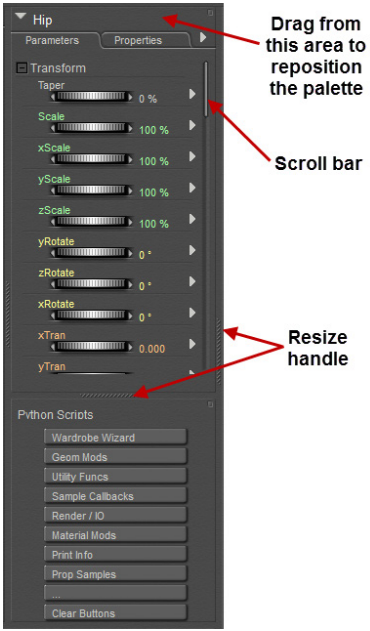
The upper-right corner of each palette contains a Palette Docking Control square. Click the square to open the palette docking menu, which contains commands that work as described below.



Palette Docking menu options.

Moving, Repositioning, and Resizing Palettes

Various controls allow you to resize docked or floating palettes, or reposition them as necessary. For example:



Resizing handles for palettes.

- To resize a docked palette, position the cursor over the resize handle and drag in either direction indicated by the double-arrow resize cursor.
- To resize a floating palette, position your cursor over a side or corner, where it turns into a double-arrow resize cursor. Then drag to the desired size.
- To reposition a palette, position the cursor in the Title area of the palette, where it turns into a hand. Reposition the palette to another area on your screen. If the area that you drag to is highlighted in blue, the palette will dock into the highlighted area of your workspace. If the area that you drag to is not highlighted, the palette will float in the new area when you release the mouse button.
- Some palettes display scroll bars when they contain more information than can be displayed in the allotted space.
- Some palettes (such as the Editing Tools or Display Styles palettes) display options that wrap based on the width of the palette.
- Some palettes cannot be reduced beyond the minimum size required to display all of the palette options and controls. For examples, see the Camera Controls or Light Controls palettes.

Enabling or Disabling Docking

To enable or disable palette docking:

- Click the Palette Docking Control square at the top-right corner of the palette. Check or uncheck **Drag-Docking Enabled** as appropriate. This selection is checked when docking is enabled, and not checked when disabled.



When Drag-Docking is disabled, you can move the palette anywhere on the screen over the main workspace or to an additional monitor. The palette will always float until you enable drag-docking again.

Docking Palettes

To dock a palette, use one of the following methods:

- Drag the palette toward the area in which you want to place it. When the area becomes highlighted, release the mouse. If you drag the palette into an area that is already populated by one or more palettes, the active docking area will split horizontally or vertically to provide a location for the additional palette.
- Click the control at the top-right corner of floating palette, and choose **Docked** from the menu. The palette will dock into the position where it was last docked.

Floating Palettes

To float a palette, use one of the following methods:

- Drag the palette out of the docked location, and toward the document window. Release the mouse when there is no highlighted dock location for the palette.
- Click the control at the top-right corner of a docked palette, and choose **Floating** from the menu. The palette will float in the Poser workspace.

Closing Palettes

To close an open palette, use one of the following methods:

- Click the **Close** icon in the upper-right corner.
- Click the control at the top-right corner of the palette and choose **Close** from the menu that appears.
- Choose an open palette from the **Window** pull-down menu to close it. Palettes that are currently open are indicated by a check mark.

UI Memory Dots

You can save up to nine interface configurations using the **Memory** dots (described in “Memory Dots” on page 56).

Each **Memory** dot retains a separate instance of your selected interface settings. This feature is globally applicable, meaning that UI dots can be applied regardless of the specific scene or resolution. An alternative method for saving UI settings for accessibility in any Poser scene is to modify Poser's general preferences as described in "Setting Application Preferences" on page 32. However, while preferences set in this manner are saved separately for each screen resolution, you can only save one UI configuration per resolution using the general preferences.

Setting Up the Document Window

Please refer to "Chapter 5: The Document Window" on page 72 for more information on customizing the **Document** window and using the controls found there.

Using the Log Window

The Log window enables you to view a list of ongoing commands as you use them in Poser. You can filter these comments on various criteria (timestamp, category, application commands, group selections, warnings, and debug information). This information can be useful when you are trying to troubleshoot a problem with Technical Support.

To display the Log window, choose **Window > Log**.



The window can be docked or undocked to the workspace by using the palette context menu. Click the square in the upper-right corner of the palette to display the docking options.



If a crash occurs and you can't get to the log window, you can copy the recent history from Users\<user>\AppData\Local\Temp\Poser Pro\10\Poser.log


Log
11:43:00 - Application commands: Parameter changed
11:43:08 - Application commands: Translate/pull object
11:43:12 - Application commands: Translate/pull object
11:43:14 - Application commands: Translate/pull object
11:43:19 - Application commands: Rotate camera

Log Window.

Part 2: Building Scenes

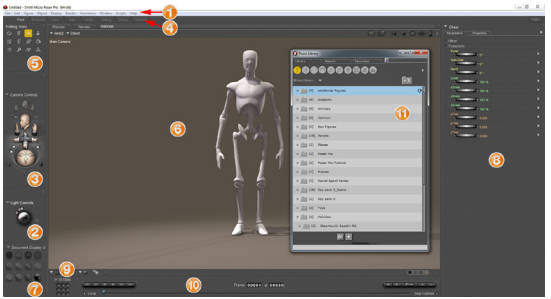
Chapter 4: The Pose Room

The **Pose** room is the focal point for much of your Poser activity. This is where you add figures and props to your scene and perform your desired posing and animation (you'll use the **Hair**, **Cloth**, **Material**, and **Face** rooms to set up and animate these items and can access the **Library** palette from any room). This chapter introduces you to the basic Poser interface. The following chapters will describe these interface elements in greater detail, and then will move on to discussing the other rooms in Poser.

The **Pose** room appears as follows at 1920 x 1200 resolution.



The number of palettes and options that you see in each room depends upon your screen resolution. At higher resolutions, the default work spaces display more palettes, while at lower resolutions you see fewer palettes.



The Pose Room.

In addition to rooms, much of Poser's functionality is available by using floating palettes and windows within the rooms themselves. Most Poser rooms (including the **Pose** room) allow you to customize your Poser workspace by hiding/displaying and relocating controls anywhere you like. You can even save up to nine different screen configurations for the entire Poser workspace.

The numbers on the image above identify the controls available in the **Pose** room:

- **Menu** bar (1)

- **Light** controls (2)
- **Camera** controls (3)
- **Room** tabs (4)
- **Editing** tools (5)
- **Document** window (6)
- **Display** controls (7)
- **Properties** & **Parameters** palettes (8)
- **UI** dots (9)
- **Animation** controls (10)
- **Library** palette (11)

Please refer to "Setting Up Your Workspace" on page 41 for more information about creating and saving custom workspace layouts. The following sections provide a brief description of the labeled interface elements and references to more detailed information.

Menu Bar

The **Menu Bar** consists of a series of pull-down menus used for accessing Poser functionality. Some menus and/or submenus duplicate other on-screen interface elements. The **Menu Bar** appears as follows and is available from every Poser room.



Poser's Menu Bar.

Light Controls

The **Light** controls allow you to adjust lighting properties. Use it for such purposes as adding and removing lights, and specifying light colors and other light properties. The **Light** controls appear as follows.

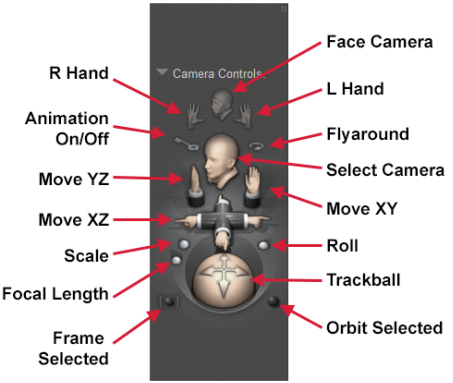


The Light Controls.

Please refer to "Chapter 12: Lighting" on page 261 for more information about the **Light** controls.

Camera Controls

The **Camera** controls allow you to select and move one or more Poser cameras. There are two types of camera controls: **View** and **Position**.



The Camera Controls.

The topmost controls are the **View** controls. Clicking one of these controls activates the **Face**, **Left Hand**, or **Right Hand** camera, as appropriate. You can also scroll through the list of available cameras. The controls beneath the hand controls are used to turn camera animation on or off, or to use the **Flyaround** camera. The **Position** controls appear below these controls and are used to move or rotate the currently selected camera. The

Camera Plane position controls move the camera along the X, Y, and/or Z axis, while the **Trackball** rotates the currently selected camera without changing its location in 3D space. To use the **Camera** controls, simply click and drag your desired control. Moving a camera does not change the locations or poses of figures, props, and other elements in your scene.

The **Frame Selected** button changes the camera view to fit around the currently selected actor. Pick a body part or actor, and then click the **Frame Selected** control to change the camera view to fit around the selected actor.

The **Orbit Selected** button rotates the camera around the currently selected actor. This control is a toggle. When toggled on, the camera will be centered on the selected object or body part and you can rotate the camera so that it is always in the center.



The Orbit Selected mode does not work with cameras that are already set to orbit a specific body part (such as the Face, Left Hand, and Right Hand cameras).

A subset of these **Camera** controls appears in the upper-right corner of the **Document** window. Please refer to "Chapter 11: Cameras" on page 242 for complete information about the **Camera** controls.

Room Tabs

The **Room** tabs allow you to switch from room to room within Poser. To enter a room, simply click its tab.

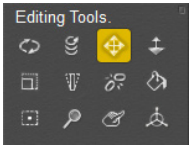


Room Tabs.

Editing Tools

The **Editing Tools** display contains the tools you use most often when posing figures/props.

By selecting a body part or prop followed by the desired **Editing** tool, you can pose objects in various ways such as translating (moving side to side or back and forth), rotating, twisting, etc. You can also perform other functions such as editing Inverse Kinematic (IK) chains and working with element/material groups. Each **Editing** tool is a little different, but their basic usage is as follows:



The Editing Tools.

1. Select your desired body part or prop (referred to as an **element** or **actor**) in your scene by clicking that actor.

2. Select the desired **Editing** tool. You can only have one **Editing** tool selected at a time. The currently selected **Editing** tool appears yellow within the Poser interface.

3. Click and drag to perform the selected tool's function.

You can use the **Editing** tools in any combination to create a virtually infinite number of still or animated poses. Please refer to "The Editing Tools" on page 184 for more information on the **Editing** tools. In addition, each tool is discussed in depth where appropriate in this manual.

Document Window

The **Document** window is your viewport into the Poser workspace where you view and pose your figure and interact directly with your scene. Each view of the **Document** window is displayed through a virtual camera, which means you can view each scene from multiple camera angles, either one at a time or from up to four angles at once.

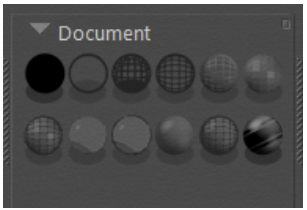
You can position cameras to view your scene from any angle or distance and can resize the **Document** window to suit your needs. In addition, the **Document** window has numerous controls around its edges that you use to change the appearance of scene elements. You can also select objects within your scene by clicking them directly within the **Document** window or by using the menus on the bottom of the window. Please refer to "Chapter 5: The Document Window" on page 72 for more information about the **Document** window.



The Document Window.

Display Controls

The **Display** controls allow you to select your desired preview mode for your entire scene, a figure or prop, and/or specific elements of your currently selected figure/prop.



The Display Controls.

Please refer to "Chapter 6: The Display Controls and Menu" on page 105 for more information about the **Display** controls.

Parameters/Properties Palette

Poser offers an easy-to-use **Parameters** and **Properties** palette that allows you to access any scene object's properties and parameters in one convenient location.



Parameters Palette.

To switch between the **Properties** and **Parameters** palettes, simply click the desired tab at the top of the palette.

Although both properties and parameters appear in the same palette, we will treat them as separate entities throughout this manual for clarity.

Parameters Palette

The **Parameters** palette contains all of an object's parameters transformation settings, (as described in "Parameters Palette" on page 197) and morph targets. Each object type has specialized parameters, which are described where appropriate in this manual. Further, individual objects can have parameters unique to that object. For example, different figures have different morph targets available.

Properties Palette

The **Properties** palette contains all of an object's properties. In addition to certain universal properties (which are described in "Properties" on page 192, each object type has specialized properties, which are described where appropriate in this manual.

Library Palette

The Library palette consists of three tabs.

The **Library** tab contains all of the various categories of content from which you can choose.

- The **Search** tab allows you to perform keyword searches through one or all of your runtimes.
- The **Favorites** tab gives you quick access to your favorite content.

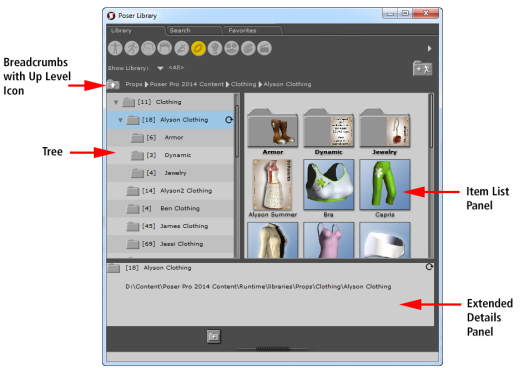
Library Tab

The **Library** tab contain Poser's **Library** content categories. The **Categories** icons allow you to access and search through all of the content available to your installation of Poser, including content included with Poser and any additional content you may have obtained. The Library tab contains categories (**Figures**, **Props**, etc.) and subcategories (**Animals**, **New Figures**, etc.) for organizing your Poser content: You can also organize your favorite content in the Favorites tab for even quicker access.

Use the **Library** tab to add or remove elements from your Poser scenes. The vast collection of content included with Poser allows you start building scenes right away. The Library makes it easy to add existing and new content collections so that you can find and add any items to your scene. Please refer to "Chapter 7: The Poser Library" on page 122 for more information about the **Library** palette and to "Changing the Library Appearance" on page 127 for information on how to show and hide the various elements in the Library tab.



Poser ships with a wide array of content that you can use to create thousands of unique still and animated scenes. You can also use the **Content** *room to locate and obtain even more free and for-sale content from leading 3D marketplaces! Please refer to* *"Chapter 8: The Content Room" on page 173* *for more information about the* **Content** *room.*



Library tab.

Search Tab

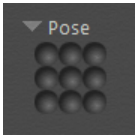
Use the Search tab to perform keyword searches on one or all of your Runtime libraries. This powerful new features makes it easier to find the content you want to use, even in large content collections. You'll find more information in "Searching the Library" on page 167.

Favorites Tab

The **Favorites** tab on the **Library** palette provides quick access to your favorite Poser content. For more information about adding favorites, see "Favorites Tab" on page 171

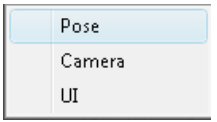
Memory Dots

Being able to customize your workspace wouldn't be useful if you had no way of saving your preferences. Poser includes **Memory** dots that allow you to save poses, camera locations, and user interface (UI) preferences and to switch between saved items with a single mouse click.



Memory Dots.

Clicking the arrow to the left of the description allows you to choose between the **Poses**, **Camera**, and **UI** memory dots that you have saved.



Memory Dots options.

Please refer to the following for more information on each type of **Memory** dot.

- **Pose Dots**: **Pose** dots are described in further detail in "Pose Dots" on page 211.

- **Camera Dots**: **Camera** dots are described in further detail in "Camera Dots" on page 259
- **UI Dots**: **UI** dots are described in further detail in "Setting Up Your Workspace" on page 41.

Using Memory Dots

To use **Memory** dots:

1. Set up your pose, cameras, and/or interface (UI) the way you want them.
2. Use the pull-down menu to select the dot type, as described above.
3. Click an empty memory dot. This dot will appear full, as shown below.



Filled, empty, and selected Memory Dots.

To use a dot, simply click it. The stored settings are applied to your scene. To clear a memory dot (delete its information and make it appear empty again), press and hold **[OPT]/[ALT]** while clicking the memory dot you wish to erase.

Animation Controls

The **Animation** controls allow you to preview animations and set up keyframes. You do this by posing your figure, moving to a new frame, and changing the pose. Clicking the **Play** button plays an animation using the keyframes. The **Animation** controls appear as follows:



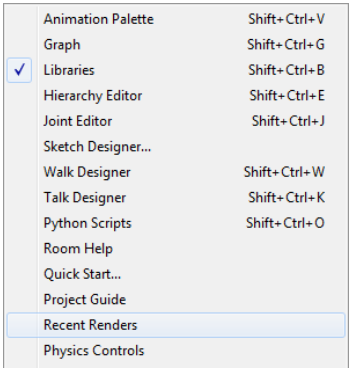
Animation Controls.

Please refer to "Using the Animation Controls" on page 450 to learn more about the **Animation** controls, and to "Chapter 22: Animating with Poser" on page 447 for more information about creating and rendering animations using Poser.

Showing and Hiding Windows and Palettes

The **Window** menu allows you to enable and disable (show and hide) various Poser windows and palettes. The upper portion of the Window menu contains the following commands:

The palette options that are displayed in each room vary, depending on your screen resolution or upon which room you have displayed.

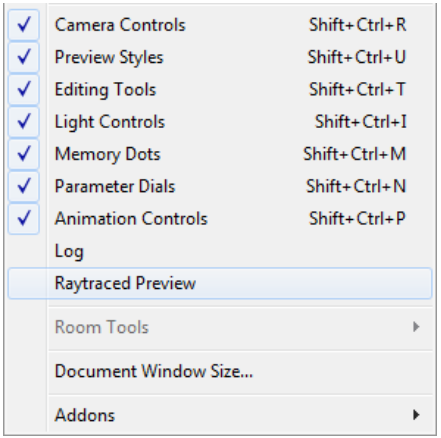


The Window menu shows and hides windows and palettes.

- **Animation Palette**: Selecting **Window > Animation Palette** opens the **Animation** palette. Please refer to "Using the Animation Palette" on page 454 for information about the **Animation** palette and creating Poser animations.
- **Graph**: Selecting **Window > Graph** opens the **Graph** palette for the selected element in your scene. Please refer to "About the Graph Palette" on page 459 for information about using the Graph when making Poser animations.

- **Libraries**: Selecting **Window > Libraries** opens the **Library** palette. Please refer to "Chapter 7: The Poser Library" on page 122 for more information about the **Library** palette.
- **Hierarchy Editor**: Selecting **Window > Hierarchy Editor** opens the **Hierarchy Editor** palette. Please refer to "About Groups" on page 690 for more information about the **Hierarchy Editor** palette.
- **Joint Editor**: Selecting **Window > Joint Editor** opens the **Joint Editor** palette. Please refer to "Chapter 33: Working with Joints, Weights, and Skinning" on page 719 for more information about the **Joint Editor** palette.
- **Sketch Designer**: Selecting **Window > Sketch Designer** opens the **Sketch Designer** window. Please refer to "Chapter 20: The Sketch Designer" on page 440for more information about the Sketch Designer renderer.
- **Walk Designer**: Selecting **Window > Walk Designer** opens the **Walk Designer** window. Please refer to "Using the Walk Designer" on page 474 for more information about the **Walk Designer** window.
- **Talk Designer**: Choose **Window > Talk Designer** to open the Talk Designer window, described in "Using the Talk Designer" on page 482.
- **Python Scripts**: Selecting **Window > Python Scripts** opens the **Python Scripts** palette. Please refer to "The Python Scripts Palette" on page 842 for more information about the **Python Scripts** palette.
- **Room Help**: Selecting **Window > Room Help** opens an HTML window with information to assist you in using the Poser rooms.
- **Quick Start Guide**: Choose **Window > Quick Start Guide** to open the **Quick Start Guide**, described in "Project Guide" on page 30.
- **Project Guide**: Choose **Window > Project Guide** to open the **Project Guide**, described in "Project Guide" on page 30.
- **Recent Renders**: Choose **Window > Recent Renders** to display a palette that contains thumbnails of the images that you most recently rendered. For more information, see "Displaying Recent Renders" on page 102.
- **Physics Palette**: Choose **Window > Bullet Physics Controls** to create physics simulations using Bullet Physics. See "Chapter 23: Using Bullet Physics" on page 493 for more information.

The lower portion of the Window menu contains commands that toggle frequently-used palettes on and off.



Window menu commands show and hide windows and palettes.

- **Camera Controls**: Selecting **Window > Camera Controls** toggles the **Camera** controls display on and off. A check mark next to this option indicates that the controls are currently displayed, and vice versa. Please refer to "The Camera Controls" on page 242 for more information about the **Camera** controls.

- **Preview Styles**: Selecting **Window > Preview Styles** toggles the **Display** controls display on and off. A check mark next to this option indicates that the controls are currently displayed, and vice versa. Please refer to "Chapter 6: The Display Controls and Menu" on page 105 for more information about the **Display** controls.

- **Editing Tools**: Selecting **Window > Editing Tools** toggles the **Editing** tools display on and off. A check mark next to this option indicates that the controls are currently displayed, and vice versa. Please refer to "The Editing Tools" on page 184 for more information about the **Editing** tools.

- **Light Controls**: Selecting **Window > Light Controls** toggles the **Light** controls display on and off. A check mark next to this option indicates that the controls are currently displayed, and vice versa. Please refer to "Chapter 12: Lighting" on page 261 for more information about the **Light** controls.

- **Memory Dots**: Selecting **Window > Memory Dots** toggles the **Memory** dots display on and off. A check mark next to this option indicates that the controls are currently displayed, and vice versa. Please refer to "Memory Dots" on page 56 for more information about the **Memory** dots.

- **Parameters Palette**: Selecting **Window > Parameters Palette** shows or hides the **Parameters/Properties** palette, which contains tabs for the Parameters palette and Properties Palette. A check mark next to this option indicates that the **Parameters/Properties** palette is currently displayed, and vice versa. Please refer to "Parameters Palette" on page 197 for more information about the **Parameters** palette, and to "Properties" on page 192 for more information about the Properties palette.

- **Animation Controls**: Selecting **Window > Animation Controls** toggles the **Animation** controls display on and off. A check mark next to this option indicates that the controls are currently displayed, and vice versa. Please refer to "Using the Animation Controls" on page 450 for more information about the **Animation** controls.

- **Log**: Choose **Window > Log** to open the Log Window. See "Using the Log Window" on page 45 for further information.

- **Raytrace Preview**: Choose **Window > Raytrace Preview** to open the real-time Raytrace Preview window, discussed in "Real-time Raytrace Preview" on page 402

- **Room Tools**: The Room Tools submenus display options that are enabled when you are using the **Material**, **Face**, **Hair**, or **Cloth** room. The options for each room are disabled until you enter the room to which they apply.

  - **Material**: When you are in the Material room, a menu option allows you to show or hide the **Material Palette**. See "Chapter 14: The Material Room" on page 296 for further information about the Material Palette.

  - **Face**: When you are in the Face Room, menu options allow you to show or hide the **Face Preview**, **Photo Lineup**, **Texture Preview**, **Face Texture Tool**, or **Face Shaping Tool**. These palettes are discussed in "Chapter 24: Rendering Animations" on page 510.

  - **Hair**: When you are in the Hair Room, menu options allow you to show or hide the **Hair Growth Groups**, **Growth Controls**, **Styling Controls**, and **Dynamics Controls** palettes. These palettes are discussed in "Chapter 26: The Hair Room" on page 533.

  - **Cloth**: When you are in the Cloth Room, menu options allow you to show or hide the **Cloth Simulation**, **Cloth**, **Cloth Groups**, and **Dynamics Controls** palettes. These palettes are discussed in "Chapter 27: The Cloth Room" on page 550.

- **Document Window Size**: Selecting **Window > Document Window Size** opens the **Preview Dimensions** dialog allowing you to resize your **Document** window when it is floating. Please refer to "Chapter 5: The Document

Window" on page 72 for information about resizing your **Document** window.



The Document Window is only resizeable when it is floating. When docked, the document window expands to fit into the space that is not used by docked palettes.

- **Addons**: Displays help and addon applications for and by third party PoserPython developers.

Keyboard Shortcuts

Keyboard shortcuts are available for many menu commands found in Poser. The following tables summarize the available keyboard shortcuts for each menu.

File Menu

Command	Windows	Mac
File > New	CTRL+N	CMD+N
File > Open	CTRL+O	CMD+O
File > Close	CTRL+W	CMD+W
File > Save	CTRL+S	CMD+S
File > Save As	CTRL+Shift+S	CMD+Shift+S
File > Print	CTRL+P	CMD+P
File > Exit	CTRL+Q	

Edit Menu

Command	Windows	Mac
Edit > Undo	CTRL+Z	CMD+Z
Edit > Redo	CTRL+Shift+Z	CMD+Shift+Z
Edit > Cut	CTRL+X	CMD+X
Edit > Copy	CTRL+C	CMD+C
Edit > Paste	CTRL+V	CMD+V
Edit > Restore > Element	CTRL+E	CMD+E
Edit > Restore > Figure	CTRL+Shift+F	CMD+Shift+F
Edit > Restore > Lights	CTRL+Shift+L	CMD+Shift+L
Edit > Restore > Camera	CTRL+Shift+H	CMD+Shift+H
Edit > Restore > All	CTRL+A	CMD+A
Edit > Memorize > Object	CTRL+ALT+E	CMD+ALT+E
Edit > Memorize > Figure	CTRL+ALT+F	CMD+ALT+F

Edit > Memorize > Lights	CTRL+ALT+L	CMD+ALT+L
Edit > Memorize > Camera	CTRL+ALT+H	CMD+ALT+H
Edit > Memorize > All	CTRL+ALT+A	CMD+ALT+A
Edit > Special Characters		CMD+ALT+T
Edit > Preferences*	CTRL+N	CMD+K

* Preferences command is found in the Poser Pro application menu in Mac systems

Figure Menu

Command	Windows	Mac
Figure > Drop to Floor	CTRL+D	CMD+D
Figure > Hide Figure	CTRL+H	CMD+H

Object Menu

Command	Windows	Mac
Object > Properties	CTRL+I	CMD+I

Display Menu

Command	Windows	Mac
Display > Camera View > Main Camera	CTRL+M	CMD+M
Display > Camera View > From Left	CTRL+; (semicolon)	CMD+; (semicolon)
Display > Camera View > From Right	CTRL+' (apostrophe)	CMD+' (apostrophe)
Display > Camera View > From Top	CTRL+T	CMD+T
Display > Camera View > From Front	CTRL+F	CMD+F
Display > Camera View > Face Camera	CTRL+= (equal)	CMD+= (equal)
Display > Camera View > Posing Camera	CTRL+, (comma)	CMD+, (comma)
Display > Camera View > Right Hand Camera	CTRL+[(left bracket)	CMD+[(left bracket)
Display > Camera View > Left Hand Camera	CTRL+] (right bracket)	CMD+] (right bracket)
Display > Camera View > Dolly Camera	CTRL+/ (forward slash)	CMD+/ (forward slash)
Display > Fly Around	CTRL+L	CMD+L

Display > Frame Selected	CTRL+Shift+= (equal)	CMD+Shift+= (equal)
Display > Orbit Selected Mode	CTRL+0 (zero)	CMD+0 (zero)
Display > Document Style > Silhouette	CTRL+1	CMD+1
Display > Document Style > Outline	CTRL+2	CMD+2
Display > Document Style > Wireframe	CTRL+3	CMD+3
Display > Document Style > Hidden Line	CTRL+4	CMD+4
Display > Document Style > Lit Wireframe	CTRL+5	CMD+5
Display > Document Style > Flat Shaded	CTRL+6	CMD+6
Display > Document Style > Cartoon w/ Lines	CTRL+7	CMD+7
Display > Document Style > Smooth Shaded	CTRL+8	CMD+8
Display > Document Style > Texture Shaded	CTRL+9	CMD+9
Display > Figure Style > Use Document Style	CTRL+ALT+0 (zero)	CMD+ALT+0 (zero)

Display > Figure Style > Silhouette	CTRL+ALT+1	CMD+ALT+1
Display > Figure Style > Outline	CTRL+ALT+2	CMD+ALT+2
Display > Figure Style > Wireframe	CTRL+ALT+3	CMD+ALT+3
Display > Figure Style > Hidden Line	CTRL+ALT+4	CMD+ALT+4
Display > Figure Style > Lit Wireframe	CTRL+ALT+5	CMD+ALT+5
Display > Figure Style > Flat Shaded	CTRL+ALT+6	CMD+ALT+6
Display > Figure Style > Cartoon w/Lines	CTRL+ALT+7	CMD+ALT+7
Display > Figure Style > Smooth Shaded	CTRL+ALT+8	CMD+ALT+8
Display > Figure Style > Texture Shaded	CTRL+ALT+9	CMD+ALT+9
Display > Element Style > Use Figure Style	CTRL+Shift+0 (zero)	CMD+Shift+0 (zero)
Display > Element Style > Silhouette	CTRL+Shift+1	CMD+Shift+1
Display > Element Style > Outline	CTRL+Shift+2	CMD+Shift+2
Display > Element Style > Wireframe	CTRL+Shift+3	CMD+Shift+3

Display > Element Style > Hidden Line	CTRL+Shift+4	CMD+Shift+4
Display > Element Style > Lit Wireframe	CTRL+Shift+5	CMD+Shift+5
Display > Element Style > Flat Shaded	CTRL+Shift+6	CMD+Shift+6
Display > Element Style > Cartoon w/ Lines	CTRL+Shift+7	CMD+Shift+7
Display > Element Style > Smooth Shaded	CTRL+Shift+8	CMD+Shift+8
Display > Element Style > Texture Shaded	CTRL+Shift+9	CMD+Shift+9
Display > Depth Cued	CTRL+Shift+D	CMD+Shift+D
Display > Tracking > Bounding Boxes Only	CTRL+Shift+A	CMD+Shift+A
Display > Tracking > Fast Tracking	CTRL+Shift+X	CMD+Shift+X
Display > Tracking > Full Tracking	CTRL+Shift+C	CMD+Shift+C
Display > Show Background Picture	CTRL+B	CMD+B
Display > Guides > Ground Plane	CTRL+G	CMD+G
Display > Preview Drawing > OpenGL Hardware	CTRL+ALT+O	CMD+ALT+O
Display > Preview Drawing > SreeD Software	CTRL+ALT+S	CMD+ALT+S

Render Menu

Command	Windows	Mac
Render > Render	CTRL+R	CMD+R
Render > Area Render	CTRL+ALT+N	CMD+ALT+N
Render > Antialias Document	CTRL+ALT+R	CMD+ALT+R
Render > Render Settings	CTRL+Y	CMD+Y
Render > Render Dimensions	CTRL+Shift+Y	CMD+Shift+Y
Render > Materials	CTRL+U	CMD+U

Animation Menu

Command	Windows	Mac
Animation > Make Movie	CTRL+J	CMD+J

Window Menu

Command	Windows	Mac
Window > Animation Palette	CTRL+Shift+V	CMD+Shift+V
Window > Graph	CTRL+Shift+G	CMD+Shift+G
Window > Libraries	CTRL+Shift+B	CMD+Shift+B
Window > Hierarchy Editor	CTRL+Shift+E	CMD+Shift+E
Window > Joint Editor	CTRL+Shift+J	CMD+Shift+J
Window > Walk Designer	CTRL+Shift+W	CMD+Shift+W
Window > Talk Designer	CTRL+Shift+K	CMD+Shift+K
Window > Python Scripts	CTRL+Shift+O	CMD+Shift+O
Window > Camera Controls	CTRL+Shift+R	CMD+Shift+R
Window > Preview Styles	CTRL+Shift+U	CMD+Shift+U
Window > Editing Tools	CTRL+Shift+T	CMD+Shift+T
Window > Light Controls	CTRL+Shift+I	CMD+Shift+I
Window > Memory Dots	CTRL+Shift+M	CMD+Shift+M
Window > Parameter Dials	CTRL+Shift+N	CMD+Shift+N
Window > Animation Controls	CTRL+Shift+P	CMD+Shift+P

Other Basic Operations

Creating a New Scene

Selecting **File > New** creates a new Poser scene. A dialog will appear if you have any unsaved changes in your previous scene. If this dialog appears:

- Selecting **Yes** opens a **Save Poser Scene** dialog box, allowing you to save your current Poser scene. After saving your current scene, the new scene will be created.
- Selecting **No** creates a new Poser scene without saving your unsaved changes. All unsaved changes will be lost, so use this option carefully!
- Selecting **Cancel** closes the dialog and cancels the new scene creation, leaving your current Poser scene open.

Opening a Scene

Selecting **File > Open** opens a standard **Open** dialog box, allowing you to access and work on a previously saved Poser scene file. You are prompted to save any unsaved changes in your current scene, if any (see above).

Opening a Recent File

Selecting **File > Recent Files** opens a pop-up list that displays a list of the ten most recent document files (.PZ3 or .PZZ formats) that you opened in Poser.

Closing Your Scene

Selecting **File > Close** closes your current Poser scene while leaving the Poser application running. You are prompted to save any unsaved changes in your current scene.

Saving a Scene

Selecting **File > Save** saves your current Poser scene using your previously specified filename and save location. If you have not previously saved your scene, Poser will open the standard **Save As** dialog box, allowing you to name and save your current Poser scene (see below).

Selecting **File > Save As** saves your current Poser scene allowing you to select a different filename and/or save location. This feature is useful for creating different versions of work, which allows you to return to any previous stage if you decide you don't like your progress beyond a given save point. For example, you could save myscene_1.PZ3, then save new versions as myscene_2.PZ3, myscene_3.PZ3, and so forth.

Compressed File Support

Poser allows you to compress saved figures/props/scenes to save hard drive room. To enable compression support, select **Edit > General Preferences**, select the Library tab, and check the **Use File Compression** box as described in "Miscellaneous Preferences" on page 40.

Reverting Changes

Selecting **File > Revert** allows you to undo your changes and reopen your current scene file in its last-saved state. This is a great way to do your recent changes over, however you will lose everything you've done since the last time you saved your scene. This is why we recommend that you save your scene often and, if you think you may want to return to an earlier version, to save progressive versions of your work using the **Save As** command. Clicking **Cancel** returns you to Poser, and clicking **Revert** proceeds to load the last saved version of your current scene.

Run Python Script

Selecting **File > Run Python Script** opens a standard **Open** dialog, allowing you to browse for your desired PoserPython script. Once you locate your script, select it and click **OK** to execute it.

Page Setup

Selecting **File > Page Setup** opens a standard **Print Setup** dialog box allowing you to set up your printers. Please refer to your operating system and/or printer documentation for information on setting your print preferences.

Print

Selecting **File > Print** sends your current scene to your selected printer. A standard **Print** dialog box opens allowing you to select your desired printer and general printing properties. Poser documents always print using the full page size. Please refer to your operating system documentation for information on selecting print options.

Exit

Selecting **File > Exit** closes Poser. You are prompted to save any unsaved changes. You can also type **[COMMAND]**/**[CTRL]**+[Q] to exit Poser.

This menu option is available for Windows only. For Macintosh, the **Quit** command appears on the Poser **Application** menu.

Undo

Selecting **Edit > Undo** reverses your most recent change to the actual scene. You can also press **[COMMAND]**/**[CTRL]**+[Z]. Undo applies only to alterations made within the actual scene; it is not applicable to changes made to application settings, Library content, etc.

Poser supports multiple levels of Undo. Selecting **Edit > Undo** repeatedly allows you to step backwards through your most recent document changes, reversing each change individually and reverting the scene to its previous state. Some operations within Poser will purge the Undo/Redo cache; a warning dialog will appear asking you to confirm before the action is implemented. Closing the file will purge the Undo/Redo cache.

You can specify the maximum size of the Undo stack. Please see “Setting Application Preferences” on page 32 for more information.

You can specify whether or not the Undo feature will apply to camera changes. Open the Properties palette for the currently selected camera, and check the "Remember changes for undo" checkbox in order to apply Undo to camera changes. Alternately, if you do not wish camera changes to be included in the Undo feature, make sure to uncheck this checkbox for each camera. This checkbox is active by default.

Redo

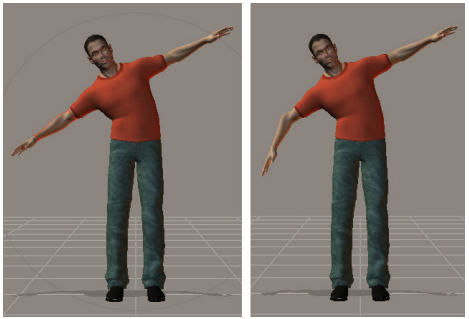
Selecting **Edit > Redo** reiterates the most recently undone action, thus reverting the scene to its previous state. You can also press **[COMMAND]**/**[CTRL]**+**Shift**+[Z]. To reverse a Redo action, simply select **Edit > Undo** again.

Cut

Selecting **Edit > Cut** removes the selected element(s) and places them in the system Clipboard for later pasting. You can also press **[COMMAND]**/**[CTRL]**+[X]. You can do this for poses and other functions.

Copy

Selecting **Edit > Copy** copies selected elements to the Clipboard. You can use this command to copy the position of one prop to another. You can also copy transformation and rotation channel information from the selected item and paste that information into another item. For example, the following figure shows rotation information pasted from the figure's abdomen to its arm.



Before and after abdomen pose settings are copied to a figure's arm.

To copy and paste a shaped body part:

1. Manipulate the body part using any tool you desire.
2. Select the body part (source), then select **Edit > Copy** or press **[COMMAND]/[CTRL]**+[C].
3. Click to select the body part you wish to copy to (target) and select **Edit > Paste** (see following subsection). This copies all settings from the source to the target, including deformers.

Paste

Selecting **Edit > Paste,** or pressing **[COMMAND]/[CTRL]**+[V], places the item stored in the Clipboard into your current scene. If you are pasting a pose, select the element to apply the copied pose to, then make your selection.



Copying and pasting poses from one side to the other does not mirror the poses. The same pose is applied. To mirror poses, use the Symmetry function.

Copy Picture

Selecting **Edit > Copy Picture** takes a snapshot of your scene, which you can then paste into a graphics application such as Adobe Photoshop. Your scene is copied exactly as displayed in the **Document** window.



Copying and pasting images in this manner is not the same as rendering. Please refer to part 9 for information on rendering Poser scenes.

Duplicate

The **Duplicate [ObjectName]** option creates an exact duplicate of the currently selected figure or prop. The duplicate object is placed within the **Document** window, in the same position as the original. The duplicate object will appear in either the **Select Figure** or **Current Actor** menu, depending on whether it is a figure or a prop, and can be resized and repositioned independently from the original object.

Restore

Need to restore a scene element to its default state? Selecting **Edit > Restore** opens a submenu allowing you to restore scene elements, which are completely restored to their Poser default states, including but not limited to position, scale, morphs, parameters, materials, parent/child relationships, etc.



The Restore function is literally for cases when you wish to go back and start all over again. Use it with care!

The **Restore** submenu appears as follows:

- **Element**: Selecting **Edit > Restore > Element** restores the current element to its default state. An element could be a body part, prop, single camera, or single light.
- **Figure**: Selecting **Edit > Restore > Figure** restores the current figure to its default state.
- **Lights**: Selecting **Edit > Restore > Lights** restores all lights in your scene to their Poser default state.
- **Camera**: Selecting **Edit > Restore > Camera** restores the current camera to its default state.
- **All**: Selecting **Edit > Restore > All** restores all scene elements to their default states. Use this option with care!

Memorize

While working, you might arrive at a convenient stopping point. You know you like what you have so far and do not want to revert all the way back to the Poser default state should you need to restore one or more scene elements (or even the entire scene) at a later time. No problem. Select **Edit > Memorize** and the element(s) you wish to memorize (the list is the same as for the **Restore** submenu, above). Doing this essentially changes the default for your selected item(s), which can be undesirable in some cases. Redoing this operation saves the new default overwriting the old. If you later select **Edit > Restore**, your element(s) will be restored to the last memorized settings.



It is very important when setting up new figures to use the **Edit > Memorize > Figure** *command to preserve default poses so that Inverse Kinematics works properly.*

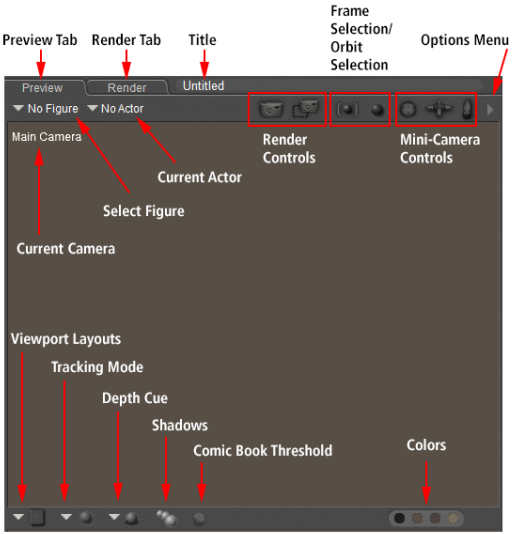
Memorization works on a per-file basis, meaning that memorizing defaults in one file does not affect the defaults of other Poser files or **Library** entries.

Chapter 5: The Document Window

The **Document** window is your portal to the Poser workspace where you view and can directly manipulate your scene and the elements within it. The **Document** window consists of two tabs: the **Preview** tab, which is where you do the work to set up your Poser scene; and the **Render** tab, which is where you can view the results of your renders. The following topics discuss the **Document** window controls and how to use them.

Preview Tab

Clicking on the **Preview** tab at the top left of the **Document** window brings up the scene preview window, where you can manipulate figures, props, etc. to set up your Poser scene. Refer to "Preview Tab" on page 398 for detailed configuration parameters for the Preview tab's preview display window. The **Preview** tab contains the following controls:



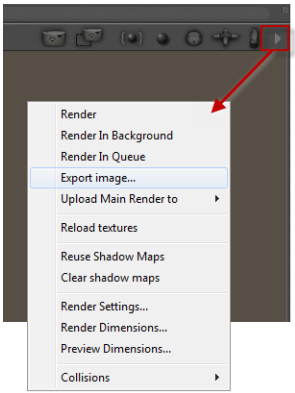
Components of the Document Window.

Title

The **Title** appears along the top of the **Document** window, and displays the current Poser scene (such as **My Scene.PZ3**).

Options Menu

Clicking on the arrow at the right side of the Title bar opens the Document window's **Options** menu. This menu contains the following settings and shortcuts:



Document Window Options menu.

Render

Selecting **Render** from the **Context** menu renders your entire Poser scene, using the render settings specified in the **Render Settings** dialog, and the render engine specified in the **Render Engine Selection** menu on the **Render** tab. For more information on Poser's render settings, see "Part 4: Rendering" on page 391. The render results will appear in the **Render** tab of the **Document** window.

Render in Background

Choose the **Render in Background** command from the Options menu to render your image or animation in the background. This option allows you to continue working while your project renders.

Background renders are only available for single frames (images). The Background Render option will not be available for movies. We recommend using the Render Queue (see "Network Render Queue" on page 426) when rendering movies.

Render in Queue

Choose the Render in Queue command to send the selected render process to the Queue Manager. Further information on the Queue Manager can be found in "Installing Queue Manager" on page 27 and "Render in Queue" on page 393.

Export Image

Selecting **Export Image** opens a standard Save As dialog that will allow you to save the scene as it appears in your scene preview window as an image file. This can also be accomplished by selecting **File > Export > Image**..

Upload Main Render To

Choose **Upload Main Render To > Facebook** to upload the currently selected render to your Facebook account. For further information on how to perform the upload, see "Uploading to Facebook" on page 103.

Reload Textures

Clicking on **Reload Textures** will reload into memory all textures for the current scene preview display. This allows you to easily update any changes you may have made in other applications to the currently loaded textures.

Reuse Shadow Maps

If you do not make changes to lights or object positions between renders, there is no need to recalculate the shadow maps for your scene, as they will not have changed. The **Reuse Shadow Maps** option allows you to save the shadow map computations from your previous render and reuse them, thereby saving time with each subsequent render.

Clear Shadow Maps

Clicking on **Clear Shadow Maps** will cause Poser to recalculate the shadow maps for your scene during the next render. Use this option if you have made changes to lights or object positions, as such changes will affect the shadows in your scene.

Render Settings

Selecting Render Settings will open the **Render Settings** dialog. See "Chapter 18: The Render Settings Dialog" on page 397 for more information on the Render Settings dialog options.

Render Dimensions

Selecting **Render Dimensions** brings up the **Render Dimensions** dialog, which contains settings that allow you to specify the dimensions of your render tab. See "Render Dimensions" on page 75 for more information on the **Render Dimensions** dialog settings.

Preview Dimensions

Selecting Preview Dimensions brings up the Preview Dimensions dialog. Here you can specify your desired height and width (in pixels) of the scene preview window. Clicking the **Match Background** button forces the **Document** window to match the dimensions of an imported background image or movie. Clicking the **Match Production Aspect** button sets the scene preview window size to the currently selected Production Frame aspect. This button is only active when the **Production Frame** feature is enabled (see "Production Frame" on page 111). Clearing a checkbox disables the specified option.

Collisions

A collision occurs when two objects in your scene partially or completely occupy the same 3D space. Selecting the **Collisions** menu item opens a pop-up menu that allows you to set the following collision options for your current Poser scene:

- **Collisions On**: Checking the **Collisions on** option prevents objects in your scene from colliding with/penetrating each other.
- **Collisions Off**: Checking the **Collisions off** option allows objects in your scene to collide with/penetrate each other.
- **Show Intersections**: Checking the **Show intersections** option displays colliding polygons in red when objects in your scene collide with/penetrate each other but does not prevent the collision.

Once you have set collision preferences for your scene, you must then enable collision detection for each of the objects for which you want to use this feature. Do this by selecting your desired objects one at a time and checking the **Collision Detection** checkbox in that object's **Properties** palette. This feature only works between objects that have collision detection enabled. If you have one object enabled and one disabled, collision detection will not work.



Objects lose their collision detection settings when hidden.

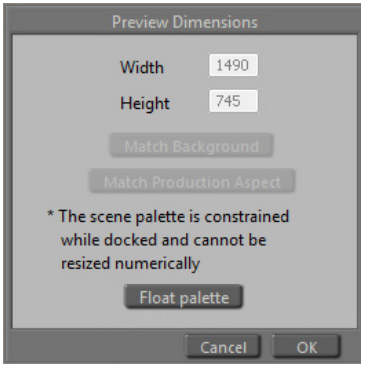
Document Window Size

The **Document** window is dockable and floatable. When the **Document** window is in its floating state, there are two ways that you can resize it:

- Clicking and dragging the bottom right corner of the **Document** window to your desired size.
- Choose **Window > Document Window Size**, which opens the **Preview Dimensions** dialog. Enter your desired scene preview window height and width (in pixels) in the appropriate fields and click **OK** to resize the **Document** window.
- Click the **Match Background** button to match the **Document** window to the dimensions of an imported background image or movie.
- Click the **Match Production Aspect** button to set the scene preview window size to the currently selected Production Frame aspect. This button is only active when the **Production Frame** feature is enabled (see "Production Frame" on page 111).



Note that the above two options are disabled (as shown below) when the **Document** *window is docked. To undock the document window, click the* **Float Palette** *button in the Preview Dimensions dialog.*



Setting Document Window size.

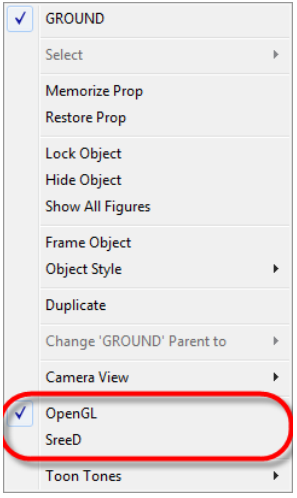
The **Document** window size is saved in the same manner as described in "Single/Multiple-View Panes" on page 92.

OpenGL Hardware Acceleration

Poser offers OpenGL hardware accelerated rendering as well as SreeD software rendering options for the scene preview display. Simply right-click (Windows) or Apple key-click (Mac) within the preview window to select hardware or software rendering for processing the scene previews. In most cases, hardware rendered

previews will be faster than software rendered previews. Additionally, hardware accelerated performance is independent of the preview window size, whereas software rendering will yield a lower frame rate with larger preview window sizes.

Recent and more powerful graphics cards with OpenGL support will provide better results with the display of your Poser scene, with better texture previews and faster interaction and updating of the scene. Unfortunately, due to the vast variety of graphics hardware available, hardware acceleration may not be supported on every system. In that case please use the SreeD software rendering option. Poser should automatically detect whether or not OpenGL hardware rendering is supported for your system, and if not, should default to SreeD software rendering.



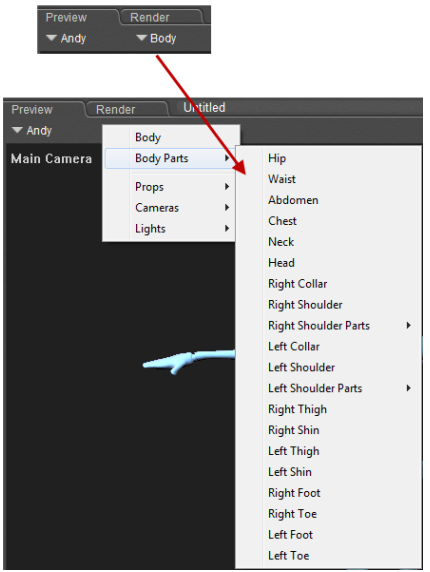
Choosing your Preview Rendering option.

Select Figure/Current Actor Menus

The top left of the **Preview** tab contains the **Select Figure** (left) and **Current Actor** (right) pull-down menus. The currently

selected figure and item appear as labels, and those item's properties and parameter dials are accessible in the **Parameters & Properties** palette. Double-clicking anywhere in the scene preview area will open the **Parameters & Properties** palette in the position and state in which it was last used, with the settings for the currently selected figure and/or actor displayed.

You can also select figures, props, and other scene objects by clicking on them directly in the scene preview area.



Select Figure (left) and Current Actor (right) menus.

- **Select Figure Menu**: Use the **Select Figure** pull-down menu to select your desired figure. This can be helpful if you

have a number of figures in your scene (particularly if you are using conforming clothing, each item of which is a Poser figure).

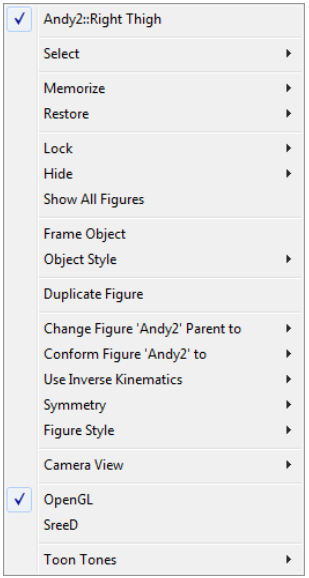
- **Current Actor Menu**: The **Current Actor** pull-down menu allows you to select scene items as follows:
  - **Body**: Selecting **Current Actor > Body** selects the entire body and all body parts of the currently selected figure.
  - **Body Parts**: Selecting **Current Actor > Body Parts** opens the list of the currently selected figure's body parts. By using this option, you will select only the specified body part on the currently selected figure.
  - **Props**: Selecting **Current Actor > Props** opens the list of all props in your scene (including hair and cloth objects), allowing you to select your desired prop.
  - **Cameras**: Selecting **Current Actor > Cameras** opens the list of the cameras in your scene. You may select any camera from this list. Please refer to "Chapter 11: Cameras" on page 242 for information about Poser cameras.
  - **Lights**: Selecting **Current Actor > Lights** opens the list of lights in your scene. You may select any light from this list. Please refer to "Chapter 12: Lighting" on page 261 for information about Poser lights.

Preview Tab Context Menus

Right-clicking (Windows) or Apple key-clicking (Mac) within a scene preview tab will open up the **Context** pop-up menu. The options that appear in this menu vary, depending on the type of item that you right-click over.

Actors Context Menu

When you right-click over a body part in a poseable figure, the context menu appears as shown below.



Actor Context Menu.

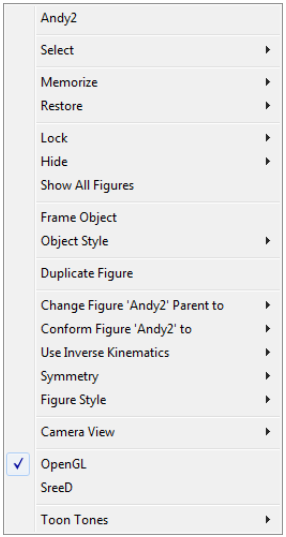
The Actor context menu provides the following commands:

- The top line in the context menu displays the name of the selected item.
- **Select**: Expand the **Select** menu to select the part that you right-click. A check mark appears beside the name of the body part when it is set as the current selection.
- **Memorize** and **Restore**: Equivalent to using the **Edit > Memorize** and **Edit > Restore** commands as they apply to the entire figure, or to the selected element. See "Memorize" on page 71 and "Restore" on page 70.
- **Lock**: Equivalent to using the **Figure > Lock Figure or Object > Lock Object** commands. Allows you to lock or unlock the transformations of the selected actor or figure. The item is locked when a check mark appears beside the item. See "Lock Figure" on page 215 and "Lock Object" on page 211.
- **Hide Actor**: Hides the actor that is right-clicked.
- **Show All**: Equivalent to using the **Figure > Show All** command. "Unhides" any hidden figures or actors.
- **Frame Object**: Equivalent to using the **Frame Selected** camera control or the **View > Frame Selected** command. See "Frame Selected" on page 111.

- **Element Style**: Equivalent to using the **Display > Element Style** command for the selected element. Choose the desired display style from the submenu. See "Chapter 6: The Display Controls and Menu" on page 105 for more information about the display styles available in Poser.
- **Duplicate Figure**: Equivalent to using the **Edit > Duplicate** command. See "Duplicate" on page 70.
- **Change Figure (figurename) Parent to**: Equivalent to using the **Figure > Set Figure Parent** command. Allows you to select a prop, camera, or light as a figure parent. Choose **Universe** to remove the figure parent. See "Set Figure Parent" on page 230.
- **Conform Figure (figurename)To**: Equivalent to using the **Figure > Conform To** command. Allows you to conform the figure to another figure in the scene. Choose **None** to unconform the selected figure. See "Adding Conforming Clothing: Manual Conforming" on page 143.
- **Use Inverse Kinematics**: Equivalent to using the **Figure > Use Inverse Kinematics** command. A check mark appears beside the leg or hand when inverse kinematics is on. See "Inverse Kinematics (IK)" on page 177.
- **Symmetry**: Equivalent to using the **Figure > Symmetry** command. Expand the menu and choose the desired symmetry. See "Symmetry" on page 216.
- **Figure Style**: Equivalent to using the **Display > Figure Style** command. Allows you to choose the display style for the figure. See "Chapter 6: The Display Controls and Menu" on page 105 for more information about the display styles available in Poser.
- **Camera View**: Equivalent to using the **Display > Camera View** command. Select the desired camera view from the context menu.
- **OpenGL**: Equivalent to using the **Display > Preview Drawing > OpenGL Hardware** command. See "OpenGL Hardware Acceleration" on page 76.
- **SreeD**: Equivalent to using the **Display > Preview Drawing > SreeD Software** command. See "OpenGL Hardware Acceleration" on page 76.
- **Toon Tones**: Equivalent to using the **Display > Cartoon Tones** command. Select the desired cartoon display mode from the context menu. See "Cartoon Tones" on page 120.

Full Figures Context Menu

To display the context menu for a full figure, right-click the Figure circle that appears around a poseable figure. The options in the context menu are similar to those in the Actor context menu described in the previous section.



Full Figure Context Menu.

- The top line in the context menu displays the name of the selected item.

- **Select**: Expand the **Select** menu to select the part that you right-click. A check mark appears beside the name of the body part when it is set as the current selection.

- **Memorize** and **Restore**: Equivalent to using the **Edit > Memorize** and **Edit > Restore** commands as they apply to the entire figure, or to the selected element. See "Memorize" on page 71 and "Restore" on page 70.

- **Lock**: Equivalent to using the **Figure > Lock Figure or Object > Lock Object** commands. Allows you to lock or unlock the transformations of the selected actor or figure. The item is locked when a check mark appears beside the item. See "Lock Figure" on page 215 and "Lock Object" on page 211.

- **Hide Actor**: Hides the actor that is right-clicked.

- **Show All**: Equivalent to using the **Figure > Show All** command. "Unhides" any hidden figures or actors.

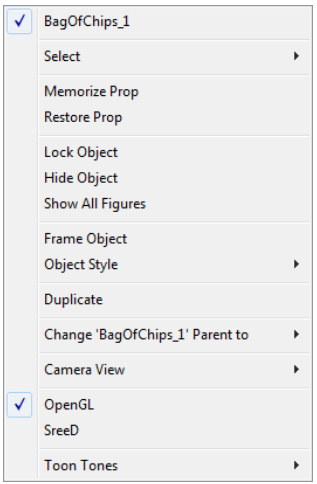
- **Frame Object**: Equivalent to using the **Frame Selected** camera control or the **View > Frame Selected** command. See "Frame Selected" on page 111.

- **Element Style**: Equivalent to using the **Display > Element Style** command for the selected element. Choose the desired display style from the submenu. See "Chapter 6:

The Display Controls and Menu" on page 105 for more information about the display styles available in Poser.

- **Duplicate Figure**: Equivalent to using the **Edit > Duplicate** command. See "Duplicate" on page 70.
- **Change Figure (figurename) Parent to**: Equivalent to using the **Figure > Set Figure Parent** command. Allows you to select a prop, camera, or light as a figure parent. Choose **Universe** to remove the figure parent. See "Set Figure Parent" on page 230.
- **Conform Figure (figurename)To**: Equivalent to using the **Figure > Conform To** command. Allows you to conform the figure to another figure in the scene. Choose **None** to unconform the selected figure. See "Adding Conforming Clothing: Manual Conforming" on page 143.
- **Use Inverse Kinematics**: Equivalent to using the **Figure > Use Inverse Kinematics** command. A check mark appears beside the leg or hand when inverse kinematics is on. See "Inverse Kinematics (IK)" on page 177.
- **Symmetry**: Equivalent to using the **Figure > Symmetry** command. Expand the menu and choose the desired symmetry. See "Symmetry" on page 216.
- **Figure Style**: Equivalent to using the **Display > Figure Style** command. Allows you to choose the display style for the figure. See "Chapter 6: The Display Controls and Menu" on page 105 for more information about the display styles available in Poser.
- **Camera View**: Equivalent to using the **Display > Camera View** command. Select the desired camera view from the context menu.
- **OpenGL**: Equivalent to using the **Display > Preview Drawing > OpenGL Hardware** command. See "OpenGL Hardware Acceleration" on page 76.
- **SreeD**: Equivalent to using the **Display > Preview Drawing > SreeD Software** command. See "OpenGL Hardware Acceleration" on page 76.
- **Toon Tones**: Equivalent to using the **Display > Cartoon Tones** command. Select the desired cartoon display mode from the context menu. See "Cartoon Tones" on page 120.

Props Context Menu



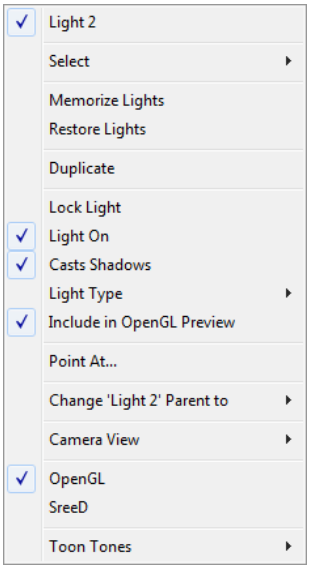
Props Context Menu.

- The top line in the context menu displays the name of the selected item.
- **Select**: Expand the **Select** menu to select the prop that you right-click. A check mark appears beside the name of the prop when it is set as the current selection.
- **Memorize Prop** and **Restore Prop**: Equivalent to using the **Edit > Memorize** and **Edit > Restore** commands as they apply to the prop. See "Memorize" on page 71 and "Restore" on page 70.
- **Lock Object**: Equivalent to using the **Object > Lock Object** command. Allows you to lock or unlock the transformations of the selected prop. The item is locked when a check mark appears beside the item. See "Lock Object" on page 211.
- **Hide Actor**: Hides the actor that is right-clicked.
- **Show All**: Equivalent to using the **Figure > Show All** command. "Unhides" any hidden figures or actors.
- **Frame Object**: Equivalent to using the **Frame Selected** camera control or the **View > Frame Selected** command. See "Frame Selected" on page 111.
- **Element Style**: Equivalent to using the **Display > Element Style** command for the selected element. Choose the desired display style from the submenu. See "Chapter 6: The Display Controls and Menu" on page 105 for more information about the display styles available in Poser.

- **Duplicate**: Equivalent to using the **Edit > Duplicate** command. See "Duplicate" on page 70.
- **Change (propname) Parent to**: Equivalent to using the **Object > Change Parent** command. Allows you to select a figure, prop, camera, or light as a parent. Choose **Universe** to remove the figure parent. See "Changing a Parent" on page 231.
- **Camera View**: Equivalent to using the **Display > Camera View** command. Select the desired camera view from the context menu.
- **OpenGL**: Equivalent to using the **Display > Preview Drawing > OpenGL Hardware** command. See "OpenGL Hardware Acceleration" on page 76.
- **SreeD**: Equivalent to using the **Display > Preview Drawing > SreeD Software** command. See "OpenGL Hardware Acceleration" on page 76.
- **Toon Tones**: Equivalent to using the **Display > Cartoon Tones** command. Select the desired cartoon display mode from the context menu. See "Cartoon Tones" on page 120.

Lights Context Menu

For information regarding commands that are specific to lights, see "Chapter 12: Lighting" on page 261.



Lights Context Menu.

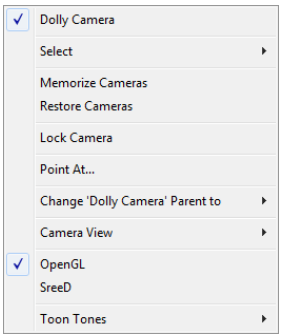
- The top line in the context menu displays the name of the selected light.
- **Select**: Expand the **Select** menu to select the light that you right-click. A check mark appears beside the name of the light when it is set as the current selection.
- **Memorize Lights** and **Restore Lights**: Equivalent to using the **Edit > Memorize** and **Edit > Restore** commands as they apply to the lights. See "Memorize" on page 71 and "Restore" on page 70.
- **Duplicate:** Equivalent to using the Edit > Duplicate command. See "Duplicate" on page 70.
- **Lock Light**: Equivalent to using the **Object > Lock Object** command. Allows you to lock or unlock the transformations of the selected light. The item is locked when a check mark appears beside the item. See "Lock Object" on page 211.
- **Light On:** Turns the light on or off. A check mark appears beside the command when the light is on.
- **Casts Shadows:** Turns shadows on or off for the selected light. Shadows are on when the option is checked.
- **Light Type:** Allows you to choose the type of light. A check mark appears beside the currently selected light type.
- **Include in OpenGL Preview:** Allows the effects of the current light to display in the preview render in the document window. A check mark appears beside the light if it is included.
- **Point At:** Equivalent to using the **Object > Point At** command. See "Point At" on page 212.
- **Change (lightname) Parent to**: Equivalent to using the **Object > Change Parent** command. Allows you to select a figure, prop, camera, or light as a parent. Choose **Universe** to remove the parent. See "Changing a Parent" on page 231.
- **Camera View**: Equivalent to using the **Display > Camera View** command. Select the desired camera view from the context menu.
- **OpenGL**: Equivalent to using the **Display > Preview Drawing > OpenGL Hardware** command. See "OpenGL Hardware Acceleration" on page 76.
- **SreeD**: Equivalent to using the **Display > Preview Drawing > SreeD Software** command. See "OpenGL Hardware Acceleration" on page 76.
- **Toon Tones**: Equivalent to using the **Display > Cartoon Tones** command. Select the desired cartoon display mode from the context menu. See "Cartoon Tones" on page 120.

Cameras Context Menu

For information regarding commands that are specific to cameras, see "Chapter 11: Cameras" on page 242.



You will need to make the camera visible in the Properties panel before you right-click to display the camera context menu.

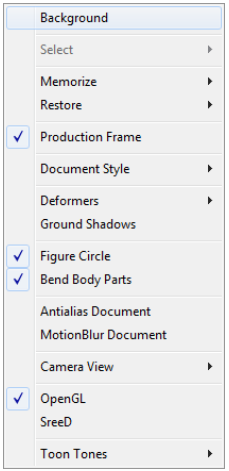


Cameras Context Menu.

- The top line in the context menu displays the name of the selected camera.
- **Select**: Expand the **Select** menu to select the light that you right-click. A check mark appears beside the name of the light when it is set as the current selection.
- **Memorize Cameras** and **Restore Cameras**: Equivalent to using the **Edit > Memorize** and **Edit > Restore** commands as they apply to the selected camera. See "Memorize" on page 71 and "Restore" on page 70.
- **Lock Camera**: Equivalent to using the **Object > Lock Object** command. Allows you to lock or unlock the transformations of the selected camera. The item is locked when a check mark appears beside the item. See "Lock Object" on page 211.
- **Point At:** Equivalent to using the **Object > Point At** command. See "Point At" on page 212.
- **Change (lightname) Parent to**: Equivalent to using the **Object > Change Parent** command. Allows you to select a figure, prop, camera, or light as a parent. Choose **Universe** to remove the parent. See "Changing a Parent" on page 231.
- **Camera View**: Equivalent to using the **Display > Camera View** command. Select the desired camera view from the context menu.

- **OpenGL**: Equivalent to using the **Display > Preview Drawing > OpenGL Hardware** command. See "OpenGL Hardware Acceleration" on page 76.
- **SreeD**: Equivalent to using the **Display > Preview Drawing > SreeD Software** command. See "OpenGL Hardware Acceleration" on page 76.
- **Toon Tones**: Equivalent to using the **Display > Cartoon Tones** command. Select the desired cartoon display mode from the context menu. See "Cartoon Tones" on page 120.

Background Context Menu



Background Context Menu.

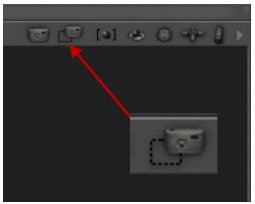
- **Memorize** and **Restore**: Equivalent to using the **Edit > Memorize** and **Edit > Restore** commands. See "Memorize" on page 71 and "Restore" on page 70.

- **Production Frame**: Equivalent to using the Display > Production Frame command. See "Production Frame" on page 111.
- **Document Style**: Equivalent to using the **Display > Document Style** command. Allows you to choose the display style for the entire document. See "Chapter 6: The Display Controls and Menu" on page 105 for more information about the display styles available in Poser.
- **Deformers**: Equivalent to using the **Display > Deformers** command. Allows you to show and hide the deformers in the scene. See "Deformers" on page 113.
- **Ground Shadows**: Equivalent to using the **Display > Ground Shadows** command. Turns the ground shadow on and off. See "Ground Shadows" on page 114.
- **Figure Circle**: Equivalent to using the Display > Figure Circle command. Toggles the display of the figure circle around the figure. See "Figure Circle" on page 114.
- **Bend Body Parts**: Equivalent to using the **Display > Bend Body Parts** command. Toggles bending on and off in a figure. See "Bend Body Parts" on page 114.
- **Antialias Document**: Equivalent to using the **Render > Antialias Document** command. Smooths rough edges in the rendered image. See "Antialias Document" on page 394.
- **Motion Blur Document**: Equivalent to using the **Render > Motion Blur Document** command. Adds a motion blur effect to the render. See "Motion Blur Document" on page 394.
- **Camera View**: Equivalent to using the **Display > Camera View** command. Select the desired camera view from the context menu.
- **OpenGL**: Equivalent to using the **Display > Preview Drawing > OpenGL Hardware** command. See "OpenGL Hardware Acceleration" on page 76.
- **SreeD**: Equivalent to using the **Display > Preview Drawing > SreeD Software** command. See "OpenGL Hardware Acceleration" on page 76.
- **Toon Tones**: Equivalent to using the **Display > Cartoon Tones** command. Select the desired cartoon display mode from the context menu. See "Cartoon Tones" on page 120.

Area Render

The Area Render feature allows you to select a specific region of your scene to render, thereby allowing you to more quickly view

the results of changes to one part of your scene, without having to re-render the entire scene each time. Area Renders appear in the **Render** tab overlaid on the window's existing image at the time the Area Render was taken, so you can view the rendered area in the context of your entire scene.

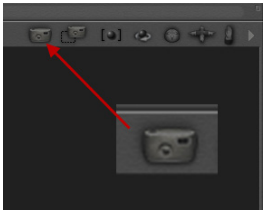


Area Render icon.

To use the Area Render feature, simply click on the **Area Render** icon at the top of the **Preview** or **Render** tab. The symbol will turn red, indicating that Area Render has been enabled. Then click and drag within the scene preview area to select the portion of the scene you wish to render. The results will appear in the **Render** tab of the **Document** window, using the render settings specified in the **Render Settings** dialog, and the render engine specified in the **Render Engine Selection** menu on the **Render** tab. Poser will save the most recently rendered image in the Render tab, allowing you to toggle back and forth between the **Preview** and **Render** tabs, without losing your rendered image.

Render

The **Render** icon at the top of the **Preview** or **Render** tab is a shortcut to the Render command. Clicking this symbol will render your entire Poser scene, using the render settings specified in the **Render Settings** dialog, and the render engine specified in the **Render Engine Selection** menu on the **Render** tab. For more information on Poser's render settings, see "Part 4: Rendering" on page 391. The render results will appear in the **Render** tab of the **Document** window.



Render icon.

Mini Camera Controls

The **Mini Camera Controls** located at the top right of the **Preview** tab contain a subset of the total available **Camera** controls. From left to right, these are:

- **Frame Selected Object:** Allows you to pick a body part and then frame that body part in the camera view. To frame another object, select another body part and click the icon again.
- **Orbit Selected Mode:** Toggles the Orbit Selected feature on and off. When on, the camera will be centered on the selected body part while rotating. The arrow turns blue when Orbit Selected mode is active.



The Orbit Selected mode does not work with cameras that are already set to orbit a specific body part (such as the Face, Left Hand, and Right Hand cameras).

- **Camera Rotation**: The **Camera Rotation** trackball tilts and spins the currently selected camera about all three axes.
- **Move XZ**: Clicking and dragging the **Move XZ** control moves the currently selected camera along the X and/or Z axes.
- **Move XY**: Clicking and dragging the **Move XY** control moves the currently selected camera along the X and/or Y axes.

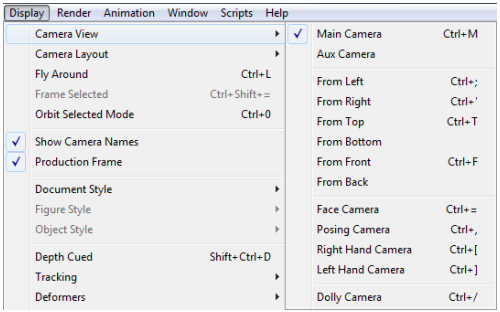
Please refer to "Chapter 11: Cameras" on page 242 for detailed information about the **Camera** controls.



Mini Camera Controls.

Changing Cameras within a Pane

The camera label in the upper left corner of the scene preview tab displays the currently selected camera for that pane. You can change the selected camera in each pane of the **Preview** tab. To do this, click on the **Current Actor** pop-up menu, or right-click anywhere within the desired pane to open the context menu, and click on the **Camera View** option.



Choosing a camera view from the menu commands.

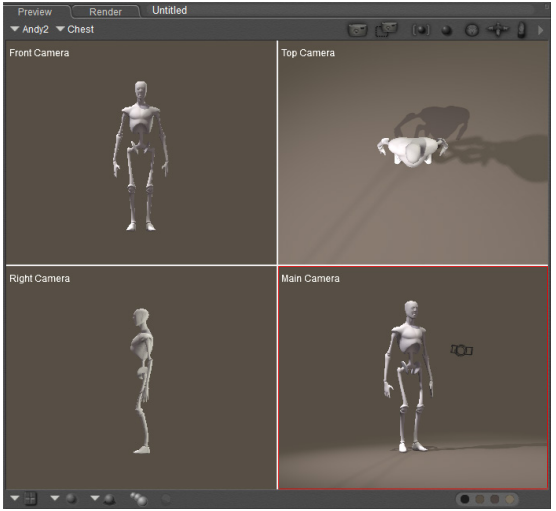
To change the camera, click your desired option. The view in the selected pane will switch to your newly selected camera.

Single/Multiple-View Panes

By default, the **Preview** tab consists of one pane, meaning that you can view your scene using one camera at a time. You can, however, add up to four simultaneous viewing panes (cameras) to your **Document** window using eight customizable layouts, which helps you visualize your scene in all dimensions.

To select a layout, click the **Document** window **Layout** menu button in the lower left corner of the **Preview** tab, and select your desired layout from the pop-up menu.

- To toggle between single pane and the most recently selected multiple-pane layout, press **[D]**.
- Press **[F]** to cycle through all of the available multiple-pane layouts.



Multiple view panes.

- You can resize panes by clicking and dragging their borders. Poser remembers pane sizes and camera selections if you switch layouts while working on a given scene, and these selections are also saved when you save your Poser scene.

- To use the same layout every time you launch Poser, select the **Previous State** option from the **General Preferences** dialog as described in "Setting Application Preferences" on page 32. You can also save up to nine pane/camera layouts using the **UI Memory** dots (see "Memory Dots" on page 56).

- Clicking anywhere in a pane makes that pane active. A red border appears around the active pane.

Tracking Mode

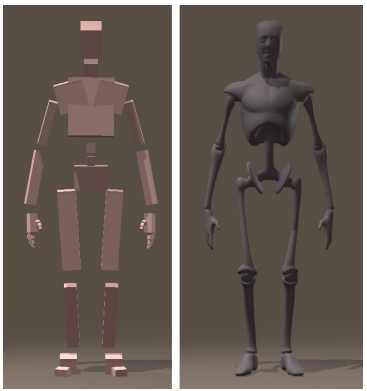
Tracking mode determines the type of preview Poser uses to display an object when you reposition either that object or a camera. The **Tracking Mode** pop-up menu in the lower left corner of the **Preview** tab offers three tracking mode options. From top to bottom, these are:

- **Box**: Displays scene elements (figures and props) as bounding boxes all the time, whether still or moving. This is the fastest way to preview scenes and is useful for rough blocking work.

- **Fast**: Displays figures and props in the currently selected display style while they or the camera are still and as bounding boxes when in motion. This combines an accurate scene view so you can see before and after images without waiting for each frame to fully render. Fast tracking can

help save time while blocking out scenes and creating animations.

- **Full**: Displays scene elements in the currently selected **Document** window display style at all times, whether still or animated. This mode is suitable for users with high-performance computers and for performing fine-tuning on previously blocked-out scenes.



Box and Full tracking modes.

Depth Cueing

The Depth Cueing button appears to the right of the **Tracking Mode** menu along the bottom left of the **Preview** tab.

Depth Cueing adds dimension to scene elements visible in the **Document** window. When Depth Cueing is enabled, elements farther away from the camera fade into the distance. This provides a quick visual indication of the depth of your scene, which can be helpful if you are viewing it using a single pane. To toggle depth cueing on and off, click the Depth Cueing button. **Depth Cueing** depends on the total depth of your scene. For example, if your scene consists of a single figure, the portions of that figure farthest from the camera will appear faded out. Adding another element (such as a prop) farther from the camera than the figure will cause the prop to appear faded with the figure being more visible. This is useful if you wish to control the amount of depth cueing in your scene.



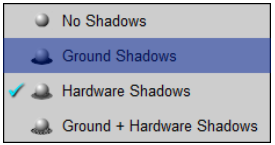
Depth cueing fades objects that are farther away in the distance.

Depth cueing and shadows do not affect your rendered output.

Shadows

Items in your scene can cast shadows on the ground plane, which can help you orient them in 3D space. Disabling shadows can help speed up scene redraw time.

The **Shadows** button appears in the lower left corner of the Document window. Clicking the **Shadows** button allows you to choose which shadows will be displayed in the preview window as you build your scene:



Shadow display options.

- **No Shadows**: Turns shadow display off. This can help improve performance on systems that have limited hardware resources.
- **Ground Shadows**: Displays shadows on the ground only as shown in the following figure.
- **Hardware Shadows**: Displays more realistic shadows in relation to the lights in your scene.

The **Enable Hardware Shading** *option in the Preview tab of the Render Settings dialog must be enabled for hardware shadows to display.*

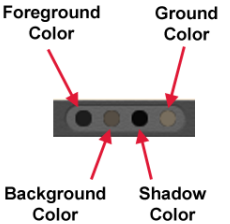
- **Ground and Hardware Shadows**: Displays both ground and hardware shadows (if enabled).



Displaying ground and hardware shadows.

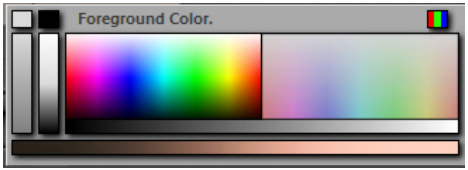
Colors

You can improve your view of your scene by altering the foreground, background, shadow, and ground colors appearing within the **Document** window's **Preview** tab. The four dots located along the lower-right corner of the **Preview** tab allow you to control the following colors, respectively:



Interface options for foreground, background, shadow, and ground colors.

- **Foreground**: Clicking the **Foreground** button opens the Poser Color Picker and displays an eyedropper icon. Pressing **[OPT]/[ALT]** while clicking this button opens your operating system's standard Color Picker. Position this dropper over the color you wish to select and click it. If you use the operating system's standard Color Picker, you can alter the color using numeric values. The **Foreground** color affects the color of the Silhouette, Outline, Wireframe, and Hidden Line display modes (see "Chapter 6: The Display Controls and Menu" on page 105).



The color picker.

- **Background**: Change the **Background** color as described above. This color affects the Poser workspace background.

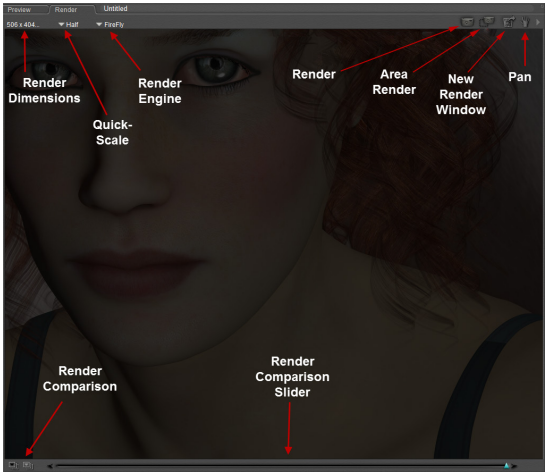
  The final render will always display whatever is attached to the Color channel of the Root Background node. However, if you wish the same image to appear in the preview render, you must also attach it to the BG Picture or BG Movie node. For more information about nodes, please refer to "Chapter 16: Material Room Nodes" on page 325.

- **Shadow**: Change the **Shadow** color as described above. This color affects the preview shadow displayed in the **Preview** tab (if enabled).

- **Ground**: Change this color as described above. This color affects the ground plane displayed in the **Preview** tab (if enabled).

Render Tab

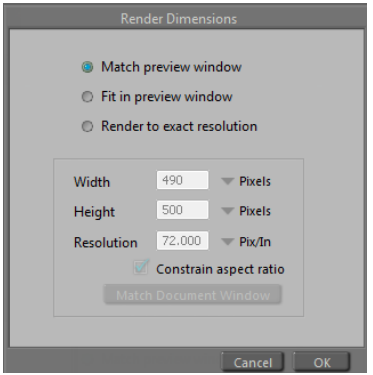
Clicking on the **Render** tab at the top left of the **Document** window displays the main render window, where you can see the rendered results of your Poser scene. The **Render** tab contains the following controls:



Render Window controls.

Render Dimensions

The main render window size is displayed in the upper left corner of the **Render** tab. Clicking this display brings up the **Render Dimensions** dialog, which contains the following settings:



Render Dimensions options.

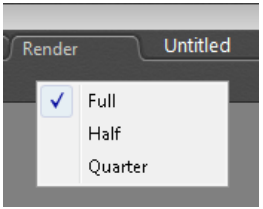
- **Match Preview Window**: Clicking the **Match Preview Window** radio button sets the resulting render to match the existing render preview window size.
- **Fit in Preview Window**: Alternately, clicking the **Fit in Preview Window** radio button will fit the resulting render within the render preview window, while maintaining the specified aspect ratio.

- **Render to Exact Resolution**: Clicking the **Render to Exact Resolution** radio button will generate the render results according to the specific resolution specified in the following fields.
- **Width**: Enter the width in pixels for the render window in the **Width** field. Larger measurements take longer to render and require more disk space.
- **Height**: Enter the height in pixels for the render window in the **Height** field. Larger measurements take longer to render and require more disk space.
- **Resolution**: Enter the resolution in dot pixels per inch (DPI) in the **Resolution** field. 72DPI is normal for screen-resolution images and is suitable for images you intend to distribute online. 300DPI is appropriate for most print functions, and 1200DPI is used when you need extreme detail. Higher resolution images require more disk space and take longer to render.
- **Constrain Aspect Ratio**: Checking the **Constrain Aspect Ratio** checkbox preserves the render window's **aspect ratio** (width divided by height). For example, if you begin with 640x480 and change the 640 to 1280, the height will automatically change to 960. Clearing this checkbox disables this option.
- **Match Document Window**: Clicking the **Match Document Window** button sets the **Document** window's current size in the **Width** and **Height** fields.

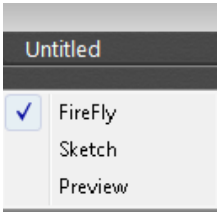
The production frame is determined by the aspect ratio resulting from the output width and height. You can set the production frame to be visible in the **Document** window's scene preview area, by selecting **Display > Production Frame** from the menu bar.

Quick-Scale

The **Quick-Scale** pop-up menu is along the top left of the **Render** tab. It offers quick access to three different render scale options: Full Size, Half Size, and Quarter Size. Note that this feature is not intended to replace the **Render Dimensions** menu, but rather is a tool for facilitating quick render previews, as the smaller scale render sizes require less time to calculate.



Quick Scaling options.



Selecting a render engine.

Render Engine Selection

Click on the name of the currently selected render engine, along the top of the **Render** tab, to display the **Render Engine** popup menu. This menu allows you to easily switch between the various renderers included with Poser. To modify the render settings for each render engine, open the **Render Settings** dialog by clicking on **Render > Render Settings**... in the menu bar (see "Chapter 18: The Render Settings Dialog" on page 397 for a description of this window).

Area Render

Clicking the **Area Render** icon along the top right of the **Render** tab enables the Area Render feature, which allows you to select a specific region of the current image to render, thereby saving processing time. **Area Render** uses the render settings specified in the **Render Settings** dialog, and the render engine specified in the **Render Engine Selection** menu (as described above). **Area Render** is available for the FireFly renderer only. Please see "Area Render" on page 89 for a complete description of this feature's functionality.

Render

To render the current image, click the **Render** icon along the top of the **Render** tab. The results will display in the main render window area, using the render settings specified in the **Render Settings** dialog, and the render engine specified in the **Render Engine Selection** menu (as described above).

New Render Window (Tear Off)

Clicking the Tear Off arrow symbol next to the **Render** icon sends the current Main render image to a new window. You can then select a previously rendered image, or generate a new one, in the main render window and compare the two images side by side.



New Render Window icon.

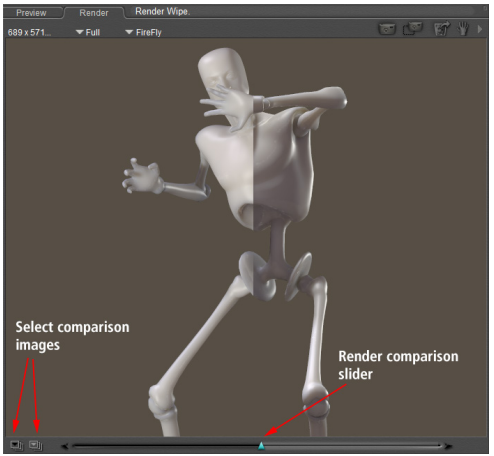
Pan

If the image you have rendered is larger than the render window size, you can pan the image by clicking and dragging in the main render window. The **Pan** symbol at the top right of the **Render** tab activates this feature. Panning is useful as it allows you to shrink the **Document** window as needed, such as when entering the **Material** room, and still have access to your entire rendered image.

Render Comparison

Poser offers convenient render comparison features, allowing you to contrast two different rendered images within the main render window. Clicking either of the two squares in the lower left corner of the **Render** tab brings up a pop-up menu listing the most recent renders by date and time. By default, the most recent render is set as the Main render, and is checked in the list under the black square. The second most recent render is the default Compare render, and is checked in the list under the white square. You can, however, select any render from the list as your Main and Compare renders. To compare the Main and Compare renders, use the **Render Wipe** slider at the bottom of the main render window. Moving the slider to the right displays the Main render, while moving it to the left displays the Compare render. The default number of recent renders listed is ten. You can configure this number in the **General Preferences**

dialog. (See "Setting Application Preferences" on page 32 for more information about the **General Preferences** dialog.)



Render Comparison controls.

Displaying Recent Renders

You can use the Recent Renders palette to display thumbnails of your most recent rendered images. This palette can be docked or floating in the same manner as other palettes in your workspace.

To show or hide the Recent Renders palette, choose **Window > Recent Renders**. A check mark appears beside the command when the palette is visible.

From the Recent Renders palette, you can perform the following functions:

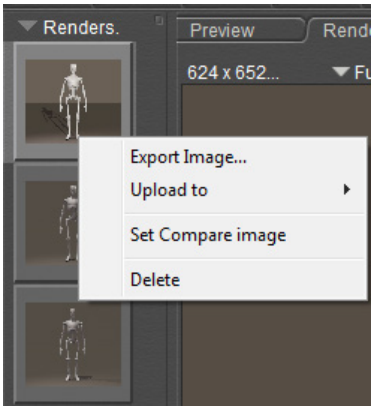
- Click a thumbnail in the Recent Renders palette to display the selected render in the Render window. Partially and fully completed renders appear in this palette

  The number of thumbnails that appear in the palette are determined by the **Max Cached Renders** *setting in the Render tab of the General Preferences dialog. For more information on this setting see* "Render Preferences" on page 37.

Right-click a thumbnail to display a context menu with the following commands.

  - **Export Image**: Opens the Export As dialog, which allows you to save the render in one of the supported image formats.

- **Upload To**: Allows you to upload the selected render to Facebook, as described later in this chapter.
- **Set Compare Image**: Designates the selected image as the image to compare with another thumbnail for use with the Render Wipe slider.
- **Delete**: Deletes the selected render from the render cache, and removes the thumbnail from the Recent Renders palette.

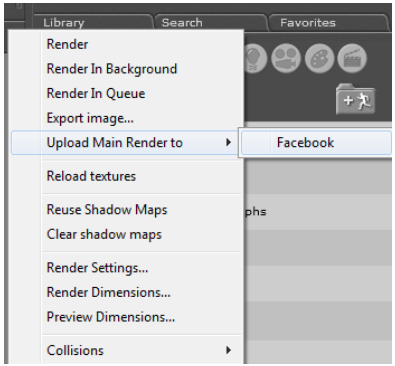


Recent Renders options.

Uploading to Facebook

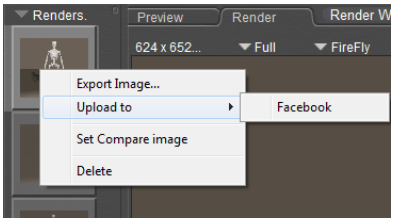
If you have a Facebook account, you can upload your renders to your account directly from within Poser. The steps are as follows:

1. After you complete your render, do one of the following:
   - Click the arrow at the upper-right corner of the Document window to display the Options menu. Then choose **Upload Main Render To > Facebook**.



Uploading to Facebook from the Document Window options menu.

- You can also choose **Window > Recent Renders** to display the Recent Renders palette. Then right-click on the thumbnail of the image that you want to upload, and choose **Upload to > Facebook** from the context menu.

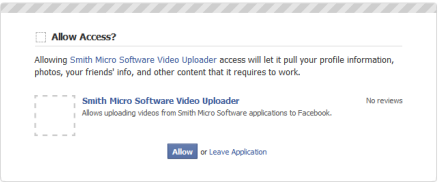


Uploading to Facebook from the Recent Renders Palette.

2. In the dialog that appears, you are asked to enter a name for the Facebook album that you want to upload to, and to add a description of the image. After you enter the information, click OK to launch Facebook.

3. A browser window opens and you are asked to log in to your Facebook account.

4. If you have not yet set up the Smith Micro Video Uploader, you are directed to a page where you check an option to allow Smith Micro Software Video Uploader to publish content. Click **Allow Publishing** to save the authorization permissions. You will be prompted to close the browser window to return to the Smith Micro Software Video Uploader.



Configure Facebook to allow access from Smith Micro Video Uploader.

5. Your Facebook account opens, where you should see the image posted on your wall.

Chapter 6: The Display Controls and Menu

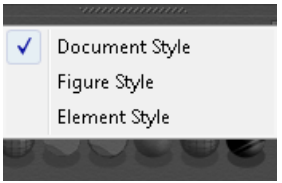
Poser allows you to select 12 display styles. Selecting a different display style can help you better visualize your scene and/or add additional artistic interest to your rendered output. You can select display styles on the scene, figure/prop, or element (body part) level.



Document Display Style controls.

The Display Controls palette has adjustable width and height, and the controls auto-wrap to fit the allotted width. If additional height is needed to display all the controls, a scrollbar appears on the right side of the palette.

Clicking the arrow to the left of the title opens a pull-down menu with the following options:



Display styles can be set for the entire document, for a single figure, or for an element.

By default, the display style that you select will be applied to the entire document (Document Display Style). You can also apply different display styles to the selected figure, or the selected element.

- To change the display style for the entire document, choose **Display > Document Style > (display option)**, or choose **Document Style** from the Display controls palette and click the display style icon you want to use. This affects how all scene elements (figures and props) are displayed unless the display style of a figure or actor is overridden as described below.

- To change the display style for the selected figure, choose **Display > Figure Style > (display option)**, or choose **Figure Style** and click the desired display type from the Display controls palette shown above. Selecting the **Figure Style** option accesses the **Figure Display** controls, which causes only the selected figure or prop to display in the selected style without affecting the other scene elements. To revert the selected actor back to the document style, choose **Display > Figure Style > Use Document Style**, or click the **Use Document Style** option in the Figure Style display options palette.

- To change the display style for the selected element (such as a prop or selected body part actor on a figure), choose **Display > Element Style > (display option)**, or choose **Element Style** and click the desired display type from the Display controls palette shown above. Only the selected figure or prop will display in the selected style without affecting the other scene elements. If the selected element is a body part on a figure, you can revert back to the display mode set for the entire figure by choosing **Display > Element Style > Use Figure Style**, or by clicking the **Use Figure Style** option in the Element Style display options palette.

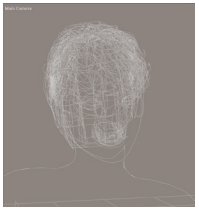
Whether you use the **Display > Document Style, Figure Style,** or **Element Style** menu, or the **Document Style, Figure Style,** or **Element Style** display control palette, there are twelve different display styles from which to choose. They are as follows:

- **Silhouette:** displays the figure/element only as a cutout, as shown to the right.



Silhouette Display Style.

- **Outline:** displays the figure/element only as an outline. When either the entire scene or an entire figure is displayed in this mode, outlines appear around each actor (body part), as shown to the right.



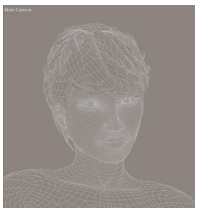
Outline Display Style.

- **Wireframe**: displays the figure/element as a polygonal mesh. This mode displays the actual polygons comprising the figure/element, including polygons that would normally be hidden from view (such as a figure's back when viewed from the front), as shown to the right.



Wireframe Display Style.

- **Hidden Line**: displays only the figure/element's polygons that would normally be visible from the current camera. For example, if you are viewing a figure from the front, the polygons forming the back would not be visible, as shown to the right.



Hidden Line Display Style.

- **Lit Wireframe**: displays much the same as the Wireframe display style, except that the polygons' colors correspond to the color of the surface material, as shown to the right.



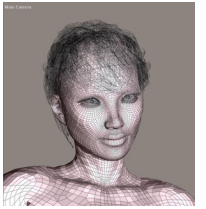
Lit Wireframe Display Style.

- **Flat Shaded**: displays figures/elements using the surface material colors while displaying the mesh facets, as shown to the right.



Flat Shaded Display Style.

- **Flat Lined**: same as the Flat Shaded display style, except that black mesh lines clearly denote polygon edges, as shown to the right.



Flat Lined Display Style.

- **Cartoon**: displays the figure/element using a simulated hand-drawn style, as shown to the right. See "Cartoon Tones" on page 120 for more information about this shading style. Poser offers improved Cartoon display effects in conjunction with the OpenGL hardware acceleration option (see "OpenGL Hardware Acceleration" on page 76).



Cartoon Display Style.

- **Cartoon With Line**: same as the Cartoon display style, except that figures/elements are outlined with black lines, as shown to the right. See "Cartoon Tones" on page 120 for more information.



Cartoon with Line Display Style.

- **Smooth Shaded**: displays figures/elements as smooth continuous surfaces with the material colors, as shown to the right.



Smooth Shaded Display Style.

- **Smooth Lined**: combines the Flat Lined and Smooth Shaded by displaying the polygons as a black mesh over a smooth surface, as shown to the right.



Smooth Lined Display Style.

- **Texture Shaded**: displays figures/elements using texture maps, as shown to the right.



Texture Shaded Display Style.

You can also change display styles by selecting **Display > Document Style**, **Display > Figure Style**, and **Display > Element Style**.

By default, Poser renders using the **Texture Shaded** mode. While rendering high-resolution output using the currently selected display styles and/or depth cueing, etc. is not directly supported, you can achieve excellent results using the rendering tips discussed in "Tips & Tricks" on page 403.

The Display Menu Commands

As the name implies, the **Display** menu controls how items appear in your Poser workspace, specifically within the **Document** window.

Camera View

Choose **Display > Camera View** to select one of the cameras available in your scene. See "Chapter 11: Cameras" on page 242 for more information about the various camera views.

Camera Layout

Choose **Display > Camera Layout** to select the number of different views that you want to display in the document

window. See “Single/Multiple-View Panes” on page 92 for more information about multiple views.

Fly Around

This command puts the current camera in Flyaround mode. For more information, see “Flyaround View” on page 247.

Frame Selected

The **Frame Selected** command fits the camera view around the currently selected actor. For example, you can pick a body part, and then choose the **Frame Selected** command to frame the camera view around that body part.

Orbit Selected Mode

The **Orbit Selected** command rotates the camera around the currently selected actor. This command is a toggle. When toggled on, the camera will be centered on the selected object or body part and you can rotate the camera so that it is always in the center.



The Orbit Selected mode does not work with cameras that are already set to orbit a specific body part (such as the Face, Left Hand, and Right Hand cameras).

Show Camera Names

This command shows or hides the display of camera names in the document window.

Production Frame

Selecting **Display > Production Frame** allows you to specify whether you wish the production frame to be visible in the **Document** window’s scene preview. The size of the production frame is determined by the aspect ratio resulting from the output width and height. See “Render Dimensions” on page 75 and “Keyframe Controls” on page 452 for more information about configuring the output dimensions for images and movies, respectively.

Document Style

Selecting **Display > Document Style** allows you to select a display style for your entire Poser scene. This is the same as using the **Display** controls discussed earlier.

Figure Style

Selecting **Display > Figure Style** allows you to select a display style for your currently selected Poser figure. This is the same as using the **Display** controls discussed earlier.

If your currently selected figure does not use the same display style as the document, choose **Display > Figure Style > Use Document Style** *to change to change it to the same display mode that is selected for Document Display Style.*

Element Style

Selecting **Display > Element Style** allows you to select a display style for your currently selected scene element (for example, a body part or a prop). This is the same as using the **Display** controls.

If your currently selected element (body part, prop, hair, and so on) does not use the same display style as the figure to which it is attached, choose **Display > Element Style > Use Figure Style** *to change to change it to the same display mode that is selected for the figure.*

Depth Cued

Selecting **Display > Depth Cued** toggles depth cueing on and off. Depth cueing makes objects fade as they get further from the camera. A check mark appears when this feature is active and vice versa. Please refer to "Depth Cueing" on page 94 for more information about depth cueing.



Depth Cueing fades objects over distance.

Tracking

Selecting **Display > Tracking** allows you to set your desired tracking mode. Please refer to "Tracking Mode" on page 93 for more information about tracking modes.

Deformers

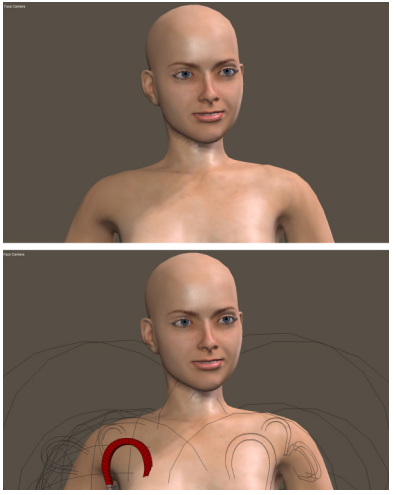
As the name implies, deformers (morph targets, parameters, force fields, and magnets) affect the shape of figures and props within your scene.

The Alyson and Ryan figures utilize many deformers to improve bending and joint performance.

Each deformer type is discussed in its own section later in this manual. Selecting **Display > Deformers** allows you to:

- Show all deformers (magnets, waves, and force fields) in your scene (**Display > Deformers > Show All**).
- Hide all deformers in your scene (**Display > Deformers > Hide All**).
- Only show the currently selected deformer. (**Display > Deformers > Show current selection only**).

A check mark appears next to the currently selected deformer display mode. You can select hidden deformers using the **Current Actor** pull-down menu. Hiding some or all deformers can reduce clutter, particularly in complex scenes.



Deformers hidden (top) and visible (bottom).

Ground Shadows

Selecting **Display > Ground Shadows** displays or hides ground shadows, as shown in the following figure.

Please refer to "Shadows" on page 95 for more information about ground shadows.



Ground shadows (top); Hardware shadows (middle); Both (bottom).

Figure Circle

Selecting **Display > Figure Circle** toggles displaying a white circle around your currently selected figure in your scene, which turns red depending on cursor location, allowing you to select the entire figure. Please refer to "Selecting Body Parts" on page 181 for more information about the **Figure Circle**.

Bend Body Parts

Selecting **Display > Bend Body Parts** toggles bending on and off. All body parts are separate elements (actors). As you change their positions, Poser attempts to maintain continuity over the entire body. The arm should connect smoothly to the shoulder, etc. Poser achieves these smooth transitions by bending body parts where they join. However, the bends that work well for a body part might not work well when applied to figures created from props, or figures that have some body parts replaced by props (such as replacing a hand with a hook for a pirate character). Rendering images with bending disabled can cause figures to appear "broken", as shown above.



When the Bend Body Parts option is off, figures split at the group seams.

Foreground/Background Color

Selecting **Display > Foreground Color** or **Display > Background Color** allows you to specify the **Document** window's foreground and background colors, respectively. You can also do this using the **Color** controls located next to the **Document** window. Please refer to "Colors" on page 96 for an explanation of foreground and background colors.

Show Background Picture

If you have a background image in your scene that was placed there using either the **File** menu (see "Importing Background Pictures" on page 778) or by pasting the current figure/prop into the background (see below), then selecting **Display > Show Background Picture** toggles displaying this image on and off. Please refer to "Importing Movies" on page 777 for more information on adding a background animation to your Poser scene.

Clear Background Picture

Selecting **Display > Clear Background Picture** deletes the currently displayed background image (if any).

Paste Onto Background

You can paste an image of your currently selected figure/prop into your scene background: This is especially helpful for planning animation.



You can paste a "snapshot" of your scene onto the background and make changes.

To do this, select the prop/figure you wish to paste into the background, then Select **Display > Paste onto Background**. If you do this more than once, each succeeding image supersedes the previous one. This is also true if you import a separate background image/movie.

Show Background Footage

Selecting **Display > Show Background Footage** displays imported animation footage in the workspace background.

Clear Background Footage

Selecting **Display > Clear Background Footage** removes imported animation footage from your scene.

Use Background Shader Node

There are two ways of specifying the background of a scene – by loading an image in the BG Picture node, or by attaching a shader tree to the Background root node:

If you want to use the BG Picture node as the background of your rendered image, choose **Render over > Background picture** in the Render Settings dialog, as described in "FireFly Options Settings" on page 417. Please refer to "Importing Background Pictures" on page 778 for information on importing background pictures.

- If you want to use the shader attached to the Background root node as the background of your rendered image, choose **Render over > Current BG shader** as described in "FireFly Options Settings" on page 417. Please refer to "Root

Background Node" on page 329 for information about using background shaders.

Guides

Poser provides several guides to assist you when posing figures. Guides are particularly useful for helping you achieve a particular perspective more easily. To display a guide, select **Display > Guides** and select the guide you wish to display. A check mark appears next to visible guides. To hide a guide, select **Display > Guides** and select the guide you wish to hide. Hidden guides have no check marks next to them. The available guides are described in the following sections.

Ground Plane

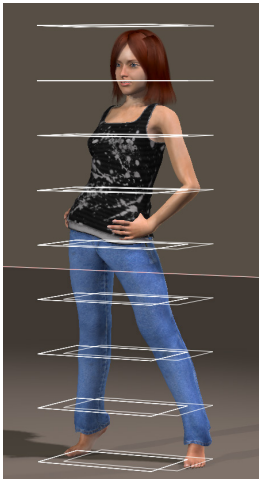
The ground plane provides a basic reference of the camera's position relative to the Poser workspace. It also helps show scene elements' vertical positions relative to one another. You can display the ground plane using the same display style as the rest of your scene or you can give it its own display styles.



The ground plane represents the "zero" point of the scene's height.

Head Lengths

This guide references the figure's height. Most people are roughly seven "heads" tall, meaning that the average head is 1/7th the height of a person. This guide can be helpful when you are performing body shaping operations such as using morph targets.



Head lengths are represented by several parallel planes.



Hip and shoulder relationship guides.

Hip-Shoulder Relationship

This guide displays the relationship between the figure's upper and lower body. It helps you see the side-to-side, bend, and twist in the hip, abdomen, and chest. This is particularly useful when editing/viewing your figure using different cameras.

Horizon Line

This guide references the Poser workspace's horizon line. You can check camera orientation by selecting a camera and checking its position relative to the horizon line. The horizon line is also useful when creating perspective between two or more figures

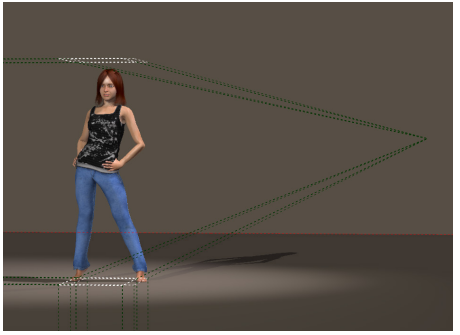
or other scene elements. For example, if the horizon line crosses the front figure's chest, arrange all the figures so that the horizon line crosses their chests as well. This ensures that all figures are on the same plane and contributes to a viewer's sense that all figures have their feet on the ground.



Displaying the horizon line.

Vanishing Lines

Vanishing lines are an artistic technique for achieving realistic perspective. You can see this is real life by standing at the corner of a long building and sighting along a wall. You will see that the roof and the ground appear to converge the farther away you look until they eventually meet. This phenomenon is one of the things that give objects the appearance of depth in both real and virtual life.



Displaying vanishing lines.

Focus Distance Guide

The focus distance is the distance at which objects appear most in focus. This distance is individually configurable for each camera. The Focus Distance Guide shows you where the focus distance for the selected camera falls within the scene, to help you visualize the position of various scene elements in

relationship to the focal plane. For more information on the focal plane and focus distance, see "Camera Parameters" on page 252.

Preview Drawing

Selecting **Preview Drawing** allows you to specify whether you wish to use OpenGL hardware rendering, or SreeD software rendering, for your scene preview display. Please see "OpenGL Hardware Acceleration" on page 76 for more information about hardware versus software rendering.

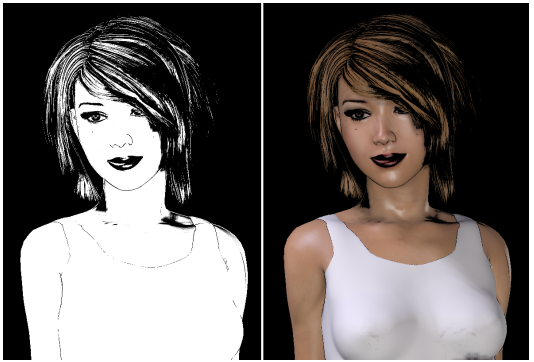
Cartoon Tones

Selecting **Cartoon Tones** allows you to choose between the following options for your scene preview display: One, Two, or Three cartoon shading tones, Three Tones Plus Highlights, and Smooth Toned. These shading styles affect the Cartoon Display Style specifically, and are only visible when **Cartoon** is selected as the **Document Style**, **Figure Style**, or **Element Style** from the **Display** menu. Note that these styles are for the scene preview only, and are not to be confused with final render shading styles.

Comic Book Preview Mode

Comic book preview mode displays the items in your preview window with a look that is similar to comic book illustration, without the need to assign materials that have Toon IDs. The previews include persistent shadowing and improved outlining. Comic Book styles not only work in Texture Shaded mode, but they also work with any other display style (Wireframe, Flat shaded, Cartoon, and so on).

The Cartoon Tones command, mentioned previously, includes two Comic Book mode toggles: Comic Book is used for black and white preview, and Comic Book (Color) for color previews:



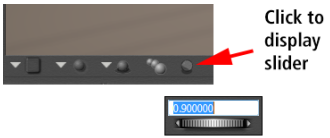
Comic Book *(left) and* **Comic Book (Color)** *(right).*

There are two ways to enable one of the Comic Book styles:

- Choose **Display> Cartoon Tones > Comic Book** or **Display > Cartoon Tones > Comic Book (Color)**.
- Right-click in the viewport, and choose **Toon Tones > Comic Book**, or **Toon Tones > Comic Book (Color)**.

You can use the **Render > Antialias Document** *command to produce a final rendering, or open the Render Settings dialog to render an image using your current Preview settings.*

You can use the Comic Book Threshold slider, located below the lower-left corner of the document window. To adjust the light/dark contrast of the comic book preview, simply click the Comic Book Threshold icon to display the slider.



Comic Book Threshold slider

Chapter 7: The Poser Library

Poser's hierarchical **Library** palette provides access to all of the content that ships with Poser such as figures, props, lights, cameras, etc. It has three tabs: the **Library** tab that provides access to the Poser content categories, the **Search** tab which allows you to search your content folders for specific files, and the **Favorites** tab where you can gain easy access to your frequently used or favorite content items. The **Library** tab contains ten categories, discussed below. Each category is further divided into subcategories. You can create and remove categories and subcategories, and can add and remove content, including your existing content libraries, to/from the **Library** palette. See "Maintaining Your Library Palette" on page 161 for information on maintaining your **Library** palette.

Poser can also automatically install content purchased or obtained using the **Content** room as described in "Chapter 8: The Content Room" on page 173.

The following figure shows the various controls and options that are contained in the library palette. The boxed area in Figure 1 shows the Library list. Navigate through the Library list as follows:

- Use the Up and Down arrow keys to move higher or lower in your content tree.
- Use the Right and Left arrow keys to open and close folders.
- Click or select an item in the list to expand the display and view a larger preview of the content item.



The Library Window.

1. **Library Tabs**: Allows you to switch between three views in the Library Palette: Library, Search, and Favorites.

2. **Category Icons**: Allows you to select one of the ten library categories. From left to right, they are **Figures**, **Poses**, **Faces**, **Hair**, **Hands**, **Props**, **Lights**, **Cameras**, **Materials** and **Scenes**.

3. **Library Selection**: Click the **Show Library** selector to display all runtime folders, or to display the contents of a single selected runtime folder in the library contents window.

4. **Expanded folder**: Click the down arrow to collapse the contents of the folder. The number that appears in brackets at the beginning of the folder name designates the number of items that are contained within that folder.

5. **Collapsed folder**: Click the right arrow to expand the contents of the folder. The number that appears in brackets at the beginning of the folder name designates the number of items that are contained within that folder.

6. **Category Selection**: Allows you to select a library category (listed above in **Category Icons**) by name.

7. **Remove Library**: A **Remove Library (-)** icon appears to the right of the **Add Library** icon when you use the Show Library menu to select a Library that you added yourself

through the **Add Library** command. See "Removing Libraries" on page 134 for details.

8. **Add Library**: Click the **Add Library** (**+**) icon to open the Browse for Folder dialog, which allows you to select additional Library folders that you have stored on your computer.



Content that is created for Poser is typically arranged in a folder named **Runtime**, *with subfolders beneath that for geometry, textures, and library items. For more information about creating, installing and accessing additional library folders, see* "Accessing Different Content Libraries" on page 131

9. **Item List Panel**: The currently selected item is highlighted in blue. If the Item List Panel is not displayed, the currently selected item displays as a larger icon in the Tree view.

10. **Extended Details Panel**: Displays a thumbnail, filename, file size, installation date, and other details about the item that is selected in the library.

11. **Single check mark**: Click the single check mark icon to replace the item that is currently selected in your scene with the item that is highlighted in the library. Functions of the single check mark button vary, depending on the Library category that is currently selected. See "Loading and Managing Items using the Library Icons" on page 135.

12. **Double Check mark**: Click the double-check mark icon to add the currently selected item to your scene. The double check mark does not appear for every Library category and the purpose varies depending on the selected category. See "Loading and Managing Items using the Library Icons" on page 135.

13. **Add a Folder (+}:** Click this button to create a new folder or subfolder beneath the currently selected library folder.

14. **Save to Library (+)**: Click this button to add the item that is currently selected in your scene into the library.

15. **Delete from Library (-)**: Click this button to delete the library content item that is currently selected. Note that this button completely removes the library item from the Library, not from your scene.

16. **Add to Favorites:** Adds the item that is currently highlighted in the library to the library's Favorites tab.

17. **Display Options Widget**: Click the Display Options widget to expand or collapse the display options in the bottom of the library palette.

18. **Display Options**: Use the **Display**, **Tree**, **List**, and **General** display options to configure how content is displayed in the Library palette.

19. **Breadcrumb Trail**: Displays the library path to the currently selected folder or item. Use the Up arrow at the left of the breadcrumb trail to navigate up to the previous folder level.

20. **Library Menu (not shown)**: Appears in the 32-bit Library only. Click the Docking Control icon (the small square) in the upper-right corner to select commands that dock, undock, close, or enable/disable dragging. Refer to "Docking and Floating Palettes" on page 42 for further information.

Displaying the Library Palette

If the Library Palette is not open, select **Window > Libraries**.

The library consists of several different sections that can be shown or hidden. For further information, see "Accessing Different Content Libraries" on page 131.

- Additional library preferences appear in the Library tab of the General Preferences dialog. See "Library Preferences" on page 35 for a discussion of the settings you find in this tab.

- There are notable differences between the 32-bit and 64-bit versions of the Library:
  - When using the 32-bit version of Poser Pro, you can dock or float the library palette. Commands to dock or float the library appear in the docking options menu, accessible by clicking the Docking Control square in the upper-rght corner of the Library window.
  - In the 64-bit version (Poser Pro only), the Library Palette is displayed in floating (external) state only. The docking options menu is not available in the upper-right corner of the Library window. However, you will notice a library popup widget in the upper-right corner of the Poser interface that allows you to bring the library window to the foreground when it falls behind other windows.



The Library Popup widget.

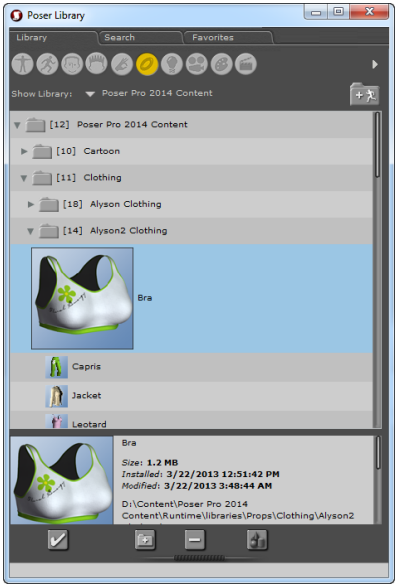
When you use the Poser Library as an external application (Poser Pro only), you will see two icons in the system tray. The icon with the human figure brings Poser to the foreground when it appears behind other windows. Similarly, the icon with the scrolled document brings the external library application to the foreground.



Poser and Poser Library icons.

- When the Library Palette is floating, you can position and resize it however you like. Drag either side of the Library palette across your screen to the desired width. You can also move the Library palette to a second monitor if desired. For further instructions on arranging palettes, refer to "Docking and Floating Palettes" on page 42.

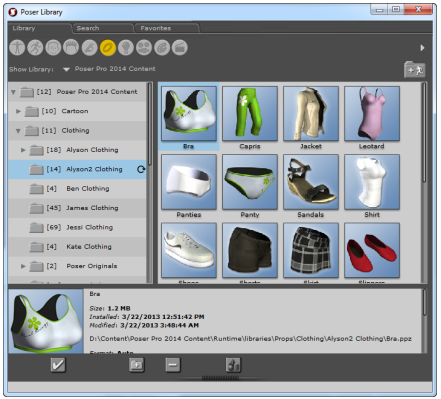
The Library Palette allows you to display your content in a variety of ways. You can display your content in a **Tree** view, which displays all of the content in your libraries in a hierarchical list. The tree view appears as shown below if the Item List display is turned off



Viewing library items in Tree view.

Alternatively, you can undock the Library palette and display content thumbnails in multiple rows and columns, which allows

a better view of all of the content in a selected folder. When Item List is open, a hierarchical tree appears in the left side of the library. When you select a folder in the tree, the folders and content within the selected folder appear in a multi-column display that adjusts to fill the width of your library window as shown below.

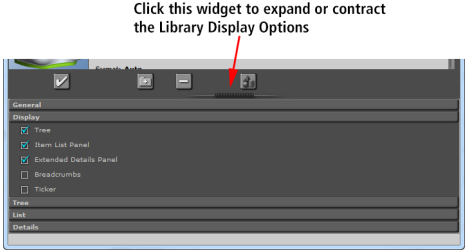


Displaying thumbnails in multiple rows and columns.

The following section describes how you can customize the appearance of the Library palette to suit your needs.

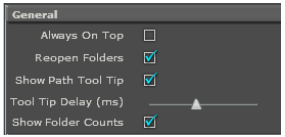
Changing the Library Appearance

A widget appears at the bottom of the Library palette, just beneath the library buttons shown in the previous figure. Click this widget to expand the Library palette to view the display options described in the sections that follow:



The Library Display Options widget.

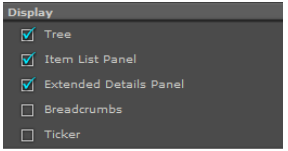
General Options



General library options.

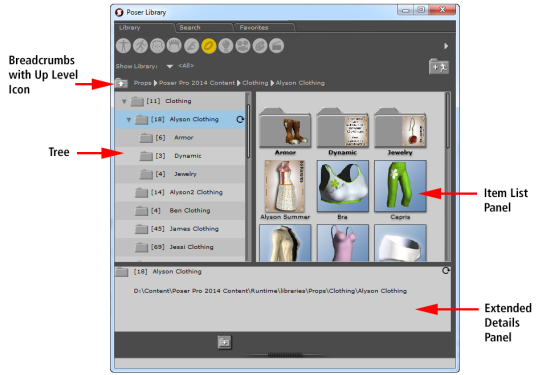
- **Always On Top:** Check this option to keep the Library window on top of all other open windows on the screen. When unchecked, the Library window will be allowed to move behind other windows when they have focus.
- **Reopen Folders:** When checked, preserves the state of current open folders when you close and then reopen the library. If you toggle it off, the library reverts to a completely clean state when relaunched, with all folders closed.
- **Show Path Tool Tip**: Enable or disable the tool tip that displays the path to a library folder when you hover your mouse over a folder name in the library.
- **Tool Tip Delay (ms)**: Drag the slider left or right to adjust the amount of time between hovering over a library name and displaying its path tool tip. Time delay is adjustable from 100 to 1000 ms.
- **Show Folder Counts**: Check or uncheck this option to show or hide the number that represents the number of items in a folder. When checked, the number of items contained in the folder appears within parentheses.

Display Options



Display library options.

Check or uncheck the options listed below, to show or hide the various areas in the Library Palette as desired. These areas are labeled in the following figure.



Breadcrumbs, Tree, Item List, and Extended Details in the Library palette.

- **Tree**: Displays a hierarchical view of the contents of your library. Check or uncheck this option to show or hide the hierarchical tree in the Library Palette. If the Item List Panel is turned off, thumbnails appear in the tree.
- **Item List Panel**: Displays the folders and content thumbnails for the folder that is selected in the tree. The thumbnail display appears in multiple rows and columns that adjust to the width and height of the Library palette. Check or uncheck this option to show or hide the item list panel.
- **Extended Details Panel**: Displays information about the selected item. Check or uncheck this option to show or hide the extended details.

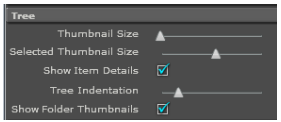
The Extended Details panel will display basic information such as the product name, size, the date the file was installed and last modified, and the path to the file on your computer. Additional metadata can also appear about a library item if it has been added by the author of the content. Extended details can include additional information such as author name, copyright information, usage instructions, and more. Metadata is stored in a file that ends with an XMP extension. For more information, see the article at http://blog.smithmicro.com/2010/07/12/poser-3d/metadata-makes-life-in-poser-easier/.

- **Breadcrumbs**: Displays the runtime folder path to the selected library folder. Check or uncheck this option to show or hide the breadcrumbs.
- **Ticker:** Displays up to the minute news about Poser and related content.

When breadcrumbs are displayed, you can use the Up arrow icon (at the right of the Breadcrumb trail) to navigate to the next highest folder level in the path. You can also click any folder in the breadcrumb trail to move up to the selected level.

Tree Options

Thumbnails and additional product details appear in the Tree if you have selected to disable the Item List Panel. The options in the Tree Options section control the size of preview and selected item thumbnails, details, and other items in the Tree.



Tree library options.

- **Thumbnail Size**: Drag the slider left or right to decrease or increase the size of the preview thumbnails.
- **Selected Thumbnail Size**: Drag the slider left or right to decrease or increase the size of the thumbnail for selected library items.
- **Show Item Details**: Shows or hides the File Name, Size, Installed, and Modified details that appear beside the currently selected library item.
- **Tree Indentation**: Drag the slider left or right to decrease or increase the amount of indentation for items and folders that appear within and beneath library folders.
- **Show Folder Thumbnails**: Check or uncheck this option to show or hide Folder icons in the library. When unchecked, only the name of a folder will appear in the library. When checked, a small Folder icon appears beside the folder name.

List Options

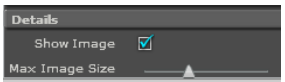
When the Item List is enabled, thumbnails appear in multiple columns that adjust to fit the width of the panel. Settings in the List Options section control size of the thumbnail and the placement of text around the thumbnail.



List library options.

- **Thumbnail Size**: Drag the slider left or right to decrease or increase the size of the content thumbnails.
- **Label Height**: Adjusts the amount of vertical space between the thumbnail rows to allow for labels that have multiple lines.
- **Horizontal Gap**: Adjusts the amount of horizontal space between the thumbnails

Details Options



Details library options.

- **Show Image**: Check this option to display an image of the selected library item in the Extended Details panel. Uncheck the option to remove the image display.
- **Max Image Size**: If you have images displayed in the Extended Details panel, drag the slider toward the left to reduce the size of the image, or toward the right to increase the size.

Accessing Different Content Libraries

Poser contains two Libraries: **Runtime** (contains the content that shipped with your copy of Poser) and **Downloads** (a default folder for added third-party content).



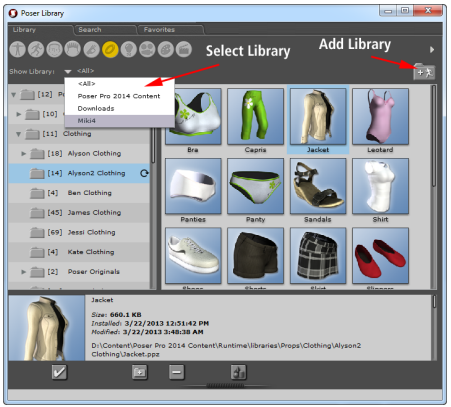
Poser content libraries are arranged in Runtime folders, which contain many different types of components that are used in Poser. In addition to content such as figures, props, hair, and poses, Runtime folders can also contain scripts, interface files, plug-ins, and other application-critical data. The collection of different types of elements in a Runtime folder is known as a **Library**.

You may add as many Libraries as you wish. This feature allows you to store Poser content in different folders and/or different drives, making content management more powerful than ever. Also, should you need to reinstall Poser for any reason, you can do so without affecting your custom Libraries. You can access each of your Libraries using the **Library** palette.

Switching Libraries

To filter content between loaded Library Runtimes, click on the Show Library menu, which is located along the top of the **Library** tab of the **Library** palette. Doing so will open the **Available**

Libraries pop-up menu, from which you can display the contents of any single Library, or of all your runtime libraries.



You can add and access external libraries from the Library palette.

Adding Libraries

As mentioned earlier, Poser creates **Runtime** and **Download** libraries during installation, dependent upon which content you elect to install during installation. There is also a great deal of third-party content available for Poser, and if you have acquired a large collection you may find it necessary to arrange your content into multiple library folders. Then you can use the following process to make your additional folders appear in the Library palette.

Runtime folders have a structure similar to the following. Folders and content shown in italics are unique to the content and are named by the creator of the content.

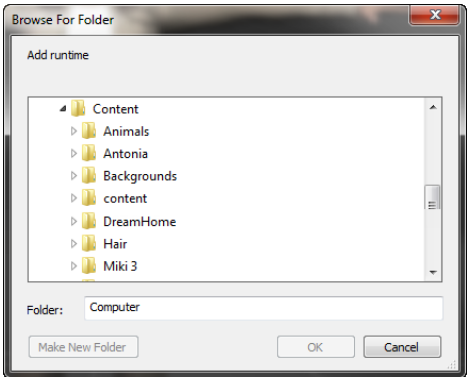
```
Runtime
  Geometries
     (vendor or product folder)
        OBJ files for product
  Libraries
     Camera
        (vendor or product folder)
           Camera and thumbnail files for product
     Character
        (vendor or product folder)
           Character and thumbnail files for product
     Face
        (vendor or product folder)
           Face and thumbnail files for product
     Hair
        (vendor or product folder)
           Hair and thumbnail files for product
     Hand
        (vendor or product folder)
           Hand and thumbnail files for product
     Light
        (vendor or product folder)
           Light and thumbnail files for product
     Materials
        (vendor or product folder)
           Material and thumbnail files for product
     Pose
        (vendor or product folder)
           Pose and thumbnail files for product
```

```
    Props
        (vendor or product folder)
            Prop and thumbnail files for product
    Scene
        (vendor or product folder)
            Scene and thumbnail files for product
Textures
    (vendor or product folder)
        texture image files for product
```

Poser products do not always contain all of the above-mentioned folders beneath the Runtime folder. For example, if you are installing a piece of clothing, it might add files in the **Geometries**, **Props**, and **Textures** folders but not in the others.

As an example of creating a new Library on your hard drive, assume the following:

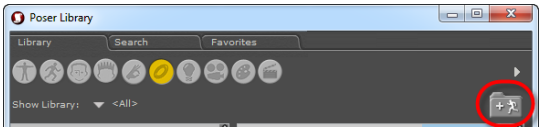
- You have collected dozens or hundreds of items that relate to several different figures. You want to arrange them into different libraries that make the content easier to find.
- You have an external hard drive D: that has lots of room to store content. You decide you want to install all of your content there.
- You create a **Content** folder to store all this content. Beneath that **Content** folder, you create other subfolders to store each of the content types you want to organize. The folders can be named for a specific figure (Miki 3, Terai Yuki, etc) or type of character (Monsters, Animals, etc), or even a theme (Anime, Horror, Sci Fi, etc). Arrange them in any way you like. The following figure shows some examples.



Adding a Library folder.

- Now you want to install all of the content that relates to one figure (such as Smith Micro's Miki 4 figure). You extract/install all of your Miki 3 clothing, hair, and other related content into the **D:\Content\Miki 4** folder. The final path to the runtime folder is **D:\Content\Miki 4\Runtime**.
- To add this example Miki 4 Library to Poser, you would proceed as follows:

1. Open the **Library** palette if it is not open.
2. Click the **Add Library** button (**+**) to open a standard **Browse for Folder** dialog box.



The Add Library icon.

3. Select the hard drive that stores the Library files you want to add (for our example, you would choose D:)
4. Navigate to the folder that stores the Runtime folder and its subfolders (for our example, you would choose **Content**, then **Miki 4**).
5. Click **OK** to add the new Library

When adding existing Poser libraries to your Poser **Library** *palette, you must preserve your Runtime folder name and structure (<drive > :\<folder > \<subfolder > \Runtime\<folders >. Navigate the Browse dialog to your desired Runtime folder. The added Library will appear using the name of the folder containing the Runtime folder.*

Poser allows you to create your own folders to store your own poses, material settings and other creations, or so that you can organize library items to your liking. *See "Creating Subfolders" on page 161.*

Removing Libraries

The Remove Library button appears when a library other than the Poser default libraries is selected. You cannot delete the default Poser library. Deleting libraries only severs the link between the Library folders and the Library palette. It does not remove any of the folders or content from your hard drive. This protects your data from accidental deletion and allows you to reuse Libraries at need (such as from removable drives).

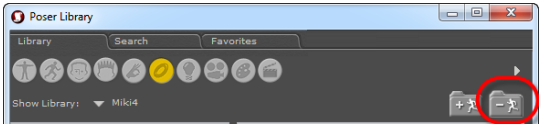
If you want to remove the Library from your hard drive completely, you will need to do this manually by deleting the folder and contents from your hard drive. Exercise extreme caution when deleting library folders from your hard drive, as they will be irretrievably lost.

To remove a library:

1. Use the **Show Library** list to select a Library that you previously added using the steps outlined in "Changing the Library Appearance" on page 127

Note that you will be unable to delete libraries that were installed during the Poser installation You can only remove libraries that you added yourself.

2. Click the **Remove Library** button (minus sign) to remove the selected Library from the Library palette. The name of the library is removed from the Show Library list, and its contents no longer appear in the Library.

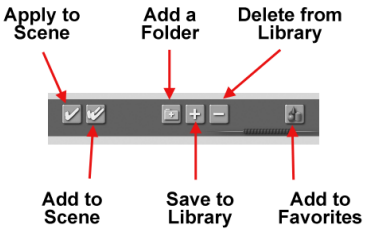


The Remove Library icon.

Loading and Managing Items using the Library Icons

The **Library** icons appear as shown in the following figure. Certain **Library** icons are only available for specific categories. These icons appear at the bottom of the palette.

From left to right, these icons are:



Several icons add content to the scene and to the Library.

- **Single check mark**: Clicking the single check button serves different functions as listed below:
  - **Figures Category**: Changes the selected figure.
  - **Poses Category**: Applies the pose to the figure for which it was originally designed.
  - **Faces:** Applies the selected face expression to the currently selected figure.
  - **Hair:** Adds selected hair to the scene.
  - **Hands:** Applies a hand pose to the currently selected figure. You are prompted to specify right hand or left hand.
  - **Props:** Adds the currently selected prop to the scene.
  - **Lights:** Replaces the existing lights in the scene with the currently selected light set.
  - **Cameras:** Applies the camera settings to the camera.
  - **Materials:** Applies the single material to the currently selected single material in an object; or, applies a Material Collection to all materials in the current object.
  - **Scenes:** Closes the current scene and replaces it with the scene you are adding from the library.
- **Double check mark**: The double check mark button appears for the following categories and serves the purposes listed below:
  - **Figures Category**: Creates a new figure in the scene. Typically used to add additional human characters, clothing, and other poseable figures.
  - **Poses Category**: Applies the currently selected pose as a universal pose.
  - **Lights:** Adds the lights in the library to those already present in the scene.

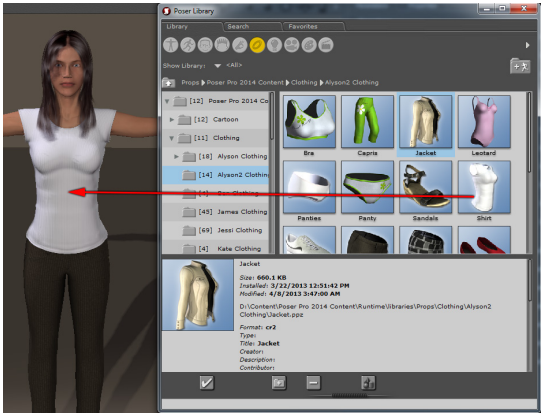
- **Scene**: Keeps the content that is currently in your scene, and adds the additional content from the selected library item.
- **Add a Folder**: Click the **Add a Folder** (+) button to create a folder beneath the currently selected Library folder.

- **Add to Library**: Clicking the **Add to Library** (+) button adds the selected item to the **Library** palette.
- **Delete from Library**: Clicking the **Delete from Library** (-) button removes the selected item from the **Library** palette.
- **Add to Favorites**: Click to add the currently highlighted library item to your Favorites list.

Placing/Adding Items to the Poser Workspace

In addition to using the library icons as discussed in the previous section, you can also drag an item from the library and drop it into your scene. As you drag an item from the library to the scene, a tooltip displays the action that you are performing.

You can also select multiple items into the library and add them to your scene at the same time. Click to select the first item, and then press the Shift key (Windows or Mac) to select a contiguous range of thumbnails between the first and last items you selected. You can also **CMD-click** (Mac) or **CTRL-click** (Windows) to add additional items to the selection. Then drag or drop the additional items into your scene.



Adding clothing to a figure.

Removing an Item From the Poser Workspace

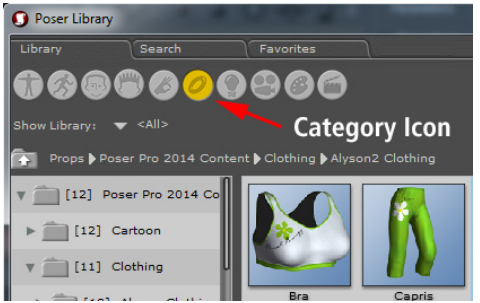
To remove an item from the Poser workspace, first select the item to remove by either selecting it in the **Document** window or using the **Current Actor** pull-down menu (see "Select Figure/Current Actor Menus" on page 77), then press [DEL].

About Library Palette Categories

Poser's new library allows you to quickly select categories and the items contained within them.

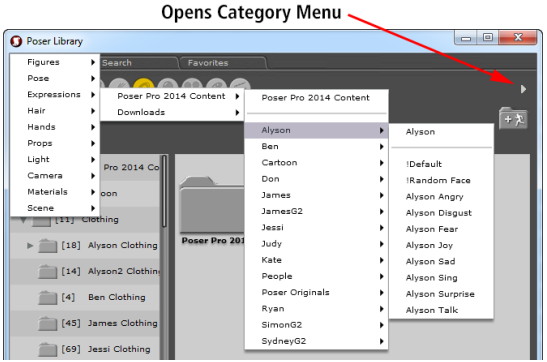
If you are seeking more information related to installed third party Poser content, please look in the "ReadMe" Folder located in the Poser Pro installed "runtime" folder. This folder is in the content location that you selected when installingPoser Pro. There are not ReadMe's for every specific piece of content, but there are some that may help get you more familiar with how pieces of content were designed to be used together, special features of a piece of content or in depth details on how to use it. The P.I.C.K Content for example has a PDF file in the **ReadMe/CP Partners/MindVision-GDS** *folder which has in depth details on how to use it to its fullest potential*

- Click a **Category** icon to select a Content category. Then drill down in the hierarchical list in the Library list to select the item you want to add to your scene.



Category icons help you choose a Library category.

- You can also drill down through the **Category** menu to select an item. First, click the **Category** icon to select the main category for your content. Then click the Category button (shown in the following figure) to drill down in the menus until you find the item you want to choose. In the following figure, the menu drills down from **Hair > Poser Content > People > Alyson** to list all of the available hair objects in that folder.



Category menus allow you to select a category folder.

The **Library** palette categories are described in further detail below in "About Library Palette Categories" on page 138. Please refer to "Loading and Managing Items using the Library Icons" on page 135 for information on working with **Library** palette content.

The default categories are broken down by Poser file type: **Figures**, **Poses**, **Faces**, **Hair**, **Hand poses**, **Props**, **Lights**, **Cameras**, **Materials** and **Scene**. Please refer to "Poser File Types" on page 848 for a brief discussion of Poser file types and how they relate to using Poser. When you switch between categories, the Library remembers which item was selected the last time you used a specific category.

You can navigate through the Content pane as follows:

- When you reach a content folder that contains items, you can navigate through the contents in the folder using your arrow keys. Click to activate a selection in the Content pane, then use the Left and Right arrow keys to collapse or expand folders, and the Up and Down arrow keys to navigate through the folder contents.
- Press the **Refresh** button to refresh the contents. This is useful after you install content while Poser is running.
- The Library popup menu displays nested menus, but you can also click on a folder or category to switch to it, and then highlight an item to load it.

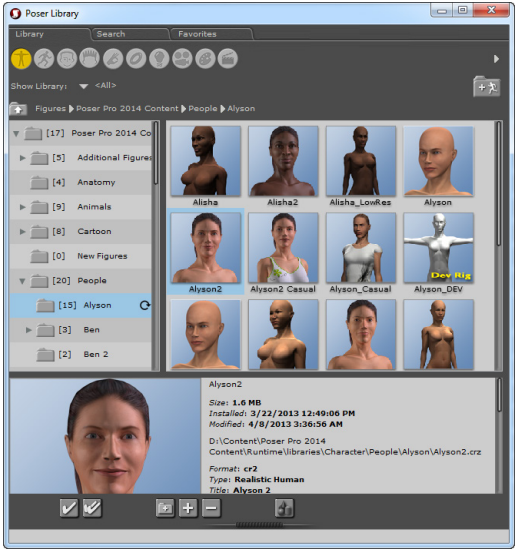
The Figures Category

Figures are poseable content items that use an extension of **CR2** or **CRZ**. The Figures category houses your poseable Poser figures. This category contains many figures to work with, including various types of males and females, children, skeletons, mannequins, stick figures, and animals. Morph values can be saved with figures if you choose the option to do so while

saving them. Newer Poser figures feature fully articulated hands and feet with movable fingers and toes.

There are two main types of clothing used in Poser: conforming clothing (discussed here), and dynamic clothing, which are treated as and found in the Props library. You'll find more information about dynamic clothing in "Chapter 27: The Cloth Room" on page 550.

Poser includes two versions of both M/F human skeletons. These skeletons are found in the **Additional Figures/Skeletons** *content folder. The human skeletons named Ryan and Alyson are designed to conform inside the Ryan or Alyson figures to create medical illustration effects. These conforming skeletons will follow the conformed figures' poses and positions. A semi transparent version of each character's texture is found in the Materials in the Library, so setting up a skeleton inside a figure is easy to achieve using these pre-configured material collections. The fully articulated M/F skeletons are accurate versions of the human skeleton with each bone poseable. These are not designed to conform inside the human figures, but instead work best on their own.*



The Figures category stores poseable figures, such as humans and animals.

Some models are available in high- and low- resolution versions. Use high-resolution models for realism, and low-resolution

models (these have very low polygon counts) when performance matters. For example, using low polygon figures instead of high polygon figures in the distance of a large scene can conserve on your computer resources.

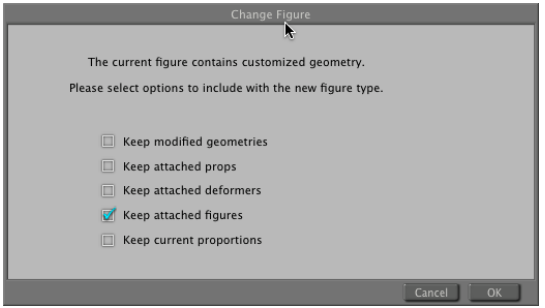
Replacing Figures

If you want to replace a figure or light in your scene with one from the **Library** palette:

1. Select the figure you wish to replace and click the **Change Figure** (single check mark) button.

2. If you are replacing a figure, the **Change Figure** dialog appears with the following options:

    - **Keep modified geometries**: Check this option if you have modified the geometry of the figure with morphs and want to pass the modifications on to the figure that is replacing it. Props and magnets attached to the figure, and other changes such as groups changed or added and normals reversed, will be applied to the figure after replacement.
    - **Keep attached props**: Check this option if you have attached props to the figure and want to attach them to the figure that is replacing it.
    - **Keep attached deformers**: Check this option if you want the new object to use any deformers (magnets or wave deformers) that you have added to the object that is being replaced.
    - **Keep attached figures**: When checked, any figures that are attached to the original figure will remain in the scene and will be attached to the new figure. For example, if you have Alyson wearing conforming clothing, and then you replace Alyson with Alisha, then Alisha will wear the same clothing. When this option is not checked, the clothing worn by the original figure will be removed from the scene when the replacement figure appears.
    - **Keep current proportions**: To have the new figure retain the old figure's proportions, check the **Keep current proportions** checkbox. Leaving this checkbox blank allows the new figure to retain its own proportions.



Change Figure options.

3. After you make your selections, click **OK** to add the figure.

Adding Conforming Clothing: Automatic Conforming

The simplest way of clothing figures is with conforming clothing. Conforming clothing is poseable, just like a human or animal figure. This type of clothing is typically designed for a specific figure (for example, clothing designed for Alyson will not fit or conform exactly to the G2 figures). However, when conforming clothing is "attached" (or conformed) to the figure, it automatically bends and poses along with the character that wears the clothing.

Options in the Properties dialog allow you to choose whether or not you want to include morphs and/or scaling when conforming your clothing to a figure. For further information, see "Figure Properties" on page 193.

Due to fundamental changes to Alyson 2 and Ryan 2 figures, conforming clothing created for the original Alyson and Ryan figures will not automatically conform. For best results, clothing originally created for Alyson and Ryan can be converted using Wardrobe Wizard (included with this copy of Poser) to fit the new Alyson 2 and Ryan 2 figure variations. See "Chapter 29: Wardrobe Wizard" on page 589 *for detailed information about using the Wardrobe Wizard.*

Conforming clothing is rigged like a figure, including the same joint parameters. Some conforming clothing includes morphs that correspond with the morphs in the figure.

You will find conforming clothing in either the Figure library or the Props library.

- When found in the Figures library (as is typical for older clothing, or conforming clothing created by third-party content creators), conforming clothing will use a CR2 or CRZ extension.

- When found in the Props library (as is common for Poser 7 and later, and G2 Figure clothing prepared by Smith Micro), conforming clothing will use a PP2 or PPZ extension.

You can drag and drop conforming clothing onto a selected figure and the clothing will automatically inherit the pose of the figure. To automatically conform clothing to your figure, follow these steps:



Conforming clothing automatically "fits" to the character that it is designed for.

1. Click to select the figure in your scene that you wish to clothe. This makes it the active figure in your scene.

2. Locate a conforming clothing item in the desired **Figures** or **Props** category. Clothing is often named for the figure that it is designed to fit (for example, Alyson Pants).

3. Drag the clothing from the library and drop it onto the figure that you selected in Step 1. If your figure is posed, you should see the clothing conform to the pose of the figure.

Adding Conforming Clothing: Manual Conforming

You can use the **Figure > Conform To** command to manually conform clothing to any figure in your scene. The process is as follows:

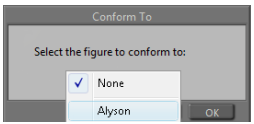
1. Select the figure you wish to clothe.

2. Select a conforming clothing item from the desired **Figures** or **Props** category. Clothing is often named for the figure that it is designed to fit (for example, Alyson Pants).

3. If your clothing is in the Figures category, click the **Create New Figure** button at the bottom of the Library palette. If the item is in the Props category, click the **Apply Library Preset** button. The clothing appears to the scene in its default position and pose. Alternatively, you can drag and drop from the Library to the Document window.

4. When added to the scene, conforming clothing appears in the **Select Figure** menu pull-down menu (described in "Select Figure/Current Actor Menus" on page 77) . Verify that the clothing item that you want to conform is currently selected.

5. Choose **Figure > Conform To**. The Conform To dialog appears, listing all of the figures in your scene.



The Conform To dialog allows you to select the character that will wear the clothing.

Some tight-fitting conforming clothing may not completely cover the base figure's skin, particularly when the figure is animated. You might notice the base figure poking through areas of the conforming clothing. There are two ways to correct this problem. The first method is to hide the body part of the figure that is poking through by setting the body part as invisible (see "Body Part Actor Properties" on page 195). The second method of correction is to use the Morph Brush to raise the clothing over the hole, or lower the body part underneath the clothing (see "Creating Morphs with the Morphing Tool" on page 642).

6. Select the figure you wish to conform the clothing to in the dialog that appears. Click **OK** when finished. The clothing conforms to the figure.

7. Apply a pose to the figure, and the conformed clothing should automatically snap to the new position.

If the clothing item that you added does not appear in the Select Figure menu, check inside the **Current Actor > Props** *menu, because you may have added a dynamic clothing item instead. For further information on using Dynamic clothing, see "Chapter 27: The Cloth Room" on page 550.*



You can also use conforming clothing without a figure. Conforming clothing is treated like any other Poser figure and can be added to the Poser workspace and posed/animated just like any other Poser figure.

The Poses Category

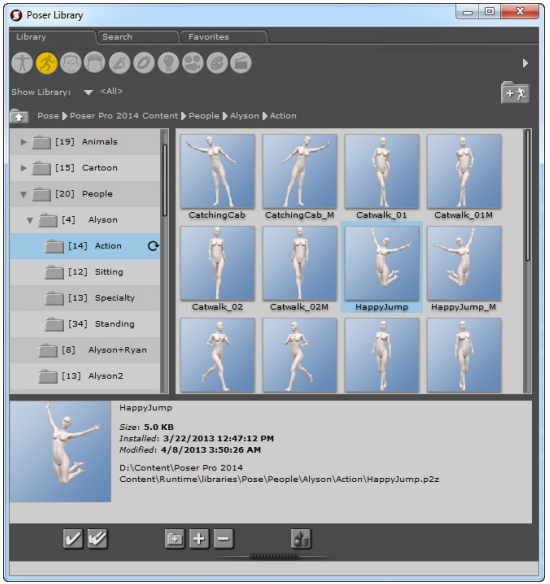
The Poses **Library** palette category houses poses (*.PZ2), which actually fit into several different categories.

Figure Poses

Poses were originally designed as pre-defined poses (standing, sitting, working, and so on) that you could apply to your currently selected figure. Pose files store pose information for an entire figure, including its hands (see below for more information). They contain joint positions for each of the figure's joints (such as Left Elbow bend 45 degrees).



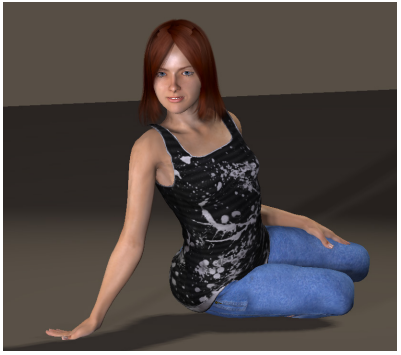
When adding a pose to a figure, facial expressions are not applied, even if they are included in the Pose file. This preserves any work you have done to your face prior to applying the pose. To apply facial expressions, choose items from the Face category in your library. If the pose contains morph settings they will override the values on the figure to which they are applied.



Use presets in the Pose category to pose your characters.

To add a pose to a figure:

1. Select the figure (not its clothing) to apply the pose to.
2. Open the Poses category and highlight the pose that you want to apply to the figure.
3. Choose one of the following options:
   - Click the **Apply Original Pose** (single check mark) button to apply the pose to the selected figure when the pose was created specifically for that figure.
   - Click the **Apply Universal Pose** (double check mark) button to apply the pose to the selected figure as a Universal pose.
   - Drag and drop the pose from the Library to the figure. A tooltip displays the name of the character as your mouse hovers over it. Release the mouse when the tooltip displays the correct character name.



After posing, the clothing also poses with the character.

Some of the Poses included in the **Library** *are Universal Poses, meaning they will be compatible with any human Poser figure. If you check the* **Apply Universal Poses** *option in the General Preferences dialog > Library tab, you can save any pose to your library as a Universal pose.*

Poses that are set-up for figures with standard rigging may not apply correctly when uses with figures provided with Poser 7 and later.

Poses that were created in Poser 6 or earlier versions applied specifically to a particular figure. For example, a pose you may have created for the James figure may not work correctly when applied to the Kate figure due to the different joint setups between the two figures. However, you can apply a legacy pose to the figure for which it was designed, and then save it to the **Library**, *which will convert the pose to a Universal Pose for use with other figures.*

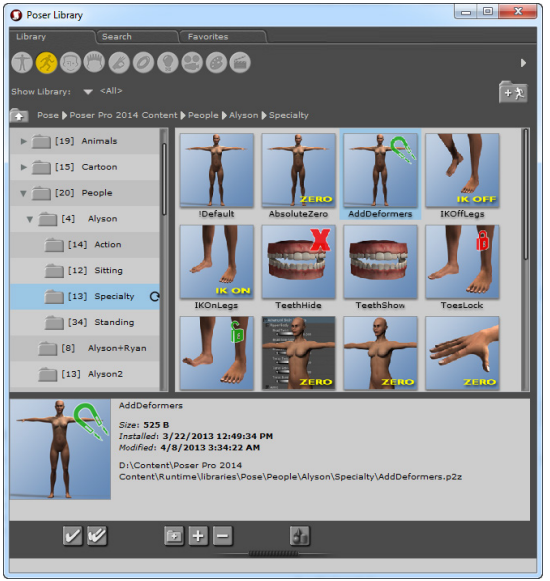
Material (or MAT) Poses

Material collections, discussed in "The Materials Category" on page 157, are the preferred method for saving complete materials for a figure or prop to the Materials library. Third-party content creators sometimes use Material Poses (or MAT files for short), as an alternative to MC6 material collection files. MAT Poses are typically found in the Poses library and are not created or tested by Smith Micro Software. If you need help with MAT files, please refer to the file creator (if you purchased or obtained a MAT file using the **Content** room, for example) or to one of the many online resources, some of which are listed in "Third-Party Forums" on page 9.

Other Pose Types

Though not as common as figure and MAT poses, you will also find a mixture of other types of pose files in the Pose Room. Like MAT poses, these are generally created by third-party content creators. Other uses for Pose files include:

- Many Smith Micro characters (including Ryan and Alyson) include Specialty poses that zero a figure, add deformers, turn IK off of the legs and arms, and lock or unlock the toes. Third-party content may or may not include similar poses.



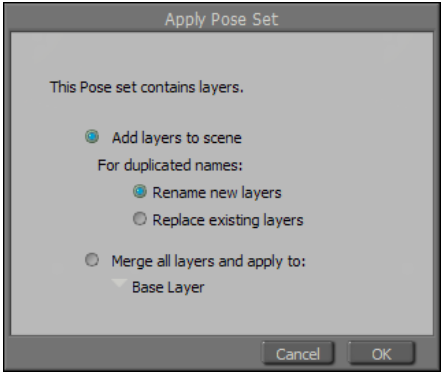
Specialty poses perform specific functions that help with posing and fitting clothing.

- MOR poses, which apply character morphs and settings to a figure.
- INJ and REM poses, which inject or remove injected morphs into or from a figure.

When you are not certain what a pose type is used for, check the Readme file (which usually accompanies the third-party product), or contact the individual that created the product.

Adding Poses with Animation Layers

If you are adding a Pose set containing Animation Layers to your scene, a dialog will appear asking whether or not you wish to Add new layers to your scene, or Merge all the layers in the Pose set into a single layer, which you can select from a pop-up menu. The dialog also provides you with options for how to handle duplication of layer names when adding new layers to the scene. For more information on Animation Layers, see "Layers Tab" on page 469.



Additional options for poses that have animation layers.

The Faces Category

The **Face Library** palette category houses facial expression files (*.FC2), which can be applied to your currently selected figure.

Face files contain parameter settings that activate facial morph targets (see "Chapter 30: Modifying Figures & Props" on page 614 for information about morph targets) to create the expression. These files are the same as if you manually adjusted

each of the face dials available for your current figure, or if you use the Random Face poses in the Library, except that they apply preset values at once, saving time.

Poser Face directories contain full facial expressions (Angry, Disgust, Fear, and so on). You can also dial these individually, by facial region (eyes, lips, cheeks, and so on). To do so, click on the head to find the full set of facial morphs. Any combination of these head/face morph targets will be stored in the Face category when you add a new entry.

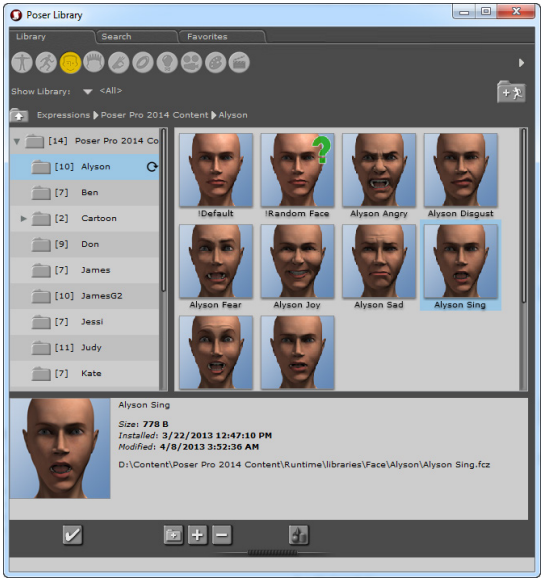
Facial expressions are often designed for a particular figure, since each figure can have different facial parameters available. For example, an expression file created for the Poser 6 Male figure (James) may not work on Ryan, because Ryan has far more available facial parameters.



Ryan and Alyson's Face directories contain full facial expressions. You can also dial the expressions manually in the Morphs section of the Parameters palette when you select Ryan or Alyson. To dial these individually, by facial region such as eyes, lips, or other feature, click the head to find the full set of morphs. You can save any combination of these head/face morph targets when you save a new face to the Library's Face category.

To add a facial expression:

1. Select the figure to apply the expression to.
2. Locate the desired facial expression in the Face library.
3. Double-click the selected facial expression, or click the **Apply Library Preset** button, or drag the selected expression from the library to the character. The facial expression on your figure changes.



Expressions for your characters are found in the Face category.

The Hair Category

The **Hair Library** palette category houses hair (*.HR2) files, which can be applied to your currently selected figure. Hair created for one figure may or may not fit or work with other figures.

There are three different types of hair used in Poser:

- Conforming hair, which is commonly found in the Figures library (usually when created by third-party vendors) or in the Hair library (usually when created by Smith Micro). This type of hair is added and conformed to your figure as instructed in "Adding Conforming Clothing: Manual Conforming" on page 143.
- Prop hair, which is a modeled and textured OBJ file found in the Hair category, using an HR2 extension.
- Strand-based (or dynamic) hair, which is created in the Hair room and typically found in the Hair category, using an HR2 extension.



Strand-based hair created in the **Hair** *room cannot be saved to the* **Library** *palette unless it is saved with underlying geometry such as a figure or skull cap.*

Adding Hair to a Figure

Conforming hair is added to your figure using the same method as conforming clothing, discussed in "Adding Conforming Clothing: Manual Conforming" on page 143.

To add either strand-based or prop-based hair to a figure:

1. Select the figure to which you wish to add hair.
2. Select your desired hair using the **Library** palette.
3. Click the **Apply Library Preset** icon or drag the hair from the library to your scene. The hair is added to the figure.

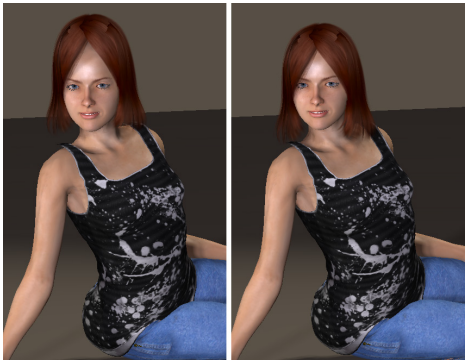


If your figure already has prop-based hair, adding new hair replaces the old. You can either add or replace selected conforming hair, depending on whether you choose the single check mark or double check mark (which adds another conforming hair figure).



The Hair library stores many different types of hair for your characters.

While prop-based hair usually orients itself to the angle and rotation of the head, you may need to reposition the hair to precisely fit the figure's head (especially if it was created for another figure as is the case in this example). To do this, use the **Current Actor pull-down** menu to select the hair, then use the hair's **Trans** parameter dials as necessary in the **Parameters** palette. To translate conforming hair, you usually use the Translate dials in the Head actor of the head.



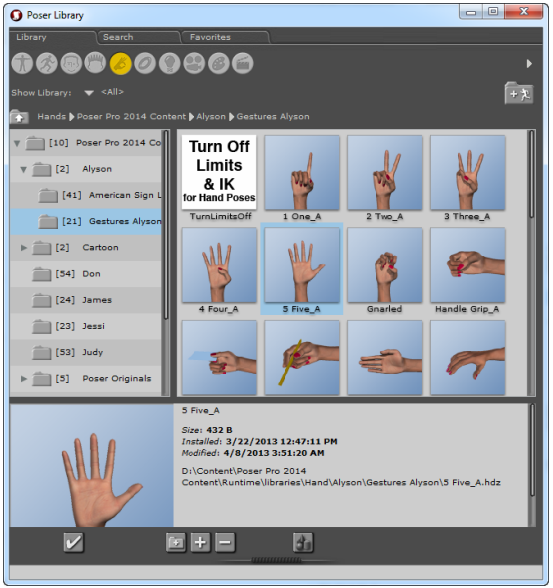
You can use the YTrans parameter dial to adjust the height of the hair.

The Hands Category

This **Library** palette category houses hand (*.HD2) files, which can be applied to your currently selected figure. Hand files are subsets of Pose files that only contain positioning information for the hand and its children (fingers). Hand poses contain both finger positions and wrist positions.

Not all figures hands are created using the same number of joints. Ryan and Alyson contain an additional joint at the knuckle and older hand poses may not work correctly on their hands. Additionally, Hand poses saved using Ryan or Alyson may not apply to older content correctly.

If you apply a pose file to a figure then apply a hand, only the hand positions will change. If, however, you apply a hand file to a figure followed by a pose, the pose application will override the positions specified by the hand file.



The Hands category stores poses that affect the hands and fingers.

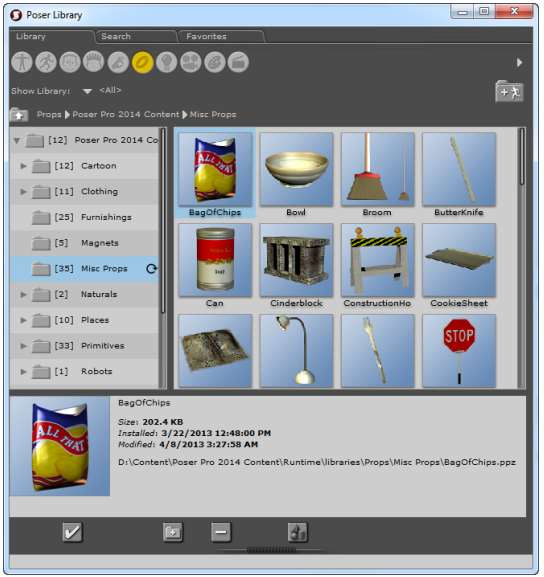
To add a hand pose to a figure:

1. Click the figure to which you want to apply the hand pose.
2. Select the **Hands** category in the Poser **Library**, and select the hand pose that you want to apply.
3. Click the **Apply Library Preset** button at the bottom of the Library palette, or drag the hand pose from the library to the character to which you want to apply the pose. A dialog asks if you want to apply the pose to the figure's right hand or left hand. Click either button to apply the pose.

The Props Category

This **Library** palette category houses props (*.PP2), which are loosely defined as static or poseable objects that are not figures. Items such as swords, balls, canes, furniture, walls, some types of clothing (such as dynamic) and other non-conforming items fall into this category. You will also find conforming clothing items in the Props library.

For more information about Dynamic Clothing, see "Chapter 27: The Cloth Room" on page 550.



The Props library includes many elements for scene building.

Adding Props

To add a prop to your scene:

1. Open the scene to which you want to add the prop.
2. If you want to replace a prop that is already in your scene with another prop from the library, select the prop in your scene that you want to replace.
3. Choose the **Props** category from the **Library** palette.
4. From the **Library** palette, select the prop you want to add to the scene.
5. Click the **Apply Library Preset** (single check mark) button.
6. By default the prop appears in the center of the scene in its default position. You can use the Translate dials in the Parameters palette to reposition the prop to the correct spot in your workspace.

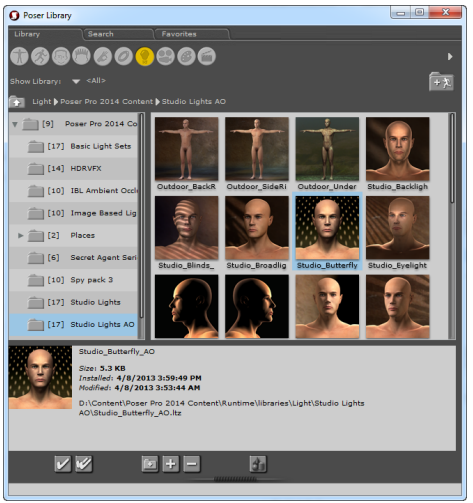


A prop added to a scene.

If you wish to have the prop move with another scene item (such as a tennis racket moving in concert with the figure's hand), you need to specify a parent for the racket. Please refer to "Changing a Parent" on page 231 *for directions on setting a parent for an object.*

The Light Category

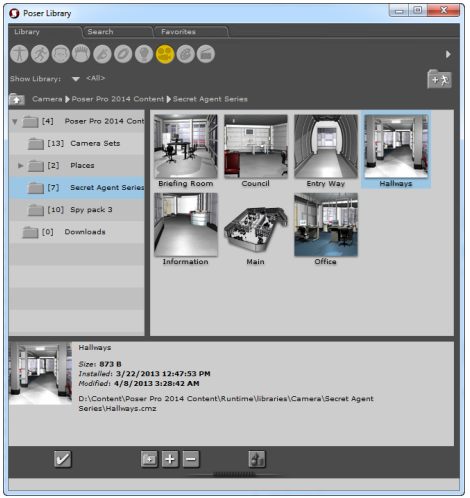
This **Library** palette category houses lights (*.LT2), which includes the number, color, position, and other lighting attributes. Please refer to "Chapter 12: Lighting" on page 261 for a description of Poser lights.



Several lighting presets can be found in the Lights category.

The Camera Category

This **Library** palette category houses cameras (*.CM2), which includes all Poser cameras, their positions, and other attributes. Please refer to "Chapter 11: Cameras" on page 242 for information about Poser cameras.



The Camera category stores different settings to position cameras in your scene.

The Materials Category

Poser's Material library provides an easy way to apply preset materials to the items in your scene. You can navigate through the items in your library, and then drag and drop compatible materials from the Library to the objects in your scene. As you drag your material into the scene, a tooltip displays the name of the actor in your scene. Release the mouse when the tooltip displays the correct actor name.

When saving materials to the library, Poser offers two methods for storing material definitions for an entire figure in a single file. Both of these methods can save considerable time, since they can apply colors and maps to an entire figure simply by loading them from the **Library** palette instead of having to add them one by one.

This **Library** palette category houses materials (*.MT5), which include all Poser materials and any associated shader trees created or loaded into the **Material** room. Materials and material collections can be dragged from the Library and dropped onto an object in your scene.

The Material Collection (MC6/MCZ) file format was designed as a fully integrated replacement for MAT pose files. Additionally, Poser includes a built-in compatibility feature, which enables you to simply change the extension of your MAT files to MC6 or MCZ, and Poser will recognize them as Material Collections.

However, Smith Micro Software does support the MAT files included in your Poser installation.



Use the Materials category to apply different textures and materials to the items in your scene.

Adding Materials to the Library Palette

Poser offers the option of saving either single materials, or grouped material collections from a single figure, to the **Library** palette.

To save single material to the **Library** palette:

1. Open the Material Room.
2. In the Library palette, select the desired Category/Subcategory that will store the new material.
3. Move the mouse into the Preview window, where it turns into an Eyedropper tool. Use the eyedropper to "pick up" the material that you want to save. The material settings appear in the Simple or Advanced view in the Material room.
4. Click the **Save to Library** icon (**+**) at the bottom of the **Library** palette.
5. In the **New Material Set** dialog, select the **Single Material** radio button.
6. Enter a name for the Material and click **OK**. A square showing the single material appears in the currently selected Material library category/subcategory.

Adding Material Collections to the Library Palette

Poser also allows you to save some or all of the materials for a single figure together in a Material Collection, in addition to saving single materials individually. Simply select the **Material Collection** option in the **Add to Library** dialog, as described below, and choose which materials you would like to include in the collection. Like MAT files, Material Collections provide the convenience of grouping materials in a single file, and also offer the added benefit of seamless integration into your Poser workflow. Please refer to "Chapter 14: The Material Room" on page 296 for information about the **Material** room.

To save Material Collection to the **Library** palette:

1. Open the Material Room and select your desired category/subcategory.

2. Move the mouse into the Preview window, where it turns into an Eyedropper tool. Use the eyedropper to "pick up" one of the materials in the object that uses the material collection that you want to save. The single material that you clicked appears in Simple or Advanced view in the Material room.

3. Click the **Add to Library** icon (**+**) at the bottom of the **Library** palette.

4. In the **New Material Set** dialog, select the **Material Collection** radio button, and click the **Select Materials** button to open the Select Materials dialog.

5. Choose which materials you would like to include in your collection from the list presented in the **Select Materials** dialog, and click **OK**. **Select All** and **Select None** buttons are also provided to add or clear all materials in the selection set.

6. Enter a name for the Material Collection and click **OK**. A small thumbnail of the object with your material settings appears in the currently selected Material library category/subcategory.

The Scene Category

The Scene category allows you to load or save complete scenes. This is especially useful when you want to work with objects that are inter-related to each other, or which use dependent parameters to interact with each other. It also allows you to load complex scenes or a complete set design -- including lights, cameras, and props in the background -- with a single click.

Adding Scenes from the Library

You can use the Scene category in the library to open a scene, or to merge content from an existing scene into your current project. Follow these steps:

1. Open the Library and select the Scene category.
2. Create or navigate to the folder that stores the scene you want to use.
3. Choose one of the following:
   - Click the **Load New Scene** (single check mark) button to replace the contents of the current scene with the scene contents in the library. This is the same as using the **File > Open** command. You will be prompted to save any unsaved changes in the existing project before its contents are replaced.
   - Click the **Import Scene** (double check mark) button to add the contents of the scene in the Library to your current scene. This is the same as choosing the **File > Import > Poser Document/Prop** command. Everything from the imported scene will be added; however if a light in the existing scene is named the same as a light in the imported scene, it will be replaced with the light from the imported scene.

Saving Scenes to the Library

Saving the scene into the library allows you to easily find and reuse projects that you have previously created, and also makes it easier to share complete project settings with others.

To save a scene to the library, proceed as follows:

1. Open the Library and select the Scene category.
2. Create or navigate to the folder that will store the new scene.
3. Click the **Add to Library** icon (**+**) at the bottom of the **Library** palette.
4. In the **New Set** dialog, enter a name for the new scene.
5. Click **OK**. A small thumbnail of the scene appears in the currently selected Scene library category/subcategory.



The Scene category allows you to use or save complete scenes into the Library.

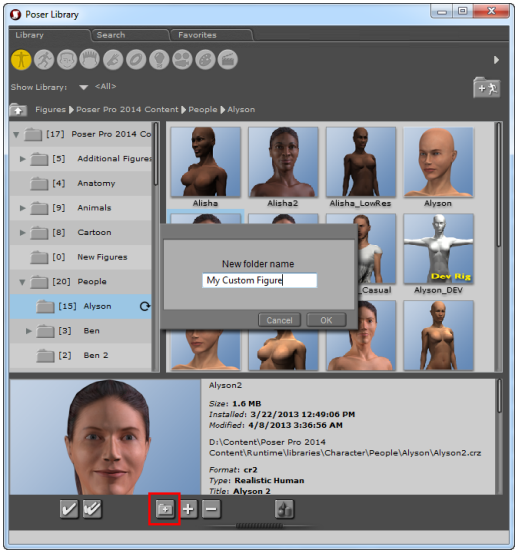
Maintaining Your Library Palette

You can maintain your **Library** palette by adding and removing items to and from the **Library** palette, as described below.

Creating Subfolders

You can create new subfolders in the library to store your content. Follow these steps:

1. Use the **Show Library** menu to select **<All >** libraries, or the library to which you want to add the folder.
2. Click the category icon that applies to the subfolder you want to create. For example, if you are using the new folder to store a Prop, select the Prop category.
3. Highlight the folder beneath which you want the new folder to appear.
4. Click the **Create New Folder** icon located at the bottom of the Library palette. You are prompted to enter a name for the new folder.
5. Enter a new folder name and choose **OK**. The folder appears in the Library palette.



Creating a new Library subfolder.

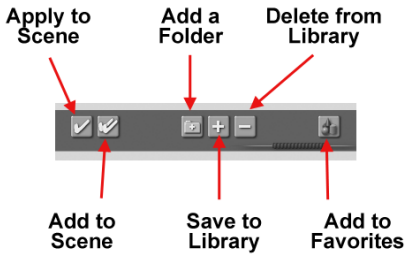
Adding Items to the Library

The following section provides some notes on saving content in general.

Saving an item to the **Library** palette adds the appropriate item to the currently selected category/subfolder. The actual file location of your saved item will display along the bottom of the **Library** palette when you select the item by clicking on its preview image once it has been added to the **Library**. In addition, when you save content to the Library, a basic set of metadata is saved along with the object. This metadata appears in the Library's Extended Details panel when it is displayed. For more information about the Extended Details panel and metadata, see "Display Options" on page 128.

To add an item to the **Library** palette:

1. Select your desired category/subcategory.
2. Click the **Save to Library** icon (**+**) at the bottom of the **Library** palette.

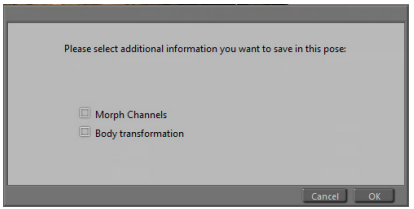


Library buttons help you maintain and use your library.

3. Complete the dialog that follows (see following subtopics for information on category-specific dialogs).

4. Enter a name for the new **Library** palette item and click **OK**. You may be prompted to select a subset of actors for inclusion in the saved item, depending on the item type being saved (poses, expressions, props, lights, cameras or material collections). Please refer to the following sub-topic for information on selecting actors.

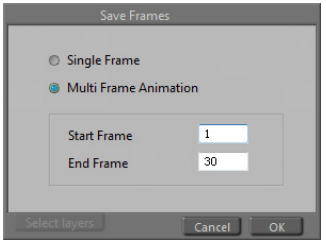
5. Depending on the **Library** palette category being saved to, you may be asked if you wish to save morph channels (such as facial expressions, muscle bulges, etc.). Saving morph channels will preserve all adjustments you might have made to any morph target parameters. You may also be asked whether you wish to save Body transformations; this option will preserve any modifications to parameters on the "Body" actor.



When saving content, you may be prompted for additional information to be saved.

This option appears when saving poses, but you need to take care when saving morph channels and body transformations with poses that you will distribute to others. If your pose is designed as a regular pose that reposes the figure (for example, from standing to sitting), in most cases you do not want to include body transformations or morphs that will affect the settings of the figure that is in another user's scene. On the other hand, if your pose is meant to set morph targets for a custom figure, you want to include morph channels in the pose set.

6. Poses and Faces can save animated data (such as an animated pose like swinging a golf club). To select only the current frame, select **Single Frame**. To save more than one frame of animation, select **Multiple Frames** and enter your desired starting and ending frame numbers. If you are adding an animated pose that includes animation layers, the **Select Layers** button will be enabled. Clicking this button opens the **Select Layers** dialog, which allows you to specify which layer(s) you wish to save with the pose. Click **OK** when you have finished making your selections.



Poses can be saved as still poses (a single frame), or as animated poses (multiple frames).

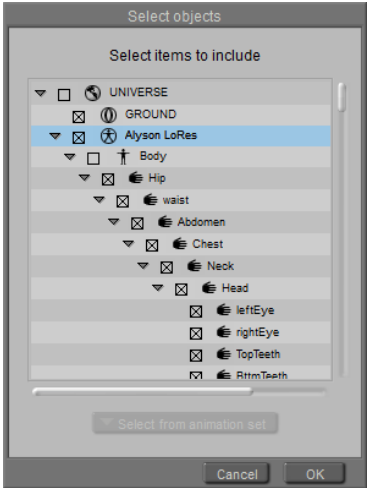
Your new item will be added to the **Library** palette and will be accessible whenever Poser is running. Poser also automatically generates an editable .PNG format preview image based on Camera position. You can make a better preview image by positioning the camera to focus on the item you're saving.

To add dynamic cloth to the **Library** *palette, add it as you would any other prop. For strand-based hair objects, you must either save a Poser scene file (PZ3) with your hair object in it or grow hair on a prop and save that prop to the* **Library** *palette.*

Adding Actors to a Library Palette Entry

When you save Poses and Faces to the library, a **Select Subset** button appears in the New Set dialog, allowing you to specify which actors to include in the library file. This allows you to create poses that affect only a part of the figure (for example, a pose that only affects the arms and hands, rather than the entire body of a figure).

If you opt to select a subset of actors within your scene for saving to the **Library** palette, the **Hierarchy Selection** dialog appears, allowing you to specify the actors you wish to include in your new **Library** palette entry.



You can include or exclude specific body parts from saved poses.

The list of actors appears hierarchically, just as it does in the **Hierarchy Editor** window (see "About Groups" on page 690). You can expand collapsed hierarchies by clicking the **+** sign next to a collapsed branch, and can collapse expanded branches by clicking the **-** sign next to an expanded branch.

To include an actor in your new **Library** palette entry, check the box to the left of your desired actor. Clearing an actor's checkbox excludes it from the **Library** palette entry. Excluding an actor that is a parent of one or more actors excludes the children actors as well.

Adding Items to the Library Palette (Manual Method)

You can also add items to the **Library** palette by creating folders and subfolders in the Poser hierarchy and adding your items directly to those folders. Please refer to "Appendix B: Poser File Structure" on page 847 for more information about the Poser file structure.



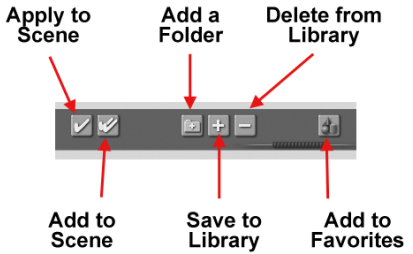
This is an advanced feature that should only be undertaken by advanced Poser users who are familiar with creating custom content. Manually adding Library items could result in misplacing files, which could cause these Library items to be invisible and/or unusable. Smith Micro Software cannot provide technical support for people who manually create content folders. If you purchased content and are unable to get it to appear in the Library or if it has other errors, please contact the content creator.

Adding Items to the Library Palette (Poser Download Manager)

Poser's Download Manager can detect and install Poser content downloaded using the **Content** room. Please refer to "Chapter 8: The Content Room" on page 173 for more information about the **Content** room.

Deleting Items from the Library Palette

To delete an item from the **Library** palette, select it by clicking its preview image, then click the **Delete from Library** icon (**-**) at the bottom of the palette (see below for an image of the **Library** icons).



The Library icons.

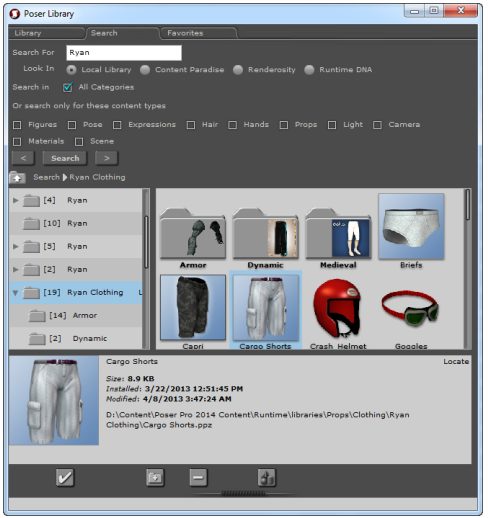
Deletions are permanent! Be sure you really want to delete the selected item. If you have not saved your content elsewhere (such as archiving the source files), the deleted content will be permanently lost. You cannot undo content deletions.

Dragging and Dropping Library Content

You can use drag and drop to add or work with library content, with the same functionality that is found in your standard operating system drag and drop. For example, when using the external (AIR) library, you can drag and drop items between library folders, or drag a CR2 file from the library and drop it into an opened text editor to make changes to the file.

Searching the Library

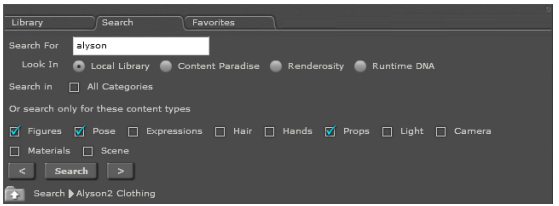
The new Search tab in the library allows you to perform a keyword search in your local content libraries. You can perform the search in all or selected categories.



You can search the library for specific search terms.

To perform a Library search, follow these steps:

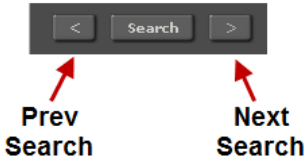
1. Switch to the Search tab in the Library.
2. Enter a keyword (such as Ryan) or a series of keywords (such as Ryan pants) in the **Search For** field.
3. From the **Look In** section, click the **Local Library** radio button.
4. Check or uncheck options as follows:
   - To perform a search throughout all Library categories, check the **All Categories** option.
   - To perform a search in specific categories in your Library, uncheck the All Categories option and then check or uncheck **Figures**, **Pose**, **Face**, **Hair**, **Hands**, **Props**, **Light**, **Camera**, or **Materials** as needed to find the content you are looking for.



When searching, you can include or exclude specific categories.

5. Click the **Search** button. Poser performs a search for the content that you specified, and search results appear in the Content pane.

6. To scroll forward or backward to view previous or later searches, you can use the arrow keys to the right and left of the **Search** button.



You can navigate forward and backward through search results.

Poser stores all search strings in a file named **SearchState.xml** *file, which is located in your Poser installation folder. Windows Vista users can find this file in the* **Users \ (username) \ AppData \ Roaming \ Poser \ 9.0** *directory. These search terms are used in conjunction with the* **Prev Search** *and* **Next Search** *buttons shown in the previous figure. You can edit this file to remove unwanted keywords from the search results.*

Searching for New Content

The Search tab in the library also allows you to perform a keyword search in Content Paradise, Renderosity, and RuntimeDNA for new content to add to your libraries. You can perform the search in all or selected categories.

A working Internet connection is required for the Content Paradise search and preview features to function correctly.

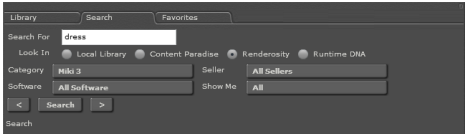
To perform a search on Content Paradise, Renderosity, or Runtime DNA, follow these steps:

1. Switch to the Search tab in the Library.

2. Enter a keyword (such as pants) or a series of keywords (such as Alyson pants) in the **Search For** field.

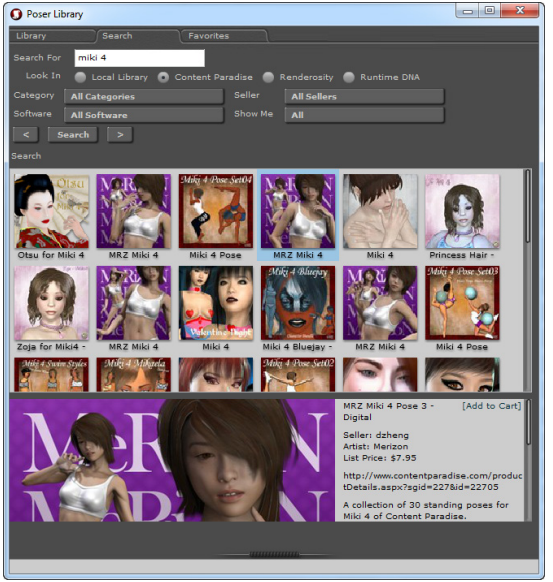
3. From the **Look In** section, click the radio button beside the name of the content provider site that you want to search (**Content Paradise**, **Renderosity**, or **Runtime DNA**).

4. Use the **Category**, **Seller**, **Software**, or **Show Me** buttons to narrow your search to selected categories, if desired. The categories you choose here are specific to the content provider site that you choose to search.



The Search pane also allows you to find content on Content Paradise.

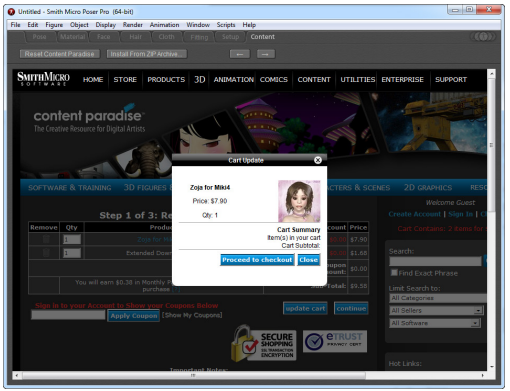
5. Click the **Search** button. Poser performs a search for the content that you specified, and search results appear in the Content pane.



Results from your Content Paradise, Renderosity, or Runtime DNA search are displayed in the Search pane.

6. Perform either of the following steps on a search result:

- Single-click a thumbnail in the results. Details for the selected item appear in the Extended Details area. If you want to purchase the item, you can click the **Add to Cart** link in the Extended Details area to add the item to the shopping cart on the selected site.



You can add a selected search result to your shopping cart.

7. Double-click a thumbnail in the results. The product page opens in the Content tab within Poser Pro. If you want to purchase the item, you can click the **Add to Cart** button to add the item to your shopping cart. Fore more information about the Content tab, see "Chapter 8: The Content Room" on page 173.

8. You can perform additional content searches or add other search results into your cart. After your shopping session is complete you can proceed to checkout to purchase your selections.

Favorites Tab

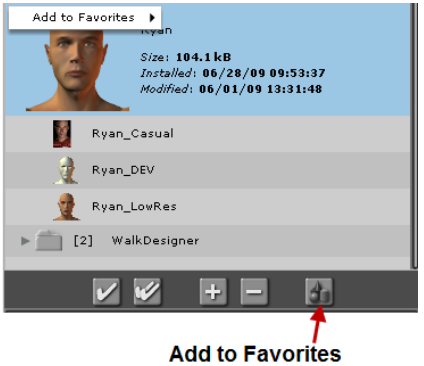
The Favorites tab allows you to quickly add your favorite content to library folders that you create yourself.

To add an item to the Favorites tab:

1. Highlight the library item that you want to add to favorites.

2. Click the **Add to Favorites** button at the bottom of the **Library** palette. An Add to Favorites menu appears above the selected item.

3. From the menu, select an existing Favorites category, or choose **<<New Folder > >** to create a new Favorites folder. When the New Library Name dialog appears, enter a name for your new folder and click **OK**. The new folder appears in the Favorites tab and your item appears within it.



Add selected search results to your Favorites library folder.

Chapter 8: The Content Room

Welcome to Content Paradise! Poser's **Content** room accesses Content Paradise, which is your gateway to leading marketplaces that provide both free and for-sale Poser content. Need a Poser figure, prop, texture, or something else? Content Paradise has you covered. And, Poser's Download Manager can auto-install most downloaded content and add it to the **Library** palette. No more manually placing files in folders!

Clicking the **Content** room tab at the top of the Poser workspace opens the **Content** room.



The Content Room.

Aside from the Download Manager, the **Content** room accesses the online Content Paradise Web server. Poser for Windows seamlessly displays Web pages in the Poser workspace. Poser for Macintosh automatically opens a new browser window connected to Content Paradise. Content Paradise features and interface are subject to change. Because of this, the discussion in this reference manual is limited to discussing the Download Manager.

Content Paradise includes comprehensive online help, which is accessible from anywhere in the interface by clicking the **Help** links. Please be sure to read all of the applicable Terms of Service, including the Privacy Policy. Smith Micro Software reserves the right to alter these policies at any time without prior notice.

Downloading and Installing Content

After you purchase your content and check out of the marketplace(s), you will be able to download it to your computer. A progress meter keeps you informed of your download's status. Follow the onscreen instructions to begin the download. Once the data transfer is complete, you can begin the installation process. Macintosh users can simply unpack the downloaded files, and install them according to your needs. Windows users can use the auto-install option, as described below.

The **Install Options** dialog appears for each downloaded file once data transfer is complete, with the following options:

- **Install Path**: When you click **Install**, the content will install to the folder specified in the **Install Path** field. By default, the Poser **Downloads** Library folder is specified. To change the folder to which content is installed, enter your desired path in the **Install Path** field, or click the folder icon to browse to your desired location. Please see "Chapter 2: Installing Poser" on page 12 for information about Libraries and the **Library** palette.
- **Install**: Clicking the **Install** button installs the downloaded content to the path specified in the **Install Path** field.
- **Cancel**: Clicking the **Cancel** button cancels the installation process. Downloaded content will remain uninstalled in the location to which it was originally downloaded.

If the file being installed already exists, a dialog pops up asking if you want to overwrite the existing file. Click **No** to abort, or **Yes** to proceed with overwriting the old file.

A confirmation dialog appears once installation is complete. Click OK to acknowledge successful installation of your downloaded content.

If Poser cannot recognize the content or cannot install content (such as an executable file), the **Copy to Folder** dialog appears, with the following options:

- **Copy Path**: When you click **Copy**, the downloaded content will be copied to the folder specified in the **Copy Path** field. To change the folder to which content is copied, enter your desired path in the **Copy Path** field, or click the folder icon to browse to your desired location.

- **Copy**: Clicking the **Copy** button copies downloaded content to the path specified in the **Copy Path** field. You will then need to manually install the content yourself.
- **Cancel**: Clicking the **Cancel** button cancels the copy process. Downloaded content will remain uninstalled in the location to which it was originally downloaded.

In addition to the Content Paradise website, the **Content** room also contains two buttons:

- The **Reset Content Paradise** button returns you to the Content Paradise home page.
- The **Install From Zip Archive** button opens the Install Options dialog, which is described above.

Chapter 9: Posing Figures

This chapter explains how to pose figures and the tools you'll use while doing so. Posing is the process of bending, twisting, and pulling a figure into new and fantastic positions. You can even create movies by changing poses over time.

General Posing Principles

A pose has two aspects: how the body parts move relative to the rest of the body (such as raising or lowering an arm, your shoulder, upper arm, forearm, hand, and fingers are moving relative to the rest of your body) and the figure's position relative to the Poser workspace (such as walking around a room). Poser's **Editing** tools ("The Editing Tools" on page 184) allow you to move body parts, figures, and props by simply clicking and dragging. It doesn't get any easier!

When posing in Poser, you're working in all three dimensions. Your only limitations are specific motion limits placed on joints to keep poses realistic. Enabling limits prevents, for example, a figure's knees from bending backward or the head from twisting 360 degrees. However, you can disable limits and put your figures into any position you can imagine.

Posing and Camera Views

Newer Poser figures (Version 3 and later) allow you to pose faces and hands (expressions, gestures, etc.). Poser includes **Face** and **Hand** Cameras (see "Chapter 11: Cameras" on page 242) that zoom into these areas for close-up work.

While posing, you can switch cameras to view your work from many different angles and can even select up to four simultaneous camera views in the **Document** window (see "Chapter 5: The Document Window" on page 72). It is recommended that you select the **Posing** camera while working, thus saving the **Main** and **Auxiliary** cameras for your final shots, particularly if rendering animations.

The Pose Library

You can add poses you create to the **Pose** Library, as described in "Maintaining Your Library Palette" on page 161, or you can apply still or animated poses from the library to your currently selected figure as described in "The Poses Category" on page 145.

Translation

Translation moves multiple body parts by pulling them in a chain. To visualize this, imagine a person lying down with their

arms out to their sides. If you were to take hold of the hand and lift it, at first only the affected arm would move. Keep moving higher, you'd lift the shoulders, chest, hips, and eventually the whole person off the ground. Poser's **Editing** tools work this way. Drag any part and connected parts follow. Parts move, bend, and twist as you would expect them to.



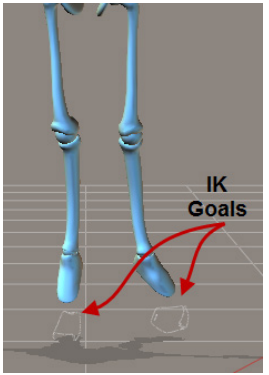
When you pull one body part, connected parts follow.

Inverse Kinematics (IK)

Poser's Inverse Kinematics (IK) features help you achieve realistic poses and add natural-looking motion to your animations. IK effects are most apparent when using the **Editing** tools.

To demonstrate how IK works, try this:

Create a scene and load the default character (in this case, Andy is still configured as the default). Make sure that IK is on (it is on by default). Use the Translate tool or the YTran parameter dial to translate the hip upward on the Y Axis so that the feet move up off the floor. Then move one of the feet to the side with the Translate tool. You'll see an outline appear of where the foot once was. That is the IK goal. The foot will move into that position wherever possible.



With IK enabled, the feet move to the position of their IK goals whenever possible.

The purpose of IK is to make it easier to pose or animate the arms and legs of a figure. For example, when IK is on, you can translate the hip, and the legs bend to accommodate the new hip position without changing the positions of the feet. Arms behave similarly: Place a figure's hands against an imaginary wall and move the hip forward. The arms bend while the hands remain fixed in position. For more information on IK, see "Understanding IK" on page 179.

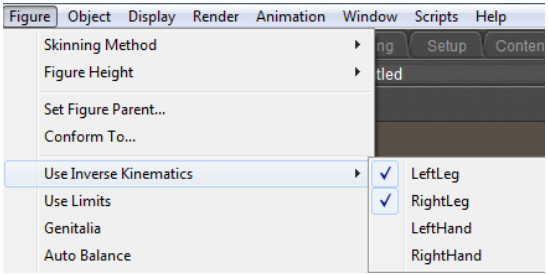
Enabling IK on a pose created with IK disabled may alter your pose.

Enabling/Disabling IK

Inverse Kinematics can add realism to your scenes. You can toggle Inverse kinematics (IK) on and off for the following limbs:

- Left Leg
- Right Leg
- Left Arm
- Right Arm

To toggle IK on or off for a limb, select **Figure > Use Inverse Kinematics > limb**, where limb is one of the four limbs. A checkbox next to a limb indicates that IK is active for that limb, and vice versa.



You can enable or disable IK for the legs and hands.

Understanding IK

Kinematics is the study of motion velocity, rotation, and position. In terms of structures such as arms and legs, kinematics is used to calculate how actions taken at a structure's root determine the position and rotation of the other end. For example, hold your arm straight and rotate your shoulder joint. Kinematics calculates the change in position of your arm, hand, and fingers. If you know the angle by which you rotated your shoulder, you can calculate your arm's new position.

It follows that Inverse Kinematics studies the same problem from the other end: The extremity moves, and IK determines how the objects joined to it must respond in order to support the new placement. If you raise your hand straight out to the side, your hand, arm, and shoulder must move to accommodate your hand's new position. Or if someone was to grab your hand and push, your arm would bend while your body remains still.

Poser supports IK for the arms and legs. With IK enabled, you can translate the hands and feet and achieve appropriate arm and leg positions automatically. IK creates targets to indicate the end of the chain. When the hands or feet move, the target is set to its new position. Moving any other body part keeps the target in its original position relative to the rest of the body. Once the target is reached, the end of the chain is fixed and the other parts must bend to accommodate the hand or foot position. For example, a foot reaches its target and the knee bends.

To work effectively with IK, you need to keep the following things in mind:

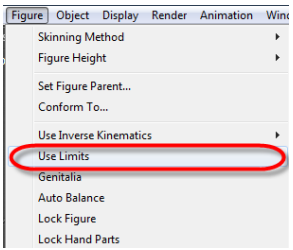
- Enable (turn on) IK when you are working with the **Editing** tools.
- The **Rotate**, **Translate**, and **Twist** tools may not behave as you might expect for some body parts. For example, you cannot easily rotate or translate a thigh or shin when IK is enabled for that leg because the foot's position takes precedence. This behavior corresponds to real life: When you stand, your feet and legs support your body, meaning that you cannot arbitrarily move or rotate them. This

consideration applies to both the **Editing** tools and the parameter dials.

- You cannot use IK and the **Chain Break** tool (see "Chain Break" on page 189) on the same limb.

Limiting Motion

Selecting **Figure > Use Limits** toggles parameter limits on and off. Please refer to "Editing Parameter Dials" on page 201 for information about setting limits for parameter dials. The figures included with your copy of Poser have realistic limits applied to them, meaning that you can't, for example, bend a knee backward. Limits are disabled when this option is toggled off.



The Use Limits option keeps body parts within preset range limits.

The **Use Limits** option keeps body parts from moving beyond natural ranges of motion. The figures that come with Poser have realistic limits that were set when the figures were rigged. Third-party content may or may not have realistic joint limits. If you have questions about a particular piece of content, please contact the content's creator or the marketplace where you purchased the content. "Natural" is a subjective definition. The limits for Poser figures are a rough guideline that may or may not look right to you. You can customize maximum and minimum limits using the methods described in "Editing Parameter Dials" on page 201.

Select **Figure > Use Limits** to toggle limits on and off. A check mark next to this option indicates that limits are being enforced, and vice versa.

Posing Body Parts

Like their real-world counterparts, Poser figures are made of body parts connected by joints. Posing a figure is as simple as moving body parts to create a new position or pose. Body parts are independent, and each considered an actor in its own right. This concept holds true no matter what the figure looks like (snake, 2-legged, 8-legged, etc.). There are some special posing cases:

- Hands (see "Posing Hands" on page 208)

- Faces (see "Posing Faces" on page 204)
- Eyes (see "Posing Eyes" on page 207)
- Animals (see "Posing Animals" on page 210)

Posing a Figure

The easiest way to pose a figure is to use the **Editing** tools as described in "The Editing Tools" on page 184. The part will move based on the part selected, your currently selected Editing tool, your camera angle, and whether or not IK is enabled. You can also use the parameter dials on the **Parameters** palette to precisely move parts. Most poses are created using the **Editing** tools to get the rough position followed by the parameter dials for fine adjustments.

Selecting Body Parts

Before you begin posing figures, you need to know how to select the body part Actor(s) you wish to move in order to create your still or animated pose. You can select body parts using the **Editing** tools, the **Current Actor** pull-down menu, or by clicking the desired part in the **Document** window. Each of a figure's body parts is a poseable element.

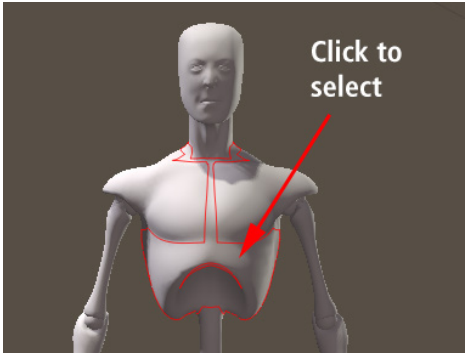


The selected body part is outlined when selected.

If you right-click (Windows) or Apple key-click (Mac) within the **Document** *window, a pop-up context menu brings up a menu listing all the body parts positioned under your mouse cursor. You can select your desired body part directly from this list, without having to interrupt your workflow or change your camera view. This process also makes it easier to select a specific actor in areas where many objects overlap.*

Using the Editing Tools

To select a body part using the **Editing** tools, click your desired tool then click the body part you wish to pose. The currently selected body part is highlighted in the **Document** window and labeled in the **Select Figure** and **Current Actor** menus in the top left corner of the **Document** window.

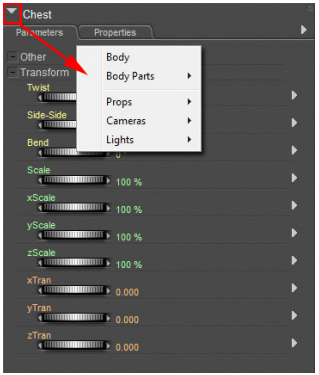


Click a body part with an editing tool to select it.

Using the Parameters/Properties Palette

You can also select body parts using the selection menu that appears at the top left corner of the Parameters/Properties palette. Click the arrow at the top-left corner of the palette to display the menu. Here you can select any of the following:

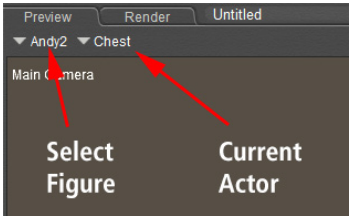
- Any body part for the currently selected figure.
- The Body Actor of the currently selected figure.
- Any props connected to the currently selected figure (such as hair, jewelry, articles that are parented to it, and so on).
- Any of the cameras in the scene.
- Any of the lights in the scene.



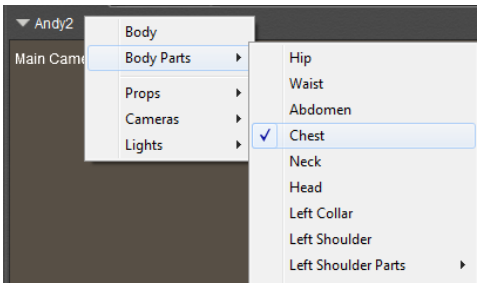
A selection menu appears at the top of the Parameters/Properties palette.

Using the Current Actor Pull-down Menu

To select a body part Actor using the pull-down menus:



Select Figure and Current Actor menus.



Drill through submenus to select your item.

1. Select the desired figure using the **Select Figure** pull-down menu.

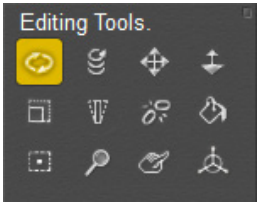
2. Select your desired body part using the **Current Actor Item** pull-down menu.

This method can be preferable if your scene has several figures and/or detailed body parts (such as poseable fingers and toes).

If there are too many actors or scene elements displayed in the Current Actor pull-down menu, you can increase the Hierarchical Threshold value in the Interface tab of the Preferences dialog. See "Interface Preferences" on page 33.

The Editing Tools

The **Editing** tools appear as follows on your Poser workspace:



The Editing tools.

The tools presented in the above image are available within the Pose Room. The availability of individual Editing tools will vary in different Poser rooms. Additional Editing tools available in different rooms will be discussed in the relevant chapters of this manual.

As described in "Setting Up Your Workspace" on page 41, you can locate the **Editing** tools wherever you like on your Poser screen and can display or hide the title. The tools will auto-wrap to fit the allotted width or height of the palette. Tool tips are displayed at the top of the palette that reveal the name of the tool when you hover your mouse over it.

The **Editing** tools let you move body parts in many different ways. A tool's effect can vary depending on whether or not

Inverse Kinematics (IK) is enabled. Please refer to "Inverse Kinematics (IK)" on page 177 for information about IK. **Editing** tools can pose an individual body part or a complete figure.



The **Color**, **Grouping**, **View Magnifier, Morphing**, *and* **Direct Manipulation** *tools serve other purposes than posing and are discussed later in this chapter.*

The Editing tools work on an entire figure, or on a body part Actor on a figure.

- To pose a body part, select it and drag.
- To pose the entire figure, use one of the following methods:
  - Click and drag on the desired **Editing** tool and the entire figure will move according to the tool that has been selected.
  - Select your desired **Editing** tool, then select the **Figure Ring** surrounding your desired figure and drag. The **Figure Ring** is highlighted when selected, indicating that you are working on the entire figure at once.
- To move an entire figure, you can:
  - Click and drag an **Editing** tool.
  - Select and drag the Figure Ring.
  - Select **Body** using the **Select Actor** pull-down menu.
  - Select the figure's hip and move it (with IK disabled).

When using an **Editing** tool in the **Document** window, your cursor changes to a visual representation of the selected tool. This helps you keep track of how you're moving the selected figure or element.

When using an **Editing** tool with a figure prop, you don't need to click and drag with the cursor positioned over the affected item; you can click and drag anywhere in the **Document** window. Also, be aware that your camera view affects how your figure or element appears. Depending on the pose you are creating, you may want to switch to a different camera. For example, if you are moving an arm in front of a figure, a side view will give you a good view of the arm's position relative to the figure's front, and so on. You can change **Camera** views as described in "Select Figure/Current Actor Menus" on page 77, and can even view your Poser scene from multiple cameras at once, as described in "Changing Cameras within a Pane" on page 91.

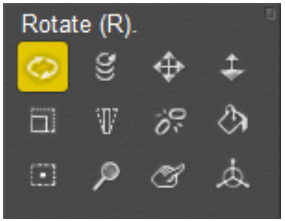
From left to right, the **Editing** tools are:

Rotate

The **Rotate** tool bends a body part at its joint. Rotation works in three dimensions, allowing you to make a lot of progress very

quickly. To rotate a body part, select the body part you wish to rotate and drag perpendicular to the part to cause the rotation to rotate up and down (relative to your point of view). Dragging parallel to the part rotates it in and out, again relative to your point of view.

To rotate the entire figure, select it. Dragging the mouse up/down and left/right functions as a trackball and rotates the figure on its own axes based on your camera location. You can also adjust an item's rotation using the parameter dials, as discussed in "Parameters Palette" on page 197.



Rotate tool.

Twist

The **Twist** tool rotates a figure/part/prop along its longest axis (length). You can twist an entire figure by selecting it and dragging. Most of the body's joints don't allow much twisting. For example, your forearm can twist almost 180 degrees while your wrist can hardly twist at all. The twist axis of the head, neck, and torso is along the spine. For the forearm, the axis lies along the arm's length. Twisting an entire figure rotates it about its own axis. If the figure is standing, it spins around. If lying down, it rolls over. You can also adjust an item's twist using the parameter dials, as discussed in "Parameters Palette" on page 197.



Twist tool.

Translate/Pull

The **Translate/Pull** tool moves the selected figure/part/prop along the camera's view (vertically... X and Y axes) depending how you drag. The translation may occur on the figure's X, Y, and or Z axes depending on the position of the camera relative

to the figure. You can translate body parts or figures, and can also adjust an item's translation using the parameter dials, as discussed in "Parameters Palette" on page 197.



Translate/Pull tool.

Translate In/Out

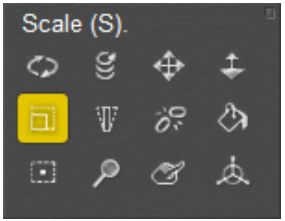
The **Translate In/Out** tool moves the selected figure/part/prop along the Camera's Z axis (in and out). This translation may take place along the figure's X, Y, and/or Z axes. Dragging down pulls the item towards you, and vice versa. Moving an item towards you makes that items seem larger, and vice versa. You can also adjust an item's translation using the parameter dials, as discussed in "Parameters Palette" on page 197.



Translate In/Out tool.

Scale

The **Scale** tool allows you to scale the selected figure/part/prop along the camera's X and Y axes. The item's affected axes will vary depending on the camera's position relative to that item. Dragging in towards the element reduces the scale, and dragging away from the element increases the scale. To scale in two dimensions, drag laterally. Dragging vertically scales in the third dimension. The axes affected depend on your currently selected camera position. You can also press and hold **Shift** while using this tool to scale evenly in all three dimensions. Make a mistake? No problem. Select **Edit > Undo**, or press **[COMMAND]**/**[CTRL]**+[Z]. You can animate scale using the parameter dials as described in "Parameters Palette" on page 197.



Scale tool.

To scale an entire figure, select the desired figure using the **Select Figure** pull-down menu in the **Document** window or by clicking its **Figure Ring**. A figure's size is relevant only in relation to other figures and props within your scene. To pose a single figure, scaling is not necessary: You can simply zoom the camera. If you are working with two or more figures and want to give one the appearance of being in the distance, it's best to simply move the selected figure to the background using the **Translate** tool (see above). You can also adjust an item's scale using the parameter dials, as discussed in "Parameters Palette" on page 197.

Taper

The **Taper** tool allows you to taper the selected figure/part/prop along the Camera's X and Y axes. The item's affected axes will vary depending on the Camera's position relative to that item. This only affects the end of the selected actor that is most distant from the center of the body. Dragging to the right increases the amount of taper, and dragging to the left decreases the taper, "flaring" the selected actor. You can also adjust an item's taper using the parameter dials, as discussed in "Parameters Palette" on page 197.



Taper tool.

Chain Break

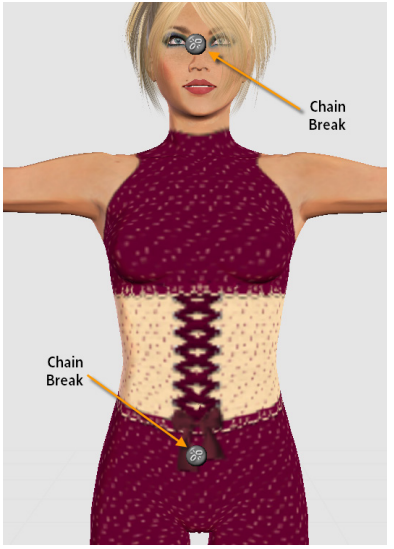
The **Chain Break** tool ends the chain of parts affected by the **Translate** tools.



Chain Break tool.

Using chain breaks on different body parts can create interesting effects. For example, to prevent the chest from moving, apply a chain break to it. You can then translate the hand freely without moving the chest: only the hand, forearm, upper arm, and shoulder will move. You must have IK disabled on the desired limb(s) in order for this to work. Please refer to "Inverse Kinematics (IK)" on page 177 for information about Inverse Kinematics.

To add a chain break, select the **Chain Break** tool and click where you want the chain broken. A **Chain Break** icon appears wherever you insert a break. You can insert as many breaks in your scene as needed. To remove a chain break, click the desired icon.



Using the Chain Break tool.

All figures have chain breaks at their hips. You cannot remove these breaks.

Color

The **Color** tool allows you to change a material group's surface (diffuse) color. Please refer to "Root Nodes" on page 325 for information about setting colors and other material values.



Color tool.

Grouping

The **Grouping** tool opens the **Group Editor** palette, which is discussed in "The Group Editor" on page 681.

View Magnifier

The **View Magnifier** tool allows you to zoom in and out to and from your desired areas of the **Document** window without altering the position of your currently selected camera. This can be of great help when working with scenes.



View Magnifier tool.

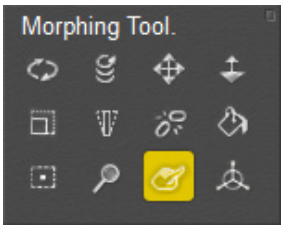
To use the **View Magnifier** tool, select it:

- Click anywhere in the **Document** window or current view pane to zoom in on the selected area. Repeated clicking will continue zooming in one step per click.
- To zoom in on a specific region in the **Document** window, click and drag a rectangle around the area you wish to magnify. Your view will zoom in on the closest point that encompasses your selected region.

- To zoom out, press **[COMMAND]/[CTRL]** while clicking in the **Document** window.

Morphing Tool

The **Morphing Tool** opens the **Morph Editor** palette. The **Morphing Tool** has two operational modes: Combine and Create, which are accessed and controlled via the **Morph Editor**. The Combine mode allows you to sculpt any surface on your figure using morph targets. The Create mode allows you to manipulate the vertices on your model's mesh to create new morph targets. See "Chapter 30: Modifying Figures & Props" on page 614 for more information about morph targets and the **Morph Editor** palette.



Morphing tool.

Direct Manipulation

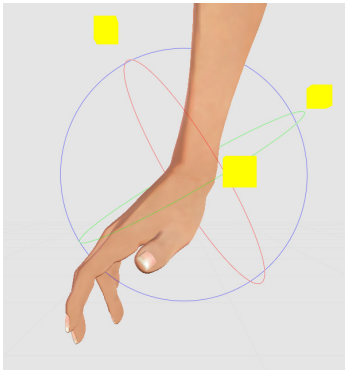
The **Direct Manipulation** tool allows you to directly adjust an element's **Translate**, **Scale**, and **Rotation** parameters: You can also use this tool to adjust falloff zones when setting up joint parameters for a poseable figure.



Direct Manipulation tool.

To adjust an element, first select the **Direct Manipulation** tool, then select your desired element:

Clicking and dragging one of the shaded boxes above the selected element increase or decreases the element's X, Y, or Z scale. This is the same as adjusting the **xScale**, **yScale**, and **zScale** parameters, respectively.



The Universal Manipulator tool makes posing easier.

You can also click and drag the colored circles to rotate the selected element along its axes. Poser calculates the rotation by using object coordinates for optimum control. Dragging the red circle rotates about the element's X axis. The green circle rotates about the element's Y axis, and the blue circle rotates about the element's Z axis. The cursor changes to indicate which transformation will occur. For example, move the cursor over the circles, the cursor changes to a rotation icon, and so forth. Elements rotate about their origins.

Clicking near the selected element's origin translates the element as if you were using the **Translate** tool. Clicking away from the origin and axes/circles allows you to rotate the element as if you were using the **Rotate** tool.

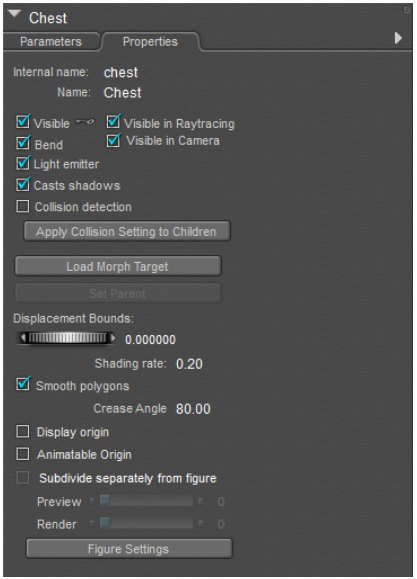
The Parameters/Properties Palette

Poser offers a combined **Properties/Parameters** palette that lets you quickly switch between a selected element's properties and parameter dials.

For clarity, each tab on this combined palette is referred to as a separate palette, either the **Properties** palette or the **Parameters** palette, as appropriate. To switch between the two, click your desired tab. You can also access an object's **Properties** palette by double-clicking the desired object. Once you do this, clicking the **Parameters** tab opens the same object's **Parameters** palette. You can also access both palettes by selecting **Window > Parameter Dials**.

Properties

The **Properties** palette contains the properties available for the currently selected scene element. Properties for lights, cameras, props, etc. are listed in their respective sections. This section describes the properties available to figures and body parts.



The Properties palette allows you to set options for a selected item.

Figure Properties

Figures have the following properties:

- **Name**: The **Name** field displays the figure or actor name. Enter a new name in this field if you desire.
- **Visible**: Checking the **Visible** checkbox makes the figure visible and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene.

  You can animate visibility by clicking the **Animation Toggle** *(key icon) next to the* **Visible** *checkbox. When animation is enabled, the icon appears green. When disabled, it appears clear.*

- **Visible in Raytracing**: Checking the **Visible in Raytracing** checkbox makes the figure visible in raytraced reflections, such as if the figure is in front of a mirror. Clearing this checkbox makes the figure not appear in reflections. This option is used when raytracing.
- **Light Emitter**: When checked, allows the object to be included in indirect lighting calculations so that light will bounce off the object. When unchecked, indirect lighting calculations are skipped for the object.

- **Visible in Camera**: When checked, the object is visible in the camera and render. When unchecked, the object does not render. Used in conjunction with **Light Emitter**, described previously, to create light-casting objects.

- **Displacement Bounds**: The **Displacement Bounds** property determines the figure's displacement boundary. Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about displacement bounds.

- **Include Morphs when conforming**: When this option is checked, the conforming article will automatically adjust to fit morphs that are set in the character to which it is conformed. Note, however, that the applicable morphs must be included in the conforming article in order for this to occur. In other words, if the character has a "Big Belly" morph that is set, the conforming clothing must also have a "Big Belly" morph in order for automatic morph conforming to work properly.

- **Include scales when conforming**: When this option is checked, the conforming article will automatically adjust to fit any scaling changes that are set in the character to which it is conformed. In other words, if you have scaled the thighs and shins of your character to 90%, the thighs and shins of the conforming clothing will automatically adjust to fit that scaling.



The accuracy of auto-scaling when conforming is dependent upon proper configuration of content. If auto-scaling does not appear to be working properly for third party-content, check the documentation furnished with the content, or contact the content developer.

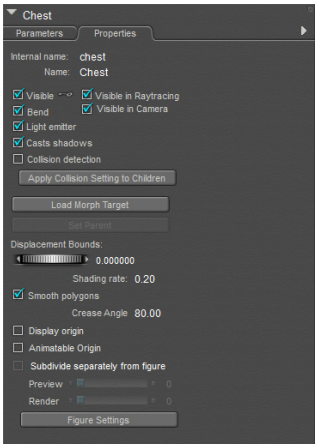
- **Match endpoints when conforming**: In legacy content, endpoints might not match between conforming clothing and the figure to which the clothing conforms. For example, factors such as incorrect joint origin settings or extremely tight parameter limits can cause clothing to behave unexpectedly. When this option is checked, you can force the matching of endpoints for conforming figures on an as-needed basis.

- **Follow origins when conforming**: If you are conforming a piece of clothing to a character that has animated origins (discussed in "Animatable Origins" on page 488) check this option to have the conforming item follow the animated origins. When enabled, Poser will compute the deltas of the current origin to follow the animated origins of the target figure.

- **Subdivision Levels**: Allows you to subdivide the selected figure. See "Working with Subdivision Surfaces" on page 769 for more information.

Body Part Actor Properties

Body part Actors have the following properties:



Body actor properties.

- **Internal Name**: The **Internal Name** field displays the body part's internal (hidden) name, which Poser uses to track that part. You cannot edit a body part's internal name within Poser.
- **Name**: The **Name** field displays the body part's name. Enter a new name in this field if you desire.
- **Visible**: Checking the **Visible** checkbox makes the body part visible and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 for information on animating the **Visible** property.
- **Visible in Raytracing**: Checking the **Visible in Raytracing** checkbox makes the body part visible in raytraced reflections, such as if the figure is in front of a mirror. Clearing this checkbox makes the figure not appear in reflections. This option is used when raytracing.
- **Bend**: Checking the **Bend** checkbox enables bending for the selected body part and vice versa. Bends are discussed in "Bend Body Parts" on page 114. Remember that selecting **Display > Bend Body Parts** bends all body parts and this property only affects the currently selected body part.
- **Visible in Camera**: When checked, the object is visible in the camera and render. When unchecked, the object does not render. Used in conjunction with **Light Emitter**, described previously, to create light-casting objects.
- **Light Emitter**: When checked, allows the object to be included in indirect lighting calculations so that light will

bounce off the object. When unchecked, indirect lighting calculations are skipped for the object.

- **Casts Shadows**: Checking the **Casts Shadows** checkbox forces the selected body part to cast a shadow, which will be visible in your scene. Clearing this box means the selected body part casts no shadow.

- **Collision Detection**: Checking the **Collision Detection** checkbox enables collision detection for the currently selected body part.

- **Apply Collision Setting to Children**: Clicking the **Apply Collision Setting to Children** button applies the currently selected body part's collision detection setting to that part's children parts (if any).

- **Load Morph Target**: Clicking the **Load Morph Target** button displays the **Load Morph Target** dialog, allowing you to load a custom morph target for the selected body part (which is then editable using the **Morphing Tool** as described in "Creating Morphs with the Morphing Tool" on page 642). Please refer to "Chapter 30: Modifying Figures & Props" on page 614 for more information about loading morph targets.

- **Set Parent**: Click the **Set Parent** button to assign a parent to the currently selected prop. In the case of a figure, this button is only enabled for the active end point actor of an IK chain. If the chain is turned on, it allows you to set a parent for that endpoint actor (such as a foot), to a moving object, or to another prop or constraint.

- **Displacement Bounds**: The **Displacement Bounds** property determines the body part's displacement boundary. Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about displacement bounds.

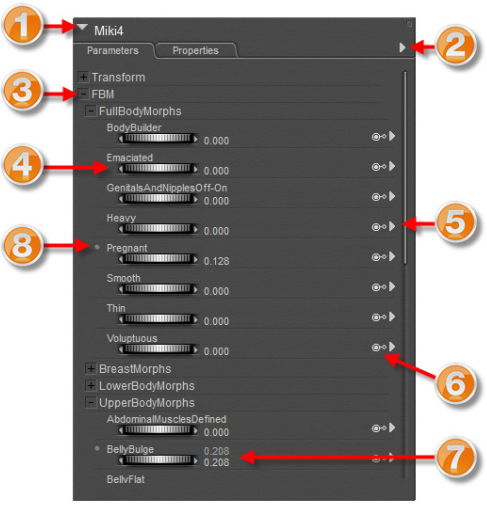
- **Shading Rate**: The **Shading Rate** allows you to specify the desired shading rate for the currently selected body part. Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about shading rates.

- **Smooth Polygons**: Checking the **Smooth Polygons** checkbox causes Poser to smooth the body part's polygons at render time to eliminate or reduce a "faceted" appearance caused by flat polygons. This option can cause sharp corners to appear round. If the affected body part has sharp edges that you wish to preserve while applying polygon smoothing to other angles, you should specify those sharp edges using smoothing groups or the crease angle threshold, as polygon smoothing will not override these settings. See "Smoothing Geometry" on page 422 for more information on specifying hard versus smooth edges.

- **Crease Angle**: The **Crease Angle** setting establishes a threshold up to which creases between adjoining polygons will be smoothed. Polygons with crease angles over this threshold will not be smoothed, and will be rendered as hard edges. See "Smoothing Geometry" on page 422 for more information about using the **Crease Angle** setting to apply smooth shading.
- **Display Origin**: Checking the Display Origin checkbox displays the prop's origin. Please refer to "The Prop Origin" on page 225 for more information about prop origins
- **Animatable Origin**: When checked, allows you to animate the actor's origin as the actor is translated, rotated, or scaled. This allows you to optimally position the joint origin if the shape of the actor changes drastically by scaling or morphing.
- **Subdivision Levels**: Allows you to subdivide the selected actor. See "Working with Subdivision Surfaces" on page 769 for more information.

Parameters Palette

The **Parameters** palette contains all of the parameters for the currently selected scene element:



The Parameters Palette.

The following topics discuss the **Parameters** palette in detail:

- (1) Current Actor Menu
- (2) Parameters Palette Options Menu

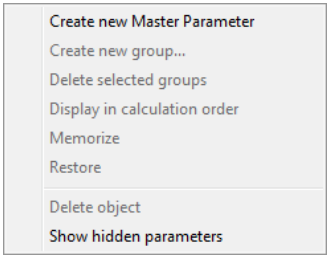
- (3) Parameter Dial Groups
- (4) Parameter Dials
- (5) Parameter Dial Menu
- (6) Master Parameter Indicator
- (7) Dependent Parameter, showing Natural and Driven parameter values
- (8) If a dot appears to the left of a parameter dial name, it means that the dial is set to something other than its default value.

Current Actor Menu

The **Parameters** palette's **Current Actor** pull-down menu (1) functions the same as the **Current Actor** pull-down at the bottom left of the **Document** window. Please refer to "Select Figure/Current Actor Menus" on page 77 for more information about the **Current Actor** menu.

Parameters Palette Options Menu

The **Parameters** palette options menu (2) contains the following options:



Parameters Palette Options menu.

- **Create New Master Parameter:** Creates a new parameter dial that can be set up to drive one or more dependent parameter dials. For further information on dependent parameters, see "Using Dependent Parameters" on page 666.
- **Create New Group**: Selecting **Create New Group** creates a new subgroup under the currently selected group. The **Create New Group** dialog appears prompting you for a name. Enter your desired name in the field. To rename an existing group (or if you make a mistake when creating the group), double-clicking the group name in the **Parameters** palette opens a field allowing you to specify a new name.

- **Delete Selected Groups**: Selecting **Delete Selected Group** deletes the currently selected group. Parameter dials in deleted groups are moved to the next highest group or subgroup, as appropriate.
- **Display in Calculation Order:** Reorders parameter channels. Allows you to correct the initial order of physics simulation parameters in order to accommodate existing and new morphs.



If morphs are added after, they will double after simulation. You will need to reorder the channels to address this issue.

- **Memorize**: Selecting **Memorize** memorizes the current parameter dial settings as default. Please refer to "Memorize" on page 71 for more information on memorizing parameter dials.
- **Restore**: Selecting **Restore** restores the most recently memorized defaults. Please refer to "Restore" on page 70 for more information about restoring saved defaults.
- **Delete Object**: Selecting **Delete Object** deletes the current object.
- **Show Hidden Parameters**: Displays parameters that are normally hidden from view, allowing you to view and edit their parameters and properties.



Making changes to channels that are normally hidden is recommended for advanced users only, as improper changes can affect the usability of the figure.

Parameter Dial Groups

Poser offers parameter dial grouping (3), which organizes parameters into easy to navigate categories.



Different figures may have different parameter dial groups.

Parameter dial groups have the following functionality:

- Clicking the **+** sign next to a collapsed group/subgroup expands that group/subgroup.
- Clicking the **–** sign next to an expanded group/subgroup collapses that group/subgroup.
- Double-clicking a group name allows you to rename that group.

- You can drag and drop groups to change their hierarchical relationship to each other. For example, a group could become a subgroup under another group, and vice versa.
- You can drag and drop parameter dials to different locations within the same group or across groups and subgroups to organize them as you see fit.



Parameter dial groups and subgroups are saved in your Poser scene files.

Parameter Dials

The parameter dials (4) in the **Parameters** palette let you pose a figure and adjust other attributes for figures, props, lights, camera, etc. using precise numerical increments. Each body part and most other elements in the scene have their own set of parameter dials. When an entire figure is selected, the displayed parameters affect the entire figure. To use a parameter dial, you can either click and drag it to the right to increase the selected value or left to decrease it. You can also click the displayed numeric value and manually enter your desired value using the text box that appears.

To restore a parameter dial's default (or last memorized) setting, press and hold **[OPT]/[ALT]** while clicking the desired parameter dial. To change a parameter dial's default value, set the dial to your desired value and either select **Edit > Memorize** > element, as described in "Memorize" on page 71, or use the **Parameter Palette** menu as described in "Parameters Palette Options Menu" on page 198.

Each parameter dial has its own **Parameter Dial** menu (5), which is accessible by clicking the arrow to the right of your desired parameter dial. The **Parameter Dial** menu has the following options:

- **Reset**: Selecting **Reset** resets the parameter dial to its default or last-memorized value.
- **Settings**: Selecting **Settings** opens the **Edit Parameter Dial** dialog, described in the following topic.
- **Graph**: Selecting **Graph** opens the **Graph** palette for the selected element. Please refer to "Using Graphs" on page 458 for more information about the **Graph** palette.
- **Recalculate Dynamics**: If you have a dynamic object selected (strand-based hair or dynamic cloth), selecting the **Recalculate Dynamics** option recalculates the dynamics for that object. Please refer to "Step Four: Setting Hair Dynamics" on page 542 and to "Step 4: Cloth Dynamics Controls" on page 562 for information about strand-based hair and cloth dynamics, respectively.

- **Split Morph**: When enabled, selecting **Split Morph** splits the currently selected morph into left and right sides, allowing you to apply the selected morph target asymmetrically. You can use this, for example, to introduce irregularities into a figure's head, enhancing realism because no person's head is perfectly symmetrical.

Master Parameter Indicator

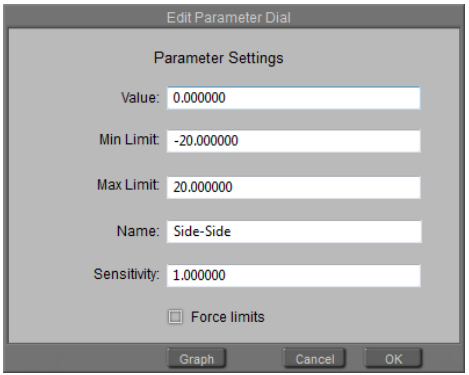
The Master Parameter indicator appears when the designated parameter dial is used to drive settings of other parameter dials. Click the Parameter Dial menu arrow to open the Dependent Parameter editing tool and the list of parameters controlled by that dial. For more information about master parameters, see "Using Dependent Parameters" on page 666.

Dependent Parameter Dials

When a parameter is configured as a dependent parameter, two values will be displayed to the right of the parameter dial. These dials are referred to as the natural and driven parameters, and are explained in detail in "Using Dependent Parameters" on page 666.

Editing Parameter Dials

You can edit parameter dials by double-clicking your selected parameter dial to open an **Edit Parameter Dial** dialog, which allows you to set the following limits:



Each parameter dial has options that you can edit.

- **Value**: The **Value** number sets the current parameter dial value.
- **Min/Max Limit**: The **Min Limit** and **Max Limit** values define the minimum and maximum limits for the parameter,

respectively. The numbers can stand for different types of values depending on the parameter you are editing. If it is a joint parameter, the value will be expressed in degrees above or below 0 (neutral). If you are adjusting a scale parameter, the number will be a percentage with 100 being normal size.

- **Name**: You can rename the parameter by entering a new name in the **Name** field.
- **Sensitivity**: The **Sensitivity** value modifies the parameter dial's sensitivity to clicking and dragging. A lower number decreases the sensitivity and vice versa.
- **Graph**: Clicking the **Graph** button opens the Graph palette for the selected element. Please refer to "Using Graphs" on page 458 for more information about the **Graph** palette.
- **Force Limits**: Check this option to keep the selected dial within the minimum and maximum limit settings.

Click **OK** when you have finished making changes.

Universal/Figure Parameters

This topic discusses both universal parameter dials and those used for figures. Parameters for cameras, lights, and other elements are discussed in their respective sections.

Scale Parameters

Scale parameters are found in the Transform group of the Parameters palette. Their functions are as follows:



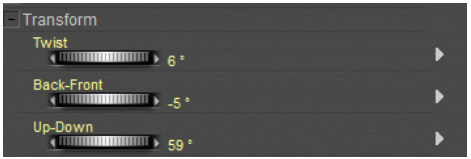
Scale Parameters.

- **Taper**: The **Taper** parameter dial tapers the selected body part/prop. This function is the same as using the **Taper** tool, described in "Taper" on page 188.
- **Scale**: The **Scale** parameter dial enlarges or shrinks the selected body part/prop in all three axes equally. This is the same as using the **Scale** tool, described in "Scale" on page 187. Normal scale is 100%.
- **XYZScale**: The **xScale**, **yScale**, and **zScale** parameter dials enlarge or shrink the selected body part/prop along the selected axis only. This allows you to squeeze or stretch

items. This is the same as using the **Scale** tool. Normal scale is 100%.

Posing Parameters

Posing parameters appear in the Transform group of the Parameters palette, and appear in yellow text. The following parameters are available for posing: Note that the options you see for each joint vary, depending on the rotation order of the joint: Each joint will have three options, one each for X, Y, and Z rotation.

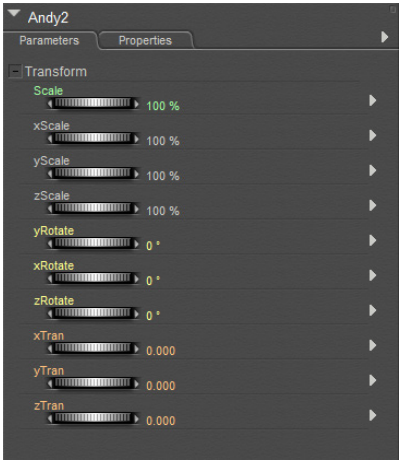


Posing Parameters.

- **Twist**: The **Twist** parameter dial rotates a body part along its own axis. For example, using twist on the head and neck turns the head. This is the same as using the Twist tool, described in "Twist" on page 186.
- **Bend**: The **Bend** parameter dial rotates a body part on its major axis. Most body parts bend forward and back, except for the shoulder and hands, which bend up and down.
- **Side-to-Side**: The **Side-to-Side** parameter dial rotates a body part perpendicular to its major axis. The thigh has lots of side-to-side motion, while the knee has very little.
- **Turn**: The **Turn** parameter dial only appears for the feet in some characters, instead of the **Twist** parameter. This parameter turns the feet inward or outward.
- **Front-Back**: The **Front-Back** parameter dial is used with shoulders and collars to rotate them forward or back, perpendicular to their major axis.

Body Parameter Dials

The following parameter dials are available for entire figures. Remember to select the correct figure when working with multiple figures in a scene:



Body Parameters.

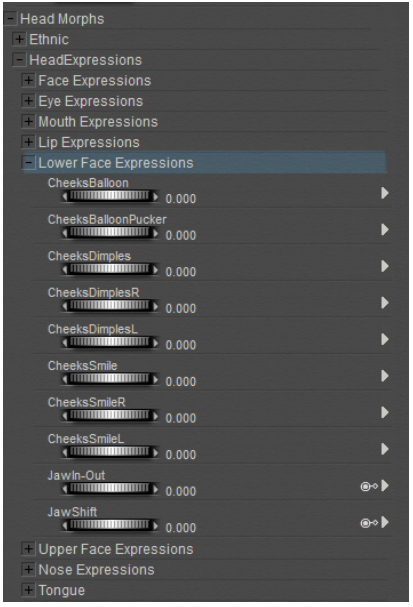
- **XYZRotate**: The **xRotate**, **yRotate**, and **zRotate** parameter dials rotate a figure around the X, Y, or Z axis as appropriate.
- **XYZTran**: the **xTran**, **yTran**, and **zTran** parameter dials move a figure along the indicated axis.

The XYZTran and other positioning dials reflect the currently selected unit of measure, which is available in the **General Preferences** *dialog. For example, if a dial is set to 12 inches and you change units to feet, the dial will now read 1 foot.*

Posing Faces

Poser's human figures and many third-party figures have fully articulated faces, meaning you can position facial muscles such as mouth, eyebrows, cheeks, and eyes to create different facial expressions using the **Parameter** dials and/or the **Morphing Tool** (described in "Creating Morphs with the Morphing Tool" on page 642).

Facial expressions work for Alyson and Ryan and their lo-res versions, even though the warning dialog will appear when applying face expressions to the lo-res figures.



Faces can be enhanced with Expression morphs.

Different Poser and third-party figures will have different body morphs. Smith Micro Software cannot provide support for third-party figures. Please contact the vendor where you obtained your third-party content for technical support.

Some older Poser figures do not have poseable faces.

When you select a head, a series of face-specific parameter dials appears in the **Parameters** palette, each dial controlling a different aspect of the face. When using face parameter dials, think of it as manipulating facial muscles to achieve the final results.

The **Face** camera uses the selected figure's face as its center of rotation, allowing you to preview your face poses up close.

Face Parameters

Face parameters normally operate in the range of 0 to 1, with 0 being fully off and 1 being fully on. Negative values (<0) produce inverted poses, and poses greater than +/- 1 give exaggerated poses. For example, a negative **Frown** parameter setting produces a slight smile. Face parameters are morph targets that can be used in concert to create expressions.



Please refer to "Chapter 30: Modifying Figures & Props" on page 614 *for information on morph targets and how they work inside Poser.*

Poser figures contain an array of facial morphs and parameters that allow you to create an endless variety of faces and expressions. The list of face parameters varies by figure, and the all parameters are self-explanatory. To view the available face parameters, select the desired figure's head and open the **Parameters** palette.

In addition to posing faces, you can also modify facial structure as well as Ethnicity, Age and Gender parameters via the Face Shaping tool in the Face room. See "The Face Shaping Tool" on page 527 for more information on the Face Shaping tool.

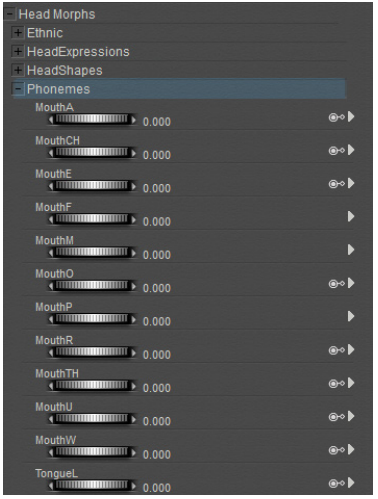


Alyson and Ryan figures include two levels of facial Ethnicity morphs. You will find face shaping morphs in the Parameters palette, and Ethnicity, Age and Gender controls in the Face room

Faces & Phonemes

A phoneme is a linguistic term for the positions of the tongue, lips, and teeth as they make sounds. Producing certain sounds requires the mouth and tongue to be in certain positions. Stringing phonemes together is what produces speech.

Poser allows you to create the appearance of phonemes (called visemes when observed) to accurately simulate speech, a useful feature when adding sound to your scenes (such as a speech). You simulate speech by using different phonemes and keyframes to sync your figure's mouth movements to an imported sound (see "Sound" on page 481). Poser's **Talk Designer** can automatically generate a lipsync animation for you based upon settings that you configure in the **Talk Designer** palette. For more information about the **Talk Designer**, see "Using the Talk Designer" on page 482.

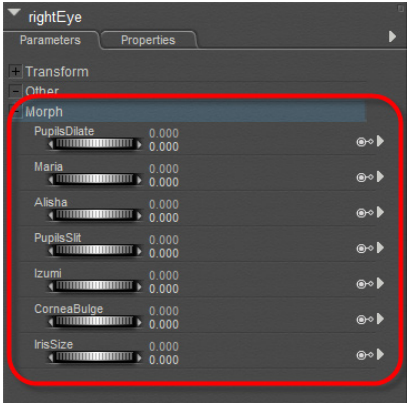


Phoneme morphs work with the Talk Designer.

Posing Eyes

To pose eyes, select them using either the **Editing** tools or the **Current Actor** pop-up menu and position them by clicking and dragging, or by using the parameter dials.

Alyson and Ryan also have additional morph dials for the eyes, which can vary the shape of the iris and pupil, or which move the eyes up, down, right, or left.



Eye morphs size or position the Eyeball, Iris, Cornea, and Pupil.

Posing Hands

Many Poser figures have fully articulated hands. When you move a finger, the appropriate knuckle(s) bend. You can pose hands for both these figures and older Poser figures without articulated hand joints by applying hand poses from the **Library** palette.

The **Left Hand** and **Right Hand** cameras use the hand as their centers of rotation, making it easier to create precise hand poses.

Use the **Editing** tools to pose hands as you would any other body part. Please refer to "The Editing Tools" on page 184 for information on using the **Editing** tools. You can also apply preset hand poses to any Poser figure using the **Hands** category in the **Library** palette, just as you would any other pose.

When you select the main portion of a hand (labeled **Left Hand** and **Right Hand** in the **Item Select** menu) on some Poser figures, you may also see a special set of hand parameter dials in the **Parameters** palette. These dials are as follows:

- **Grasp**: The **Grasp** parameter dial controls how tightly the hand/fist is clenched.
- **Thumb**: The **Thumb** parameter dial moves the thumb. Higher values move the thumb in towards the hand, and vice versa.
- **Spread**: The **Spread** parameter dial controls the amount of hand spread. Higher values spread the hand out, and vice versa.

In addition, Alyson and Ryan include several additional controls that provide extremely fine control over hand poses. These additional options, coupled with the extra joints in their hands, provide fine enough control to pose your hands holding chopsticks or other eating utensils: These additional dials are found in the Hand Controls section in the Parameters palette when you choose the hand actor for the Alyson or Ryan:

- **ThumbBend**: Bends all sections of the thumb at the same time.
- **IndexBend**: Bends all sections of the index finger at the same time.
- **MiddleBend**: Bends all sections of the middle finger at the same time.
- **RingBend**: Bends all sections of the ring finger at the same time.
- **PinkyBend**: Bends all sections of the pinky at the same time.

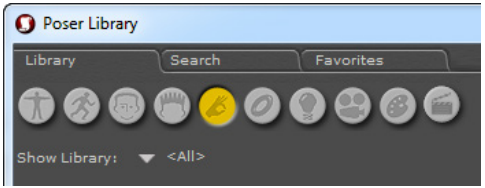
Alyson and Ryan also include advanced controls in the feet, that bend the toes in a more realistic manner. Select the Right Toe or Left Toe actor, and expand the Toe Controls section in the **Parameters Palette** *to find four dials:* **BigToeCurl**, **BigToeSpread**, **ToesCurl**, *and* **ToesSpread**.

Using the Hand Model

The **Figures > Poser Content > Additional Figures** subfolder includes disembodied hands that use the new joints found Alyson and Ryan. These hands include extra joints that allow you to create hand poses that bend in a more realistic manner. Use the **Left Hand** or **Right Hand** in this subfolder to create hand poses that are compatible with Alyson and Ryan. Then save the poses to the Hand library for future use.

Using Preset Hands

When you're done posing a hand, you can save it to the **Hands** category in the Library. Hand poses are a subset of a figure pose, meaning that figure poses include the hands but hands don't include figures.



Use Hand poses to pose a character's hand and fingers.

The Hands library folder includes various subcategories. When selecting preset hand poses for your figure(s), pay attention to the subcategory from which you choose them, as You can only apply specific hands to the corresponding figures. For example, you can only apply Poser 2 Fig. Hands to Poser 2 figures.

To use a preset hand pose:

1. Click a figure to select it.
2. Open the **Library** palette, then open the **Hands** category and your desired subcategory.
3. Double-click the pose you want to use. A dialog appears asking if you wish to apply the preset to the left or right hand. Make your selection and click **OK**.

Posing Animals

You can pose animals using the same techniques used to pose humans. Animals have their own set of IK settings, bend zones, and limits. On the Horse model, for example, moving the hip down toward the ground does not make the animal sit, unlike a human figure. **Editing** tools, parameter dials, menus, etc. all work the same with animals as they do with humans. Technically speaking, animals and human figures are identical, and Poser makes no distinction between them.

Animals do not work with the Walk Designer, which is primarily designed for two-legged (bipedal) figures. However, animals can work with the Talk Designer if the animal includes morphs that support it.



Animal figures are poseable as well, but do not work with the Walk Designer.

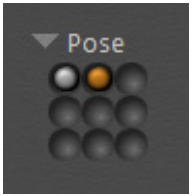
The stock animal figures shipping with Poser use the same limb names as humans, that is, front legs and paws are labeled Shoulder, Arm, Hand, etc. This means that animal figures will not work in the Walk Designer, which was created for use with two-legged figures. To animate an animal walking or running, you need to keyframe its strides manually.

Posing Animal Heads

Several animal models have fully articulated heads. For example, you can pose the dog's mouth and ears. Use the parameter dials just as you would for a human figure. The available parameter dials for a given animal's head will vary depending on the animal.

Pose Dots

You can save up to nine pose configurations using the **Memory** dots (described in "Memory Dots" on page 56). Each **Memory** dot retains all of your selected figure's pose. This feature is specific to your current scene, meaning that **Pose** dots cannot be transferred to different scenes. To save pose settings and have them accessible in any Poser scene, you need to add pose sets to the **Library** palette.



Pose Dots.

Saving Poses in the Library

All parameters are saved along with body part positions when you save a pose to the **Library** palette. To save a pose to the **Library** palette:

1. Open the **Library** palette.
2. Select the **Pose** category and your desired subcategory.
3. Follow the directions in "Adding Items to the Library" on page 162.

Other Posing and Figure Aids

The **Object** menu allows you to manipulate objects within your scene.

Lock Object

Selecting **Object > Lock Object** locks the currently selected element (body part, prop, etc.). To lock your desired actor, select it, then select **Object > Lock Object**. The currently selected actor will be locked, meaning that it will not move relative to its parent. For example, if the elbow is bent 45 degrees relative to the upper arm, it will hold that position. Locking actors is a great

way to protect your work once you've perfected a portion of your figure.

To unlock a locked actor, select it and **Object > Lock Object**. A checkbox appears next to this menu item when the selected actor is locked, and reselecting this option clears the checkbox and unlocks the actor.

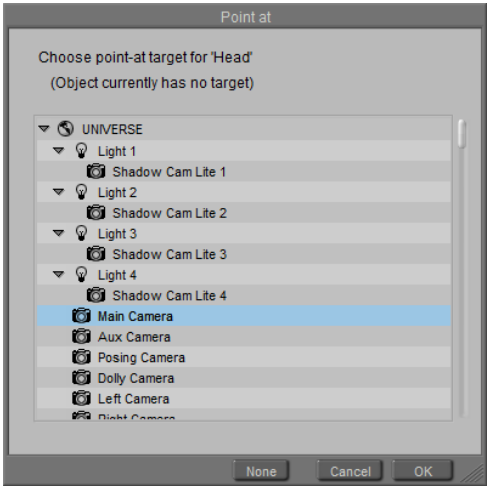
Point At

You can aim body parts, cameras, props, lights, etc. at other scene elements using the **Point At** command. This works in numerous situations, such as having a figure's eyes track a moving object, keeping a camera focused on the action, etc. This is different than parenting in that no hierarchical relationship is created. One object simply points at another. By contrast, parented objects retain their exact position and orientation relative to their parent actors.

To point an actor at another actor:

1. Select the element you want to aim using the **Select Item** pop-up menu.

2. Select **Object > Point At** to open a dialog box listing the actors in the scene.



Choosing an object to point toward.

Select the object to aim at and click **OK**. The selected element points at the object and a **Point At** parameter dial appears in that element's **Parameters** palette. Selecting 1 points the element directly at its selected target, and 0 points the element away from the target.



When selecting only a single item from the Object Parent hierarchy window, you can simply double-click on that item to make your selection and close the window.

To disable pointing for an element:

1. Select the element.
2. Select **Object > Point At**.
3. Select **None** in the dialog that appears and click **OK**.

Figure Height

Poser provides several figure heights, which you can adjust by selecting **Figure > Figure Height** and selecting one of the eight heights available.

Note that these settings may not work with al figures. You will get the best results when using these options with legacy figures, such as figures made for Poser 4 and earlier versions. Figure heights are intended for figures that have very basic construction.

Figure heights are measured in "heads", meaning the ratio of the head height to the overall body height:

- **Baby**: 4 heads (each head is approximately 6 inches tall)
- **Toddler**: 5 heads (each head is approximately 6.5 inches tall)
- **Child**: 6 heads (each head is approximately 7 inches tall)
- **Juvenile**: 7 heads (each head is approximately 7.5 inches tall)
- **Adolescent**: 7.5 heads (each head is approximately 9 inches tall)
- **Ideal Adult**: 8 heads (each head is approximately 9 inches tall)
- **Fashion Model**: 8.5 heads (each head is approximately 9 inches tall)
- **Heroic Model**: 9 heads (each head is approximately 9 inches tall)

You can create interesting effects by applying different height settings to different figures.

Genitalia

Some male and female nude models are anatomically correct. Selecting **Figure > Genitalia** toggles displaying genitals on or off.

The Figures library includes a **Poser Content > People > Ryan > Genitals** subfolder that contains props for all four male figures (**Diego**, **Marcus**, **Ryan**, and **Tomo**). There are versions for the LowRes versions of these figures as well. Add the proper library item to the male figure in your scene, and then choose **Figure > Conform To** conform to the male figure. **Basic**, **Advanced**, **Shiny**, and **Ultimate** material collection files are found in the **Materials > Poser Content > People > Ryan > (figurename) > Genitals** subfolders.



Many female figures do not have modeled genitalia, relying instead on texture/bump/transparency maps to create the appearance of genitalia. This option only works for figures that have modeled genitalia that is set up to take advantage of this feature. To remove genitals on a female character that does not have modeled genitalia, you will need to modify the texture map. The Judy and Jessi models contain modeled genitalia, which are controllable via this function.



Different figures use different mechanisms for dealing with genitalia, so not all figures will be affected by the **Figure > Genitalia** *menu option. Some newer figures, such as the G2 male figures and Ryan, contain genitalia that is set up as a separate conforming figure.*

Auto Balance

The **Auto Balance** feature is a valuable tool for helping create realistic poses. When enabled, Poser calculates a figure's mathematical "weight" and maintains it. In the following example, there is more weight in the figure's hip or center portion than in the torso. As you pose a figure, **Auto Balance** adjusts body parts to maintain the original weight distribution, resulting in more natural-looking poses without having to use several position adjustments. To further affect the weight distribution and compensation calculations, you can reposition the **Center of Mass Control Object** (the outlined ball) at the base of the figure. This control object is adjustable along the X and Z axes in the ground plane. Moving the **Center of Mass Control Object** also adjusts the **Center of Mass Indicator**, which appears as a shaded sphere in the XZ (ground) plane under the figure. This **Indicator** shows the position above which the current center of mass is located, as calculated from the body part weights and the position of the **Control Object**.



Using Auto Balancing.

When using **Auto Balance**, use small subtle motions to achieve the best results. Large motions may create drastic results. If this occurs, restore the figure as described in "Restore" on page 70. You may also want to select **Figure > Use Limits** while working with the **Auto Balance** feature, to help maintain realistic body positioning.

Selecting **Figure > Auto Balance** toggles Auto Balance on and off for the selected figure. When enabled, the Center of Mass controls will be visible at the figure's base. A check mark appears next to this option in the menu when it's enabled. Reselecting this option clears the check mark and disables Auto Balance for the selected figure.

Lock Figure

Selecting **Figure > Lock Figure** locks the figure in its current position. You cannot pose or move a locked figure. This is a great way of protecting your work in complex scenes where you have finished posing a figure and don't want it to move accidentally. A check mark appears next to this option when the currently selected figure is locked. Reselecting this option removes the check mark and unlocks the figure.

Lock Hand Parts

Selecting **Figure > Lock Hand Parts** locks the selected hand in position, protecting it against accidental position changes while you pose the rest of your figure. To use this option:

1. Select the hand to lock.

2. Select **Figure > Lock Hand Parts**. The hand is now locked. This command is not available for all Poser figures.

Please refer to "Posing Hands" on page 208 for information on posing hands.

Drop to Floor

You can place a figure in any position, such as in the middle of a flying leap. You can leave your figure in the air, or you can lower it to the ground depending on your needs. Selecting **Figure > Drop to Floor** brings the lowest part of the selected figure or prop into contact with the workspace floor. To display the floor, refer to "Ground Plane" on page 117.

Symmetry

The **Symmetry** command allows you to copy pose characteristics from one side of the body to another, which can save you time when creating scenes in the **Pose** room or when building custom figures using the **Setup** room. Pose an arm and/or leg, and use this command to instantly apply the same position to the other side. You can also swap entire poses from side to side and straighten the currently selected figure's torso.



Start pose (left); Right to Left (center); Swap Right and Left (right).

Selecting **Figure > Symmetry** opens the **Symmetry** menu, which contains the following options for your currently selected figure:

- **Left to Right**: Selecting **Left to Right** applies the position of the bones on the left side of the figure to the right side.
- **Right to Left**: Selecting **Right to Left** applies the position of the bones on the right side of the figure to the left side.
- **Swap Right and Left**: Selecting **Swap Right and Left** swaps the positions of the bones on the right and left sides of the figure.

- **Left Arm to Right Arm**: Selecting **Left Arm to Right Arm** positions the right arm bones in the same position as the left arm.
- **Right Arm to Left Arm**: Selecting **Right Arm to Left Arm** positions the left arm bones in the same position as the right arm.
- **Swap Right and Left Arms**: Selecting **Swap Right and Left Arms** swaps the positions of the bones on the right and left arms of the figure.
- **Left Leg to Right Leg**: Selecting **Left Leg to Right Leg** positions the right leg bones in the same position as the left leg.
- **Right Leg to Left Leg**: Selecting **Right Leg to Left Leg** positions the left leg bones in the same position as the right leg.
- **Swap Right and Left Legs**: Selecting **Swap Right and Left Legs** swaps the positions of the bones on the right and left legs of the figure.
- **Straighten Torso**: Selecting **Straighten Torso** straightens the torso area (Hip, Abdomen, Chest).

When you select a Symmetry function, a dialog box appears asking if you wish to copy the joint zone setup as well. Click **Yes** to apply the symmetry to the bone structure, or **No** to avoid copying the joint setup.



Symmetry also copies element settings (morph targets, deformers, parameters, etc.) from one side to the other. For example, if you scale the Left Hand to 200% and apply Left to Right symmetry, the other hand will scale as well. Do not use this command if you want to use asymmetrical settings.

Delete Figure

Selecting **Figure > Delete Figure** deletes the currently selected figure. A confirmation dialog appears. Click **OK** to proceed with the deletion or **Cancel** to abort. Windows users can also delete a figure by selecting it and pressing [DEL].

If your figure is wearing conforming clothing or has other attached figures, you can check the **Delete attached figures** option to delete them in addition to the figure that you are deleting.

Hide Figure

Selecting **Figure > Hide Figure** hides the currently selected figure if you have more than one figure in your scene. This is helpful when you work with complex scenes, especially where

a figure is getting in your way. You can also hide a figure by selecting the figure to hide by selecting **Body** using the **Select Element** pull-down menu and clearing the **Visible** checkbox in the **Properties** palette as described in "Properties" on page 192.



Collision detection settings do not apply to hidden objects.

Show All Figures

Selecting **Figure > Show All Figures** makes all hidden figures in your scene visible. You can also make hidden figures visible by selecting them and checking the **Visible** checkbox in the **Properties** palette. If one or more body parts are set to invisible, these will remain invisible when the selected figure is shown.

Chapter 10: Working with Props

Poser lets you add props to your scene. Props are three-dimensional objects that your figures can interact with or that simply add interest to your scene. Props can be accessories to add to your figure's character such as a wig, a moustache, a pair of sunglasses, a cigar, or a briefcase. Or, your figure could base its pose on a prop, such as leaning on a cane, climbing a ladder, or tossing a ball. This chapter covers hair, conforming (figure-based) clothing, and miscellaneous props not fitting into these categories. Poser treats conforming clothing items like figures, however we will treat conforming clothing as props in this chapter for the sake of discussion.

About Props

You can manipulate props just as you would any other element, which is why you see the term body part/prop used throughout this manual. You can change a prop's color, shape, deformation, material, and maps (if it has UV coordinates – refer to "About Maps & Templates" on page 283). Props can even cast shadows.

Poser's replaceable geometry feature (see "Replacing a Body Part with a Prop" on page 228) lets you replace body parts with props, making the prop actually part of the figure. You can also parent a prop to a body part or another prop or scene element, such as a briefcase in a hand. Please refer to "Poser File Types" on page 848 for information about hierarchies in general, and to "About Groups" on page 690 for information on creating hierarchies within Poser. Props also add general interest and meaning to your scenes, such as a mushroom for a frog to perch on.



Props add interest to your scene.

You can select props from the Props category in the **Library** palette, the **Content** room, or import props in a variety of

popular 3D formats. You can also create your own props in your favorite 3D modeling application (provided that application exports to one or more formats supported by Poser's **Import** function).

Props function like other scene elements, meaning you can use the **Editing** tools and parameter dials and can specify properties in the **Properties** palette. You can also create groups using the **Group Editor** palette (see "The Group Editor" on page 681).

Hair

Poser's **Hair** room (see "Chapter 26: The Hair Room" on page 533) allows you to create real strand-based hair, or to use prop-based hair, when designing your figures. We'll discuss both forms of hair in this section.

Strand-Based Hair

Poser's **Hair** room adds dynamic strand-based hair to your scene elements for ultimate realism. You can create as much or as little hair anywhere you like on any object in your scene and can even use it to add fur, lichens, grass, and many other effects. Please refer to "Chapter 26: The Hair Room" on page 533 for more information about strand-based hair and the **Hair** room.



By default, strand-based hair requires significant computing resources, so you should be careful not to overload your system. Please see the detailed information about the Hair room for more information.

Prop-based Hair

Prop-based hair is a special kind of prop that automatically attaches itself to a figure's head. You can choose from a number of styles in the **Library** palette (see "The Hair Category" on page 151). Once assigned, hair moves with the figure's head. Some newer hair models that come with Poser are morphable, as are many third-party hair props. It is common to use Transparency Maps to improve the look of prop-based hair.



Prop-based hair automatically attaches to a figure's head, and is geometry-based.

To add hair to a figure from the **Library** palette, please refer to "Adding Hair to a Figure" on page 152. Hair includes parameter dials in the **Parameters** palette (see "Prop Parameters" on page 227), allowing you to specify its scale and position. Some hair also includes morph target parameter dials that allow you to, for example, swing a ponytail as a character walks. The **Library** palette also contains a pose-able hair model, which contains elements just like a figure. You can edit and pose these elements just as you would any Poser figure.

To use the conforming hair model:

1. Add the **James** figure from the **Figures > Poser Content > People > James** category of the **Library** palette.
2. Select and add the **Messy Hair** model from the **Hair > Poser Content > People > James Hair** category in the **Library** palette.
3. Set the head as the parent for the hair as described in "Changing a Parent" on page 231.

Clothing

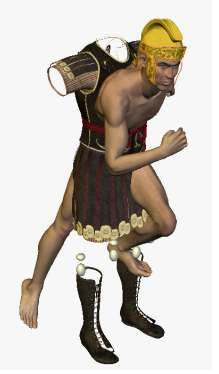
Poser's **Cloth** room (see "Chapter 27: The Cloth Room" on page 550) adds a whole new dimension to adding realistic clothing to your figures and cloth objects to your scenes. You can even add realistic motion to clothes that will react as the character moves (such as a skirt on a walking woman) and can be windblown using wind force fields (described in "Wind Force Fields" on page 633). Of course, Poser supports prop-based clothing and ships with both dynamic and conforming (figure-based) clothing.

Dynamic Clothing

Please refer to "Adding Dynamic Clothing" on page 551 for information about adding dynamic cloth to a figure or scene.

Conforming Clothing

In addition to cloth objects, Poser includes libraries of figure-based clothing that you can use on nude figures, which are located in the **Figures** category of the **Library** palette and includes shirts, pants, shoes, dresses, skirts, etc. Conforming clothing attaches to a figure and automatically moves with the figure's poses. See "Adding Conforming Clothing: Automatic Conforming" on page 142 and "Adding Conforming Clothing: Manual Conforming" on page 143 for more information on using automatic and manual conforming methods to attach clothing to your figures.



Clothing before conforming.



Clothing after conforming.

Adding & Importing Props

There are several ways to bring props into Poser. Props can be added to the document window from the Props library, or you can also import props from other 3D applications.

The Props Library

You can add props from the **Library** palette's **Props** category as described in "Adding Hair to a Figure" on page 152.

Using 3D Objects as Props

You can import 3D objects created in other 3D applications to use as props. Poser's **Import** functionality is described in "Importing Files" on page 777.

Poser places props in the workspace with your specified origin point. If you do not specify an origin point, the prop will appear in the center of the workspace. If you import a prop and can't see it, the prop may be too large and/or your currently selected camera may be zoomed in too close to see it. Try zooming out and/or switching cameras. You will probably have to scale and translate props to get them where you want them in your scene, using either the **Editing** tools or the prop's **Parameter** dials.

Moving, Resizing, and Deforming Props

You can move, resize, and deform props using the **Editing** tools, the **Properties** palette, and/or the **Parameters** palette.

Deleting Props

To delete a prop, select the prop you wish to delete and either select **Object > Delete Object** or press [DEL].

Creating New Props

You can use the **Grouping** tool to select specific polygons on a figure or prop, as discussed in "The Group Editor" on page 681. This feature allows you to create new props. For example, this graphic shows an example of a face mask created to fit the figure by selecting polygons in the figure's face and creating a prop, which was then exported to a 3D modeling application for finalizing.



The Group Editor can be helpful in creating a prop (such as a mask) from a figure.

To create a prop:

1. Select the prop or body part you want to base the prop on.
2. Select the **Grouping** tool to open the **Group Editor** palette.
3. Select polygons for a new group and create and name the prop.

4. The new prop is now listed in the **Current Actor** pull-down menu and can be moved, shaped, and edited like any other prop.

You can save your new prop to the **Library** palette as described in "Adding Items to the Library" on page 162.

Creating Prop Parameters

You can use morph targets to create new parameters for your props. Please refer to "Chapter 30: Modifying Figures & Props" on page 614 for more information about morph targets.

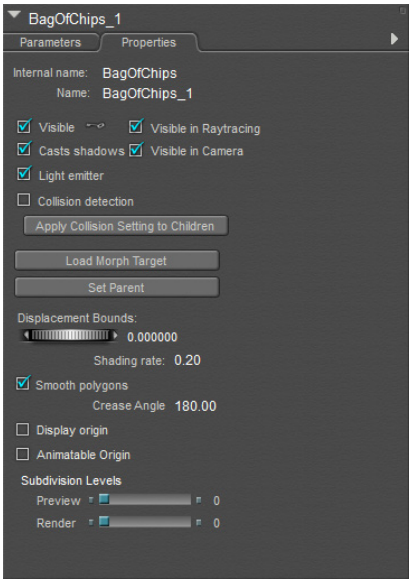
The Prop Origin

A prop's origin appears in the **Document** window as 3D crosshairs. This is the center of that prop's rotation and scale. When you rotate a prop, it rotates about its origin. It grows or shrinks from the origin point when scaled. You can display a prop's origin by selecting the desired prop and checking the **Display Origin** checkbox in the **Properties** palette.

You can move a prop's origin using the **originXYZ** parameter dials. Moving the origin alters the prop's rotation and scale points. When adjusting the origin parameters, remember that you are making these adjustments based on the prop's original origin location, not its current position.

Prop Properties

Props have the following properties:



Prop properties.

- **Internal Name**: The **Internal Name** field displays the prop's internal (hidden) name, which Poser uses to track that part. You cannot edit a prop's internal name within Poser.
- **Name**: The **Name** field displays the prop name. Enter a new name in this field if you desire.
- **Visible**: Checking the **Visible** checkbox makes the prop visible and vice versa. Invisible props are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 for information on animating the **Visible** property.
- **Visible in Raytracing**: Checking the **Visible in Raytracing** checkbox makes the prop visible in raytraced reflections, such as if the figure is in front of a mirror. Clearing this checkbox makes the figure not appear in reflections.
- **Casts Shadows**: Checking the **Casts Shadows** checkbox forces the selected prop to cast a shadow, which will be visible in your scene. Clearing this box means the selected body part casts no shadow.
- **Visible in Camera**: When checked, the object is visible in the camera and render. When unchecked, the object does not render. Used in conjunction with **Light Emitter**, described next, to create light-casting objects.
- **Light Emitter**: When checked, allows the object to be included in indirect lighting calculations so that light will bounce off the object. When unchecked, indirect lighting calculations are skipped for the object.
- **Collision detection**: Checking the **Collision Detection** checkbox enables collision detection for the currently selected prop. Please refer to "Collisions" on page 75 for more information about collision detection.
- **Apply Collision Setting to Children**: Clicking the **Apply Collision Setting to Children** button applies the currently selected prop's collision detection setting to that part's children parts (if any).
- **Load Morph Target**: Clicking the **Load Morph Target** button displays the **Load Morph Target** dialog, allowing you to load a custom morph target for the selected prop (which is then editable using the **Morphing Tool**). Please refer to "Chapter 30: Modifying Figures & Props" on page 614 for more information about loading morph targets.
- **Set Parent**: Clicking the **Set Parent** button allows you to make the prop a child of another element in your scene. Please refer to "Changing a Parent" on page 231 for information on setting prop parents.
- **Displacement Bounds**: The **Displacement Bounds** property determines the prop's displacement boundary.

Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about displacement bounds.

- **Shading Rate**: The **Shading Rate** allows you to specify the desired shading rate for the currently selected prop. Lowering the shading rate improves your render quality but consumes computer resources. Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about shading rates.
- **Smooth Polygons:** Checking the **Smooth Polygons** checkbox causes Poser to smooth the prop's polygons at render time to eliminate or reduce a "faceted" appearance caused by flat polygons. This option can cause sharp corners to appear round. If the affected prop has sharp angles, you should experiment with disabling this option for optimum results.
- **Crease Angle**: The **Crease Angle** setting establishes a threshold up to which creases between adjoining polygons will be smoothed. Polygons with crease angles over this threshold will not be smoothed, and will be rendered as hard edges. See "Smoothing Geometry" on page 422 for more information about using the **Crease Angle** setting to apply smooth shading.
- **Display Origin**: Checking the **Display Origin** checkbox displays the prop's origin. Please refer to "The Prop Origin" on page 225 for more information about prop origins.
- **Animatable Origin**: When checked, allows you to animate the prop origin as its actor is translated, rotated, or scaled. This allows you to optimally position the prop origin if its shape changes drastically by scaling or morphing.



You can animate the prop origin. When used in combination with dependent parameters, this can result in more realistic joint bends. See "Animatable Origins" on page 488.

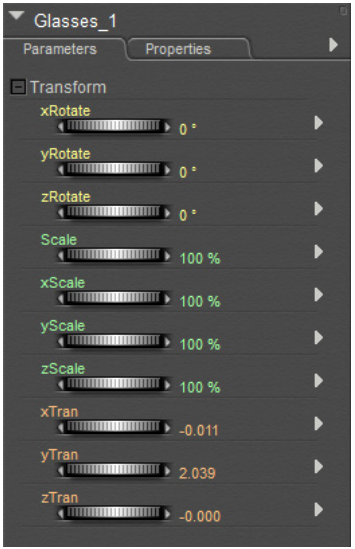
- **Subdivision Levels**: Allows you to subdivide the selected prop. See "Working with Subdivision Surfaces" on page 769 for more information.

Prop Parameters

Props have the following parameters:

- **Scale**: The **Scale** parameter dial increases or decreases the size of the prop in all axes.
- **XYZScale**: The **xScale**, **yScale**, and **zScale** parameter dials increase or decrease the size of the prop in the selected axis.

- **XYZRotate**: The **xRotate**, **yRotate**, and **zRotate** parameter dials rotate the prop around the selected axis.
- **XYZTran**: The **xTran**, **yTran**, and **zTran** parameter dials move the prop along the selected axis.



Prop parameters.

Replacing a Body Part with a Prop

Poser lets you replace a body part with a prop, such as a hook on a pirate's hand or a mask for a man's head. This example was created by importing a model of a mask, then replacing the figure's head with that mask.

You should replace body parts with props before posing figures to make positioning and aligning easier.



A mask prop replaces the figure's head.

To replace a body part with a prop:

1. Add or import the desired prop.

2. Position and deform the prop as desired using the **Editing** tools, deformers, and/or parameter dials. Be sure that the prop's position overlaps the body a little (in most cases) to avoid a "break" where the body meets the prop. You might also want to make the body part being replaced invisible using the **Properties** palette as described in "Properties" on page 192.

3. Select **Object > Replace Body Part with Prop** to open the **Replace Part** dialog.

4. Choose the prop to swap using the **Prop** pull-down menu and click **OK**. The prop assumes the name of the body part being replaced.

If the replaced body part doesn't look right, try disabling bending by selecting the replaced body part and clearing the **Bend** checkbox in the **Properties** palette. You can also use the **Joint Editor** palette to make adjustments. This is an advanced feature and should be used with care. Please refer to "Chapter 33: Working with Joints, Weights, and Skinning" on page 719 for information on using the **Joint Editor** palette. The prop retains its material groups (see the "Chapter 13: The Basics of Materials" on page 281), meaning you can apply shaders to it as you can with any other material groups in your scene.



Props turned into body parts retain their current positions relative to the figure that they had prior to being converted. Be sure to place props in their desired locations before turning them into body parts.

Changing Figures with Replaced Geometry

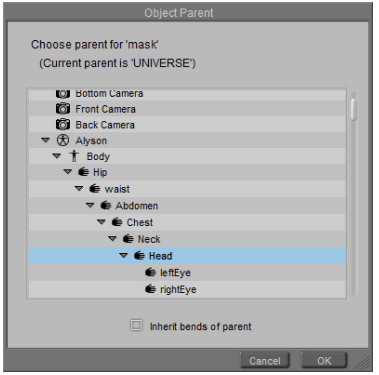
If you try to change a figure that has a prop for a body part using the **Change** function in the **Library** palette, a warning will appear asking if you want to keep the replaced geometry on the new figure replacing the old.

- To keep the props that have replaced body parts, check the **Keep modified geometries** button. To keep the props attached to their parents on the new figure, check the **Keeps props attached to figure** checkbox. Click **OK** when ready.
- To undo a geometry change and restore a figure's default geometry, simply reload the original figure from the **Library** palette.

Set Figure Parent

You can attach props to body parts, body parts to each other, figures to props, figures to figures, cameras to body parts- the list goes on and on. Setting a parent creates a hierarchical relationship, as described in "Poser File Types" on page 848. You can parent entire figures to various other scene elements. To set a parent for a figure:

1. Select the figure you wish to parent (make the child of another object).
2. Select **Figure > Set Figure Parent** to open the **Object Parent** dialog.
3. Select the desired parent object and click **OK**. To parent props, camera, etc., select **Object > Change Parent** as described in "Changing a Parent" on page 231.



Choosing a parent for an object.

Changing a Parent

You can attach props to body parts, body parts to each other, figures to props, figures to figures, cameras to body parts, etc. Setting a parent creates a hierarchical relationship, as described in "Poser File Types" on page 848. You can even control whether parented props bend along with their parent body part. Some items like sunglasses, etc. should not bend. However, other items such as elbow pads on a roller blader should bend with the parent. You should change parent props before posing your figures, since it may be harder to align props with figures once the figures have been posed (such as a sword in a warrior's hand).

Here's an example of a ball parented to a figure's right hand.



A ball follows a figure's hand when it is parented to the hand.

You could also parent a chair to a figure's hip and make the chair inherit the figure's bend.

When selecting only a single item from the Object Parent hierarchy window, you can simply double-click on that item to make your selection and close the window.

While IK is set "on" for a figure, you can use the Change Parent command on a body part actor to parent it to something else (such as another figure body part or prop).

Your parenting choices are virtually unlimited. For example, how about parenting a camera to a figure's head? This could create some interesting effects.

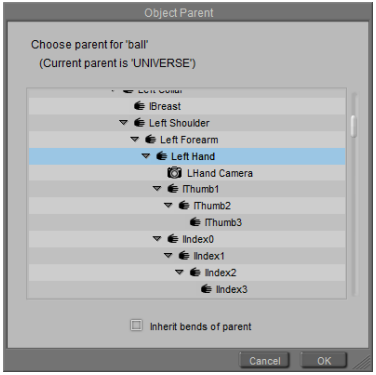
To set a parent for an element:

1. Select the object you wish to parent (make the child of another object).

2. If necessary, use the **Editing** tools, deformers, and/or parameter dials to position and shape the object. Ensure the correct positioning using either a detailed preview style (such as **Lit Wireframe**), zooming in close, or a test render. You can also enable **Collision Detection** to prevent the selected object from penetrating its parent object, or vice

versa. Please refer to "Collisions" on page 75 for more information about the **Collision Detection** feature.

3. Select **Object > Change Parent** (or click the **Set Parent** button in the **Properties** palette) to open the **Object Parent** dialog.



You choose the parent object in the Object Parent dialog.

4. Select the desired parent object (the object to which the currently selected object will be attached).

5. If you want the prop to bend like its parent, check the **Inherit bends of parent** checkbox.

6. Click **OK**.

When selecting only a single item from the Object Parent hierarchy window, you can simply double-click on that item to make your selection and close the window.

In the preceding examples, we parented the ball to the figure's right hand and the chair to the figure's hip. To set parents for an entire figure, select **Figure > Set Figure Parent** as described in "Set Figure Parent" on page 230.

Grouping Objects

A grouping object is a container that can act as a parent to two or more objects. A grouping object allows you to perform the same action to more than one object at a time. For example, when several objects are assigned to the same grouping object as a parent, you will be able to move or rotate the grouping object to do the same to all of its children; or you could turn off visibility for all of the children of the grouping object.

To demonstrate how grouping works:

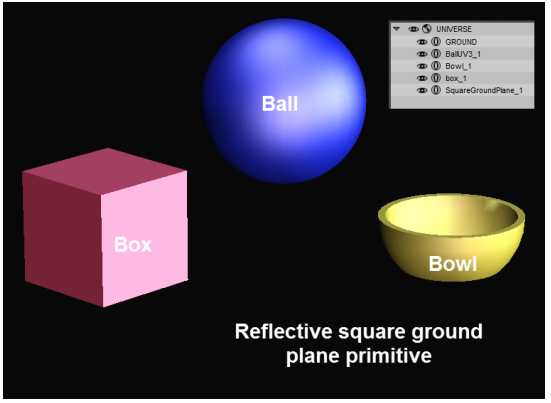
1. Create a new project.

2. Add a few primitives (a box, a ball, and a bowl are shown here).

3. Also add a **Square Groundplane HR** from the **Props > Primitives** category.

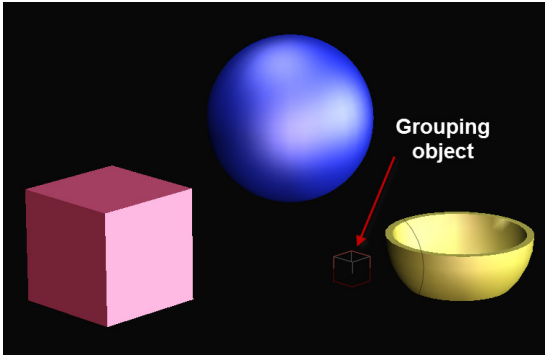
4. With the **Square Groundplane** selected go into the Material Room and click the **Add Reflection Wacro**. The ground plane will turn into a reflective surface.

5. Change the colors of the props to add more variety to the scene.



Four primitive objects in a scene.

Now, you can create the grouping. Choose **Object > Create Grouping**. A container named **Grouping n** (where **n** represents a numerical value automatically assigned by Poser) appears in the scene. It will appear at the zero position in the scene (on the floor, at the origin point of the scene). It appears as a cube in wireframe display mode, and will not be rendered in your scene.

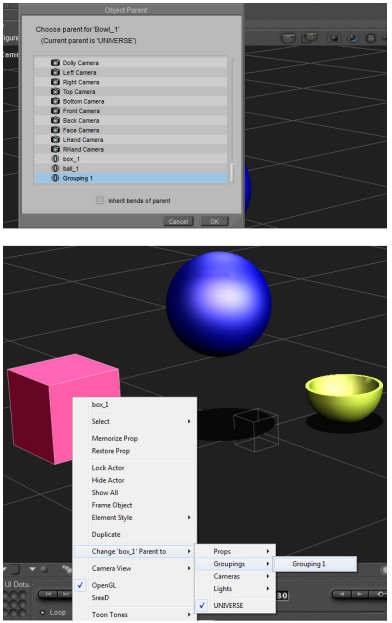


A grouping object at the origin point of the scene.

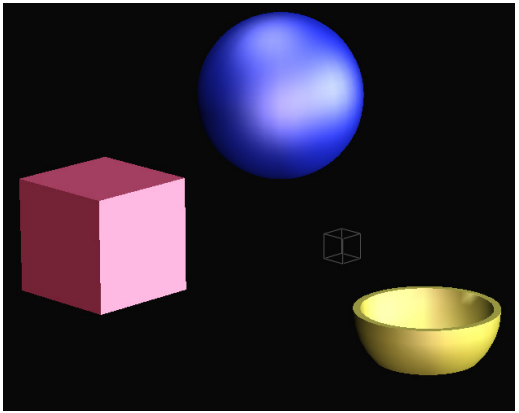
There are several ways that you can attach children to the Grouping object:

- Select an object in your scene that you want to attach to the Grouping object. Choose **Object > Change Parent**, and use the **Change Parent** dialog to select the Grouping Object in the hierarchy.
- Right-click in the Document window on the object you want to attach. A context menu appears, and included is a **Change Parent to** command. Expand the menu and select **Groupings > Grouping n** (with **n** being the number of the grouping you want to attach).
- Open the Hierarchy Editor, and select the item you want to attach to the grouping object. Drag and drop it on the grouping object so that it becomes its child.

Use any of the above methods to attach the box and the ball. Leave the bowl and ground plane as they are (do not assign the Grouping object to them as the parent). Notice now, that when you move the grouping around, the box and ball will move, but the bowl and ground plane stay put.



Parent with the **Object > Change Parent** *command (top) or with the Document window context menu (bottom).*



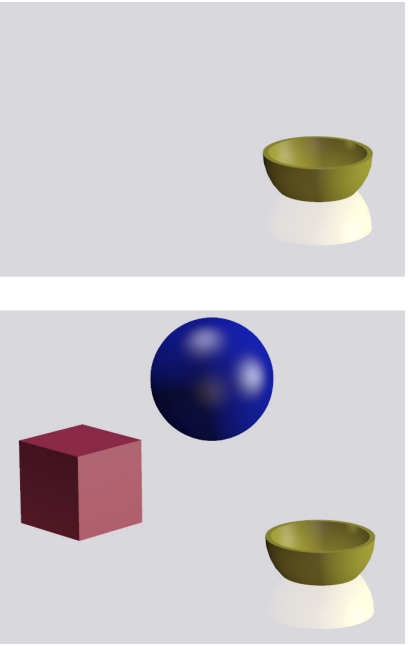
The Box and Ball move with the Grouping object. The bowl and ground (not attached) stay put.

A Grouping object allows you to do more than translate or rotate objects together.

For example, you can toggle the **Visibility** of a grouping object to show or hide all of its children at once.

When a Grouping object is invisible, the Hierarchy Window will display the visibility icon slightly differently for its children. A blue outline will appear around the visibility icons for children of a grouping object, indicating that they have inherited the Invisible setting from the grouping object.

You can also toggle the **Visible in Raytracing** property of a Grouping object. Let's say that you have several objects on a reflective surface. If **Visible in Raytracing** is turned on for the grouping object, reflections will be calculated and rendered for the child object. If **Visible in Raytracing** is turned off for the object, reflections will not be calculated. This can help speed up rendering, but there may also be times when you intentionally want some objects to be reflected and others not.



Grouping object Visibility off (top); Visible in Raytracing off (bottom).

Using Grouping Objects with Figures

When you create a grouping that includes a body part on a figure, the order that you select items can affect how the figure relates to the grouping object:

- If you start by adding a figure to your scene (such as Andy, or Alyson or Ryan), and then use the **Object > Create Grouping** command, the grouping object will appear in the scene. Next, you select one of the body parts on the character (such as the right forearm) and right-click to choose **Change Figure (figure name) parent to** from the context menu that appears. The grouping object becomes a parent of the **entire figure**, and not just the selected body part.

- If you create your group first (for example, you assign a grouping object as a parent to a table, chair, and dishes on the table) and then you assign the figure's hand as a parent to the grouping object, you can still have some freedom over the hand.

Using Constraint Channels

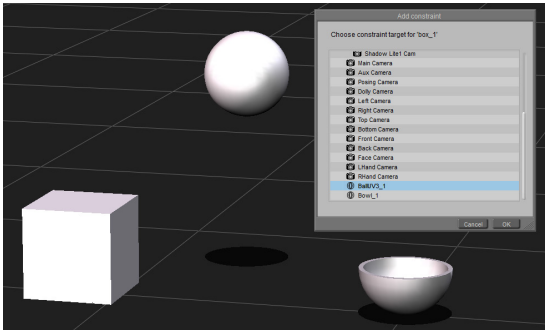
Constraint channels allow you to animate one object based on the position of another object. To explain, visualize a scene where a football is being tossed to a football player, and then he catches it and runs with it. If you create this type of scene in Poser, you can use a constraint channel to help with this animation. The figure's hand can be a target for the football. You animate the pass of the football, and when the football gets close to the catcher you can set the value of the Constraint object to 1 so that the ball moves with the figure's hand.



You can delete the Constraint channel and the Constraint object will still appear in the scene and act as a grouping object, as described in "Grouping Objects" on page 232.

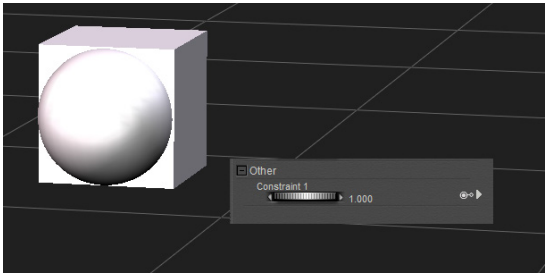
Here is a simple example to illustrate how this works. Create a simple scene that has three primitive props, such as a box, a bowl, and a ball (or similar).

With one of the props selected (the box in this example), choose **Object > Add Constraint**. The **Add Constraint** dialog appears and prompts you to select a constraint target. You can then select the ball as the target.



Choose a Constraint target from the Add Constraint dialog.

After you click OK, you will see that the box moves to the same position held by the ball, so that they are now in the same space. A Constraint dial appears in the Parameters Palette, and is set to 1. When you move this dial back toward the 0 value, you will see the box move back toward its original position.

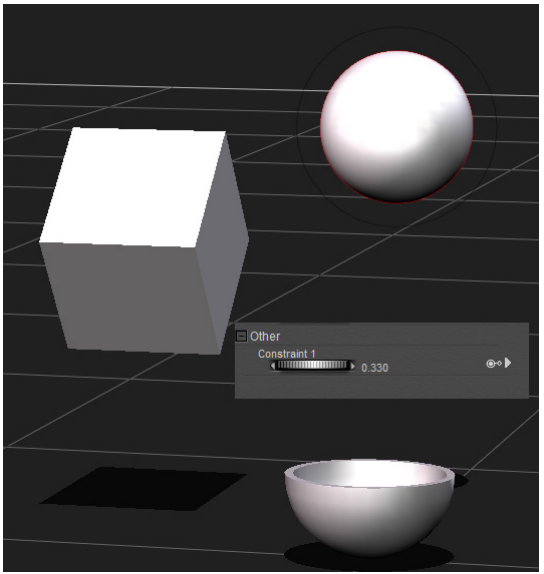


The box moves to the same space as the ball when the Constraint dial is set to 1.

A wireframe box appears at the origin of the ball (the target), but may be hidden within the target object. This wireframe box is a container that will not render in your scene, but it assists in animation. The Hierarchy Editor will show this box as **Constraint Grouping n** (where **n** is a numerical value automatically assigned in Poser) and it will appear as a child to the ball.

Now, to see how a constraint channel works, move the Constraint parameter dial back toward 1, so that the box moves closer to the ball. Then move the **ball** (not the Constraint object) with the editing tools. You will notice that the box follows the

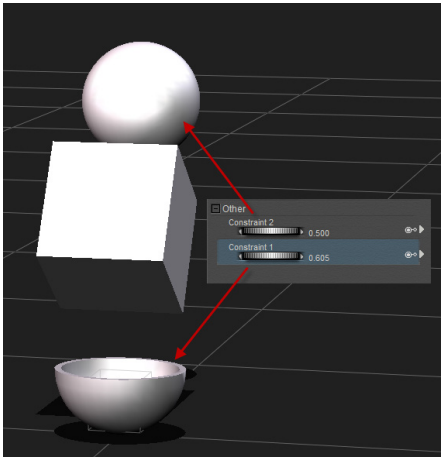
ball. The amount of movement between the two objects is determined by the value set by the Constraint parameter dial..



When an object has two constraint targets, set each to a value between 0 and 1 for both to have effect.

You can add more than one constraint object. For example, you can select the box and assign the bowl as a second constrain target. An additional Constraint dial appears in the Parameters window (and also in the Hierarchy window). When an object has two Constraint targets, it works as follows:

- If both Constraint 1 and Constraint 2 for the box are set to 1, the box will be positioned according to Constraint 2.
- If Constraint 1 is set to 0, and Constraint 2 is set to 1, the box will be positioned according to Constraint 2.
- If Constraint 1 is set to 1, and Constraint 2 is set to 0, the box will be positioned according to Constraint 1.
- If both Constraint 1 and Constraint 2 are set to values other than 0 or 1, the box will be positioned in relation to both.



When an object has two constraint targets, set each to a value between 0 and 1 for both to have effect.

Creating Simulation Proxies

The **Object > Spawn Prop from Convex Hull** command allows you to quickly create lower-resolution objects that you can use as a simulation proxy. They can be used for anything, such as physics, hair, or cloth simulations. They help reduce resources when you are trying to calculate simulations and collisions against high resolution geometry. Simulation proxies are also useful when you are trying to visualize where collisions against an object will occur, and for proofing dynamics.

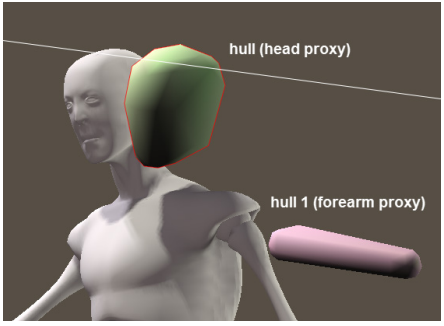
To create a simulation proxy, follow these steps:

1. Click the object in your scene for which you want to create a low-resolution proxy. This can be a prop in your scene, or an actor on a poseable character (such as a character's head).

2. Choose **Object > Spawn Prop from Convex Hull**. A prop, named **hull**, appears in your scene.

   The first simulation proxy that you create will be named **hull**. *The second, and subsequent proxies will be named* **hull n**, *where* **n** *is a sequential number (such as 1, 2, and so on).*

3. Switch to the Properties Palette, if desired, to assign a more descriptive name for the proxy in the Name field.



Examples of hull proxy objects.

Deleting Objects

Selecting **Object > Delete Object** deletes the currently selected prop. A confirmation dialog appears. Click **OK** to delete the prop, **Cancel** to abort.

Chapter 11: Cameras

This section describes how Poser's cameras work. As indicated previously, cameras aim at the Poser workspace from different vantage points. Switching cameras allows you to view your scene from up to four of these vantage points at once.

Camera View

Selecting **Display > Camera View** allows you to select one of the cameras available in your scene.

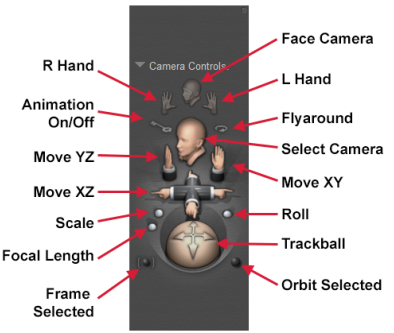
Show Camera Names

Selecting **Display > Show Camera Names** displays the name of the currently selected camera in the top left corner of the **Document** window's scene preview area. Clicking this option again disables this feature.

The Camera Controls

The **Camera** controls allow you to quickly select and position cameras. Used in conjunction with the available **Document** window layouts, they allow you to quickly navigate your scene and/or set up final shots for still or animated output. Remember that every view you see of your scene inside the **Document** window is done using one or more cameras. You can move cameras in any direction, however positioning them can be a time-consuming process. Having multiple cameras allows you to use preset camera positions to quickly navigate your scene, while the ability to position cameras allows you to create custom still or moving shots for use either while working on your scene or during rendering.

The **Camera** controls appear as follows in the Poser workspace.



Camera Controls.

In addition, the **Mini Camera** controls appear on the top of the **Document** window, allowing you to navigate your scene without having to have the full **Camera** controls visible (such as when you are using the **Material** room).



Mini Camera Controls.

The **Animation On/Off** control allows you to enable or disable automatic keyframe generation when you move or change rotation of a camera. The **Flyaround** camera view provides an animated view of your scene as a camera rotates around it while pointed at the center origin.

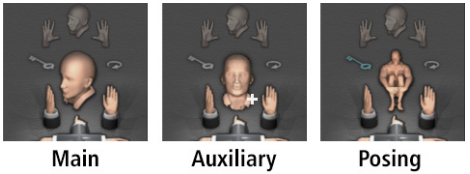
The **Mini Camera** controls consist of (from left to right) the **Frame Selected** and **Orbit Selected** buttons, and the **Trackball**, **Move XY**, and **Move XZ** controls. These function identically to their counterparts in the main **Camera** controls and are therefore detailed in this chapter.

The available 3D cameras are: **Main**, **Auxiliary**, **Posing**, **Face**, **Left Hand**, **Right Hand**, and **Dolly**. The available orthographic (2D) cameras are: **Left**, **Right**, **Top**, **Bottom**, **Front**, and **Back**. When you render stills or animations, the rendering takes place using the currently selected camera. Please refer to "Part 4: Rendering" on page 391 for more information on rendering. Each camera is discussed above.

The Main, Auxiliary, and Posing Cameras

The **Main**, **Auxiliary**, and **Posing** cameras are revolving cameras, which means they rotate about the center of the Poser workspace. By default, figures and props are placed at the center of the workspace. Moving figures/props does not alter these camera's positions. The **Auxiliary** camera provides a secondary camera for your use, such as when you are deciding which shot to render and want to explore possibilities without affecting your previous camera positioning/animation work

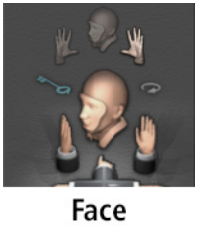
The **Posing** camera is similar to the **Main** and **Auxiliary** Cameras except that it rotates about the currently selected figure, not the workspace. If you select another figure, the **Posing** camera moves to that figure/prop.



Main, Auxiliary, and Posing cameras as displayed in the Camera Controls.

The Face Camera

The **Face** camera provides a close-up of the currently selected figure's face, allowing you to precisely adjust facial expressions and see your results in detail. This camera rotates around the currently selected figure's face and moves if you select another figure. This camera also works with animal figures. To switch to the **Face** camera, select your desired figure and click the **Face Camera** control.



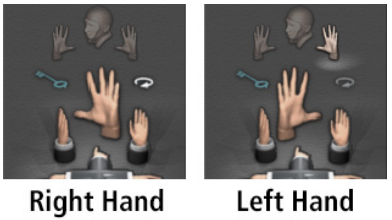
The Face camera displayed in the Camera Controls.

For the Face camera to work properly, be sure your figures' heads are all named "Head". This is not an issue for figures that were included with Poser but could be an issue for third-party content and custom figures you create yourself.

Left and Right Hand Cameras

Like the **Face** camera, you can zoom in on the left or right hand of the currently selected figure to fine-tune gestures and other hand positions. Hand cameras also focus on the currently selected figure. If the figure is an animal, the Hand cameras will

focus on the feet/paws/claws as appropriate. To switch to a hand camera, click the **Left hand** or **Right Hand** icon as appropriate.



Left and Right Hand cameras as shown in the Camera Controls.

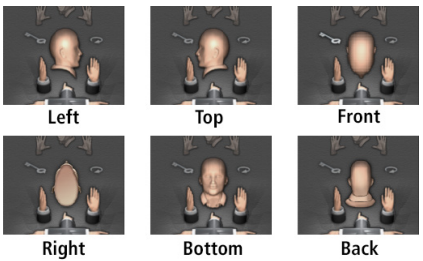
For the hand cameras to work properly, be sure your figures' hands are all named "Left Hand" and "Right Hand". This is not an issue for figures that were included with Poser but could be an issue for third-party content and custom figures you create yourself.

The Dolly Camera

The **Dolly** camera rotates about its own center independently of scene contents, meaning it can move around and between elements in the scene. If you want to emulate a motion picture camera, the **Dolly** camera is your best choice.

Orthographic Cameras

The **Left**, **Right**, **Top**, **Bottom**, **Front**, and **Back** cameras are orthographic cameras, meaning that they product orthographic projections. Orthographic projections makes objects appear flat (2D), without the perspective of 3D views. Orthographic cameras cannot be rotated, since they are permanently aligned to the X, Y, and Z axes in the Poser workspace. Because of this, they make excellent references for viewing your scene. Please refer to "About 3D Space" on page 857 for a general discussion about 3D views.



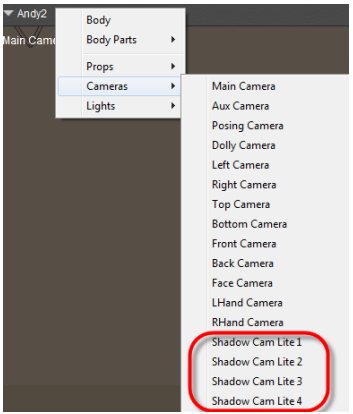
Orthographic cameras as shown in the Camera controls.

Shadow Light Cameras

Shadow light cameras are very useful for aiming lights and creating their shadows. Each light in your scene has one **Shadow Light** camera. Each shadow camera shares both XYZ location and aim direction with its assigned light. Poser uses these cameras to calculate shadows cast by the objects in each light's path. Positioning these cameras and/or adjusting their parameters/properties can affect how shadows appear in your rendered scenes. You can select these cameras using the **Select Actor** pull-down menu. Shadow cameras have a reduced set of properties/parameters (see "Camera Properties & Parameters" on page 251 for more information).



If you see poor depth map shadows in a portrait shot, or if you see warping or flickering shadows in animation, you can tweak the shadow cams to adjust the field of view to the parts of the scene that really matter.



Shadow Light cameras displayed in the Select Actor drop down menu.

Changing Cameras

To change a camera, use any of the following methods:

- Right-click the camera label in any **Document** window pane and choose one of the options in the **Camera View** submenu.
- Click the **Face**, **Left Hand**, or **Right Hand** icon in the **Camera** controls (see "The Camera Controls" on page 242).
- Click the **Select Camera** control in the **Camera** controls (see "Select Camera Control" on page 247).
- Select **Display > Camera View** using the Menu Bar, then selecting your desired camera in the **Cameras** pull-down menu.

Select Camera Control

Clicking and dragging the cursor over the **Select Camera** control cycles through the available camera views and changes the **Document** window or currently active view pane to the newly selected camera.



The Select Camera control.

Just above the main **Select Camera** control are three shortcut buttons for specific cameras. You can replace an existing camera shortcut with your currently selected camera by pressing **[OPT]/[ALT]** while clicking one of the **Select Camera** shortcut buttons. A shortcut for your currently selected camera will replace the previously existing camera shortcut.

Flyaround View

The **Flyaround** view places the currently selected camera on a virtual track above and away from the center of the Poser workspace and orbits around your scene, displaying all elements

within view. This is an excellent way to quickly see how your scene looks in 3D space. Once activated, this view remains active until toggled off. To toggle **Flyaround** on and off, click the control or make the selection using the **Cameras** pull-down menu.



The Flyaround Camera control.

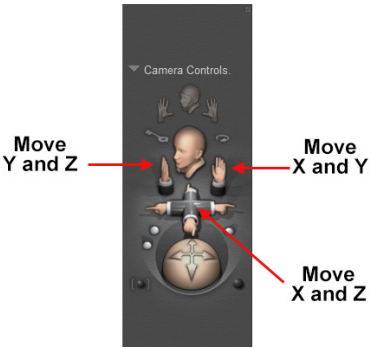
Positioning Cameras

In addition to selecting cameras, the **Camera** controls allow you to position your currently selected camera using one or more of the following controls. If you have more than one camera active (multiple **Document** window view panes), these controls will only affect the currently selected camera.

Camera Plane Controls

The **Camera Plane** controls constrain camera motion to specific 3D planes (axes), helping you move the camera with precision:

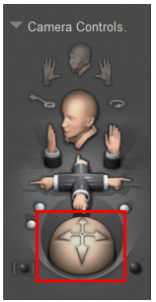
- **Move YZ**: The **Move YZ** control constrains camera motions to the up/down (Y) and front/back (Z) axes.
- **Move XY**: The **Move XY** control constrains camera motions to the side/side (X) and up/down (Y) axes.
- **Move XZ**: The **Move XZ** control constrains camera motions to the side/side (X) and front/back (Z) axes.



Camera Plane controls.

Rotation Trackball

The **Rotation** trackball tilts and spins the currently selected camera about all three axes. The **Main**, **Auxiliary**, **Posing**, and **Dolly** cameras rotate about the center of the Poser workspace. The **Posing** camera rotates around the currently selected figure. The **Face** and **Hand** cameras rotate about the respective actors (body parts) of the selected figure. You can also use the **Rotation** trackball by pressing **[OPT]/[ALT]** and dragging the cursor around the workspace using the **Document** window.



The Rotation Trackball.

Scale Control

The **Scale Camera** control works like a zoom lens. Click the control and drag right to zoom towards the camera's aim point (workspace, figure, or actor, depending on the camera). Clicking and dragging left zooms out, and vice versa.

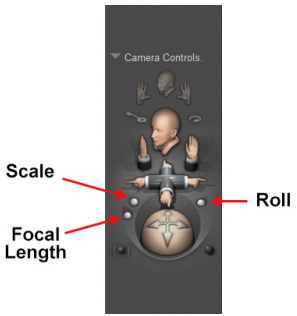
Focal Length Control

The **Focal Length** control increases or decreases the selected camera's focal length. Clicking the control and dragging right

increases the focal length, while clicking and dragging to the left reduces the focal length. You can also adjust the camera's **Focal Length** parameter in the **Parameters** palette.

Roll Control

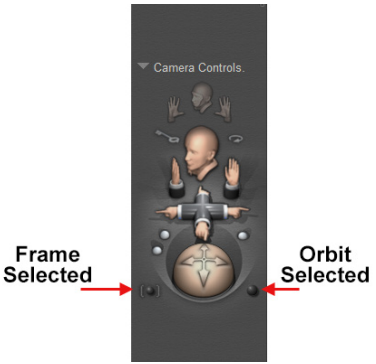
The **Roll Camera** control banks the camera to the left or right, tilting your view of the Poser workspace. Click the control and drag left or right to tilt the camera in the indicated direction.



Scale, Roll, and Focal Length camera controls.

Frame and Orbit Selected Control

Use the **Frame Selected** control to fit the camera view around the selected actor. When the **Orbit Selected** button is enabled, the camera will orbit around the selected object. When the **Orbit Selected** button is disabled, the camera will orbit normally.



Frame Selected and Orbit Selected camera controls.

Creating Cameras

You can create new revolving or dolly cameras using the **Object > Create Camera** menu option.

You can specify the type of camera you wish to create by selecting either Revolving or Dolly from the **Create Camera** sub-menu. A revolving camera rotates about the center of the Poser workspace, regardless of the position of objects within the scene. A dolly camera rotates about its own center, and can move around and between elements in the scene.

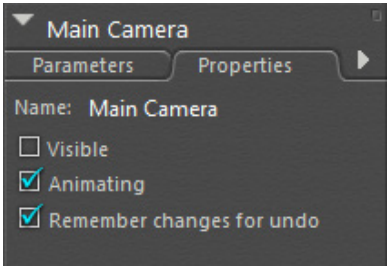
Camera Properties & Parameters

When you select a camera, its properties and parameters will appear in the **Properties** and **Parameters** palettes, respectively. To access a camera's properties and parameters in the appropriate palette when you do not currently have a camera selected, you can:

- Click your desired camera object if it is visible in the **Document** window.
- Use the **Current Actor pull-down** menu.

Camera Properties

Cameras have the following properties, available in the **Properties** palette.



Camera Properties.

- **Name**: The **Name** field displays the camera name. Enter a new name in this field if you desire.
- **Visible**: Checking the **Visible** checkbox makes the camera visible in the **Document** window, and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 or information on animating the **Visible** property. When cameras are visible, you can right-click to

display a context menu as described in "Cameras Context Menu" on page 87.

- **Animating**: Check the **Animating** box to have the selected camera's movements recorded as keyframes in your animation, or clear it to disable this feature. With this feature disabled, you can still move the camera but its movements will not be recorded as keyframes in your animation. Camera animation allows camera movements to appear as part of rendered movies, allowing for such techniques as follow shots, flyaround views, etc. Please refer to "Chapter 22: Animating with Poser" on page 447 for more information on creating animations. To enable/disable camera animation, open the **Properties** palette.

- When a camera is animated, your view of your scene changes over time, which can add realism and interest to your animation. Watch a movie and notice how often the camera moves. You can animate Poser cameras just like any other 3D object using keyframes and tween frames. Different cameras will animate differently, since they have differing centers of motion.

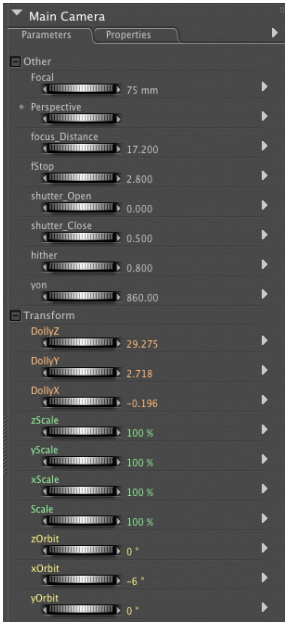


You can only use one camera per animation; you cannot switch cameras in mid animation. To do this, create separate clips then edit them together using video editing software.

- **Remember changes for Undo**: Checking the **Remember changes for Undo** checkbox specifies that any camera changes will be included in the Undo/Redo cache. Unchecking this checkbox means that the Undo feature will not apply to camera changes.

Camera Parameters

Like all parameter dials, clicking and dragging a dial to the right increases its value, and clicking and dragging to the left decreases its value. You can also click your desired parameter's numeric value to open a text field allowing you to directly type your desired value.



Camera Parameters.

Other Parameters

The **Other Parameters** section contains a variety of parameters to control the behavior of the selected camera. These parameters are as follows:

- **Focal**: The **Focal** parameter dial sets the camera's focal length. Smaller numbers give wider angles and will add more stretching and distortion as they decrease. Larger numbers give results like telephoto lenses, and result in less distorted but flatter images.

- **Perspective**: The **Perspective** parameter shifts the current camera's perspective without changing the camera's location. This can give the illusion that the camera is farther or nearer to objects in your scene. The Perspective setting is hidden, because it is interconnected with the Focal setting. If you adjust the Perspective dial, you will see a change in the Focal setting.

- **Depth of Field**: Widening the lens aperture of the camera allows you to achieve a **Depth of Field** effect. The farther away items are from the focal plane, the more blurred they will appear. Depth of Field can be individually configured for each camera.

  - **Focus Distance**: The **focus distance** dial controls the cross hair so that you can position the focus. Place the cross hair at the distance at which objects appear most

in focus. In Poser, focal distance for each camera is determined by a control object located within the scene. You can animate the control object like any other figure in Poser, by using keyframes to specify its change in position; Poser will interpolate the movement between keyframes for you. (For more information about animating using keyframes, please refer to "Chapter 22: Animating with Poser" on page 447.) Enter your desired value in the camera's **Focus Distance** field.



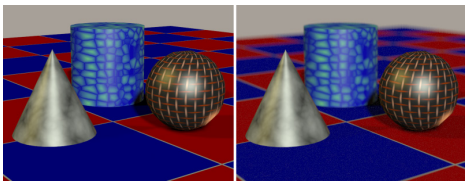
The Focus Distance control, with Alyson as the point of focus, and its render.



The Focus Distance control, with the car as the point of focus, and its render.

- **F-Stop**: The **F-Stop** number represents a lens aperture size. The larger the number, the smaller the aperture opening. Each number is multiplied by a factor of approximately 1.4 as the scale rises, giving standard values of 1.0, 1.4, 2, 2.8, 4, 5.6, 8, 11, 16, 22, 32, etc. Each change either doubles or halves the amount of light transmitted by the lens to the film plane. Basically, f-stop is calculated from the focal length of the camera lens divided by the diameter of the bundle of light rays entering the lens and passing through the aperture in the iris diaphragm. On a physical camera, this represents the lens focal length (see next bullet) divided by the f-stop value to determine the actual aperture size. The F-Stop setting affects the depth of field in Poser, just as it would in a real camera lens. Smaller F-stops increase depth of field and narrow the point of focus. Focus on the subject, and then enter the desired value in the **F-Stop** field.

The following images illustrate the Depth of Field effect.



Without depth of field (left); With depth of field (right).



Poser allows you to enable or disable Depth of Field for individual renders. In order for depth of field to render, you must enable the **Depth of Field** *option in the Render Settings dialog. Please refer to* "Chapter 19: Using The FireFly Render Engine" on page 404 *for details on how to do this using the FireFly Renderer.*



If the results of your Depth of Field settings are too grainy in the blurred areas, try raising the number of Pixel Samples. Doing so will result in a smoother effect, but increased render times.

- **Shutter Open**: The **Shutter Open** value represents the shutter opening time in fractions of a frame, where 0.0 is the beginning of the frame and 1.0 is the end of the frame. Unlike a real camera shutter, this one opens and closes instantly with zero elapsed time. Regular camera shutters, while extremely fast, require a small time interval to travel between the closed and open positions.
- **Shutter Close**: The **Shutter Close** value represents the shutter closing time in fractions of a frame, where 0.0 is the beginning of the frame and 1.0 is the end of the frame. Unlike a real camera shutter, this one opens and closes instantly with zero elapsed time. Regular camera shutters, while extremely fast, require a small time interval to travel between the closed and open positions. For example, setting a beginning time of 0.0 and an ending time of 0.5 means the shutter would be open for the first half of a frame.



The Shutter Open and Shutter Close settings only result in a visible effect when 3D Motion Blur is activated in the **Render Settings** *dialog. As the amount of time between Shutter Open and Shutter Close increases, the motion blur effect increases.*

- **Hither**: The **Hither** parameter controls the distance of the **clipping plane**. Objects (or portions thereof) closer to the camera than the hither distance will not appear in your view pane.
- **Yon**: The **Yon** parameter sets the farther range of the **clipping plane**. Objects (or portions thereof) farther from the camera than the yon distance will not appear in your view plane. The **Yon** parameter is only applicable with OpenGL hardware rendering.

Transform Parameters

When a camera is selected, you can use the parameter dials on the **Parameters** palette to precisely adjust that camera's position. The **Dolly**, **Posing**, **Face**, and **Hand** cameras have the standard 3D **Pitch**, **Yaw**, and **Roll** parameters, while the

Main and **Auxiliary** cameras have **xOrbit**, **yOrbit**, and **zOrbit** parameters. These parameters are measured in degrees.

XYZ Dolly

The **Dolly** parameter dials move the selected camera along the desired axis without altering its orientation, just like a movie camera on a dolly cart, as shown below.

- **DollyX**: The **DollyX** parameter moves the camera laterally. Increasing this value moves the camera to the right.
- **DollyY**: The **DollyY** parameter moves the camera vertically. Increasing this value moves the camera up.
- **DollyZ**: the **DollyZ** parameter moves the camera in and out. Increasing this value moves the camera in and out.

XYZ Scale

As mentioned above, camera scale functions like a zoom lens. The **Scale** control zooms the camera equally in all three axes. Using the parameter dials, however, you can scale in any amount using any combination of axes to create distorted effects. While this might give the same appearance as distorting the figures/props in your scene, scaling cameras only affects the selected camera; items in your scene are not affected. Decreasing scale values zooms in along the selected axis, and vice versa.

- **xScale**: The **xScale** parameter changes the camera's horizontal scale.
- **yScale**: The **yScale** parameter changes the camera's vertical scale.
- **zScale**: The **zScale** parameter changes the camera's depth scale.
- **Scale**: The **Scale** parameter dial changes the selected camera's scale equally along all three axes and functions in the same manner as the **Scale** camera control. If you have already selected unequal scales using the individual axis controls, the **Scale** dial/control preserves your previously selected ratios.

XYZ Orbit

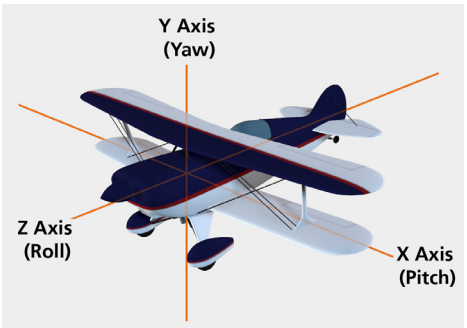
The **Orbit** parameters orbit the selected camera around the indicated Poser workspace axis. It helps to think of the selected axis as the center of a wheel with the camera being at the edge. The camera maintains its distance from the axis and remains pointing in the same direction relative to its starting point. Setting positive degrees of rotation in the **Orbit** parameter dials orbits the selected camera in a counterclockwise direction around the selected axis, and vice versa.

- **xOrbit**: The **xOrbit** parameter orbits the selected camera using the Poser workspace's X axis as the center of rotation.

- **yOrbit**: The **yOrbit** parameter orbits the selected camera using the Poser workspace's Y axis as the center of rotation.
- **zOrbit**: The **zOrbit** parameter orbits the selected camera using the Poser workspace's Z axis as the center of rotation.

Pitch, Roll, Yaw

These parameters rotate the **Dolly**, **Posing**, **Face**, and **Hand** cameras about their own axes. To illustrate this, let's use the example of a small plane with its X, Y, and Z axes labeled.



Pitch (Up or Down); Roll (Tilt); Yaw (Turn).

- **Pitch**: The **Pitch** parameter rotates the selected camera about its own X axis (up/down). A positive number pitches the camera up (the scene appears to pitch down), and vice versa.
- **Roll**: the **Roll** parameter rotates the selected camera about its own Z axis (tip left/tip right). A positive number rolls the camera to the left (the scene appears to rotate to the right), and vice versa.
- **Yaw**: The **Yaw** parameter rotates the selected camera about its own Y axis (rotate left/rotate right). A positive number yaws the camera to the left (scene appears to yaw to the right), and vice versa.

Pointing & Locking Cameras

As with any other object in your scene, you can use the **Hierarchy Editor** (see "About Groups" on page 690) to keep cameras pointed at certain other objects.

Pointing Cameras at Scene Objects

To point your camera at another scene object:

1. Select your desired camera using the **Current Actor** pop-up.
2. Select **Object > Point At** to open the **Choose Actor** dialog.

3. Choose your desired scene object in the list of actors (the camera can point at anything) and click **OK**.

The camera will point at the selected object and a **Point At** parameter dial will appear in the Parameters palette for that camera. Setting this parameter to 1 locks the camera on target, and 0 completely disables pointing. Intermediate values cause the camera to lag behind the object it's pointing at. This parameter allows you to create interesting effects when creating animations.

Disabling Camera Pointing

To disable camera pointing:

1. Select your desired camera using the **Current Actor** pop-up.
2. Select **Object > Point At** to open the **Choose Actor** dialog.
3. Choose **None** in the list of actors (the camera can point at anything) and click **OK**.

Locking Cameras

Once you have positioned a camera to your liking, you can lock it to prevent it from being moved. To lock a camera, select it as described above, then select **Object > Lock Object**. Selecting this option again toggles locking off.

Memorizing and Restoring Cameras

You can use the **Edit > Memorize > Camera** command to memorize the settings of the current camera. If you later want to return to that camera, choose the **Edit > Restore > Camera** command to restore the settings back to the camera that you memorized.

Camera Dots

You can save up to nine camera configurations using the **Memory** dots (described in "Memory Dots" on page 56). Each **Memory** dot retains the settings for all cameras in your scene. All **Memory** dots are saved with the application, so your saved camera configurations will be accessible in any Poser document loaded. You can also save camera settings to the **Library** palette as described below, which would allow you to use your **Memory** dots for other settings.

Saving Camera Sets

The **Cameras** category in the **Library** palette allows you to save camera positions and access them using a few mouse clicks. Camera positions are saved relative to the Poser workspace, not figures or other scene items. Saving camera sets saves all cameras; you cannot save one camera. As with any other

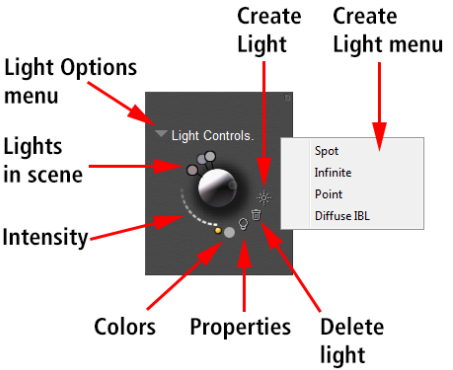
Library palette category, you can add subcategories to the **Cameras** categories. Please refer to "Chapter 2: Installing Poser" on page 12 for a description of the **Library** palette, and to "Maintaining Your Library Palette" on page 161 for information on adding items to it.

Chapter 12: Lighting

Lights add color to your scene, reveal cues in forms, enhance muscle contours, set moods, cast shadows, etc. Good lighting is a key element of getting your scene to look right when you render it. Lights work in renderings and in the Lit Wireframe and Flat Shaded preview modes (refer to "Chapter 6: The Display Controls and Menu" on page 105 for information about display styles). You can use as many lights as you need in your scene, with the only limitation being your system's resources. Poser improves the OpenGL preview of lights in your scenes. It automatically selects the eight brightest lights to display in the real-time OpenGL preview. You can also manually select which eight lights to preview in the Light Properties palette (see "Light Properties" on page 270).

Lights can also help you create effects. For example, you could add a reflection map to an element in your scene, causing it to direct light back at the source. Please refer to "Using the Group Editor" on page 681 or an explanation of material groups and to "Part 3: Materials" on page 280 for information on creating material shaders for your scene elements.

The **Light** controls appear as follows.



Light Controls.

Each light has customizable characteristics, such as rotation and revolution positions, color, and intensity (brightness). You can turn lights on or off, adjust how the brightness diminishes as you reach the edge of a light's range (the falloff), and specify whether or not a light casts a shadow. You can also animate lights to create effects such as lightning or flickering streetlights. As with any other Poser object, you can parent lights to scene elements to have the light move as the source element moves. By default, Poser scenes include three infinite lights.

When you add, remove, move, or adjust lights, the **Document** window, **Light** controls, and the selected light's parameter dials automatically adjust to show the light's new position/properties, allowing you to preview your changes in real time.

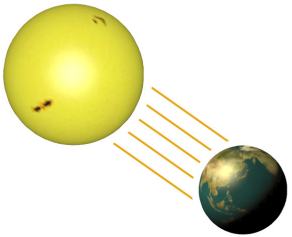
When you right-click on one of the lights in your scene, a context menu provides several different commands that allow you to perform several different functions. The commands shown in the light context menu are described in "Lights Context Menu" on page 85.

Light Types

Poser allows you to create four types of lights: infinite, point, spot and image based.

Infinite Lights

Infinite lights are comparable to the sun or moon shining on the Earth. Rays from infinite lights are parallel as they enter your Poser workspace. If you have multiple figures and/or props in your scene, infinite lights shine on each item equally. You cannot place any scene element beyond an infinite light's range, and no figure/prop can be lit differently than another.



Infinite Lights shine parallel, and equally on all items in your scene.

Point Lights

Point lights are similar to a light bulb, in that they emit light from a single source point outward in 360 degrees. These lights are ideal for times when you want an omnidirectional light source that can interact with objects and cast shadows in ways that an infinite light cannot. For performance reasons depth mapped shadows are not supported for point lights; point light shadows must be calculated using raytracing.

Spotlights

Spotlights cast light in a specific direction, throwing light along a cone-shaped path to create a classic stage spot effect. These lights are useful for illuminating specific objects or for creating lighting effects. Spotlights can increase rendering times.

Diffuse Image Based Lights (IBL)

Diffuse Image Based Lighting (Diffuse IBL) takes a light probe, which is ideally a 360 degree light distribution map captured in a single map, and illuminates the scene using that map. In Poser, only the diffuse component of the light is defined by the light probe. As this technique is based on complete light data for a given space, the lighting results are very realistic. In order to get realistic shadows when using an image based light, we recommend using Ambient Occlusion (see "Light Properties" on page 270). You must activate raytracing in the **Render Settings** dialog in order to render Ambient Occlusion effects.

To attach a light probe to the image based light, press the **Advanced Material Properties** button on the **Properties** palette (see "Light Properties" on page 270). Once in the **Material** room, you have the option of attaching simply a light probe image map, or a shader tree of any complexity, to the color channel of your Diffuse IBL.



Poser has the ability to apply the full functionality of its procedural shading system to an image map used as an image based light. See "Part 3: Materials" on page 280 for more information about the image node manipulations available using the shading system in the **Material** *room.*

Selecting Lights

You can select lights as follows:

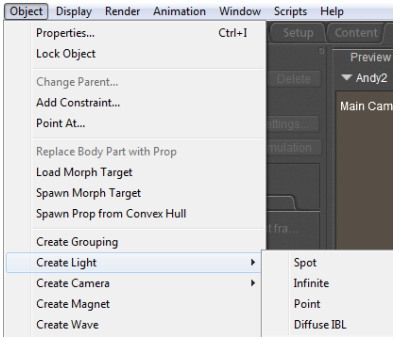
- Clicking one of the Lights in the **Light Position** indicator.
- Using the **Current Actor** pop-up menu.

Creating Lights

To create a light, click the **Create Light** icon in the **Light** controls, or click on **Create Light** in the **Light Options** pop-up menu. Your new light will appear in the **Light Position** indicator.



The Create Light icon.



Creating a light with the Object menu commands.

By default, Poser creates spotlights. To create a different type of light, select **Object > Create Light**, and select the type of light you wish to create from the pop-up menu that appears.

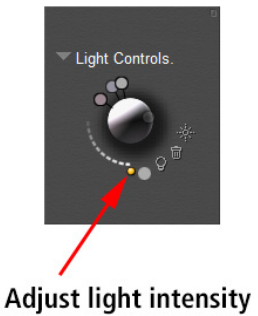
To change a light to another light type, select the new light and click the **Light Properties** icon (see below for information about light properties). You can also right-click the **Create Light** icon (in the box above) to access the light type menu.

If you select the Diffuse IBL light type on the **Properties** tab, you will then need to go to the **Material** room, select that light as the current actor, and apply an image map to use as the light probe. In the **Simple** tab, you can simply select an image map via the **Texture Manager**. In the **Advanced** tab, you would attach an image node or a complete shader tree to the color channel.

Adjusting Light Intensity

You can set a light's intensity using the **Brightness** control like a dimmer switch. Click and drag the brightness indicator to the left to dim the selected light, or to the right to brighten it.

You can also set the light's intensity using the parameter dials in the **Parameters** palette.



Slide the Light Intensity slider to adjust the brightness of a light.

For image based lighting, you must adjust the light intensity in the **Advanced** tab of the **Material** room. Take care when making these adjustments, so that your results will approximate the realism of the lighting conditions in the image map you have selected.

You can set a light's intensity to a negative value, thereby creating a "non-light" that will actually darken the affected area(s) of your scene. You can use this feature to create interesting effects.

Light Color

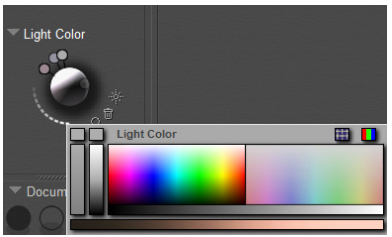
Light colors contribute to your scene's overall appearance and mood. Unlike paints, light colors multiply instead of mixing and adding to one another. For example, a red figure with blue lighting would appear black, not purple. If you don't want a light to affect the color of items in your scene, set that light's color to white or gray. Because of this relationship between scene items and lights, you might want to set your scene items' colors before setting lighting colors. Note that with image based lighting, you should generally use a white color, so as not to interfere with the light colors already contained within the image map.

To change a light's color, click the **Color** icon in the **Light** controls to open a standard Color Picker dialog. Make your selection, and your selected light will change to its new color.

Two icons appear in the upper-right corner of the Light Color picker. The first icon opens the Material Editor, where you can

add advanced material properties to the light. The other icon opens your standard system color picker.

You can also set a light's color using the parameter dials in the **Parameters** palette. For image based lighting, you can use the **Advanced** tab of the **Material** room to plug any image node into the color channel of that light. Doing so will allow you to see the effects of the image based light on any surface in the **Material** room, which will give you an exact idea of how those surfaces will be shaded in the final render.



Changing the color of a light.

Delete Light

Select the light you wish to delete and click the **Delete Light** icon in the **Light** controls, or click on **Delete Light** in the **Light Options** pop-up menu.

Aiming Lights

Spotlights and infinite lights are directional light sources, and therefore can be aimed with relation to your scene. You should finish posing your figures and positioning your props before aiming your lights. Doing this in reverse will cause your scene elements' appearances to change as you move them. For example, rotating a figure 180 degrees causes illumination falling on its front to fall on its back. You may need to re-aim your lights to continue working. Some traditional artists place a bright light above and to the left of a figure. Using a strong single light source lets you see shading on distant and oblique surfaces, contributing to the scene's depth and curvature. You may want to read books on lighting, including using lights in photographic studios, to give you ideas on using lights to enhance your Poser scenes.

If you import a background image or movie, you should set your lights to mimic the lighting in the background. For example, if your background image shows a strong light coming from the figure's right, don't light the figure from the left. This will help

preserve consistency between your scene and the background and help integrate both elements together. Ideally, when working with backgrounds, you should have the background look like part of your scene. If your scene is a room using an image of a brightly lit background visible through the windows, you should have most of your lighting streaming in through the windows to blend the room and its contents with the outside world and lend realism to your scene.

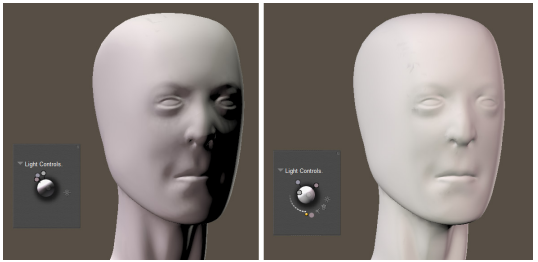
You can aim lights using any of the following methods:

- Using the **Light Position** control (see below).
- Moving a light's indicator in the **Document** window (see below).
- Using the **Editing** tools (**Rotate** and **Twist** for infinite lights, and **Rotate**, **Twist**, **Translate/Pull** and **Translate In/Out** for spotlights. Please refer to "The Editing Tools" on page 184 for information on using the **Editing** tools).
- Using the selected light's parameter dials in the **Parameters** palette.
- Using the **Object > Point At** ("Point At" on page 212) or **Object > Set Parent** ("Changing a Parent" on page 231) menus.
- Using the desired light's **Shadow** camera, as described in "Shadow Light Cameras" on page 246.

As discussed above, infinite lights always shine into the scene. Aiming an infinite light sets the location from which the light shines (such as setting the sun's position in the sky). When aiming spotlights, you're setting both the angle at which the light shines and the light's position in 3D space.

Using the Light Position Control

The globe in the center of the **Light Position** indicator represents your Poser scene in 3D space, and the light dots represent the positions of each of the lights within your scene. These dots can be moved in two ways with respect to the globe: Rotation and Revolution. Rotation keeps the light in the same physical position relative to the scene, but adjusts its direction around its own local axis. Revolution moves the light around the globe to a new position relative to the scene, while keeping the light pointed at its parent, as shown in the figures below. You can select which positioning method you wish to use by clicking either **Rotate** or **Revolve** in the **Light Options** pop-up menu. The check mark indicates which option is currently selected. Then click and drag your selected light dot(s) to change their position and/or direction. Revolving these dots to different positions around the globe adjusts the lighting angle, as shown below.



Adjusting light positions.

Clicking anywhere in the Light Position control selects the nearest light.

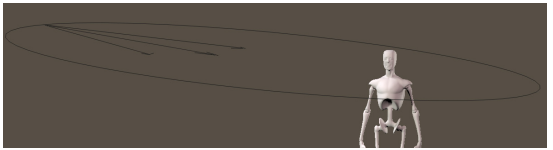
Using Light Indicators

When you select a light, Poser displays a light indicator describing your selected light's position in the **Document** window. In some cases, viewing the indicator from a different angle can help you visualize your light's position. You can switch Camera views and/or zoom to view light indicators from different angles. Additionally, you can adjust a light's position by clicking and dragging the light indicator in the actual scene.

The **Light** controls will reflect any changes you make to the light indicator's position. Note that image based lights have no light indicators, as they surround your entire scene.

Infinite Light Indicators

An infinite light's indicator appears as a ring surrounding the currently selected figure/prop. This ring serves as the equatorial line of an invisible globe with the light shining down on your scene from the point on the equator indicated by the arrows, as shown here.

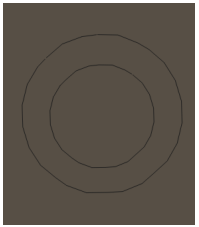


Infinite Light Indicators.

Then viewed from oblique angles, the circle appears as an ellipse, helping show if the light is in front of or behind the figure. The light is not actually on the edge of the indicator. The indicator simply represents a larger globe encompassing the entire Poser workspace. You can click and drag a light indicator to reposition the selected light.

Point Light Indicators

A point light's indicator appears as a small outlined circle, depicting the light's position in 3D space (remember, you can position point and spotlights in 3D space, unlike infinite lights), as shown here.

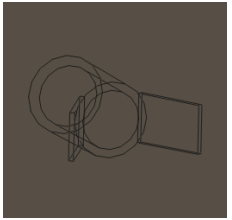


Point Light Indicators.

As point lights emit light equally in all directions, there is no direction indicator as with a spotlight.

Spotlight Indicators

A spotlight's indicator appears as the outline of a spotlight in your Poser workspace depicting both the light's position in 3D space and the direction the light is pointing, as shown in this image.



Spotlight Indicators.

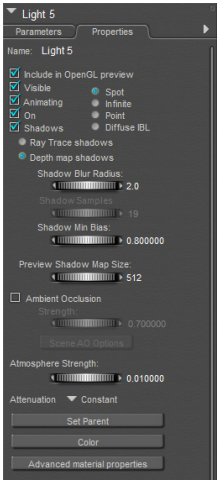
Clicking and dragging a spotlight's indicator moves the light around the scene.



You may want to use orthographic views (Left, Right, Top, Bottom, Front, or Back) to move Spotlight indicators, since doing so constrains the spotlight's motion to two dimensions (YZ if using the Left or Right views, XZ if using the Top or Bottom views, and XY if using the Front or Back views). Using perspective views can move your spotlight in oblique directions, causing unexpected lighting effects.

Light Properties

Light properties help you fine-tune your lighting effects. To access a light's properties, select the light and either click the **Light Properties** icon in the **Light** controls or select **Object > Properties**. You can also access light properties in the **Properties** palette.



Light Properties.

Depending on the light type that you select, you can control some or all of the following light properties:

- **Include in OpenGL Preview:** By default, Poser displays the eight brightest lights. Users can optionally choose which eight to display. By providing real time previews of eight user-selectable lights, posing and lighting is faster and yields better results. Use this option to select each light you want to illuminate the scene preview. Mip Map support has been enabled for enhanced performance when previewing large textures. Together, these real-time preview engine enhancements let the user view larger textures and offer more complete scene previewing when setting up lights If your scene has more than eight lights, you can check or uncheck this option to include or exclude the current light from the preview display.

- **Visible**: Checking the **Visible** checkbox makes the light visible in the **Document** window, and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 for information on animating the **Visible** property.

- **Animating**: Checking the **Animating** checkbox allows you to animate the light just as you would any other Poser object. Animated lights can also have different settings in various keyframes. For example, you could create a red spotlight on

your figure's left side that orbits overhead and turns blue. When you rendered this animation, you would see your figure's color changing and shadows moving with the light. You cannot animate lights that are turned off (see above).

- **On/Off**: Checking the **On** box turns the light on, just like flicking its switch. Clearing the checkbox turns the light off. As a shortcut, you can also press **OPT**/**ALT** while clicking a light in the **Light** controls to toggle the selected light on or off.

- **Spot/Infinite/Point/Diffuse Image (IBL)**: Check the appropriate radio button (**Spot, Infinite, Point** or **Diffuse Image (IBL)**) to make your selection. Spot, infinite, point and image based lights are discussed above.

- **Shadows**: Checking the **Shadows** checkbox enables you to choose one of the following two options:

  - **Raytrace Shadows**: Selecting **Raytrace Shadows** enables raytracing of shadows. Traditionally, raytracing results in clear, hard-edged shadows. However, Poser offers a method for softening the shadow edges, thus adding more realism to your raytraced shadows. You can control this effect using the **Shadow Blur Radius** dial (see below).

  - **Depth Map Shadows**: Selecting **Depth Map Shadows** enables depth-based shadow mapping. If you are using displacement maps, we recommend you select this option rather than raytracing, for greater accuracy. Enabling this option activates both the following dials:

    - **Shadow Blur Radius**: All shadows have a blurry region around their edges. The **Shadow Blur Radius** parameter specifies the radius of this blurry region. By default, this dial is set to a low value. Raising the blur radius increases the soft shadow edge effect.

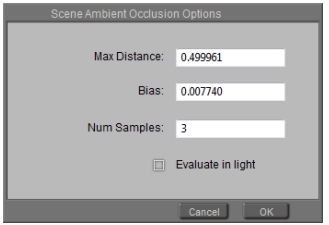
    - **Shadow Samples**: The **Shadow Samples** parameter controls the smoothness of shadows. The default value is equivalent to earlier Poser versions that used a fixed quality. Lower shadow sample settings render faster but may produce grainier shadows with a random dither. Higher shadow samples reduce the graininess that can sometimes be seen in soft raytraced shadows. As a general rule, the larger your **Shadow Blur** Radius setting is, the more you will need to increase the **Shadow Samples** to get a smooth result.

    - **Shadow Min Bias**: The **Shadow Min Bias** parameter specifies how far to shift samples towards the light source to prevent self-shadowing of objects.

- **Preview Shadow Map Size**: Sets the amount of detail in the shadows that are displayed by the preview render. Default is 512. Higher values will make the shadow preview

more detailed and accurate but will increase usage of system resources.

- **Ambient Occlusion**: Checking the **Ambient Occlusion** checkbox enables Ambient Occlusion for the selected light. Ambient occlusion adds realism to your scene by approximating the way light and shadows act in real life. It helps bring out details in creases and corners. This option provides the advantage of calculating Ambient Occlusion effects on all surfaces within the scene, without having to attach an Ambient Occlusion node to every material. Enabling this option activates the following controls:
  - **Strength**: The **Ambient Occlusion Strength** dial specifies the degree to which Ambient Occlusion effects will darken the occluded surfaces within the scene.
  - **Scene AO Options**: The **Scene Ambient Occlusion Options** button provides access to the global set of Ambient Occlusion parameters. These parameters are described in the Ambient Occlusion node section under "Raytrace Nodes" on page 357.



Scene Ambient Occlusion options.

- **Atmosphere Strength:** The **Atmosphere Strength** dial and field allow you to specify the strength of atmospheric (volumetric) effects. This attribute is used in conjunction with the **Root Atmosphere** node, which is described in "Root Atmosphere Node" on page 331.



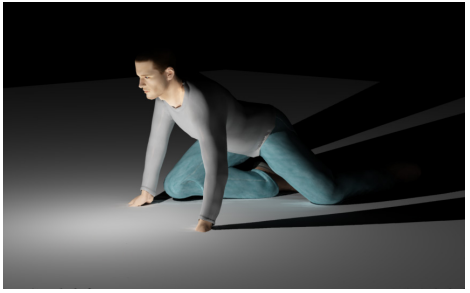
Atmosphere Strength control.

- **Set Parent**: Clicking the **Set Parent** button allows you to make the light a child of another element in your scene.

- **Color**: Clicking the **Color** button opens the Poser Color Picker, allowing you to set the light's color.
- **Advanced Material Properties**: Clicking the **Advanced Material Properties** button will automatically take you to the **Material** room, with the current light active in the **Shader** window's **Advanced** tab. Please refer to "Advanced Shader View" on page 308 for more information about the **Advanced** tab of the **Shader** window, and to "Root Light Node" on page 330 for more information about the root **Light** node attributes.
- **Attenuation**: (Enabled for Spot lights or Point lights only): This setting controls how bright or dark a spot light or point light gets based on the distance away from the light source. Options for spot and point lights are:
  - **Constant**: Behaves the same as Poser 7 and earlier lights. This setting is predictable and controllable. The Start Distance and End Distance parameters are very useful for setting how close or far the light reaches.

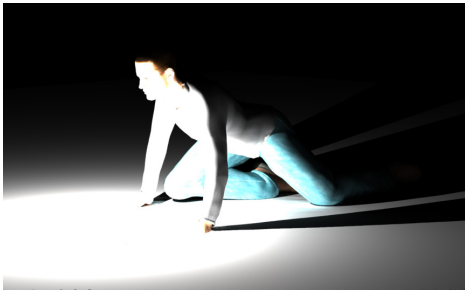


Constant Attenuation.

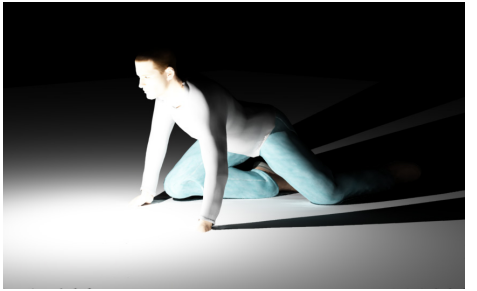


Constant Attenuation with Tone Mapping.

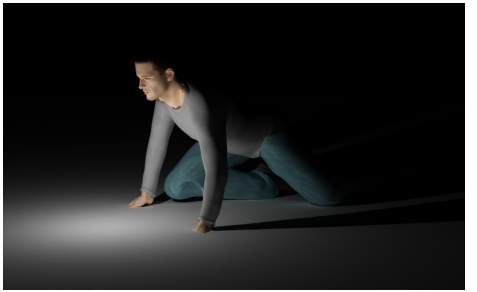
- **Inverse Linear**: Use this option for lights that are more physically correct. Objects that are close to the light source are infinitely brighter (not exponentially, but linearly). In other words, of Object B is twice the distance from the light as Object A, then Object B receives half as much light as Object A. This option allows some artistic freedom without being as touchy as Inverse Square (described next).



Inverse Linear Attenuation.

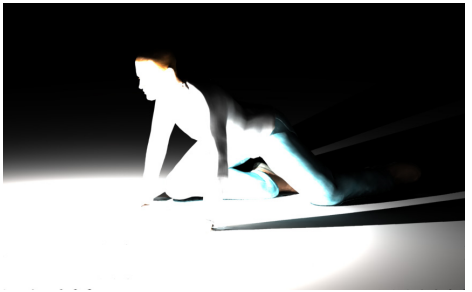


Inverse Linear Attenuation with Tone Mapping.

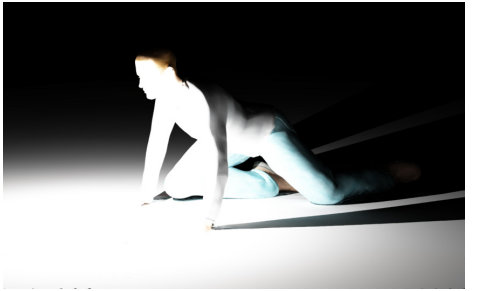


Inverse Linear Attenuation with Tone Mapping, Adjusted.

- **Inverse Square**: This option provides physically correct lighting that is more dramatic, and harsher than Inverse Linear. The light brightens exponentially as you get closer to the light source. If Object B is twice the distance from the light as Object A, it receives 1/4 the amount of light.



Inverse Square Attenuation.



Inverse Square Attenuation with Tone Mapping.

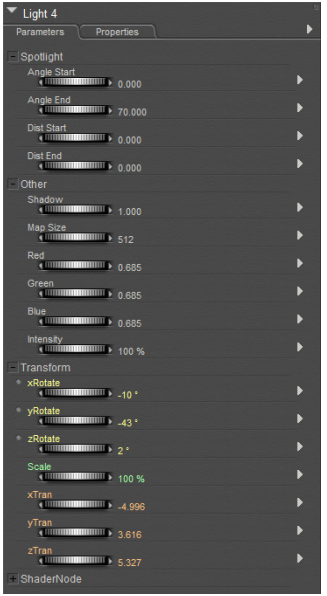


Inverse Linear Attenuation with Tone Mapping, Adjusted.

- **Evaluate in Light**: When checked, includes Ambient Occlusion in render calculations relating to light and shadows.

Light Parameters

Be sure to select the light you wish to work with before using the parameter dials to avoid accidentally changing settings for the wrong light. Once you've adjusted a light the way you want it, you can use the **Lock Object** command (see "Lock Object" on page 211) to prevent accidental changes. Lights have the following parameters, available in the **Parameters** palette:



Light Parameters.

Angle Start/End (Spotlight Only)

The **Angle Start** and **Angle End** values allow you to specify how a spotlight's light "falls off" as you approach the edge of the cone of light projected by the spotlight. The **Angle Start** parameter specifies the amount of light (in percent) present at the start of the cone of light projected by the spotlight, and the **Angle End** parameter specifies the percentage of intensity present at the cone's end.

Distance Start/End (Spotlight Only)

As you know, light fades with distance from its source. The **Distance Start** and **Distance End** parameters specify the distance from the light source (in grid units) where the spotlight's intensity begins to drop (fall off), and the distance in grid units when the spotlight is no longer casting light, respectively.

Shadow

Poser lights can cast shadows, if you enable this option using the selected light's **Cast Shadow** property in the **Properties** palette as described above. Shadows add depth, realism, and dramatic effects to your still or animated scenes. To change the cast of a light's shadow, move the light.

Spotlights cast shadows based on the spotlight's angular range, meaning that tighter spotlights produce cleaner shadows. By contrast, infinite lights adjust the view to fill the screen with all objects that cast shadows. Because of this, if you render a close-up of a scene with many figures and/or props (especially widely spaced items), the shadow map will not contain much information.



Each light has a shadow camera, available using the Current Actor pull-down menu. Advanced users can aim these cameras as desired. Each light's shadow map contains shadow information for the scene as viewed through that light's shadow camera.

The shadow-related parameter dials are:

- **Shadow:** Use the **Shadow** parameter dial to specify the selected light's shadow strength. A setting of 0 disables cast shadows for the selected light, while a setting of 100% casts a dark shadow. You can animate shadow strength over time.
- **Map Size:** The **Map Size** parameter dial sets the size of the selected light's shadow map in pixels (shadow maps are square). Poser uses image maps to apply shadows to objects in the scene, and applies these shadows during rendering. Larger map sizes increase the accuracy and detail of shadow maps, but at a cost in memory and render time. For example, each 1024x1024 map requires about 4MB of

space, while a 2048x2048 map requires 16MB. You cannot animate the shadow map's size.

XYZ Rotation

Adjusting these dials adjusts the direction in which the light is pointing. For example, think of the sun's path across the sky throughout the day and how it appears farther north or south with the changing of seasons. When the **xRotate** and **yRotate** dials are set to 0 degrees, the light aims at the Poser workspace from the front. **ZRotate** is only significant when the **xRotate** and **yRotate** settings are not 0,0 or 180, 180. In all cases, the figure is in the default position.

- **xRotate**: The **xRotate** parameter rotates the selected light about the X axis.
- **yRotate**: The **yRotate** parameter rotates the selected light about the Y axis.
- **zRotate**: The **zRotate** parameter rotates the selected light about the Z axis.

Scale

The **Scale** parameter dial allows you to scale a light's indicator. This does not affect the light itself.

Red, Green, Blue

The **Red**, **Green**, and **Blue** dials specify the amount of each of the three primary colors to add to a light's final color. A value of 1 means that the selected color is fully added, and 0 means that color is not included at all. Using these three primary colors to create a final color is called RGB lighting (Red, Green, Blue). Each of the three colors can have 256 values ranging from 0 to 255. This gives us 256 red, 256 green, and 256 blue shades to work with, or 256^3 (16,777,216) total possible colors. Parameter dial values correspond to RGB values as follows:

- Parameter dial 0 = RGB color value 0 for the selected color.
- Parameter dial 1 = RGB color value 255 for the selected color.

Intensity

You can control your light's intensity using the **Brightness** control or the **Intensity** parameter dial. A setting of 0% means the light is fully off, and a setting of 100% means the light is completely on (at full brightness/intensity).

XYZ Translation (Spotlight Only)

The **Translation** dials allow you to specify a spotlight's precise location in 3D space by specifying grid coordinates. As previously described, spotlights emit light from their location in 3D space, meaning that objects "behind" the light are not illuminated.

Saving & Loading Light Sets

You can save light sets to the Library, allowing you to reuse them in later scenes. Light sets have the file extension *.LT2 and are saved to the **Lights** Library. Please refer to "Maintaining Your Library Palette" on page 161 for information about adding items to the **Library** palette.

Memorizing and Restoring Lights

You can use the **Edit > Memorize > Lights** command to memorize the settings of the lights in your scene. If you later want to return to those light settings, choose the **Edit > Restore > Lights** command to restore the settings back to those that you memorized. If you delete lights after you memorize light settings, the deleted light(s) will not be restored.

Animating Lights

Lights can be animated like other Poser objects using keyframes and tween frames. Please see "Chapter 22: Animating with Poser" on page 447 for information about animating within Poser.

Part 3: Materials

Chapter 13: The Basics of Materials

Each figure/prop has its own unique material list containing individual materials within that list. You can see this for yourself by creating a Poser scene with two or more figures/props and opening the **Material** room.



Two figures in a scene.

This sample scene has two figures (Alyson Casual and Ryan Casual). The **Material** room therefore displays the following selections:



Materials found in Alyson and Ryan Casual.

As you can see, the two figures in this image each have different materials lists. Each object in a Poser scene has its own list of materials, which is different for each object. These lists of materials behave like a multi/sub-object material list/table.

Why Multi/Sub-object Materials?

The purpose of having more than one material per figure (multi/sub-object materials) is to provide each polygon with a different or shared material property with other polygons. This gives you control over material properties down to the polygon level.

A side benefit is that multi/sub-object materials also allow great flexibility. For example, if you have a scene with multiple figures, each figure can have its own skin and clothing colors. Selecting one figure or prop displays only the materials assigned to just that figure/prop, which organizes your materials and prevents possible confusion. Also, if you save a figure or prop to the **Library** palette, its materials will be saved as well, thereby preserving your work.

Color

Color is easy. By applying a color to an object or material group, you are essentially dumping a bucket full of paint on that object or group. Color goes a long way toward establishing the final look of your object but it doesn't tell the whole story. For

example, painting an apple red is obvious, but the simple red color does not contain the other colors and shades, nor does it portray the apple's small imperfections and other features. Thus, a material that simply uses color ends up looking plastic.

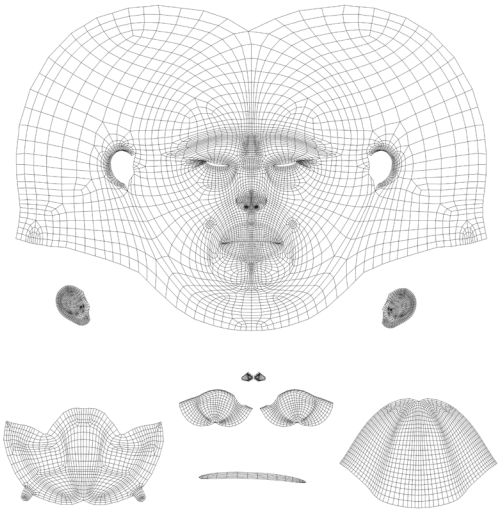
About Maps & Templates

Look at your own skin. Notice the differing colors, hairs, veins, moles, and other features. Look at any object. Is it smooth or rough? Opaque or transparent? If transparent, does it have the same transparency all over or in portions? Is it matte or glossy? Is it reflective? What sort of texture or pattern does it have? Now look at the objects around you. They all have different material properties. How can you capture these properties in your 3D objects? One answer is **mapping**. Each object in your Poser scene can have its own maps, which are used for specifying various attributes. Maps provide an efficient way to add advanced effects to your objects. For example, if you had to model every wrinkle, mole, eyelash, hair, or other feature, your object's polygon count (number of polygons) would quickly become prohibitive. In fact, most of the 3D figures and other objects you see in feature films have relatively low polygon counts and make extensive use of mapping.

As you know, most maps are two-dimensional representations of 3D surfaces. Each point on the Earth's surface that lies within the map's area of coverage corresponds to a point on the map. Depending on the area being mapped and the mapping method used, the map may or may not resemble the actual surfaces it represents. This effect is called **distortion** and is most easily seen on world maps created using the Mercator projection. We could spend a lot of time on this, but the important things to remember are that:

- Maps are 2D representations of 3D surfaces.
- Each coordinate (location) on the 3D surface corresponds to a location on the map.
- The map may or may not resemble the 3D surface.

Here is a sample map template for a Poser figure:



A texture template.

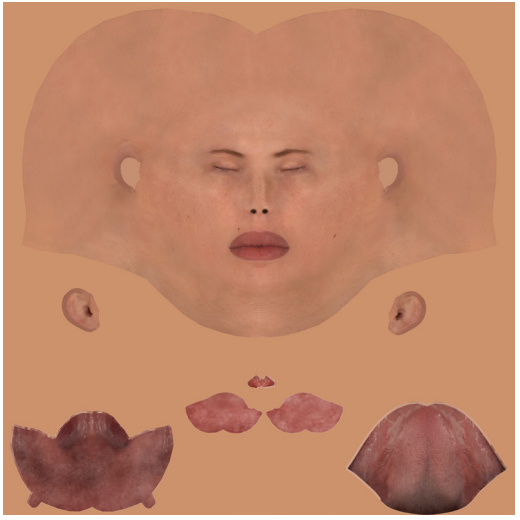
The grid-like lines on the map correspond to the polygons on the figure mesh object itself. Blank areas do not correspond to any part of the figure and are ignored. Thus, you can "color outside the lines" without ill effect, since only color falling within the lines actually appears on the figure.

Maps used for figures normally use the UV coordinate system where the upper left corner corresponds to 0,0 and the bottom right corner to 1,1. Thus, the exact center of the map would be at 0.5,0.5. For any given object, you start with the blank template shown above and modify it depending on the type of map you are creating.

Alyson 2 and Ryan 2 use the same templates and texture maps as Alyson and Ryan.

Texture Map

All map types (bump, transparency, etc.) are 2D representations of 3D objects, and texture maps are no exception. Texture maps are the primary way of making 3D objects look real. Texture maps make skin on your Poser figure look real, add realistic grain to wood, etc. The following example shows a texture map for one of the Poser figures:

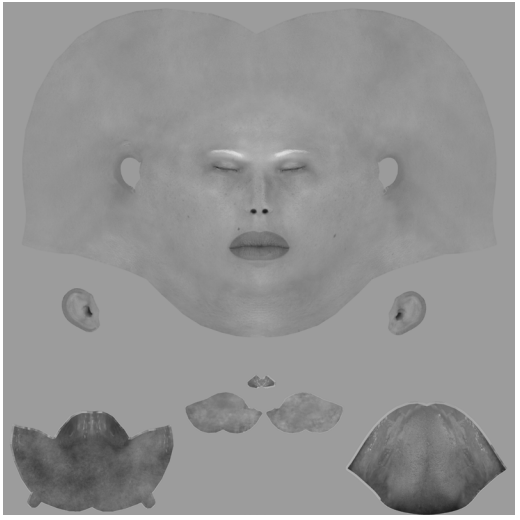


A texture map.

You can use shader elements such as color to get an effect without using texture maps, but you won't be able to precisely place features where you want them (such as painted fingernails on the ends of the fingers).

Bump Maps

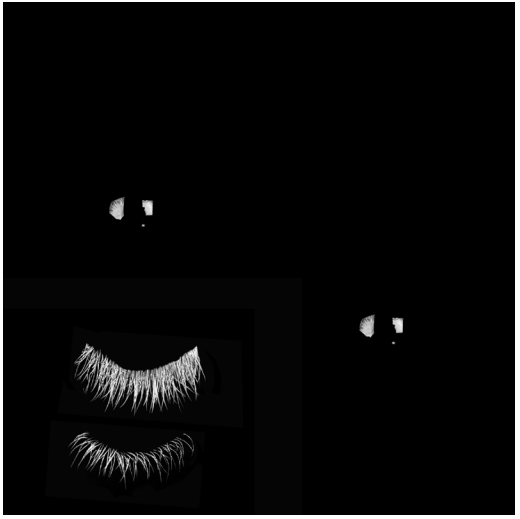
A **bump map** is used to simulate roughness on a surface. Bump maps are grayscale images where dark gray/black signifies lower areas and bright white/light gray areas signify higher areas. They work by shifting the object's normals to give the illusion of depth. On a human figure, a bump map allows you to simulate wrinkles and other imperfections/textures.



A bump map.

Transparency Maps

A transparency map is like a bump map in that it is a grayscale image. Transparency maps regulate the amount of opacity in a given location. The darker the color is, the greater the transparency, and vice versa. Here's a sample transparency map for eyelashes.



A transparency map.

Look at the bump map, above. The lighter colored areas around the eyelashes indicate that they should have height, that is, they should stand out from the figure itself. The texture map (see "Texture Map" later in this chapter) specifies the lashes' color as rough smears. The transparency map above allows only those portions of the texture map corresponding to the lighter areas to show through. The combined effect is eyelashes that stick out from the eyes. Where there are no eyelashes, you can see the skin beneath them. This is a great example of how combining maps can create very realistic effects.

Reflection Map

Reflection maps are also grayscale. As the name implies, they are used to differentiate areas of varying reflectivity. The use of reflection maps allows you to, for example, create a patterned mirror where the patterns have a higher or lower amount of reflection.

Displacement Map

Displacement maps are very similar to bump maps but with a key difference: Instead of simply shifting normals, displacement maps actually move (displace) an object's geometry. Thus, displacements provide more "real" depth than bump maps. Displacement occurs at render time, meaning that objects will look smooth until rendered.

Procedural Shaders

Poser's FireFly rendering engine supports the use of **procedural shaders** (or **shaders** for short). Shaders consist of a **root node** that can be modified by adding additional **nodes** that modify one or more of the root node's values. A node's output can modify one or more nodes, and you can use more than one node to influence another. You can include all of the maps we've discussed above when building shaders. You can also create realistic materials that don't require any maps at all, or you can have other nodes modifying any maps you decide to use. Thus, shaders are a second method of creating materials that may or may not integrate maps. Please refer to "Chapter 14: The Material Room" on page 296 for information about Poser's **Material** room.

Creating Character Textures

Creating your own textures for figures and/or props requires a solid grasp of the concepts explained in "Appendix C: 3D Basics" on page 857 and knowledge of one or more 2D graphics tools such as Adobe Photoshop. The process of creating textures is very similar if not identical for many 3D applications. While it's impossible to cover the entire process in this manual, we can give you enough information to understand the basics and begin creating your own maps.



This section covers creating maps. Please refer to *"Part 3: Materials" on page 280* *for information about applying maps to shaders.*

Creating Texture Templates

If you use the figures and props that came with Poser (or if you buy figures from most third-party vendors), they probably come with one or more ready-made texture maps and one or more blank templates. If you need to create a new texture template, you'll need to follow a process that is roughly similar to the following:

1. Create your mesh object in your preferred 3D modeling application.
2. Export the mesh in a format supported by Poser (see "Importing 3D Objects" on page 779 for a list of supported formats).
3. If your 3D modeling application supports exporting your mesh object with UV mapping data, be sure to do this, as this will probably create your template for you. Please refer to your 3D modeling application documentation for information.
4. If your exported object does not have UV information, you'll need to use an application such as UV Mapper (http://

www.uvmapper.com) to create the UV information and a blank template that can be used for any sort of map (texture, bump, transparency, reflection, displacement, etc.). If you use a third-party application to create texture templates, please refer to that application's documentation for information on using that application. Also, should you require technical support, please contact the application's creator or vendor. Smith Micro cannot provide support for third-party applications.

Creating and Using Texture Maps

This subsection contains a brief tutorial on creating texture maps.

If you've seen some computer-animated movies lately, you were probably astounded by the realism of the characters; this high level of believability was achieved using high-quality 3D models and image maps. The fact is, image maps can make or break a model's believability. What may surprise you is that Poser can generate equally realistic results for you. We are going to give you some pointers on how you can do this yourself using Poser and a 2D graphics application such as Adobe Photoshop. The primary topic for this tutorial is texture maps, however the same principles apply to all types of image maps. Please refer to "About Maps & Templates" on page 283 for information about the various types of image maps.

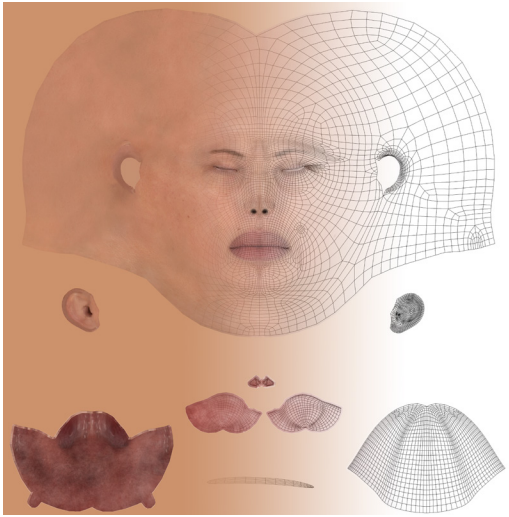


Poser supports texture resolutions up to 8192 x 8192 pixels. For optimum performance in 3D software and gaming engines, try to create your texture maps at standard resolutions that are a power of 2. Standard sizes are 512, 1024, 2048, 4096, and 8192.



Poser's Material room can create complete materials without needing any image maps. To obtain precise results, however (such as a tattoo in a specific location), you will need to include image maps in your shaders for texture, bump, transparency, etc. Image maps are added to nodes using the Material room. Also, the Face room can create custom head textures for the Poser figures from images or even from scratch!

A texture map looks like a skinned 3D model spread out onto a flat surface. Imagine peeling an orange and flattening the peelings on a table- that's a texture map. When creating a texture, remember that it will ultimately be wrapped around your object and that you'll need to pay special attention to the edges, which will be seams when the texture is rendered.



A texture map is painted over a template.

Texture makers use a UV map (template) to place the texture's major pieces. A UV map provides grid-like lines that correspond to the object's geometry, provides a coloring book approach to making textures, and only requires a good graphics editing software package such as Adobe Photoshop. Like a coloring book, items not placed properly within the grid lines render askew, and anything bleeding over the edge of the grid does not appear at all when rendered. This is one time where you definitely want to stay between the lines! The texture maps for the figures and props that are included with Poser are located on the content CD. Because realistic human textures are the hardest to achieve, we decided to describe creating one for this section. The same principles apply to any texture you are creating, be it a brick wall, animal fur, a plant- any figure or prop for which you want to use texture mapping.

The brief explanation that follows is courtesy of Ms. Syyd Raven, who created the textures used by several default Poser figures:

> *"Save often and under different filenames to preserve each step of your work.*
>
> *Maps of 1500-3000 pixels provide an ideal realism/performance balance. Some third-party textures can be 4000 pixels or more, however these can slow Poser down because they require additional computing resources."*

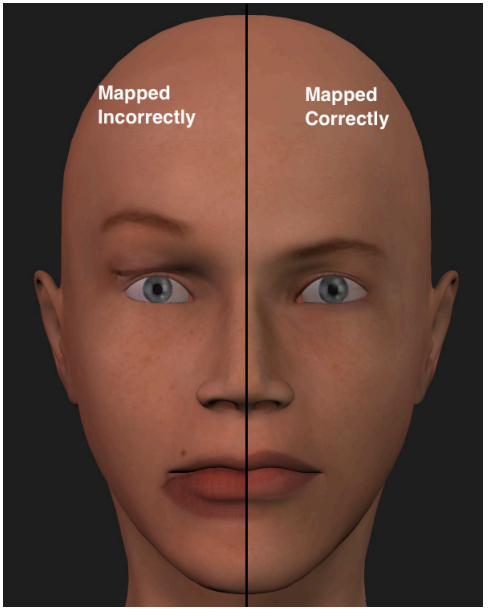
The figure used for these renders requires two maps, one for his head, and one for his body. Different Poser figures may use one or two texture maps, depending on the figure. The following sections address each map separately, and the same principles apply to figures that only use one map.



As discussed above, creating maps is an advanced process that can require one or more third-party tools. Smith Micro cannot provide support or additional information on creating texture maps beyond the technical aspects that directly involve Poser. The material presented in this section is for informational purposes only.

The Head Map

- Photos used for the basis of your texture should roughly match the final texture map size.
- Work on one side at a time.
- Set the photograph's opacity to approximately 50% so you can use the underlying template to align it; scale, rotate, and clone individual facial features to perfectly fit the map.
- With your image editor running, launch Poser and apply the head texture to the figure:
  - Set the figure's material color to white and highlights to black in the material editor.
  - Render the model with white lighting, no shadow, and antialiasing enabled to test texture alignment.
  - Test various morph targets on the face to verify that the texture remains in alignment.



- If the texture does not align properly on the template, it will also not align properly on the model.

- Make changes in your image editing software and test render in Poser as many times as you need.
- Once you are satisfied with your map, mirror the completed side by copying and pasting into a new layer and flipping the new section.
- After mirroring the texture, you may notice a line down the center. Remove this line by cloning an area with a matching color, cutting and pasting small photo pieces from the original source image, using the blend tool, or any combination of these methods.
- Change and add various details (lines, moles, etc.). No face is perfectly symmetrical!
- Continue expanding the skin to a bit beyond the template edge.
- While testing, rotate the head to see the ear and side of the neck; you will need to pay close attention to these areas to ensure that there are no seams.
- Cut out and place individual teeth, giving the front six (top) and eight (bottom) the most detail. Realistic teeth are somewhat gray/yellow, not white.

- Photograph a tongue and apply it directly to the map. Pay attention to the deep grooved center line; this adds credibility to the texture when the model's mouth is open.
- The inner mouth looks reminiscent of a rib cage surrounding lungs.
- Lachrymal glands (tear ducts) have wetness and roundness.
- Take close-up photos of eyes.
- Have the model hold their eyes wide open to show the whites and roundness of the iris.
- Make the veins thin and not overly red to avoid bloodshot-looking eyes.
- The Body Map

The body's fine details (hair, moles, etc.) require larger maps to avoid blurring and pixilation. Many third-party body maps are double the size of the corresponding head map.



A body texture map.

- It's difficult to use complete photos for textures since they will not align correctly. Size and rotate working images or photos using separate layers.

- Lay out the entire body first, without worrying about matching edges to get major portions in place, then finesse the edges with ever-increasing detail.
- Male maps require more detail than females because of body hair.
- Photograph small areas, treating arms as 4-sided objects; concentrate on elbow creases.
- Male necks can include beards or stubble, which can be problematic due to different resolutions between the head and body textures.
- Nipples can be tricky due to low resolution and may require fine-tuning, especially on female maps due to breast morphs.
- Hands are also important; get close-ups of both sides.
- Take care to include hand veins on the final texture as well as creases that match the model's geometry.
- Use the same map for the left and right hand, then add asymmetrical features. Repeat this for the feet.
- Cut individual fingernails and toenails from your photographs and fit them into the template.
- Make sure you test all your work-in-progress in Poser.
- When the body is complete, correct the head and body color to make them the same shade/hue. Writing down your color values can be a big help.

Creating and Using Bump, Reflection, and Transparency Maps

To be fully realistic, many textures also need transparency and bump maps. For example, the eyelash area template needs to be white where you want the object or eyelash visible. Consequently, you will start with a black background and draw in white where you want the eyelashes to appear when rendered. A graphics tablet works well for this, since eyelashes require a natural curved line that tapers to a point, which can be hard to achieve with a mouse. If you don't own a graphics tablet, you can begin with a very large map and reduce it to the proper size later. The larger map will make it easier to draw the lines with accuracy.

Bump maps add further realism to skin pores, scars, or moles. For photorealistic skin, it's imperative to deal with major landmarks (moles, birthmarks, etc.) using a bump map. The quickest way to create bump maps is to copy the finished texture, desaturate it (that is, remove all the color leaving only the

black and white components), and invert it. Then convert it to grayscale. This reduces the file's size and memory requirements.

Poser allows you to adjust the bump maps' height, so it's a good idea to design them with very high contrast (or the most bump). Most graphics packages have automatic contrast controls; this is a great way to quickly get the widest range of bump for your maps. If needed, you can decrease the bump height within Poser before render time.

White areas of the bump map are high, and black areas are low. In order for your texture to make a plausible map, you will have to invert it before you can use it. If you forget to do this, it may take you a while to figure out why your test renders look a bit odd. A good example of this would be whiskers pushing in instead of outward.



Bump maps simply disturb an object's normals. If you apply a bump map to a sphere, the surface will seem rough while the edges remain smooth. Poser's Material room contains a displacement channel, allowing you to use bump maps to actually alter the geometry. For example, applying a displacement map to a sphere would make the edges appear rough.

Once you've adjusted the contrast and desaturated your texture, you can start modifying it to suit your particular needs. Go ahead, give it a shot: You might be pleasantly surprised with your results!

Putting It All Together

The following image demonstrates the results you can achieve by combining the various types of maps.



A completely textured figure.

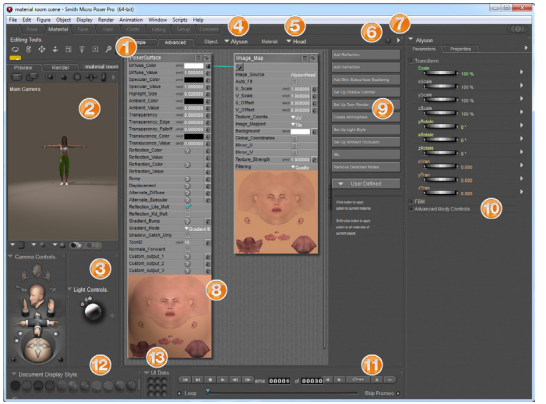
Chapter 14: The Material Room

Poser's **Material** room is a very powerful tool for creating and editing procedural shaders for the content in your scene. The **Material** room is designed from the ground up to provide the ultimate in power, flexibility, and ease of use by artists and animators. You don't need to be a programmer! The **Material** room gives you ultimate control over the appearance of your Poser scenes.

The **Material** room allows you to describe the material properties of your objects' surfaces by giving you full control over every aspect of shading a surface, from the surface color to complex lighting interactions.

In this chapter we will explore the **Material** room's basic building blocks. For a more detailed look at working with shaders and nodes in the **Material** room, please refer to "Chapter 15: Working with Nodes" on page 315 and "Chapter 16: Material Room Nodes" on page 325.

Access the **Material** room by clicking the **Material** room tab at the top of the Poser workspace. The **Material** room appears as follows.



The Material Room.

The number of palettes and options that you see in each room depends upon your screen resolution. At higher resolutions, the default work spaces display more palettes, while at lower resolutions you see fewer palettes:

The **Material** room offers two options for working with surface materials: the **Simple** and **Advanced** view tabs. By default,

the Simple view of the Material Room is displayed when you first start up Poser. This allows new users to get familiar with editing Materials before diving into the Advanced settings of the **Material** Room. The **Simple** tab is actually a less complex front-end for the **Advanced** tab, and allows users to apply and modify materials by means of a few basic controls. For more advanced users, the **Advanced** tab offers a powerful tool for defining material properties using shaders and nodes.

Poser's **Material** room contains the following items at 1280 x 960 resolution. Less items will appear at lower resolutions, and more options will appear at higher resolutions.

- **Eyedropper Tool** (1): The **Eyedropper** tool appears with the **Editing** tools. Enabling it and clicking an object in your scene opens that object's shader tree for editing in the **Shader** window.
- **Document Window (2)**: Please refer to "Chapter 5: The Document Window" on page 72 for information about the **Document** window.
- **Light Controls (3)**: Please refer to "Chapter 12: Lighting" on page 261 for information about the **Light** controls.
- **Object List (4)**: The **Object List** functions similarly to the **Current Actor** menu and has the following options: **Props** (includes strand-based hair and dynamic cloth), **Lights**, **Figures**, and **Background**.
- **Current Material List (5)**: The **Current Materials** list displays all of the material groups in the currently selected figure/prop. Poser organizes materials by figure/prop, thereby avoiding confusion when assigning materials and allowing you to, for example, assign different eye or skin colors to each figure. This method of handling materials is referred to as **multi/sub-object materials** and is discussed in more detail in "Chapter 13: The Basics of Materials" on page 281.
- **Material Room Help (6)**: The **(?)** icon at the top right of the **Shader** window opens the **Material** room Help document. This HTML document contains information about using nodes and shaders to define surface material attributes.
- **Options pop-up menu (7)**: The **Options** pop-up menu is available from the **Advanced** tab of the **Shader** window, allows you to add, cut, copy, paste, select, and deselect nodes. For convenience, this can be also accessed by right-clicking within the **Advanced** tab.
- **Shader Window (8)**: The **Shader** window contains two tabs, for Simple or Advanced Material definition techniques. The **Simple** tab allows you to easily modify various attributes of your selected material, including Diffuse Color, Highlight, Ambient, Reflection, Bump and Transparency. The **Advanced** tab is where you build **shaders**, which consist of a **root node** and as many connected **nodes** as

you want. Nodes can modify other nodes or the root node. Please refer to "Chapter 15: Working with Nodes" on page 315 and "Chapter 16: Material Room Nodes" on page 325 for more information about working with shaders and nodes.

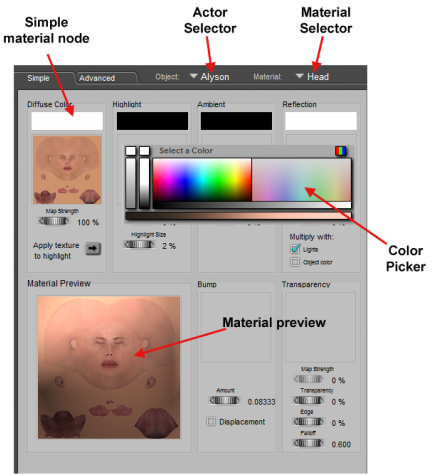
- **Wacro Drawer (9)**: The **Wacro Drawer** allows you to select from ten predefined shortcuts that cover various material setup tasks. For more information about the **Wacro Drawer**, please refer to the description of the **Advanced Shader View** later in this chapter.
- **Parameters/Properties Palette (10)**: Please refer to "The Parameters/Properties Palette" on page 192 for information about the **Parameters/Properties** palette.
- **Animation Controls (11)**: Please refer to "Using the Animation Controls" on page 450 for information about the **Animation** controls.
- **Document Display Styles (12)**: Allows you to select one of several different display styles for the elements in your scene. See "Chapter 6: The Display Controls and Menu" on page 105 for more information about the various display styles.
- **Pose, UI and Camera Dots (13)**: Allows you to store figure poses, user interface settings, and camera settings for retrieval at any time until you close your Poser document. See "Memory Dots" on page 56.

Navigating the Shader Window

The question mark at the top right corner of the Shader window opens the Material Room Workflow help page. This document provides information on creating and connecting shader nodes, frequently used nodes, and advanced material attributes.

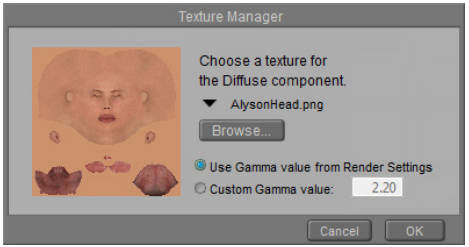
Simple Shader View

The **Simple** tab of the **Shader** window provides you with easy to use controls for adjusting various material attributes. Each of these attributes, and how they can be modified, are discussed in detail below.



Elements of the Simple material view.

For all attributes in the **Simple** tab, clicking in the **Texture Preview Slot** will bring up the **Texture Manager** dialog. Here you can preview and select a previously used image map from the pop-up list, or browse for a new map.



The Texture Manager.

Note that when accessing the **Texture Manager** from the **Simple** tab, you have the ability to select both images and movies. In the **Advanced** tab, the image and movie nodes are separate, so the **Texture Manager** enables you to select one or the other depending on which node you are using. Click the **OK** button to load the image map. A preview of your selected map should appear in the appropriate texture preview slot of the **Simple** tab.

When you select an image from the Texture Manager, you can also select one of two options for Gamma correction:

- **Use Gamma value from Render Settings**: This is the default option. By default, the texture map will use the global gamma correction settings as defined in the Render Settings dialog.

- **Custom Gamma Value**: Choose this option if you want to override the global gamma correction settings for this texture. Then enter the gamma correction setting in the Custom Gamma Value field.

The **Map Strength** dial adjusts the degree to which that image map affects the surface material. Note that the **Map Strength** dial directly controls the texture strength parameter on the image map nodes, which can be seen on the **Advanced** tab. For more information about using and creating various types of image maps, please refer to "About Maps & Templates" on page 283.

The image map pop-up list in the Texture Manager provides a historical list of path names for previously used image maps and movies. This list facilitates quick image selection; it does not indicate that these files are currently loaded into memory.

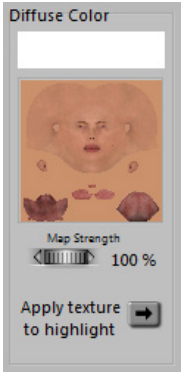
A **Caution** symbol (exclamation point in a triangle) will appear at any point when the surface attributes you are working with are too complex to be edited in the **Simple** tab. For example, this would be the case if a procedural shader node were attached to the diffuse color input. Whenever the **Caution** symbol appears, it is an indication that you need to use the **Advanced** tab for full access to this attribute's configuration parameters. Click the **Caution** symbol to switch to the **Advanced** tab.



Caution symbols appear when advanced settings are applied.

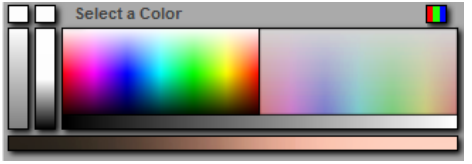
Diffuse Color

The Diffuse color is the primary surface color of the current figure or prop. If there is no texture map applied to the figure, the Diffuse color will be the figure's only color (not considering the effect of any colored lights). In a high quality rendering, when a texture map is loaded the Diffuse color tints the texture map. If you don't want the texture map to be affected by the Diffuse color, leave the Diffuse color set to white (the default color).



A diffuse color map applied to a material.

To change the Diffuse color, click on the **Color Slot** at the top of the Diffuse component area. This will bring up the Poser Color Picker, where you can select your desired color. If you wish to access the system Color Picker, simply click on the RGB bar at the top right corner of the Poser Color Picker.



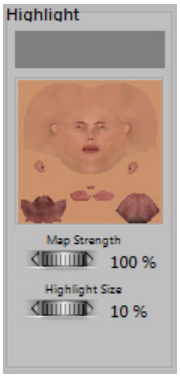
The color picker.

If you choose to have highlights on a textured surface, you might want to consider using the same map for Highlights as for Diffuse. When you have a texture map applied to the Diffuse component, pressing the **Apply texture to highlight** button will also apply the same texture map to the Highlight component. If you have a different texture map already loaded for the Highlight component, checking this box will override it and apply the texture map from the Diffuse component.

Highlights

The Highlight component corresponds to the Specular root nodes on the **Advanced** tab, and controls the object's highlight. Highlights are bright areas appearing where the light is reflected directly toward the camera. You can select a highlight color, apply a texture map, and adjust the texture map strength, as described above. In daylight and under most room lights,

highlights are white. To complement the lighting environment you've set, select a color similar to your main light.

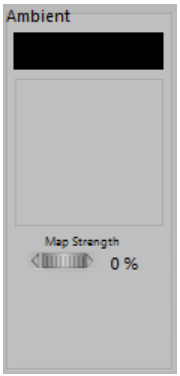


Highlight settings.

The **Highlight Size** dial allows you to determine the size and intensity of your material's specular highlights. Smooth surfaces have sharper specular highlights, whereas rougher materials should have softer highlights. On the dial, higher values result in larger, softer highlights for a duller, more matte effect, and lower values result in smaller, sharper highlights for a shiny, more polished effect.

Ambient

In Poser, you can set the Ambient color for each figure or object individually. An object's Ambient color is the color it emits equally in all directions. It simulates an ambient (overall room) lighting contribution. Unlike the other color properties, it acts without taking into account any light positions or colors. In other words, even if all other lights are turned off, the material will continue to emit the Ambient color. Thus, using an Ambient color on a surface can reduce the effect of shadows on that surface.

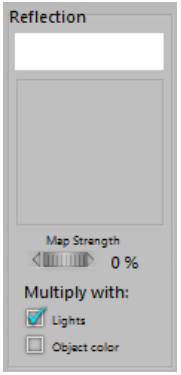


Ambient settings.

The Ambient color mixes with the other lighting properties. Too much ambience flattens the detail of an object, because it looks the same regardless of how the surface interacts with lights in the scene. If you want to turn ambient light down or off, set the Ambient color to gray or black. If you want more intense ambient light, set the Ambient color to white or a bright color. Loading an image map into the Ambient component will cause that image to function in the same way as an Ambient color. The Ambient color selection, texture map selection, and Map Strength control all function as described above.

Reflection

Reflection makes a figure or object direct light back at its source, giving it a reflective appearance. Poser offers two methods for applying Reflection to your scene. The first is to use a Reflection map, which is a 2D texture applied to a virtual sphere that surrounds your Poser workspace. The texture is then reflected from the workspace and onto your object. This method is best for scenes requiring subtle reflections, as it renders much quicker than raytracing, but results in somewhat less accurate reflection calculations. The other method is to use Raytraced Reflection, which is calculated using the raytracing rendering technique. This method is ideal for scenes containing objects with highly reflective qualities, such as chrome or mirrors, as raytracing yields extremely accurate reflections. However, using this method will increase your render times.



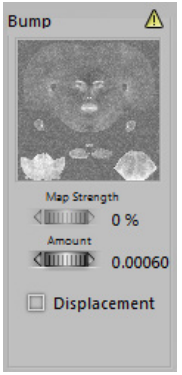
Reflection settings.

Reflective Color is a tint that is added only when a Reflection map is applied. Use the **Reflection Color** option to create dramatic effects in your renderings. To make a highly reflective object appear more vivid, use a variation of the object's color. If the object's color is particularly bright, you may want to use a darker tint of the same color. For an unusual tint, use a color that is distinctly different from the object's color. The **Map Strength** dial adjusts the **Texture Strength** parameter on the Reflection map node on the **Advanced** tab, and determines to what degree the Reflection map will affect the material.

The **Multiply with Lights / Object color** checkboxes directly control the **Reflection Lite Mult** and **Reflection Kd Mult** checkboxes on the **Advanced** tab. For more information about these options, see "Root Material (PoserSurface) Node" on page 325.

Bump

A Bump map is a special image, wrapped around the object, that works with the scene lighting to give the appearance of 3D texture on an otherwise smooth object. Bump maps can be used on individual objects or parts of a figure to emulate any manner of textures, from wrinkles and pores in skin, to raised patterns in clothing or props, to cracks and bumps in stone.



Bump settings.

You can load Bump maps using the texture preview slot and the **Texture Manager**, and adjust the Bump map strength with the **Map Strength** dial, as described above. The **Amount** dial specifies the amount of Bump, in units specified in the **General Preferences** dialog. Higher values yield more Bump effect, or rougher surfaces, while lower values yield less Bump and smoother surfaces. The **Amount** dial corresponds directly to the **Bump** attribute on the **Advanced** tab.

Note that Bump maps simply disturb an object's normals. Thus, if you apply a Bump map to a sphere, the surface will seem rough while the edges remain smooth. Poser's **Material** room contains a Displacement channel, which allows you to use Bump maps to actually alter the geometry of the surface. For example, applying a Displacement map to a sphere would make the edges appear rough, as well as the surface. The **Displacement** checkbox in the **Bump** attribute enables the **Displacement** attribute on the **Advanced** tab, replacing the Bump effect with actual Displacement. With Displacement enabled, the **Amount** dial specifies the amount of Displacement rather than the amount of Bump.



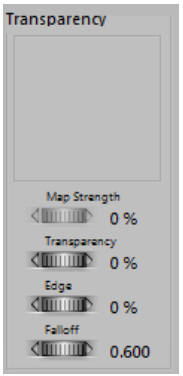
The strength of bump and displacement maps is expressed in real world units (whichever unit is set under **Edit >General Preferences**). *Please note that with the default unit of Feet very small values already yield a strong bump or displacement effect.*



For more advanced users, adding a Normal Map can add yet more realistic surface details.

Transparency

Transparency allows light to pass through a figure or object, so you can see through it. The higher a transparency value, the more of the surrounding environment is visible through the object's surface. If no light is reflected on an object, 100% Transparency and Edge settings make it invisible.



Transparency settings.

When a Transparency map is applied to an object, its texture interferes with the transparency of the object. For example, a checkerboard map results in an object that is alternately transparent and solid. You can thus use textures as Transparency maps.

The **Transparency**, **Edge**, and **Falloff** dials work together to determine how an object's transparency behaves.

The **Transparency** dial affects the transparency of the part of the object facing the camera, particularly toward the center of the object. Higher Transparency values yield greater transparency.

The **Edge** dial affects the transparency of the object's edges specifically. A high Edge value makes the object very transparent on its edges. For most renderings, you'll want to use a Transparency value that is higher than the Edge value.

The **Falloff** dial determines the rate at which the transparency becomes more opaque as you approach the edges of an object. For a real world example, look at a transparent object such as a drinking glass. The edges of the glass are less transparent than the rest of the surface. This is where the transparency of the glass "falls off". In Poser, you can vary this falloff behavior. A smaller value renders a sharper edge appearance, while a larger value renders a more gradual falloff. If the Transparency and Edge values are the same, there is no falloff in the rendering.

Normal and Gradient Bump Maps

A normal map is an image, wrapped around the object that works with the scene lighting to give the appearance of 3D texture on an otherwise smooth object. Normal maps can be used on individual objects or parts of a figure to emulate any manner of textures, from wrinkles and pores in skin, to raised patterns in clothing or props, to cracks and bumps in stone.

Note that normal maps simply replace an object's normals. Thus, if you apply a normal map to a sphere, the surface will seem rough while the edges remain smooth. Poser's **Material** room contains a **Displacement channel**, which allows you to use displacement maps to actually alter the geometry of the surface. For example, applying a displacement map to a sphere would make the edges appear rough, as well as the surface.

To load a **Normal Map**, from the **Material Room > Material Palette, Advanced** tab, connect the **Image Node** containing a normal map to the **Gradient Bump** channel on the **Poser Surface Node**. The channel value controls how much influence the normal map has on the surface. Higher values yield more effect, or rougher surfaces, while lower values yield less effect and smoother surfaces.



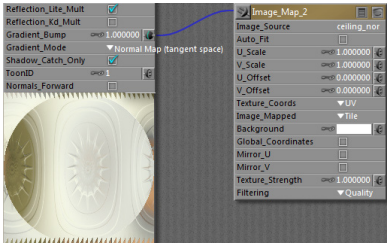
You can use Gamma Correction to adjust the amount of surface influence from the texture. For more information about assigning gamma correction to an image source, see "Gamma Correction Per Texture" on page 433.

Next, select the type of normal map from the **Gradient_Mode** pull-down menu according to how the normal map was exported from the application it was created in. Select from the following options.

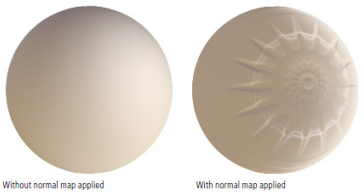
- **Normal Map (Tangent space):** Tangent space normal maps have a mostly blue appearance. The normals in a tangent space map are always considered "up" even if it is not true in world space.
- **Normal Map (Object space):** Object space normal maps are rainbow-colored in appearance. The normals are pointing in their actual directions.
- **Gradient Bump**—Legacy option for Poser gradient bump maps.



Poser 4 and previous versions used our proprietary gradient (.BUM) file format for mapping bumps. Poser Pro now supports .BUM file usage as follows: First, in the Material room, create an IMAGE MAP node and load your .BUM file into that node. Then, connect the image map node with the BUM file to the root node's GRADIENT BUMP attribute.



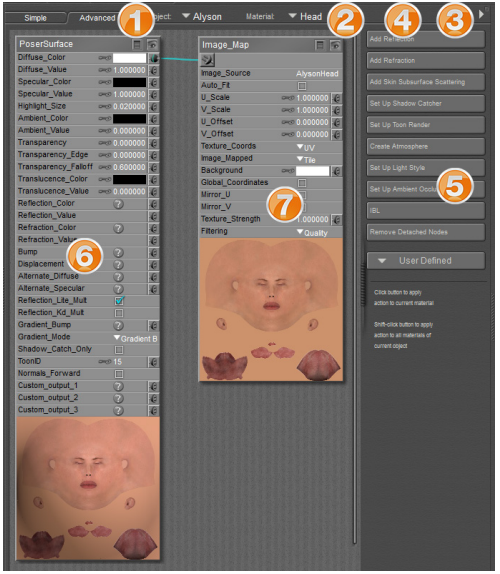
Gradient bump maps.



An object without, and with, a normal map applied.

Advanced Shader View

The **Advanced** tab of the **Shader** window is where you build shaders by working with nodes. Please refer to "Chapter 15: Working with Nodes" on page 315 and "Chapter 16: Material Room Nodes" on page 325 for more information about shader nodes and how they function within Poser.



The Advanced shader view.

The **Shader** window's **Advanced** tab contains the following elements:

- **Object menu (1)**: The **Object** menu functions similarly to the **Current Actor** menu and has the following options: **Props** (includes strand-based hair and dynamic cloth), **Lights**, **Figures**, and **Background**.

- **Material menu (2)**: The **Material** pull-down menu lists all of the materials available for the currently selected actor. Poser uses Multi/Sub-object materials, which means you will only see the materials assigned to the currently selected figure/prop in this menu. Please refer to "Chapter 13: The Basics of Materials" on page 281 for information about Multi/Sub-object materials.

- **Options Menu (3)**: Clicking the arrow on the right side of the **Shader** menu opens the **Options** menu for the **Material** room. You can also open this menu by right-clicking in any blank area within the **Shader** window or by clicking any node input (see "Chapter 15: Working with Nodes" on page 315 and "Chapter 16: Material Room Nodes" on page 325).

- **Title Bar (4)**: You can reposition the **Shader** window using its title bar.

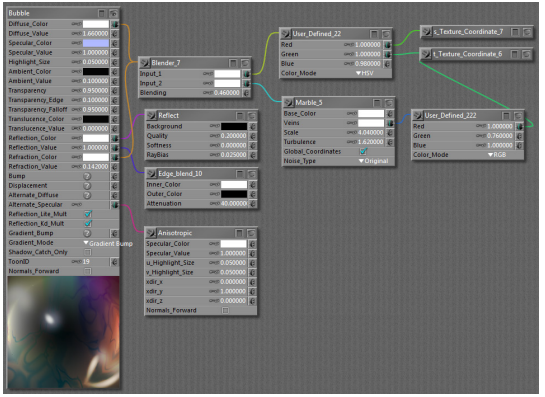
- **Wacro Drawer (5)**: The **Wacro Drawer** allows you to select from ten predefined shortcuts that cover various material setup tasks. See the "Wacros" section below for specific information on these shortcuts.

- **Root Node (6)**: The root node for the currently selected object or material group appears on the left side of the **Shader** window.

- **Nodes (7)**: Additional nodes also appear in the **Shader** window.

Shaders

A shader is a combination of nodes working together to create the final desired color, pattern, and texture -- in short, the look for your 3D objects. Every shader consists of a root node with a different number of attributes depending on the type of root node (Background, Material/Hair, Light or Atmosphere) being used. Each of these attributes can have one or more linked nodes that dynamically controls that attribute's value or color. You can either create materials from scratch or load a pre-made material. Saving a material saves that materials' shader tree, and loading a material also loads its shader tree. Also, if you load a pre-made material, you can modify it at will to create a whole new look. Please refer to "Root Nodes" on page 325 for a detailed description of the root nodes.

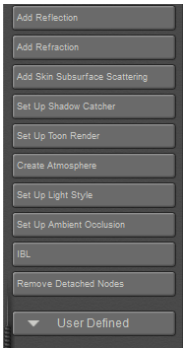


Using nodes to build a shader.

Wacros

Wacros are easy-to-use scripts designed to complete specific tasks within the Material room. The **Wacro Drawer** comes with ten predefined Wacros, each of which accomplishes a basic material setup task or process--often with the click of a single button. You can save time by using Wacros for some of the more common tasks you might wish to undertake in the **Material** room. Wacros all act upon the root node for the selected object or material. For more information on the various attributes on the root nodes, please see "Root Nodes" on page 325.

Poser also supports user defined Wacros, which you can write using Python scripting, and then place in the Runtime\Python\poserScripts\Wacros\UserDefined folder within your Poser installation folder. Your Wacros will then appear in the **User Defined** pop-up menu. Please see "Part 8: PoserPython" on page 836 for more information about writing Python scripts for Poser.



Material Wacros.

The following Wacros are included with your Poser installation:

- **Add Reflection**: Before clicking the **Add Reflection** Wacro button, make sure you have selected a material to which you want to add reflective attributes. When you click the **Add Reflection** button, Poser will attach the following nodes:
  - A Reflect raytrace node will be attached to the input of the Reflection_Color attribute on the root Material node. The Reflect node specifies the reflection color when raytracing. See "Raytrace Nodes" on page 357 for more information on the Reflect node's attributes.
  - A BG Color node will be attached to the input of the Background attribute on the Reflect node.
- **Add Refraction**: Before clicking the **Add Refraction** Wacro button, select a material to which you want to add refraction. Refraction causes light to bend as it passes from one transparent medium (material) to another; the degree to which this occurs depends on the material's refractive index. Note that refraction only affects transparent materials, so the material you select must be made transparent for refraction to be visible. Click the **Add Refraction** button. If you have selected a material that is opaque, a dialog will appear asking whether you wish to make the material transparent and add refraction. Click Yes on this dialog to proceed. Poser will then add the following nodes:
  - A Refract raytrace node will be attached to the input of the Refraction_Color attribute on the root Material node. The Refract node specifies the refraction color when raytracing. See "Raytrace Nodes" on page 357 for more information on the Refract node's attributes.
  - A BG Color node will be attached to the input of the Background attribute on the Refract node.
  - Set the Refraction_Value attribute on the root Material node to between zero and one, in order to see the refraction effect in your rendered image.



Refraction requires raytracing, so be sure to have raytracing selected when you render in order to see the refraction effect. We also recommend setting the number of raytrace bounces to at least two (or higher if you have reflective surfaces behind the transparent materials).

- **Add Skin Subsurface Scattering**: Clicking the **Add Skin Subsurface Scattering** Wacro button will apply a Subsurface Skin node to the selected material. The node will be attached to the Alternate Diffuse input of the root material node, and the Alternate Diffuse color will be set to white.

- **Set Up Shadow Catcher**: Clicking the **Set Up Shadow Catcher** button will enable the ShadowCatchOnly option on the Poser Surface node of the selected material. This Wacro will turn the selected material into a **shadow catcher**, which means that it will become transparent except for areas that are shaded by another object, which will show only the shadow. One example of how you might use this Wacro is if you created a scene showing a figure on the stairs prop, and you wanted to hide the stairs in order to composite the figure onto a photograph of actual stairs. For more information about the ShadowCatchOnly attribute, and shadow catchers, see "Root Material (PoserSurface) Node" on page 325.

- **Set Up Toon Render**: The **Set Up Toon Render** Wacro will configure your material to appear cartoon-like when rendered. Clicking the button opens a dialog asking whether you want to have specular highlights on your toon surfaces. Click either No or Yes on this dialog to proceed. Poser will then attach the following nodes:

  - A Toon diffuse node will be attached to the input on the Alternate_Diffuse attribute of the root Material node. See "Toon" on page 346 for more information about the Toon node's attributes.

  - Two additional links will be created from the output on the material's Image_Map node, to the inputs on the LightColor and DarkColor attributes on the Toon node.

  - If you clicked Yes on the initial dialog, a Glossy specular node will be attached to the input on the Alternate_Specular attribute of the root Material node. See "Glossy" on page 342 for more information on the Glossy node's attributes.

- **Create Atmosphere**: In order to view the effects of the **Create Atmosphere** Wacro, you need to have something in the background of your scene, such as a background plane or additional figures or props. Then, select Atmosphere from the **Object** menu at the top of the **Shader** window. Clicking the **Create Atmosphere** button opens the **Choose an Atmosphere** dialog. Select the type of atmosphere you wish to create, from the following options: Fog, Smoke, SmokeyRoom, Depth_Cue. Then click OK. Poser will add the appropriate nodes to create the atmosphere you have selected. If you wish to know more about any of the specific nodes added, see "Chapter 16: Material Room Nodes" on page 325. Render your scene to view the atmosphere effects.

- **Set Up Light Style**: The **Set Up Light Style** Wacro allows you to specify the style of light you wish to apply to a particular light. First, select the light you wish to configure from the Object menu at the top of the Shader window. Then click the **Set Up Light Style** button. The **Select a light style** dialog will appear, asking you to select a light style from the following options: diffuse only, specular

only, white only. When you have made your selection, click OK. You will see a message confirming that the light(s) you had selected have been set to the light style you specified. Depending on the light style you selected, you will see the following effects:

- If you selected diffuse only, the Diffuse attribute on the root Light node will be set to white, and the Specular attribute will be set to black.
- If you selected specular only, the Specular attribute on the root Light node will be set to white, and the Diffuse attribute will be set to black.
- If you selected white only, the Color, Diffuse and Specular attributes on the root Light node will all be set to white.

- **Set Up Ambient Occlusion**: Clicking the **Set Up Ambient Occlusion** button will create an Ambient_Occlusion raytrace node, the output of which is attached to the inputs of the Diffuse_Value and Specular_Value attributes on the root Material node. See "Ambient Occlusion" on page 358 for more information on the Ambient_Occlusion node's attributes.

- **IBL (Image Based Lighting)**: The **IBL** Wacro can only act upon lights, so make sure you have selected a light from the **Object** menu at the top of the **Shader** window, before using this Wacro. Clicking the **IBL** button will open the **Texture Manager**, which asks you to select a texture for the Image_Map node.

- Poser allows you to connect shader trees of any level of complexity to your Image Based Light; the **IBL** Wacro, however, is set up to use a single light probe image as an image map. Light probes are panoramic images that can record light levels from a 360 degree perspective, and are typically created by taking a high-dynamic range image of a mirrored sphere. Once you have selected your light probe image in the **Texture Manager**, click OK. Poser will attach an Image_Map node using your light probe to the input of the Color attribute on the root Light node. For more information on the Image_Map node's attributes, see "Image Map" on page 373. For information about Image Based Lighting and light probes, see "Diffuse Image Based Lights (IBL)" on page 263.



To maximize your Image Based Lighting effects, we recommend using Ambient Occlusion. See "Light Properties" on page 270 for information on activating Ambient Occlusion for the selected light.

- **Remove Detached Nodes**: Clicking the **Remove Detached Nodes** button will clear away any nodes on the currently selected material group whose outputs are

not attached to at least one other node. This Wacro is particularly useful for cleaning up complex shader trees, where the sheer number of nodes may make it difficult to see whether there are any detached nodes present in the Shader window.



If you press the Shift key while choosing **Remove Detached Nodes**, *detached nodes will be removed from all sub-materials in the figure with a single click.*



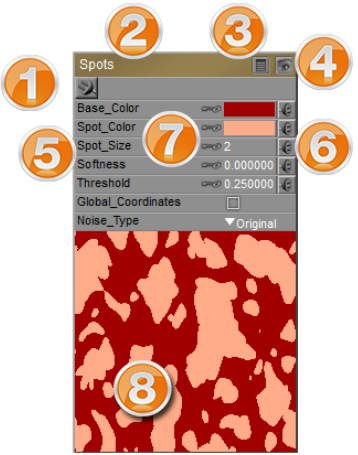
Even if one or more nodes are attached to inputs on a given node, if that node's output is not attached to another node, it will be removed by the **Remove Detached Nodes** *Wacro.*

Chapter 15: Working with Nodes

This chapter describes how to perform various operations with nodes in the **Shader** window of the **Material** room. For a description of the **Material** room itself, please refer to "Chapter 14: The Material Room" on page 296.

About Nodes

A node is the basic building block used to construct simple or complex procedural shaders (also called shaders). All nodes have the following elements except where noted:



Elements of a node.

- **Output (1)**: After accepting and processing any inputs plus its own values, the end result is passed to the output for connection to another node's input. Root nodes do not have this function.

- **Node Name (2)**: This is the name of the node. By default, a number will appear when you have two or more of the same node in your shader, for example **Clouds_2**, **Clouds_3**, and so forth. You can double-click the name of the node to enter a new name if desired.
- **Show/Hide Values Button (3)**: Clicking the **Values** button toggles displaying the node values (6) on and off.
- **Show/Hide Preview Button (4)**: Clicking the **Preview** button toggles displaying the node preview (9) on and off. Enabling previews gives you a great idea of how each step in your shader tree is contributing to the overall look, however this can increase required computing resources.
- **Node Values (5)**: This area shows the values that you can specify for the particular node.
- **Value Input (6)**: You can either input values directly in a node or connect one or more nodes to an input to modify the selected value.
- **Animation Toggle (7)**: Clicking the **Animation** control toggles animation on and off for the selected value.
- **Preview (8)**: This displays a preview of the node's output.



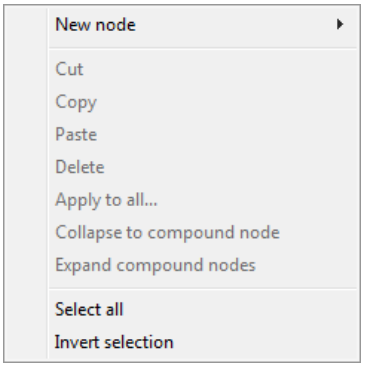
If you are running OpenGL hardware acceleration, you may be able to view the results of your procedural shaders in the Document window's Preview tab, to give you a better sense of how your rendered scene will appear. For more information previewing procedural shaders, please see "Preview Tab" on page 398.

The Material Room Options Menu

You can access the **Options** menu in one of four ways:

- Clicking the **Options** menu arrow at the top right corner of the **Shader** window.
- Clicking either mouse button on a node's input. In this case, the **Options** menu will only have the **New node** option available and may (depending on the input) have quick access options for appropriate nodes to connect to the selected input.
- Clicking either mouse button on a node's output.
- Right-clicking any blank area in the **Shader** window.

The **Options** menu, which varies depending on how it was accessed, has the following options:



Node options.

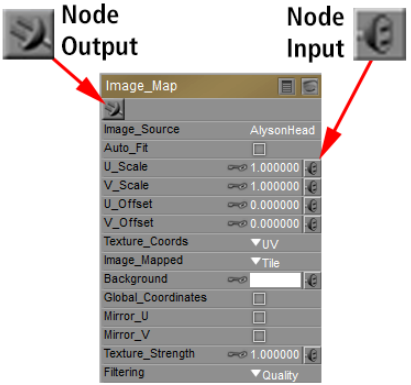
- **New node**: Selecting **New node** creates a new node. Please refer to the following section for more information about creating nodes.
- **Cut**: Selecting **Cut** places a copy of the selected node(s) into the **Clipboard** and deletes the originals from the **Shader** window along with any existing links between the cut nodes and others. This preserves any links that exist between the copied nodes.
- **Copy**: Use the Shift key to select multiple nodes and/or the full rote node to copy into the clipboard. Selecting **Copy** places a copy of the selected node(s) into the **Clipboard** without removing the originals from the **Shader** window without altering their relationships with other nodes. This preserves any links that exist between the copied nodes but does not copy links between the copied nodes and other nodes. In conjunction with the **Paste** command (see below), this is a great way to propagate your shader trees (or any portions you like) from shader to shader, thereby allowing you to save time by leveraging previous work.
- **Paste**: Selecting **Paste** places a copy of the node(s) stored in the **Clipboard** into the **Shader** window.
- **Delete**: Selecting **Delete selected nodes** deletes all selected node(s). Any links to or from deleted nodes are also lost, meaning you will need to reestablish broken connections. Please refer to "Linking Nodes" on page 321 for information on linking/de-linking nodes.
- **Apply to all**: Selecting **Apply to all...** applies all selected nodes to all materials groups in the current object. This overrides existing connections in affected material groups but does not delete any nodes.
- **Collapse to compound node**: Combines the selected nodes into a compound node. For more information see

"Collapsing Existing Nodes into a Compound Node" on page 386.

- **Expand compound node**: Expands the selected compound node back into its individual node components. For more information, see "Expanding Compound Nodes" on page 388.
- **Select All**: Selecting **Select All** selects all nodes in your shader, including the root node.
- **Invert Selection**: Selecting **Invert Selection** selects all unselected nodes and deselects all selected nodes. In essence, this function reverses your selection.

Material Room Node Connections

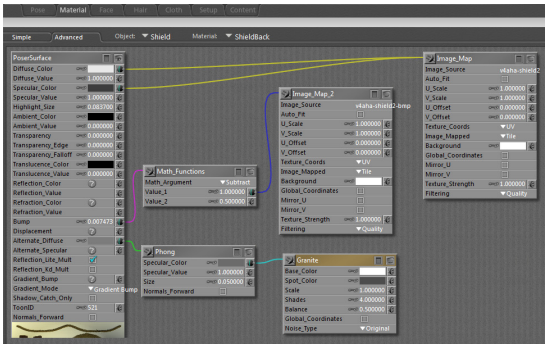
The Advanced view of the Material room uses a plug system to connect nodes together. Node inputs typically appear on the right side of a node's palette, and the node output typically appears in the upper-left corner of the node palette.



Node inputs and outputs.

You can link nodes to other nodes, thereby controlling one node's input with another node's output. This interaction between nodes is at the heart of the **Material** room's functionality and provides nearly infinite flexibility. Node interaction works by plugging values or colors from one node into another. Although only one node's output can be connected to another node's input at the same time, there is no theoretical

limit to how deep these interactions can go. Available memory and CPU speed will play a role in setting practical limits.



Several nodes can be chained together to create realistic materials.

Selecting Nodes

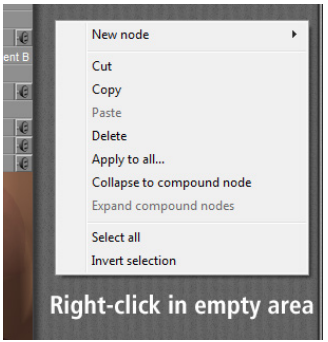
To select a node, simply click any blank area within the desired node. To select multiple nodes, press and hold **Shift** while making your selections.

Creating Nodes

Creating additional nodes is the first step to creating your own shader tree (remember that all shaders have at least a root node).

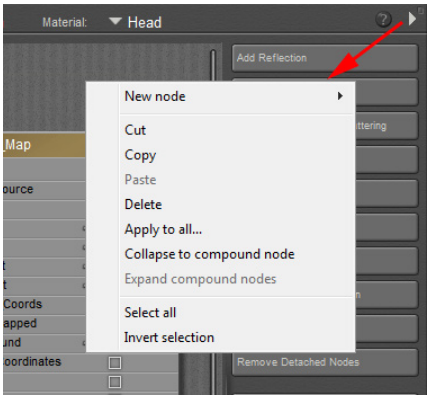
To create a node, use one of the following methods:

- To create a new node anywhere in the advanced Material view, right click in the material view and choose **New Node > Category > Subcategory > Node**. Then connect the new node to the locations you desire.



Creating a new material node.

- To create an instance of the node that is currently selected in the Shader window, open the **Options** menu in the upper right corner of the material room and select **New Node > Category > Subcategory > Node.** Connect the new node as desired.

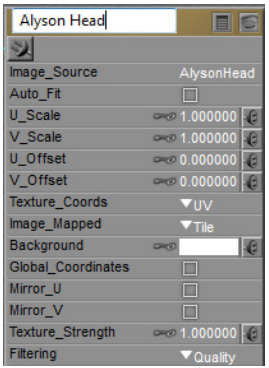


Node options menu.

- To create a new node that is automatically connected to a node input, click the desired node input to display the **Options** menu. Alternatively, you can drag from a node's input to an open area in the view will pop up the new node menu. Your new node will appear with its output already linked to your current node's input. If you access the **Options** menu in any other manner (see above), the new node will not be linked.

Renaming Nodes

After you create a new node, you can double-click the name field to change the name of the node to something more descriptive. Press **Enter/Return** to apply the new name.

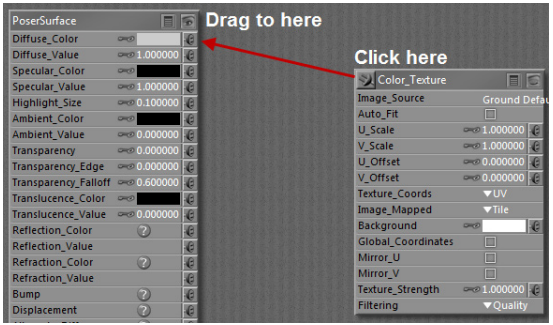


Double-click a node name to rename it (top); After renaming (bottom).

Linking Nodes

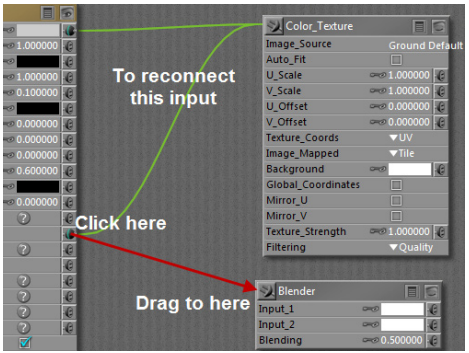
After creating a node, you may need to link it to an input on another node. This is accomplished in one of three ways:

- **Direct Link**: Click the output of the node you wish to link and drag the cursor over the node or shader input you wish to link to. Release the mouse button to complete the link.



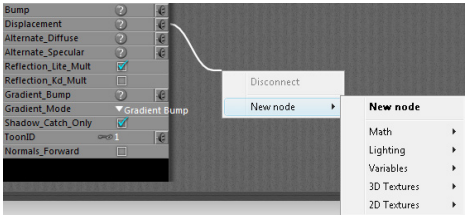
Attaching a new node to the root node.

- **Moving Existing Links**: To move a link from one node to another, click the input you want to unlink and drag the cursor off the node. Place the cursor over the input node you wish to link and release the mouse button.



Relinking nodes.

- **Clicking and dragging:** Click the input you wish to connect a new node to and drag. A node connection will appear. When you release the mouse button, the **Options** menu will appear, allowing you to create a new node whose output is pre-connected to your selected input.



Adding a new node to a root node input.

You can link a node to as many other nodes as you wish and each node input can be linked to as many input nodes as you wish.

De-Linking Nodes

To break the link between two nodes, click the input you want to unlink and select **Disconnect** in the **Options** menu.

Expanding/Collapsing Nodes

You can expand and collapse a node's values and/or preview separately, as described in the previous section.

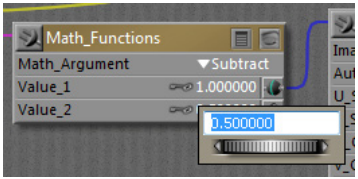
Moving Nodes

You can move and arrange nodes to suit your particular work style. A node's position has no effect on the shader's function or appearance. To move a node or nodes:

1. Select the node(s) you want to move as described above.
2. Hold the mouse button down and drag the node(s) to the desired position. Release the mouse button to complete the move.

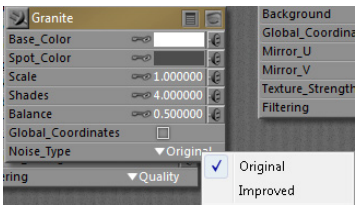
Entering Node Values

To enter a value for a node, click the desired value to open a small window with a value field and a parameter dial. Here, you can enter a numeric value in the field and/or move the parameter dial using the mouse. You can also link one or more nodes to the desired value (see below), which will make the appropriate adjustments.



Manually entering node values.

Some node values are pull-down menus. Use these as you would any other pull-down menu.



Node options can be displayed in a pull-down menu.

Also, clicking a color within a node opens a standard Color Picker, which you can use to quickly select your desired color.



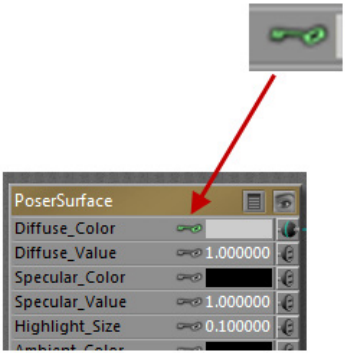
Colors are selected through the Color Picker.

Deleting Nodes

To delete a node, select the node you wish to delete and either press [DEL] or select **Node > Delete**.

Animating Nodes

You can animate node attributes by clicking the **Animation Toggle** (key icon) for the attribute you wish to animate. When animation is enabled, the icon appears green. When disabled, it appears clear. Clicking the **Animation Toggle** opens a pull-down menu with the following options:



Turn the Animation Toggle on (green) to animate a material.

- **Animated:** Selecting the **Animation** option toggles animation for the current attribute on or off. A check mark appears next to this menu item when animation is enabled, and vice-versa.
- **Info:** Each animated attribute has one or more **Info** options depending on the attribute. For example, a numerical node will have one **Info** option for its numeric value, while a color node will have three **Info** options (one each for red, green, and blue). Selecting one of these options allows you to set the current value, maximum and minimum limits, name, and sensitivity. This dialog is exactly the same as the **Edit Parameter Dial** dialog, which is discussed in "Editing Parameter Dials" on page 201.
- **Graph:** For each **Info** option that appears above, you will see a **Graph** option. Selecting a **Graph** option opens the **Graph** palette for the selected channel. Please refer to "Using Graphs" on page 458 for more information about the **Graph** palette.

Once animation is enabled, you can animate the attribute's value using any combination of the following methods:

- **Keyframes:** Move to a frame and set a value, then move to a different frame and set a new value.
- **Graph Palette:** Use the **Graph** palette to animate the node.
- **Other nodes:** Connect other nodes to control how the attribute changes over time.

Please refer to "Chapter 22: Animating with Poser" on page 447 for more information about animating within Poser.

Chapter 16: Material Room Nodes

Poser includes the following nodes, which, combined and linked to root nodes, can create virtually any shader you can imagine. Nodes are divided into several groups: **Math**, **Lighting**, **Variables**, **3D Textures**, and **2D Textures**. Each group and its shaders is discussed in the following sections:

Root Nodes

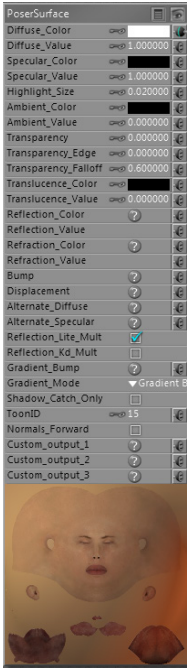
As previously mentioned, all shaders include a root node, which can be modified using added nodes that modify the root node. Thus, the root node is itself a complete shader. The **Material** room has four root nodes: **Material**, **Background**, **Light**, and **Atmosphere**. Let's examine these nodes further.

Root Node Help

Some node attributes have a question mark (**?**) icon next to them. Clicking this icon opens help for that channel. This help is also available by navigating the **Material** room help window (available by clicking on the (**?**) icon at the top right of the **Shader** window, or by selecting **Window > Room Help** if the help pages are not already displayed in the **Material** room).

Root Material (PoserSurface) Node

The root **Material** node and root **Hair** nodes contain all of the attributes required to create a complete shader for almost every material group in your scene (figures, props, hair). They both have the following attributes:



Poser Surface Node.

- **Diffuse Color**: The **Diffuse_Color** attribute is the surface color that is multiplied through any light striking the object.
- **Diffuse Value**: The **Diffuse_Value** attribute defines the strength of the diffuse color, where 1=100%.
- **Specular Color**: The **Specular_Color** attribute defines the color of the object's highlight.
- **Specular Value**: The **Specular_Value** attribute defines the strength of the specular color, where 1=100%.
- **Highlight Size**: The **Highlight_Size** attribute defines the quantity of micro-facets on the object surface. Micro-facets are tiny imperfections that are invisible to the human eye, yet effect the way light is reflected off the surface. Very smooth surfaces (such as glass) have very few imperfections and produce a very sharp specular highlight. Surfaces such as paper have extremely high numbers of imperfections in their surface and thus produce subtler specular highlights.
- **Ambient Color**: The **Ambient_Color** attribute defines the color that a surface has when it receives no light. This can be used to simulate overall ambient light or to create self-illuminating surfaces. Note that the ambient color of a surface will also bounce off other surfaces when rendering with indirect light enabled.

- **Ambient Value**: The **Ambient_Value** attribute defines the strength of the ambient color, where 1=100%.
- **Transparency**: The **Transparency** attribute defines the object's opacity, where 1=fully transparent.
- **Transparency Edge**: The **Transparency_Edge** attribute defines the object's transparency at its edges. For example, a glass appears opaque at its edges.
- **Transparency Falloff**: The **Transparency_Falloff** attribute defines how the transparency changes as it moves towards the object edge. Smaller values create a sharper edge and vice versa.
- **Translucence Color**: The **Translucence_Color** attribute is the color of light passing through the object.
- **Translucence Value**: The **Translucence_Value** attribute defines the strength of the translucent color, where 1=100%.
- **Reflection Color**: The **Reflection_Color** attribute allows you to specify a reflective color. This is a good input for connecting other nodes to control reflections.
- **Reflection Value**: The **Reflection_Value** attribute defines the strength of the reflective color, where 1=100%.
- **Refraction Color**: The **Refraction_Color** attribute defines the color of light refracted by the current object.
- **Refraction Value**: The **Refraction_Value** attribute defines the strength of the refraction color, where 1=100%.
- **Bump**: The **Bump** attribute defines the amount of bump in the material. See "Bump Maps" on page 285 for information about bump.
- **Displacement**: The **Displacement** attribute defines the amount of displacement in the material. See "Displacement Map" on page 287 for information about displacement.
- **Alternate Diffuse**: The **AlternateDiffuse** attribute provides an alternate input for diffuse lighting. Use this channel for strand-based hair and anytime you wish to use custom diffuse lighting.
- **Alternate Specular**: The **AlternateSpecular** attribute provides an alternate input for specular lighting. Use this channel for strand-based hair and anytime you wish to use custom specular lighting.
- **Reflection Lite Mult**: Checking the **ReflectionLiteMult** checkbox multiplies the total color through the amount of diffuse lighting hitting each point on the surface. This automatically darkens reflections in areas not seen by lights. On by default.

- **Reflection Kd Mult**: Checking the **ReflectionKdMult** checkbox automatically tints the reflection color by the surface's diffuse color value. Off by default.

- **Gradient Bump:** Previous versions of Poser used a proprietary file format for bump maps (*.BUM). If you want to use these older file types in Poser, connect an image map node to the **Gradient_Bump** attribute and load your desired *.BUM file into that node (see "Image Map" on page 373 for information on loading images). You cannot use *.BUM files with the FireFly renderer. The Gradient Mode option also allows you to select one of two types of normal maps.

- **Gradient Mode:**
  - **Gradient Bump:** Choose this option to use with a grayscale bump map image.
  - **Normal Map (Tangent space):** Tangent space normal maps have a mostly blue appearance. The normals in a tangent space map are always considered "up" even if it is not true in world space.
  - **Normal Map (Object space):** Object space normal maps are rainbow-colored in appearance. The normals are pointing in their actual directions.



For more information about normal maps, see "Normal and Gradient Bump Maps" on page 306.

- **ShadowCatchOnly**: Checking the **ShadowCatchOnly** checkbox allows transparent surfaces to **catch** shadows, as opposed to letting the shadows appear on the opaque surface behind them. In other words, this option will treat transparent surfaces as opaque, only in terms of their interaction with shadows. A prime use of this feature would be if you wish to render only a figure and its shadow; you could set up the floor as a transparent surface by using the **ShadowCatchOnly** feature to show your figure's shadow on the transparent floor, and render (without the background). The floor will be invisible except for the shadow laying on it, so the only things in your rendered scene will be the figure and its shadow.

- **ToonID**: By default, selecting the Toon Outline option causes an outline to appear around each separate material on the figure or object. Depending on how the figure is setup, this may lead to too many outlines. In such a case, you can adjust the Toon ID assignment on the root node of the material, to reduce the number of outlines drawn. Assigning the same ID to multiple materials means that the render engine will not draw separating outlines between those materials.

- **Normals_Forward:** Checking the **Normals_Forward** checkbox will flip the surface normal to point towards the camera (or towards the ray in case of raytracing). Light for indirect lighting (IDL) is also cast in the direction of

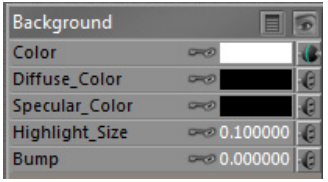
the normals. Use this option to avoid shading artifacts on double-sided polygons.

- **Custom Outputs**: Use the **Custom_Output_1**, **Custom_Output_2** and **Custom_Output_3** connectors to define material properties that you want to output to Photoshop layers. If there is no connection to these inputs in the Poser Surface node, the output to a layered PSD file will be Diffuse only, Specular only, and Shadow only, respectively for Custom Output 1, 2, and 3. For more information, see "Rendering Layered PSD Files" on page 434.

You must have a hair object selected in order to see its root node.

Root Background Node

The root **Background** node contains all of the attributes required to create a complete shader for your scene's background and has the following attributes:



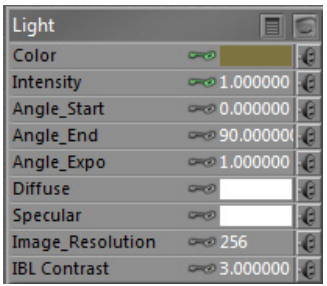
Root Background Node.

- **Color**: The **Color** attribute allows you to choose the background's base color.
- **Diffuse Color**: The **Diffuse_Color** attribute is the surface color that is multiplied through any light striking the object.
- **Specular Color**: The **Specular_Color** attribute defines the color of the object's highlight.
- **Highlight Size**: The **Highlight_Size** attribute defines the size of the highlight.
- **Bump**: The **Bump** attribute defines the amount of bump in the material.

The final render will always display whatever is attached to the Color channel of the Root Background node. However, if you wish the same image or color to appear in the preview render, you must also attach it to the BG Picture or BG Movie node.

Root Light Node

A root **Light** node appears whenever you have a light selected. Each light in your scene has its own root **Light** node, which has the following attributes:



Root Light Node.

- **Color**: The **Color** attribute allows you to choose the light's base color.
- **Intensity**: The **Intensity** attribute defines the light's brightness.
- **Angle Start**: The **AngleStart** attribute defines the start of the light cone (in degrees) for spotlights.
- **Angle End**: The **AngleEnd** attribute defines the end of the light cone (in degrees) for spotlights.
- **Angle Expo**: The **AngleExpo** attribute controls how the light fades towards the edge of the light cone (falloff).
- **Diffuse**: The **Diffuse** attribute allows you to create lights that use only a diffuse component to light the scene.
- **Specular**: The **Specular** attribute allows you to create lights that use only a specular component to light the scene. You can create specular only lights by setting the color in the specular channel to black. You can also create a **negative light source** (a light source that darkens or negates certain colors in the areas of the scene lit by this light) by setting the **Specular** value to zero (i.e., black) and setting the light's **Intensity** to -1. Then the **Color** and **Diffuse** channels can be adjusted to reduce certain aspects of light.

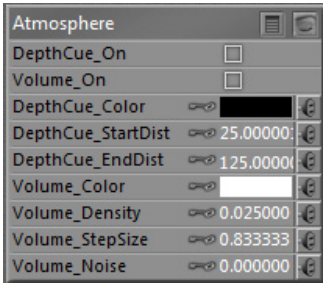
- **Image Resolution**: The **Image Resolution** attribute specifies the width and height of the light probe to be sampled. You can attach a light probe of any size, and then adjust the resolution to suit your needs. Note that higher resolutions require more processing time, whereas with extremely low resolutions you will lose image quality. 256 is a reasonable default resolution for most light probe images.
- **IBL Contrast**: The **IBL Contrast** attribute allows you to modify the level of contrast in the incoming light probe image. The default value of 3 for this attribute is intended for use with Low Dynamic Range (LDR) images. For High Dynamic Range (HDR) images, the best **IBL Contrast** setting would be 1.



You must have a light selected in order to see its root node.

Root Atmosphere Node

The **Root Atmosphere** node contains all of the attributes required to create realistic atmospheric effects such as fog, haze, etc. in your scenes.

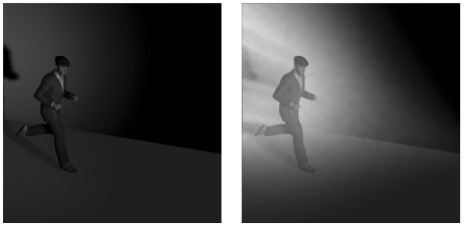


Root Atmosphere Node.

- **DepthCue_On:** Checking the **DepthCue_On** checkbox enables depth cueing, which varies all surface material colors from their original lit colors to the specified depth cue color (see below). This gives an effect similar to enabling the **Depth Cueing** option in the Document window as described in "Depth Cueing" on page 94.
- **Volume_On:** Checking the **Volume_On** checkbox enables volumetric effects. You can enable depth cueing and/or volumetric effects individually.
- **DepthCue_Color:** The **DepthCue_Color** attribute specifies the color to use when applying the depth cueing.

- **DepthCue_StartDist:** The **DepthCue_StartDist** attribute specifies the distance from the current camera at which the depth cueing effect begins. This distance is not necessarily displayed in Poser distance units.
- **DepthCue_EndDist:** The **DepthCue_EndDist** attribute specifies the distance from the current camera at which the depth cueing effect ends. This distance is not necessarily displayed in Poser distance units.
- **Volume_Color:** The **Volume_Color** attribute specifies the color of the volumetric effect. This color is multiplied with the color of the lights in your scene. To use the lights' colors for the volume, set this color to white.
- **Volume_Density:** The **Volume_Density** attribute controls the strength of the volumetric effect. This effect is multiplied by each light's **Atmosphere Strength** attribute. If this attribute is set to 1.0, the selected light will cast atmospheric effects equal to this attribute and so forth. Please refer to "Light Properties" on page 270.
- **Volume_StepSize:** The **Volume_StepSize** attribute specifies the distance between rendering samples taken through the volume. Lowering this value increases the quality and requires increased render time.
- **Volume_Noise:** The **Volume_Noise** attribute adds a random factor added to the sample that can help balance out the effect of larger step sizes (see previous attribute).

You can connect nodes to the color and density attributes for more complex effects.



Without volumetric rendering (no fog) on left; With volumetric rendering (with fog) on right.

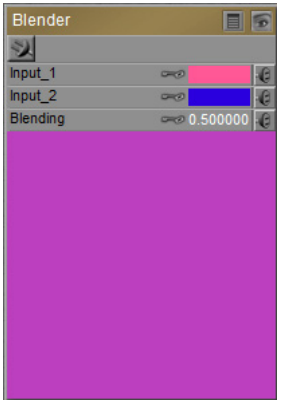
Bright infinite lights can wash out volumetric effects unless you use a very low density. Volumetric effects are most successfully used with both spotlights and carefully controlled density numbers. Also, Volumetric lighting effects only appear over a rendered object. They do not appear over an empty background, even when a background shader is in place. You need at least one object in on screen in order for volumetric lighting effects to be visible.

Math Nodes

These are the math nodes included with Poser. You will find them in the **New Node > Math** submenu. Unless specified otherwise, the list of attributes for each node is listed from top to bottom.

Blender

The **Blender** node blends two colors using a value attribute as an alpha mask. It has the following attributes:



Blender Node.

- **Input 1**: The **Input_1** attribute defines the first blend color. Clicking this attribute opens the standard Color Picker.
- **Input 2**: The **Input_2** attribute defines the second blend color. Clicking this attribute opens the standard Color Picker.

- **Blending**: The **Blending** attribute is used to determine the amount of blending. Valid values are from 0 (**Input 1** color only) to 1 (**Input 2** color only).

Fresnel Blend

The **Fresnel Blend** node has the following attributes:



Fresnel Blend Node.

- **Outer Color**: The **Outer Color** attribute defines the color of surfaces facing away from the camera. Clicking it opens the standard Color Picker.
- **Inner Color**: The **Inner Color** attribute defines the color of surfaces facing towards the camera. Clicking it opens the standard Color Picker.
- **Index of Refraction**: The index of refraction of the material. Light hitting the surface will be reflected or transmitted dependent on the incident angle based on the index of refraction.

Edge Blend

The **Edge Blend** node blends color nodes based on surface and camera angles. It has the following attributes:

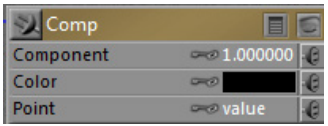


Edge Blend Node.

- **Inner Color**: The **Inner Color** attribute defines the color of surfaces facing towards the camera. Clicking it opens the standard Color Picker.
- **Outer Color**: The **Outer Color** attribute defines the color of surfaces facing away from the camera. Clicking it opens the standard Color Picker.
- **Attenuation**: The **Attenuation** attribute defines the power curve used for transitioning between the inner and outer colors.

Component

The **Component** node is useful for extracting the red, green, or blue components from an input color. It has the following attributes:

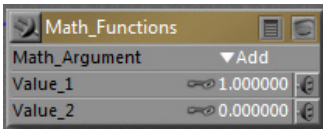


Component Node.

- **Component**: The **Component** attribute specifies the color to extract. 0=red, 1=green, and 2=blue.
- **Color**: The **Color** attribute provides an input for another node, whose output will be processed according to the **Component** attribute setting.
- **Point**: The **Point** attribute provides an input for a point node whose output will be processed according to the **Component** attribute setting.

Math Functions

The **Math Functions** node is useful for mathematically merging values, nodes, and other parameters and can be used to create patterns. It has the following attributes:



Math Functions Node.

- **Math Argument**: This pull-down menu defines the math function to be used. Your options are:
  - **Add**: Selecting **Add** returns **Value 1** plus **Value 2**.
  - **Subtract**: Selecting **Subtract** returns **Value 1** minus **Value 2**.
  - **Multiply**: Selecting **Multiply** returns **Value 1** times **Value 2**.
  - **Divide**: Selecting **Divide** returns **Value 1** divided by **Value 2**.
  - **Sine**: Selecting **Sin** returns the sine of **Value 1**. **Value 2** is ignored.

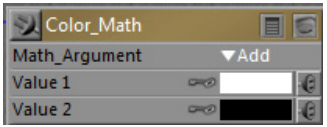
- **Cosine**: Selecting **Cos** returns the cosine of **Value 1**. **Value 2** is ignored.
- **Tangent**: Selecting **Tan** returns the tangent of **Value 1**. **Value 2** is ignored.
- **Square Root**: Selecting **Sqrt** returns the square root of **Value 1**. **Value 2** is ignored.
- **Power**: Selecting **Pow** returns the **Value 1** to the **Value 2** power (such as 33).
- **Exponential**: Selecting **Exp** returns **e** to the exponent **Value 1**, **Value 2** is ignored (such as **e**V1).
- **Logarithm**: Selecting **Log** returns the natural log of **Value 1**, **Value 2** is ignored.
- **Modulus**: Selecting **Mod** returns the **modulus** (remainder) of **Value 1** divided by **Value 2**.
- **Absolute**: Selecting **Abs** returns the absolute value of **Value 1**. **Value 2** is ignored.
- **Sign**: Selecting **Sign** returns –1 if **Value 1** is less than zero, and 1 if **Value 1** is greater than or equal to zero. **Value 2** is ignored.
- **Minimum**: Selecting **Min** returns **Value 1** if **Value 1** is less than **Value 2**, otherwise **Value 2** is returned.
- **Maximum**: Selecting **Max** returns **Value 1** if **Value 1** is greater than **Value 2**, otherwise **Value 2** is returned.
- **Clamp**: Selecting **Clamp** returns **Value 1** unless **Value 1** is less than 0 or greater than 1. If **Value 1**<0, 0 is returned. If **Value 1** > 1, 1 is returned. **Value 2** is ignored.
- **Ceiling**: Selecting **Ceil** returns **Value 1** rounded up to the next whole number. **Value 2** is ignored.
- **Floor**: Selecting **Floor** returns **Value 1** rounded down to the last whole number. **Value 2** is ignored.
- **Round**: Selecting **Round** returns **Value 1** rounded to the nearest whole number. **Value 2** is ignored.
- **Step**: Selecting **Step** returns 1 if **Value 1** is less than **Value 2**, and 0 if **Value 1** is greater than or equal to **Value 2**.
- **Smooth Step**: Selecting **Smoothstep** returns **Value 1** bicubically smoothed. **Value 2** is ignored.
- **Bias**: Selecting **Bias** adjusts the bias of **Value 1** by **Value 2**.
- **Gain**: Selecting **Gain** adjusts the gain of **Value 1** by **Value 2**.

- **Value 1**: The **Value_1** value defines the first value in the math equation.

- **Value 2**: The **Value_2** value defines the second value in the math equation.

Color Math

The **Color Math** node performs the selected mathematical operation with two colors. It has the following attributes:

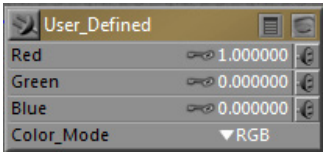


Color Math node.

- **Math Argument**: Please refer to the previous node explanation, above, for a list of math arguments available in this pull-down menu.
- **Value 1**: The **Value_1** attribute defines the first color value in the math equation.
- **Value 2**: The **Value_2** attribute defines the second color value in the math equation.

User Defined

The **User Defined** node allows you to define a custom color. The **Color Mode** (bottom) attribute is a pull-down menu allowing you to specify your desired color model. You can choose **RGB**, **HSV**, or **HSL** modes and enter the appropriate attributes in the three fields above, as follows:



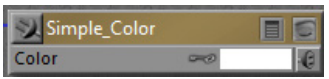
User Defined node.

- **Red**: This attribute allows you to specify the first value: **Red** (RGB) or **Hue** (HSV or HSL).
- **Green**: This attribute allows you to specify the second value: **Green** (RGB) or **Saturation** (HSV or HSL).
- **Blue**: This attribute allows you to specify the third value: **Blue** (RGB) or **Value** (HSV) or **Lightness** (HSL).
- **Color Mode**: This attribute allows you to specify the color mode that applies to the Red, Green, and Blue setting.

Choices are **RGB** (Red, Green, Blue), **HSV** (Hue, Saturation, Value) or **HSL** (Hue, Saturation, Lightness.

Simple Color

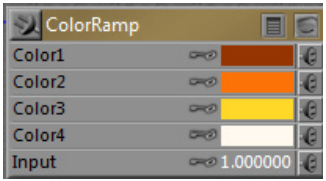
The **Simple Color** node allows you to access a color picker to select a color. Clicking the color (**Color** attribute) opens the Poser Color Picker. To use your operating system's **Color Picker,** press **[OPT]/[ALT]** while clicking the color or click the red-green-blue button in the top right of the Poser Color Picker.



Simple Color node.

Color Ramp

The **Color Ramp** node takes four colors and creates a spline color map (gradient) with them. You can feed grayscale output from other nodes (turbulence, wood, etc.) into this node to create interesting still or animated effects using the grayscale values as lookups into the color spline, providing a colorized version of the original grayscale image. It has the following attributes:

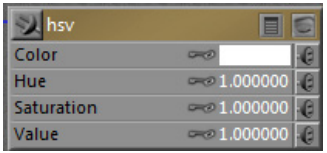


Color Ramp node.

- **Color 1 through Color 4**: The **Color_1** through **Color_4** attributes allow you to input colors for the color spline. Clicking them opens the standard Color Picker.
- **Input**: The **Input** attribute is the grayscale value to lookup into the color spline. This is where you should plug in your grayscale images.

HSV

The **HSV** node allows you to adjust the Hue, Saturation, and/or Value of the Color input.

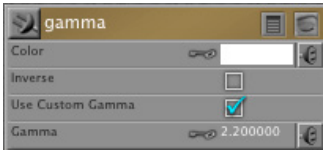


HSV Node.

- **Color**: Allows you to specify the color source that you want to adjust.
- **Hue**: This attribute allows you to adjust the **Hue** of the Color input. A setting of 1 represents no adjustment. Increase or decrease the setting to offset the original hue.
- **Saturation**: This attribute allows you to adjust the **Saturation** of the Color input. A setting of 1 represents no adjustment. Increase or decrease the setting to offset the original saturation.
- **Value**: This attribute allows you to adjust the **Value** of the Color input. A setting of 1 represents no adjustment. Increase or decrease the setting to offset the original value.

Gamma

The Gamma node allows you to incorporate Gamma settings into the currently selected material. The Gamma node provides the following settings:



Gamma Node.

- **Color**: Allows you to specify a solid color, or to input other nodes as a source of color.
- **Inverse**: Used as a shortcut that applies the specified gamma value in reverse. For example, if Gamma value is set to 2.2, checking the Inverse option will result in a Gamma setting of 1/2.2 (or .4545).
- **Use Custom Gamma**: Check this option to pass the custom gamma settings to the node that is connected to the output.
- **Gamma**: Sets the desired gamma value.

Lighting Nodes

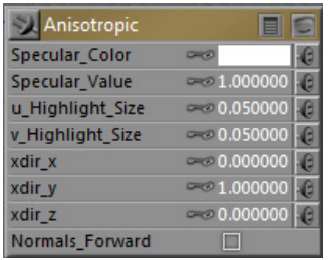
These are the light nodes included with the **Material** room. Unless specified otherwise, the list of attributes for each node is listed from top to bottom. The **Light** menu item has several sub-menus, each containing one or more nodes.

Specular Nodes

Specular nodes provide different models for calculating highlights on objects.

Anisotropic

The **Anisotropic** node allows you to create irregularly shaped highlights. It has the following attributes:



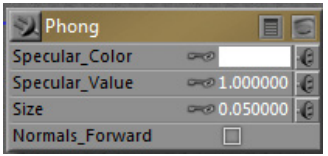
Anisotropic node.

- **Specular Color**: The **Specular_Color** is the color of any highlight that appears on the object surface. Highlights lend the illusion of shininess. For example, a piece of wood displays no highlight, while a piece of polished metal has one or more distinct highlights. This color is generally the same as that of the direct lighting falling on the affected surface but does not have to be.
- **Specular Value**: The **Specular_Value** is the amount of influence the specular color has on the shader. A higher value will create larger, more distinct highlights and vice versa.

- **U Highlight Size**: The **U_Highlight_Size** attribute is the highlight's size in the U direction.
- **V Highlight Size**: The **V_Highlight_Size** attribute is the highlight's size in the V direction.
- **Xdir_X**: The **Xdir_X** attribute controls the size of the specular reflection relative to the X-axis.
- **Xdir Y**: The **Xdir_Y** attribute controls the size of the specular reflection relative to the Y-axis.
- **Xdir_Z**: The Xdir_Z attribute controls the size of the specular reflection relative to the Z-axis.
- **Normals_Forward:** Checking the **Normals_Forward** checkbox will flip the surface normal to point towards the camera (or towards the ray in case of raytracing). Use this option to avoid shading artifacts on double-sided polygons.

Phong

The **Phong** node defines a model for calculating highlights. It has the following attributes:



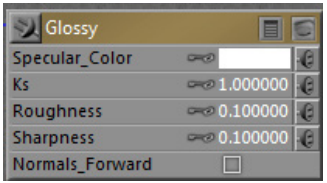
Phong node.

- **Specular Color**: The **Specular_Color** is the color of any highlight that appears on the object surface. Highlights lend the illusion of shininess. For example, a piece of wood displays no highlight, while a piece of polished metal has one or more distinct highlights. This color is generally the same as that of the direct lighting falling on the affected surface but does not have to be.
- **Specular Value**: The **Specular_Value** is the amount of influence the specular color has on the shader. A higher value will create larger, more distinct highlights and vice versa.
- **Size**: The **Size** attribute specifies the size of the highlight.
- **Normals_Forward:** Checking the **Normals_Forward** checkbox will flip the surface normal to point towards the

camera (or towards the ray in case of raytracing). Use this option to avoid shading artifacts on double-sided polygons.

Glossy

The **Glossy** node defines a model for calculating highlights. It has the following attributes:

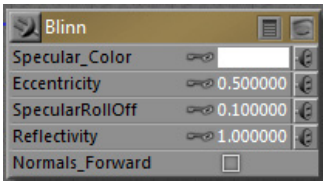


Glossy node.

- **Specular Color**: The **Specular_Color** is the color of any highlight that appears on the object surface. Highlights lend the illusion of shininess. For example, a piece of wood displays no highlight, while a piece of polished metal has one or more distinct highlights. This color is generally the same as that of the direct lighting falling on the affected surface but does not have to be.
- **Ks**: The **Ks** attribute defines the strength of the specular color, where 1=100%.
- **Roughness**: The **Roughness** attribute defines the size of highlights.
- **Sharpness**: The **Sharpness** attribute defines the sharpness of the highlight's edge.
- **Normals_Forward:** Checking the **Normals_Forward** checkbox will flip the surface normal to point towards the camera (or towards the ray in case of raytracing). Use this option to avoid shading artifacts on double-sided polygons.

Blinn

The **Blinn** node defines a model for calculating highlights. It has the following attributes:



Blinn node.

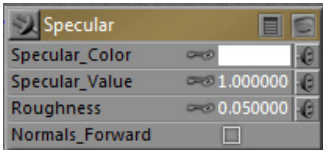
- **Specular Color**: The **Specular_Color** is the color of any highlight that appears on the object surface. Highlights

lend the illusion of shininess. For example, a piece of wood displays no highlight, while a piece of polished metal has one or more distinct highlights. This color is generally the same as that of the direct lighting falling on the affected surface but does not have to be.

- **Eccentricity**: The Blinn formula models the microfacets (microscopic imperfections) of the surface as ellipsoids of revolution. The **Eccentricity** attribute controls the size and variation of the imperfections. Use 0 for very shiny surfaces and 1 for very diffuse surfaces.
- **Specular Roll Off**: The **SpecularRollOff** attribute controls the highlight's sharpness.
- **Reflectivity**: The **Reflectivity** attribute controls the amount of light reflected back to the eye.
- **Normals_Forward:** Checking the **Normals_Forward** checkbox will flip the surface normal to point towards the camera (or towards the ray in case of raytracing). Use this option to avoid shading artifacts on double-sided polygons.

Specular

The **Specular** node defines a model for calculating highlights. It has the same attributes as the **Phong** node, which is discussed below.



Specular node.

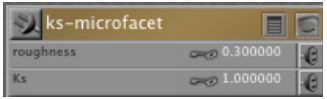
- **Specular Color**:: The **Specular_Color** is the color of any highlight that appears on the object surface. Highlights lend the illusion of shininess. For example, a piece of wood displays no highlight, while a piece of polished metal has one or more distinct highlights. This color is generally the same as that of the direct lighting falling on the affected surface but does not have to be.
- **Specular Value**: The **Specular_Value** is the amount of influence the specular color has on the shader. A higher value will create larger, more distinct highlights and vice versa.
- **Roughness**: The **Roughness** attribute defines the size of highlights.
- **Normals_Forward:** Checking the **Normals_Forward** checkbox will flip the surface normal to point towards the

camera (or towards the ray in case of raytracing). Use this option to avoid shading artifacts on double-sided polygons.

ks Microfacet

The KS-Microfacet node is a node that is a physically-based specular node that uses specularity calculations similar to those used in the Subsurface Skin and Scatter nodes.

The settings are as follows:



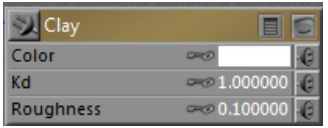
ks-Microfacet node.

- **Roughness**: The **Roughness** attribute defines the size of highlights. Lower values create smaller, sharper highlights. Higher values create larger, more diffused highlights.
- **Ks**: The **Ks** attribute controls the specular light strength, where 1=100%.

Diffuse Nodes

Clay

The **Clay** node applies a clay-like lighting model to the selected material. It has the following attributes:

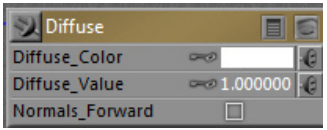


Clay node.

- **Color**: The **Color** attribute specifies the clay color. Clicking the color opens a Color Picker.
- **Kd**: The **Kd** attribute specifies the strength of the color, where 1=100%.
- **Roughness**: The **Roughness** attribute defines the size of highlights.

Diffuse

The **Diffuse** node allows you to use the standard diffuse lighting model. It has the following attributes:

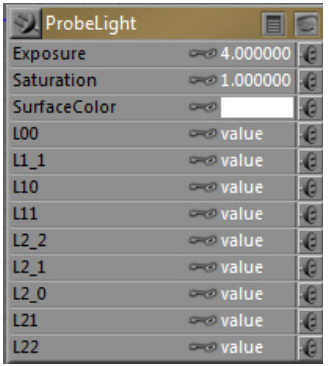


Diffuse node.

- **Diffuse_Color**: The **Diffuse_Color** attribute specifies the diffuse color.
- **Diffuse_Value**: The **Diffuse_Value** attribute defines the strength of the diffuse color, where 1=100%.
- **Normals_Forward:** Checking the **Normals_Forward** checkbox will flip the surface normal to point towards the camera (or towards the ray in case of raytracing). Use this option to avoid shading artifacts on double-sided polygons.

ProbeLight

The **ProbeLight** node takes an irradiance environment map, which is a 360 degree light distribution contained within a single image map, and applies it to your material. It has the following attributes, as well as nine coefficients:



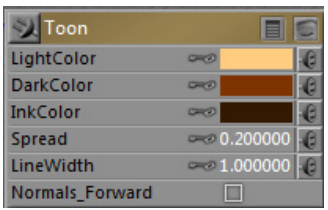
Probe Light node.

- **Exposure**: The **Exposure** attribute specifies the brightness, or exposure level, of the irradiance map.
- **Saturation**: The **Saturation** attribute specifies the degree of color saturation within the irradiance map.
- **SurfaceColor**: The **SurfaceColor** attribute allows you to select a color tint by which the irradiance map will be multiplied. For more realistic results, you should multiply with white.

If your intention is to create an image based light, you can do so by simply adding a diffuse image Based light to your scene in the lighting controls. See "Chapter 12: Lighting" on page 261 for more information about adding and configuring lights.

Toon

The **Toon** node gives your material a cartoon-like look. It has the following attributes:



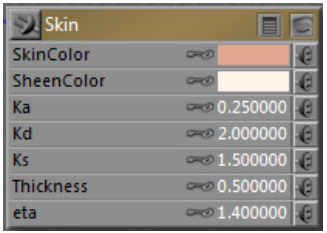
Toon node.

- **Light Color**: The **LightColor** attribute specifies the light color.
- **Dark Color**: The **DarkColor** attribute specifies the dark color.
- **Ink Color**: The **InkColor** attribute specifies the ink color.
- **Spread**: The **Spread** attribute defines the sharpness/softness of edges between colors.
- **Line Width**: the **LineWidth** attribute specifies the width of the ink color.
- **Normals_Forward:** Checking the **Normals_Forward** checkbox will flip the surface normal to point towards the camera (or towards the ray in case of raytracing). Use this option to avoid shading artifacts on double-sided polygons.

Special Nodes

Skin

The **Skin** node allows you to create realistic skin. It has the following attributes:



Skin node.

- **Skin Color**: The **SkinColor** attribute selects the skin's base color. Clicking this attribute opens a standard Color Picker.
- **Sheen Color**: The **SheenColor** attribute is the color of any highlight that appears on the object surface. Highlights lend the illusion of shininess. For example, a piece of wood displays no highlight, while a piece of polished metal has one or more distinct highlights. This color is generally the same as that of the direct lighting falling on the affected surface but does not have to be.
- **Ka**: The **Ka** attribute controls the ambient light strength, where 1=100%.
- **Kd**: The **Kd** attribute controls the diffuse light strength, where 1=100%.
- **Ks**: The **Ks** attribute controls the specular light strength, where 1=100%.
- **Thickness**: The **Thickness** attribute controls the thickness of the top, translucent skin layer.
- **ETA**: The **ETA** attribute controls the density of the top, translucent skin layer.

Subsurface Skin

The **Subsurface Skin** node offers more realistic skin effects than the **Skin** node. It adds subsurface scattering effects that give the skin more luminescence and sheen. This node has the following settings:



Subsurface Skin node.

- **Color**: Determines the base color for the material. The Subsurface Skin effect is added to this color. By default it is set to white. You can choose another color, or attach an image map or another node to the input.

- **Texture Detail:** Represents the ratio of the use of the texture for post-scatter versus pre-scatter. The range is from 0-1.0. A value of 1 will apply 100% of texture at post-scatter, yielding more texture details. A value 0 uses none of texture at post-scatter, applying all of that texture for pre-scatter calculations, and yields very low texture detail. A value of .5 is a reasonable point to start experimenting.

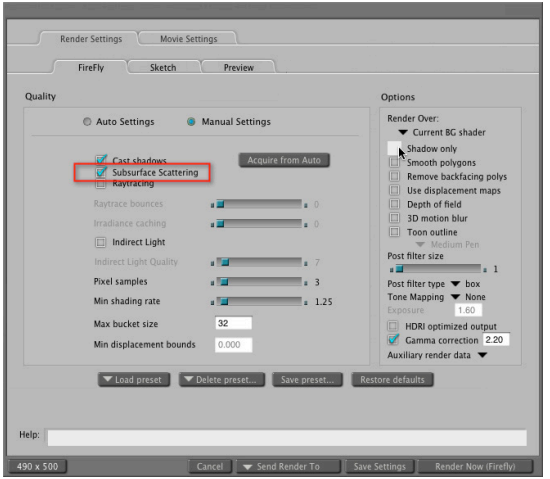
- **Specularity**: When set to 1, this setting approximates the physical specular behavior of human skin. Increase or decrease the setting for your desired effect.

- **Highlight Size**: Determines the size of the highlight, similar to the way that Highlight Size works in the Root node.

- **MaxError**: This setting is a quality-speed trade-off. When set to a low value, you will get higher precision in the subsurface scattering, but rendering will be more slow. When set to a higher value, you will get better rendering speeds, but less precision in the subsurface scattering.

To demonstrate the Subsurface Skin node we start with a simple scene: a figure and two directional lights with raytraced shadows. The head texture is very simple, just an image map plugged into the diffuse color and the specular color. Diffuse color is set to white, and specular color is set to black with a value of zero.

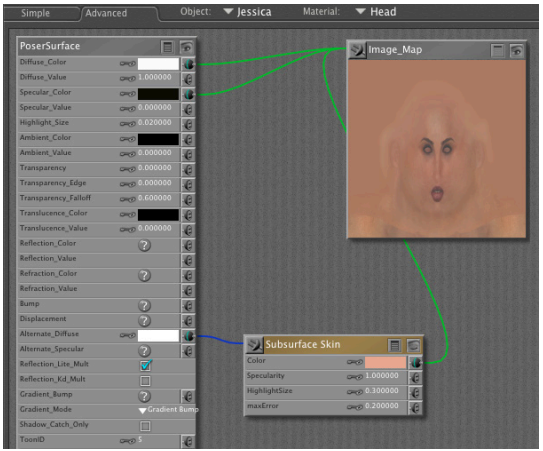
Render settings for the scene are also standard. However, in order to use the **Subsurface Skin** node, the **Subsurface Scattering** option must be turned on in the **Render Settings** dialog.



Render settings dialog with Subsurface Scattering turned on.

Go to the **Material** room and select the **Head** material. Right-click in an empty area in the Advanced material view and choose **New Node > Lighting > Special > Subsurface Skin**.

Plug the output of the image map into the **Color** input of the new node. Then, plug the output of the new node into the **Alternate Diffuse** input of the **PoserSurface** root node. Finally, set the **Diffuse Value** setting in the root node to 0, so that Poser only uses the **ALT Diffuse** setting.



Material Settings for the Subsurface Skin node.

When you render the new material, Poser will first render a pre-pass to calculate light all over the surface (including the back side). During the second pass, it calculates the scattering.

The following figure shows a comparison before and after subsurface scattering is added on a character.



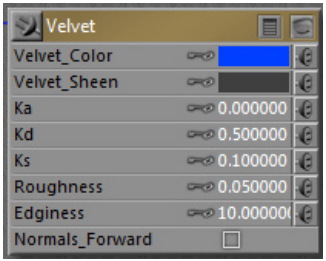
Subsurface scattering only works on objects that are in direct view of the camera. Objects in reflected surfaces will not be calculated with proper Subsurface Scattering.



A figure without subsurface skin (left); with subsurface skin (right).

Velvet

The **Velvet** node allows you to create the appearance of realistic velvety fabric. It has the following attributes:

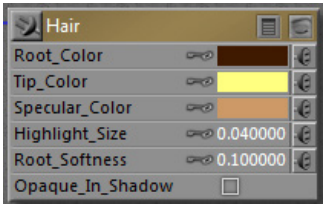


Velvet node.

- **Velvet Color**: The **Velvet_Color** attribute selects the color. Clicking this attribute opens a standard Color Picker.
- **Velvet Sheen**: The **Velvet_Sheen** attribute is the color of any highlight that appears on the object surface. Highlights lend the illusion of shininess. For example, a piece of wood displays no highlight, while a piece of polished metal has one or more distinct highlights. This color is generally the same as that of the direct lighting falling on the affected surface but does not have to be.
- **Ka**: The **Ka** attribute controls the ambient light strength, where 1=100%.
- **Kd**: The **Kd** attribute controls the diffuse light strength, where 1=100%.
- **Ks**: The **Ks** attribute controls the specular light strength, where 1=100%.
- **Roughness**: The **Roughness** attribute controls the thickness of the velvet.
- **Edginess**: This attribute controls the horizon scatter of the velvet.
- **Normals_Forward:** Checking the **Normals_Forward** checkbox will flip the surface normal to point towards the camera (or towards the ray in case of raytracing). Use this option to avoid shading artifacts on double-sided polygons.

Hair

The **Hair** node allows you to color your characters' or props' hair. It has the following attributes:



Hair node.

- **Root Color**: The **Root_Color** attribute selects the color for the root of the hair. Clicking this attribute opens a standard Color Picker.
- **Tip Color**: The **Tip_Color** attribute selects the color for the tip of the hair. Clicking this attribute opens a standard Color Picker.
- **Specular Color**:: The **Specular_Color** attribute selects the hair's highlight color. Clicking this attribute opens a standard Color Picker.
- **Highlight Size:** Allows you to determine the size and intensity of the highlights in the hair.
- **Root Softness**: The **Root_Softness** attribute controls the root's transparency, which helps hair blend into the scalp.

To create realistic hair shaders, connect this node to the root node's Alternate Diffuse attribute.

- **Opaque in Shadow:** Check this option to create solid shadows beneath hair strands. This allows you to create hair that looks more full without having to increase the number of hairs on the head (thereby requiring less computer resources).

Scatter

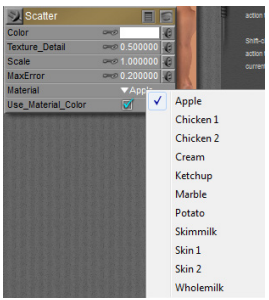
The **Scatter** node offers another way to render scattering effects in various objects, including skin. A number of presets that use real-world material properties are included in this node.

The **Scatter** node offers the following settings:



Scatter node.

- **Material**: The Material selector includes several presets that emulate the scatter effects of real-world materials.



Material options.

- **Use Material Color**: Check this option if you want to use color from the Material property.
- **Texture Detail:** Represents the ratio of the use of the texture for post-scatter versus pre-scatter. The range is from 0-1.0. A value of 1 will apply 100% of texture at post-scatter, yielding more texture details. A value 0 uses none of texture at post-scatter, applying all of that texture for pre-scatter calculations, and yields very low texture detail. A value of .5 is a reasonable point to start experimenting.
- **Scale**: Each of the Scatter materials are based on physical measurements. The Scale setting decreases or increases the physical scale to adjust appropriately for your geometry in the event that it is smaller or larger than it would be in real life.
- **MaxError**: This setting is a quality-speed trade-off. When set to a low value, you will get higher precision in the subsurface scattering, but rendering will be more slow. When set to a higher value, you will get better rendering speeds, but less precision in the subsurface scattering.
- **Color**: Determines the base color for the material. The Scatter effect is added to this color. By default it is set to white. You can choose another color or add an image map or other node to the input.

Use the same scene that you started with in "Subsurface Skin" on page 347. If you completed that exercise, disconnect the **Subsurface Skin** node from the **Alternate Diffuse** input of the **PoserSurface** node, and then right-click the **Subsurface Skin** node and choose **Delete Node**.

Next, right-click in an empty area in the Advanced Material view. Choose **New Node > Lighting > Special > Scatter**. A new scatter node is added to the Advanced material view. Plug the output into the **Alternate Diffuse** input of the **PoserSurface** node. Set the **Diffuse Value** in the PoserSurface node to 0 to turn the texture influence off.

You will notice when you render the **Scatter** node that the object takes on the color of the selected material. The color of the real-world materials is built in to the preset. In other words, if you choose the **Apple** material there will be a green tone to the Scatter effect. If you choose **Skin1** or **Skin2**, the object will have natural skin tones, and so on. Examples of **Apple** and **Skin 1** are shown in the following figure.

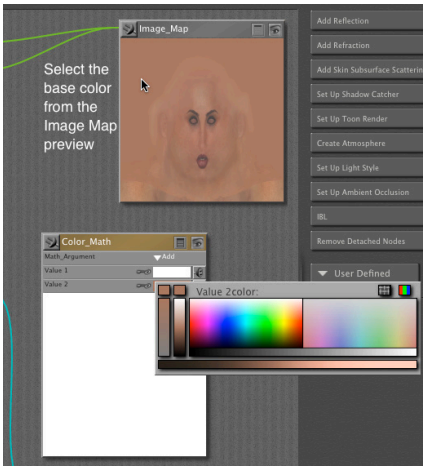


Apple preset (left); Skin 1 preset (right).

Because colors are built into the **Scatter** presets, you will need to take that into account when you use skin textures that have built-in color (as most do.) There is a way that you can work around this.

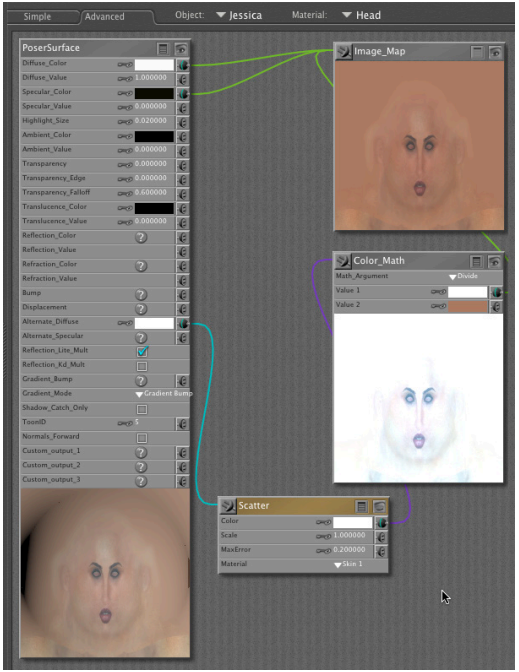
- First, right-click in an empty area of the Advanced Material view and add a **Color Math** node (**New Node > Math > Color_Math**).
- Click the **Value 2** color chip in the **Color Math** node, and then use the eyedropper to select the base skin color from

the **Image Map** texture preview. This is the color that will be removed after passing through the **Color Math** node.



Select the base color for Value 2 from the image texture map.

- Set the **Math Argument** of the **Color Math** node to **Divide**.
- Connect the output from the **Image Map** node into the **Value1** connector of the **Color Math** node. You can display the texture preview in the **Color Math** node to view the result. You should see a preview with the base flesh color removed, and leaving other areas such as brows, eye makeup, and shadows to pass through to the Scatter node.
- Connect the output of the **Color Math** node into the **Color** input of the **Scatter** node.
- Connect the output of the **Scatter** node into the **Alternate Diffuse** input of the **PoserSurface** node. When completed, it should look like the following figure:



Final Color Math connections.

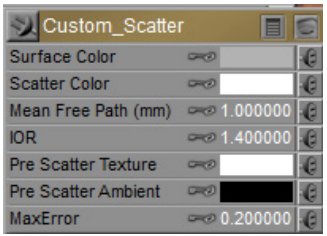
Now when you render your head, you will see the scattering effects and skin tone from the **Scatter** node combined with the additional detail that was in the texture you used.



Skin 1 Preset with added color from the Image Map and Color Math nodes.

Custom Scatter

This node exposes subsurface scattering with the raw parameters available to the user, as opposed to the measured presets in the plain Scatter node.



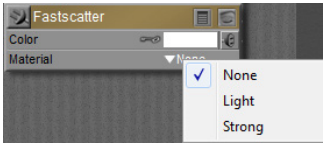
Custom Scatter node.

The Custom Scatter node has the following attributes:

- **Surface Color**: The overall color of the surface. Applied post-scattering, so textures applied to this input will remain sharp.
- **Scatter Color**: The color of the light that gets scattered in the material.
- **Mean Free Path**: The mean distance that light travels in the surface before it scatters. Larger values result in a more translucent effect. Note that regardless of the settings in the preferences, this parameter's units are always in millimeters, due to the small size of typical values.
- **IOR (Index of Refraction)**: The index of refraction of the material. Light hitting the surface will be reflected or transmitted dependent on the incident angle based on the index of refraction. Range is 0.0001 – 3.4.
- **Pre-Scatter Texture**: The incoming light on the surface will be modulated by this color before it scatters in the material.
- **Pre-Scatter Ambient**: The amount of self-illumination of the material. This is being applied before scattering, so the illumination generated here will be scattered around in the material.
- **Max Error**: Same parameter as in the other two subsurface scattering nodes, this one is a speed vs. quality trade-off parameter. Lower values equal a more precise calculation at the expense of render time, higher values render faster but may show artifacts. Range is 0.0 – 1.0.

FastScatter

The **FastScatter** node offers an easy application of subsurface scattering (SSS) effects. The results of the **FastScatter** calculation approximate true Subsurface Scattering.



Fast Scatter node.

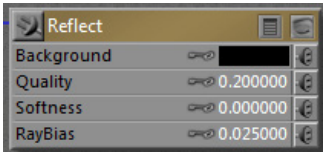
Subsurface scattering simulates the interaction of light with translucent materials, whereby the light interacts to some degree with the material below the surface level. The FastScatter node is a legacy node that was introduced prior to the implementation of true Subsurface Scattering. This node should be phased out by content developers and replaced with one of the true Subsurface Scattering nodes: "Subsurface Skin" on page 347 *or* "Scatter" on page 351.

Raytrace Nodes

To use the raytracing nodes, you must have raytracing enabled in the **Render Settings** dialog, as described in "Chapter 18: The Render Settings Dialog" on page 397.

Reflect

The **Reflect** node specifies the reflection color when raytracing. It has the following attributes:



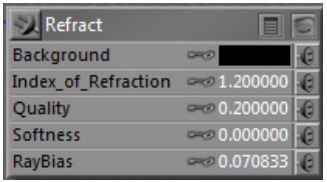
Reflect node.

- **Background**: The **Background** attribute selects the background color to be used for raytracing. Clicking this attribute opens a standard Color Picker.
- **Quality**: The **Quality** attribute controls how many rays are spawned by hitting a surface. Increasing this value increases the realism of reflections but consumes computing resources.
- **Softness**: The **Softness** attribute controls the randomness of the directions of reflected rays.
- **RayBias**: The **RayBias** attribute helps to prevent false shadows and other artifacts that may occur as a result

of using raytracing techniques in conjunction with displacement maps. **RayBias** offsets the starting point of the rays above the geometry of the surface, so as to avoid the displacement geometry in the raytracing calculation. Be aware that if your **RayBias** setting is too high, your shadows will migrate in the scene.

Refract

The **Refract** node specifies the refraction color when raytracing. It has the following attributes:

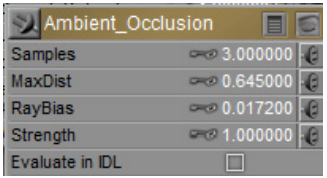


Refract node.

- **Background**: The **Background** attribute selects the background color to be used for raytracing. Clicking this attribute opens a standard Color Picker.
- **Index of Refraction**: The **Index of Refraction** attribute controls how much light bends when passing through the object.
- **Quality**: The **Quality** attribute controls how many rays are spawned by hitting a surface. Increasing this value increases the realism of reflections but consumes computing resources.
- **Softness**: The **Softness** attribute controls how sharp or smooth refracted light appears after passing through an object.
- **RayBias**: The **RayBias** attribute helps to prevent false shadows and other artifacts that may occur as a result of using raytracing techniques in conjunction with displacement maps. **RayBias** offsets the starting point of the rays above the geometry of the surface, so as to avoid the displacement geometry in the raytracing calculation. Be aware that if your **RayBias** setting is too high, your shadows will migrate in the scene.

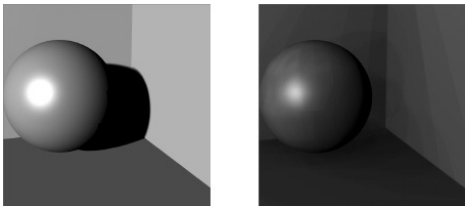
Ambient Occlusion

The **Ambient Occlusion** node uses raytracing to calculate the degree to which other objects within a scene mask (or occlude) the ambient light of a surface at a given point. Surfaces with greater occlusion ratios will be rendered as darker than surfaces with little or no occlusion. This node has the following attributes:



Ambient Occlusion node.

- **Samples**: The **Samples** attribute determines the number of rays projected. Too few samples will result in a grainy appearance in the darker areas of the scene. Higher sample rates yield higher quality darkened areas, but take longer to render.
- **MaxDist**: The **MaxDist** attribute allows you to control the maximum distance that the rays will travel through the scene, thus limiting the amount of data collected.
- **RayBias**: The **RayBias** attribute helps to prevent false shadows and other artifacts that may occur as a result of using raytracing techniques in conjunction with displacement maps. **RayBias** offsets the starting point of the rays above the geometry of the surface, so as to avoid the displacement geometry in the raytracing calculation. Be aware that if your **RayBias** setting is too high, your shadows will migrate in the scene.
- **Strength**: The **Strength** attribute controls the degree to which the **Ambient Occlusion** node will darken the occluded surfaces within the scene.
- **Evaluate in IDL:** Check this option if you want Poser to consider ambient occlusion settings during an indirect lighting pass.



- Without Ambient Occlusion (left); With Ambient Occlusion/depth mapped shadows (right).

Gather

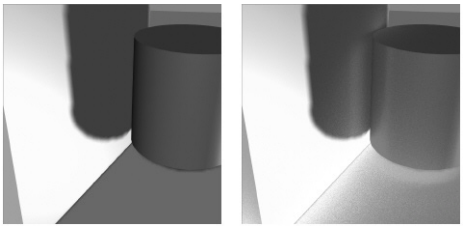
The **Gather** node uses raytracing to collect color and light information from the surfaces within a specific area, which when combined with an infinite light source adds a realistic “outdoor”

lighting effect. This effect also adds some color bleeding to the rendered scene. The Gather sampling area, or cone, is defined by the following attributes:



Gather node.

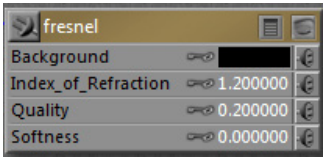
- **Samples**: The **Samples** attribute determines the number of Gather rays projected. Higher sample rates yield more realistic results, but take longer to render.
- **MaxDist**: The **MaxDist** attribute allows you to control the maximum distance that the Gather rays will travel through the scene, thus limiting the amount of data collected.
- **RayBias**: The **RayBias** attribute helps to prevent false shadows and other artifacts that may occur as a result of using raytracing techniques in conjunction with displacement maps. **RayBias** offsets the starting point of the Gather rays above the geometry of the surface, so as to avoid the displacement geometry in the raytracing calculation. Be aware that if your **RayBias** setting is too high, your shadows will migrate in the scene.
- **Angle**: The **Angle** attribute sets the angle of the cone in which the Gather rays will be projected. A wider angle will result in a greater area and hence more data. More data will give you more realistic results, but longer render times.



Without Gather/no color bleeding (left); With Gather/color bleeding (right).

Fresnel

The **Fresnel** node is used for surfaces that are both refractive and reflective (also known as dielectrics). Such surfaces tend to reflect more when the observer to surface angle is high, and refract more when the observer to surface angle is low. Most surfaces that are transparent (refractive) are also reflective.



Fresnel node.

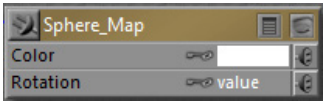
To use the **Fresnel** node with a surface node, plug it into the surface node's **refraction_color** channel. Set the **Diffuse** values low, and **Transparency** to 0. The **Fresnel** node has the following attributes:

- **Background**: The **Background** attribute selects the background color to be used for raytracing. Clicking this attribute opens a standard Color Picker.
- **Index of Refraction**: The **Index of Refraction** attribute controls how much light bends when passing through the object.
- **Quality**: The **Quality** attribute controls how many rays are spawned by hitting a surface. Increasing this value increases the realism of reflections but consumes computing resources.
- **Softness**: The **Softness** attribute controls how sharp or smooth refracted light appears after passing through an object.

Environment Map Nodes

Sphere Map

The **Sphere Map** node is a lighting node for performing spherical reflections. Attach this node to a materials' reflection input (or as a raytrace reflection mode's color attribute) to create spherical reflections. This node has the following attributes:



Sphere map node.

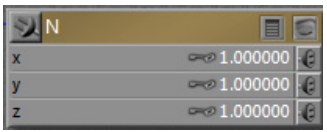
- **Color**: The **Color** attribute specifies the map's color. Clicking the color opens a Color Picker.
- **Rotation**: The **Rotation** attribute specifies the maps, rotation along the X, Y, and Z values.

Variable Nodes

These are the value nodes included with Poser. Unless specified otherwise, the list of attributes for each node is listed from top to bottom.

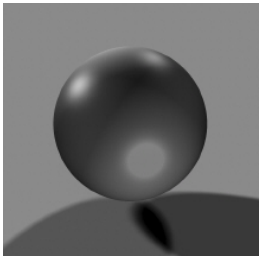
N

The **N** node returns the normal at the specified point. It has the following attributes:



N Node.

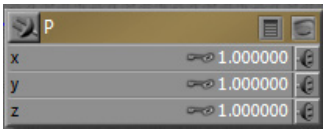
- **X**: The **X** attribute is the normal vector's X component.
- **Y**: The **Y** attribute is the normal vector's Y component.
- **Z**: The **Z** attribute is the normal vector's Z component.



Visualizes direction of surface normal.

P

The **P** node defines a point in space. It has the following attributes:



P Node.

- **X**: The **X** attribute is the point's X location.
- **Y**: The **Y** attribute is the point's Y location.
- **Z**: The **Z** attribute is the point's Z location.

Frame Number

The **Frame Number** node returns the current frame number. It has no user-definable attributes.

U Texture Coordinate

The **U** node returns the S coordinate in texture space of the pixel currently being rendered. It has no user-definable attributes.

V Texture Coordinate

The **V** node returns the T coordinate in texture space of the pixel currently being rendered. It has no user-definable attributes.

Du

The **dU** node defines the rate of change of surface parameters as pertains to the current pixel's location in S space. The 'd' indicates a derivative of the 'U' parameter.

Dv

The **dV** node defines the rate of change of surface parameters as pertains to the current pixel's location in T space. The 'd' indicates a derivative of the 'V' parameter.

dPdv

The dPdv node represents a varying point surface shader variable. It is a vector perpendicular to the surface normal in the 'V' direction. Specifically, it indicates the derivative of the surface position along 'V'. It has no user-definable attributes.

dPdu

The dPdu node represents a varying point surface shader variable. It is a vector perpendicular to the surface normal in the 'U' direction. Specifically, it indicates the derivative of the surface position along 'U'. It has no user-definable attributes.

dNdv

The dNdv node represents the derivative of the surface normal in the 'V' direction. In other words, it defines the rate of change of the surface normal along 'V'.

dNdu

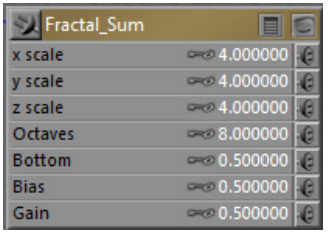
The dNdu node represents the derivative of the surface normal in the 'U' direction. In other words, it defines the rate of change of the surface normal along 'U'.

3D Texture Nodes

These are the color nodes included with the **Material** room. Unless specified otherwise, the list of attributes for each node is listed from top to bottom.

Fractal Sum

The **Fractal Sum** node is a fractal function that returns values between –1 and 1. It has the following attributes:



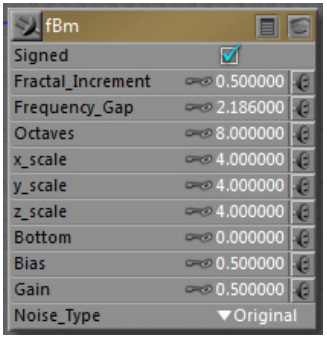
Fractal Sum node.

- **X Scale**: The scale of the property along the X (horizontal) axis
- **Y Scale**: The scale of the property along the Y (vertical) axis.
- **Z Scale**: The scale of the property along the Z (depth) axis.
- **Octaves**: The **Octaves** attribute defines the number of iterations for the fractal function. Higher values produce more detailed fractals but may increase render time.
- **Bottom**: The **Bottom** attribute controls the bottom color level or floor.

- **Bias**: The **Bias** attribute specifies how far to shift samples towards the light source to prevent self-shadowing of objects.
- **Gain**: The **Gain** attribute controls the balance between light and dark colors.

fBm

The **fBm** node is a multi-fractal function. It has the following attributes:



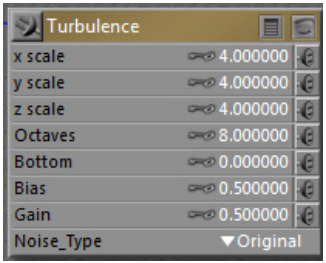
fBm node.

- **Signed**: Checking the **Signed** checkbox returns values in the range –1 to 1. If unchecked, values less than 0 will be returned unsigned, e.g. –25 will be returned as 25.
- **Fractal Increment**: The **Fractal_Increment** attribute controls noise. Lower values result in a smoother noise gradient.
- **Frequency Gap**: The **Frequency_Gap** attribute controls fractal size. Higher values product larger fractals.
- **Octaves**: The **Octaves** attribute defines the number of iterations for the fractal function. Higher values produce more detailed fractals but may increase render time.
- **X Scale**: The scale of the property along the X (horizontal) axis
- **Y Scale**: The scale of the property along the Y (vertical) axis.
- **Z Scale**: The scale of the property along the Z (depth) axis.
- **Bottom**: The **Bottom** attribute controls the bottom color level or floor.
- **Bias**: The **Bias** attribute specifies how far to shift samples towards the light source to prevent self-shadowing of objects.

- **Gain**: The **Gain** attribute controls the balance between light and dark colors.
- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Turbulence

The **Turbulence** node is an unsigned fractal function. It has the following attributes:

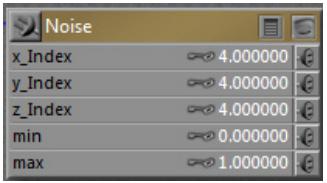


Turbulence node.

- **X Scale**: The scale of the property along the X (horizontal) axis
- **Y Scale**: The scale of the property along the Y (vertical) axis.
- **Z Scale**: The scale of the property along the Z (depth) axis.
- **Octaves**: The **Octaves** attribute defines the number of iterations for the fractal function. Higher values produce more detailed fractals but may increase render time.
- **Bottom**: The **Bottom** attribute controls the bottom color level or floor.
- **Bias**: The **Bias** attribute specifies how far to shift samples towards the light source to prevent self-shadowing of objects.
- **Gain**: The **Gain** attribute controls the balance between light and dark colors.
- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Noise

The **Noise** node adds random “static” or “snow” effects. It has the following attributes:

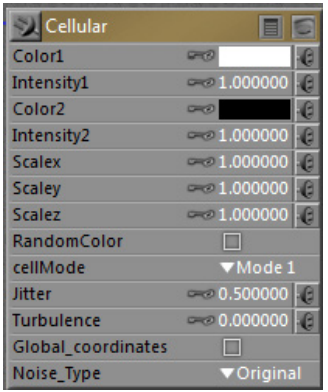


Noise node.

- **X Index**: The **x_index** attribute defines the position on the X axis from which to draw a noise sample.
- **Y Index**: The **y_index** attribute defines the position on the Y axis from which to draw a noise sample.
- **Z Index**: The **z_index** attribute defines the position on the Z axis from which to draw a noise sample.
- **Min**: The **Min** attribute controls the minimum amount of noise.
- **Max**: The **Max** attribute controls the maximum amount of noise.

Cellular

The **Cellular** node is used to create mosaic or cubic tiles. It has the following attributes:



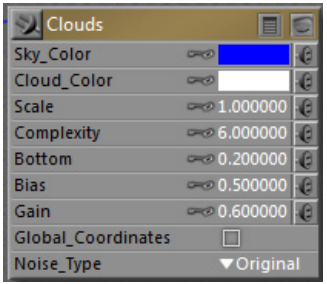
Cellular node.

- **Color1**: The **Color1** attribute specifies the cell color.
- **Intensity1**: The **Intensity1** attribute determines the degree of dominance between the cells and the cusps.

- **Color2**: The **Color2** attribute specifies the color of the borders between the cells.
- **Intensity2**: The **Intensity2** attribute determines the degree of dominance between the cells and the cusps.
- **ScaleX**: The **ScaleX** attribute controls the size of the tiles along the x axis.
- **ScaleY**: The **ScaleY** attribute controls the size of the tiles along the y axis.
- **ScaleZ**: The **ScaleZ** attribute controls the size of the tiles along the z axis.
- **RandomColor**: Enabling the **RandomColor** attribute specifies that the color of each cell will be randomly determined.
- **CellMode**: The **CellMode** attribute determines the type and shape of the cells. It has the following options:
  - **Mode 1**: This option creates 3D tiles. You can increase the **Intensity1** value to make the tiles more prominent.
  - **Mode 2**: This option emphasizes the cracks between the cells. Set the **Intensity1** value relatively high to maximize this effect.
  - **Mode 3**: This option creates a spider-web effect. The **Color1** attribute defines the color of the web strands. Set the **Intensity1** value relatively high to maximize this effect.
  - **Mode 4**: This option is similar to that of Mode 3, but it includes an additional dimension.
  - **Mode 5**: This option creates a quilt-style cell pattern when the **RandomColor** attribute is enabled.
- **Jitter**: The **Jitter** attribute controls the irregularity of the cell sizes.
- **Turbulence**: The **Turbulence** attribute controls the irregularity of the cell boundaries.
- **GlobalCoordinates**: When the **GlobalCoordinates** attribute is enabled, the object will use the global coordinates.
- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Clouds

The **Clouds** node simulates cloud patterns. It has the following attributes:

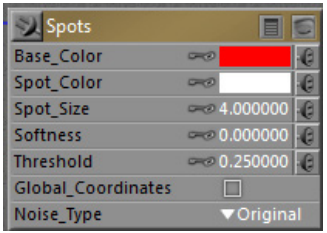


Clouds node.

- **Sky Color**: The **Sky_Color** attribute defines the areas behind the clouds. Clicking it opens the standard Color Picker.
- **Cloud Color**: The **Cloud_Color** attribute defines the clouds. Clicking it opens the standard Color Picker.
- **Scale**: The **Scale** attribute defines the size of the clouds.
- **Complexity**: The **Complexity** attribute defines the complexity of the cloud patterns.
- **Bottom**: The **Bottom** attribute controls the bottom color level or floor.
- **Bias**: The **Bias** attribute specifies how far to shift samples towards the light source to prevent self-shadowing of objects.
- **Gain**: The **Gain** attribute controls the balance between light and dark colors.
- **Global Coordinates**: Use the **Global_Coordinates** pull-down menu to select **ON** or **OFF**. When on, the texture is computes using world space instead of object space and vice versa. If this option is on while the object is moving in any way, the texture will appear to "slide" through the object when rendered.
- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Spots

The **Spots** node consists of a 3D texture composed of random spots. It has the following attributes:

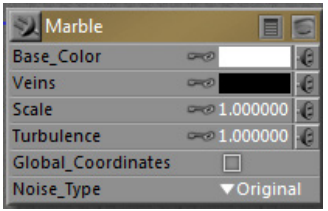


Spots node.

- **Base Color**: The **Base_Color** attribute defines the base color. Clicking it opens the standard Color Picker.
- **Spot Color**: The **Spot_Color** attribute defines the spot color. Clicking it opens the standard Color Picker.
- **Spot Size**: The **Spot_Size** attribute defines the size of the spots.
- **Softness**: The **Softness** attribute determines the transition from the spot to the base color.
- **Threshold**: The **Threshold** attribute defines the lean towards the base or spot color. Values close to 0 favor the base color while values closer to 1 favor the spot color.
- **Global Coordinates**: Use the **Global_Coordinates** pull-down menu to select **ON** or **OFF**. When on, the texture is computes using world space instead of object space and vice versa. If this option is on while the object is moving in any way, the texture will appear to "slide" through the object when rendered.
- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Marble

The **Marble** node is a 3D simulation of marble or other stone patterns. It has the following attributes:

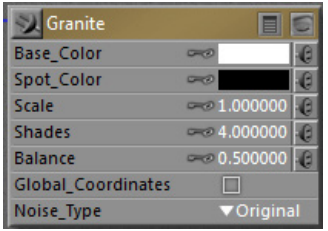


Marble node.

- **Base Color**: The **Base_Color** attribute defines the base color. Clicking it opens the standard Color Picker.
- **Veins**: The **Veins** attribute defines the vein color. Clicking it opens the standard Color Picker.
- **Scale**: The **Scale** attribute defines the size of the veins.
- **Turbulence**: The **Turbulence** attribute defines the low-frequency randomness of the brick pattern.
- **Global Coordinates**: Use the **Global_Coordinates** pull-down menu to select **ON** or **OFF**. When on, the texture is computes using world space instead of object space and vice versa. If this option is on while the object is moving in any way, the texture will appear to "slide" through the object when rendered.
- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Granite

The **Granite** node is a 3D simulation of speckled granite textures. It has the following attributes:



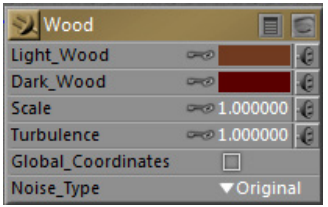
Granite node.

- **Base Color**: The **Base_Color** attribute defines the base color. Clicking it opens the standard Color Picker.
- **Spot Color**: The **Spot_Color** attribute defines the spot color. Clicking it opens the standard Color Picker.
- **Scale**: The **Scale** attribute defines the size of the speckles (spots).
- **Shades**: The **Shades** attribute defines the number of shades used for the texture between and including the base and spot colors.

- **Balance**: The **Balance** attribute defines the lean towards the base or spot color. Values close to 0 favor the spot color while values closer to 1 favor the base color.
- **Global Coordinates**: Use the **Global_Coordinates** pull-down menu to select **ON** or **OFF**. When on, the texture is computes using world space instead of object space and vice versa. If this option is on while the object is moving in any way, the texture will appear to "slide" through the object when rendered.
- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Wood

The **Wood** node provides a 3D texture that simulates wood patterns. It has the following attributes:



Wood node.

- **Light Wood**: The **Light_Wood** attribute defines the base wood color. Clicking it opens the standard Color Picker.
- **Dark Wood**: The **Dark_Wood** attribute defines the wood grain color. Clicking it opens the standard Color Picker.
- **Scale**: The **Scale** attribute determines the size of the wood grain.
- **Turbulence**: The **Turbulence** attribute determines the amount of randomness of the wood grain.
- **Global Coordinates**: Use the **Global_Coordinates** pull-down menu to select **ON** or **OFF**. When on, the texture is computes using world space instead of object space and vice versa. If this option is on while the object is moving in any

way, the texture will appear to "slide" through the object when rendered.

- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Wave3D

The **Wave3D** node implements a three-dimensional sin / cos trigonometric function, resulting in a three-dimensional wave effect.



Wave 3D node.

2D Texture Nodes

These are the color nodes included with the **Material** room. Unless specified otherwise, the list of attributes for each node is listed from top to bottom.

Wave2D

The **Wave2D** node implements a two-dimensional sin / cos trigonometric function, resulting in a two-dimensional wave effect.



Wave 2D node.

Image Map

The **Image Map** node allows you to specify an image to use as a map (texture, reflection, transparency, bump, displacement, etc.). You can use any image as a map. However, if you want

to use a map designed for the particular figure/prop, you must use an image that has been set up to work that way. Please refer to "About Maps & Templates" on page 283 for a general discussion about maps, and to "Creating Character Textures" on page 288 for a brief description on creating maps. This node has the following attributes:

Poser supports texture resolutions up to 8192 x 8192 pixels. Note, however, that high resolution textures consume a greater amount of system resources.

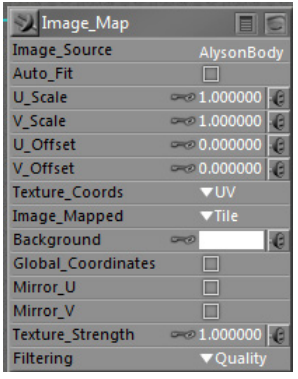
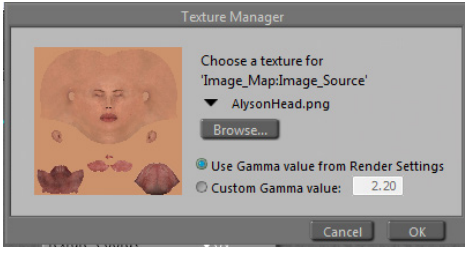


Image map node.

- **Image Source**: Displays the currently loaded image. Clicking the **Image Source** attribute opens the **Texture Manager** dialog. To load an image map, either select the path from the drop-down list or click the **Browse** button to open a standard **Open** dialog and select the image you wish to load. A preview of your selected image should appear in the preview window. You can also select to use a global gamma value as set in the Render Settings dialog, or enter a specific gamma value that is unique to the selected texture. Click **OK** to implement your changes or **Cancel** to abort.



Choosing a texture map.

- **Auto_Fit:** Check this option to automatically fit the texture map to the currently selected material without tiling.

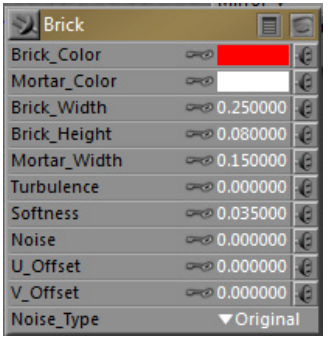
- **U Scale**: The **U_Scale** attribute sets the U scale factor to apply to the texture map when using UV or VU mapping. When using a projection map method (see below), this is one of two attributes used to define the world space size of the texture map being projected onto the surface.
- **V Scale**: The **V_Scale** attribute sets the V scale factor to apply to the texture map when using UV or VU mapping. When using a projection map method (see below), this is one of two attributes used to define the world space size of the texture map being projected onto the surface.
- **U Offset**: The **U_Offset** attribute defines the U position of the first texture tile in UV space. When using a projection map method (see below), this is one of two attributes used to define the position of the upper left corner of the projection "screen" in grid units.
- **V Offset**: The **V_Offset** attribute defines the V position of the first texture tile in UV space. When using a projection map method (see below), this is one of two attributes used to define the position of the upper left corner of the projection "screen" in grid units.
- **Texture Coordinates**: The **Texture_Coordinates** pull-down menu offers the following choices:
  - **UV**: The **UV** option behaves like rubber wallpaper that can stretch over the object surface; the image file is made to correspond with set positions on the object's surface, making any distortion caused by the stretching seem more natural. This is the most versatile mapping method.
  - **VU**: The **VU** option is identical to UV mapping, except that the image map is rotated 90 degrees.
  - **XY**: The **XY** option works like a slide projector in that the "screen" being projected onto is the XY plane whose size and position are determined using the **U_Scale**, **V_Scale**, **U_Offset**, and **V_Offset** parameters. Any surface not oriented with the selected viewing plane will distort the texture at render time.
  - **XZ**: Same as above but uses the XZ plane.
  - **ZY**: Same as above but uses the ZY plane.
- **Image Mapped**: The **Image_Mapped** pull-down menu offers the following choices:
  - **None**: The background color will be used for all areas of the object not covered by the texture map.
  - **Alpha**: The background color will be used for all areas of the object not covered by the texture map. The background color will also be blended with the texture map based on the alpha channel of the texture map.

  - **Clamped**: The edge pixels of the texture map are repeated to cover any area of the object that the texture map does not cover.
  - **Tile**: The texture map will be tiled to ensure total coverage. Tiling is controlled using the **Mirror U** and **Mirror V** attributes, below.

- **Background**: The **Background** attribute specifies the background color. Clicking this attribute opens a standard Color Picker. **Global_Coordinates** button forces projected maps to use global instead of local coordinates.
- **Mirror U**: Enabling the **Mirror_U** option can help hide the seams between texture cells when tiling textures.
- **Mirror V**: Enabling the **Mirror_V** option can help hide the seams between texture cells when tiling textures.
- **Texture Strength**: The **Texture_Strength** attribute defines the strength of the texture map, where 1=100%.
- **Filtering**: The **Filtering** attribute allows you to select one of three options for texture filtering on the selected image map. These options are: **None**--no texture filtering; **Fast**--high-speed texture filtering; **Quality**--high-quality texture filtering; **Crisp**--provides more aliasing for increased crispness.

Brick

The **Brick** node simulates brick or stone wall patterns. It has the following attributes:



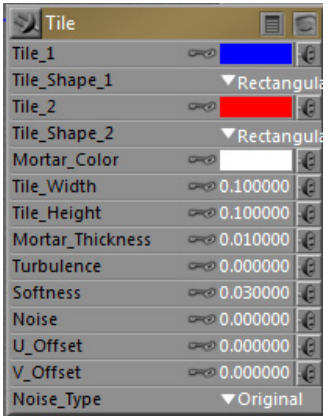
Brick node.

- **Brick Color**: The **Brick_Color** attribute defines the brick color. Clicking it opens the standard Color Picker.
- **Mortar Color**: The **Mortar_Color** attribute defines the mortar color. Clicking it opens the standard Color Picker.

- **Brick Width**: The **Brick_Width** attribute determines the horizontal scale of the bricks.
- **Brick Height**: The **Brick_Height** attribute determines the vertical scale of the bricks.
- **Mortar Width**: The **Mortar_Width** attribute determines the spacing between bricks.
- **Turbulence**: The **Turbulence** attribute defines the low frequency randomness of the brick pattern.
- **Softness**: The **Softness** attribute defines how softly the brick blends into the mortar.
- **Noise**: The **Noise** attribute defines the high frequency randomness of the brick pattern.
- **U Offset**: The **U_Offset** attribute defines the U position of the first texture tile in UV space. When using a projection map method (see below), this is one of two attributes used to define the position of the upper left corner of the projection "screen" in grid units.
- **V Offset**: The **V_Offset** attribute defines the V position of the first texture tile in UV space. When using a projection map method (see below), this is one of two attributes used to define the position of the upper left corner of the projection "screen" in grid units.
- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Tile

The **Tile** node is a 2D texture that simulates tile patterns. It has the following attributes:

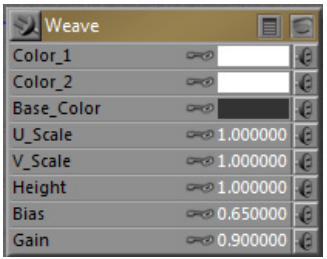


Tile node.

- **Tile 1**: The **Tile_1** attribute defines the first tile color. Clicking it opens the standard Color Picker.
- **Tile Shape 1**: The **Tile_Shape_1** pull-down menu defines the shape of the first tile. Your options are:
  - **Rectangle**: Selecting **Rectangular** will make the tiles rectangular.
  - **Ellipsoid**: Selecting **Ellipsoid** will make the tiles elliptical.
- **Tile 2**: This attribute defines the second tile color. Clicking it opens the standard Color Picker.
- **Tile Shape 2**: The **Tile_Shape_2** pull-down menu defines the shape of the second tile. This menu has the same options as the **Tile 1 Shape** menu, described above.
- **Mortar Color**: The **Mortar_Color** attribute defines the mortar color. Clicking it opens the standard Color Picker.
- **Tile Width**: The **Tile_Width** attribute defines the tile's width.
- **Tile Height**: The **Tile_Height** attribute defines the tile's height in.
- **Mortar Thickness**: The **Mortar_Thickness** attribute determines the spacing between bricks.
- **Turbulence**: Defines the low-frequency randomness of the brick pattern.
- **Softness**: The **Softness** attribute defines how softly the brick blends into the mortar.
- **Noise**: The **Noise** attribute defines the high-frequency randomness of the brick pattern.
- **U Offset**: The **U_Offset** attribute defines the U position of the first texture tile in UV space. When using a projection map method (see below), this is one of two attributes used to define the position of the upper left corner of the projection "screen" in grid units.
- **V Offset**: The **V_Offset** attribute defines the V position of the first texture tile in UV space. When using a projection map method (see below), this is one of two attributes used to define the position of the upper left corner of the projection "screen" in grid units.
- **Noise_Type**: The **Noise_Type** attribute allows you to select between the **Original** Perlin type and the **Improved** enhanced noise definitions.

Weave

The **Weave** node creates woven textile effects. It has the following attributes:

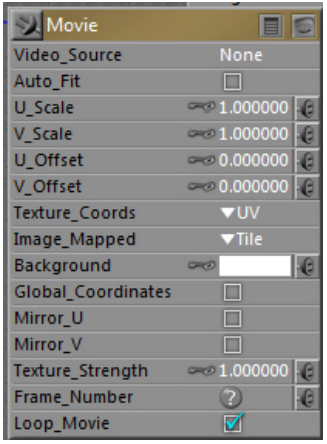


Weave node.

- **Color 1**: The **Color_1** attribute defines the first woven color. Clicking this attribute opens the standard Color Picker.
- **Color 2**: The **Color_2** attribute defines the second woven color. Clicking this attribute opens the standard Color Picker.
- **Base Color**: The **Base_Color** attribute defines the underlying color behind the woven pattern. Clicking this attribute opens the standard Color Picker.
- **U Scale**: The **U_Scale** attribute defines the size of the weave in the U direction.
- **V Scale**: The **V_Scale** attribute defines the size of the weave in the V direction.
- **Height**: The **Height** attribute defines the height of the woven pattern.
- **Bias**: The **Bias** attribute adjusts the weave's bias.
- **Gain**: The **Gain** attribute adjusts the weave's gain.

Movie

The **Movie** node allows you to add animations to materials. Supported formats are AVI, MPG, and WMV. This node has the following attributes:



Movie node.

- **Video Source**: The **Video_Source** attribute specifies the path containing the selected animation.
- **U_Scale**: The **U_Scale** attribute defines the size of the animation in the U direction.
- **V_Scale**: The **V_Scale** attribute defines the size of the animation in the V direction.
- **U Offset**: The **U_Offset** attribute defines the U position of the first texture tile in UV space. When using a projection map method (see below), this is one of two attributes used to define the position of the upper left corner of the projection "screen" in grid units.
- **V Offset**: The **V_Offset** attribute defines the V position of the first texture tile in UV space. When using a projection map method (see below), this is one of two attributes used to define the position of the upper left corner of the projection "screen" in grid units.
- **Texture Coordinates**: The **Texture_Coordinates** pull-down menu offers the following choices:
  - **UV**: The **UV** option behaves like rubber wallpaper that can stretch over the object surface; the PICT file is made to correspond with set positions on the object's surface, making any distortion caused by the stretching seem more natural. This is the most versatile mapping method.
  - **VU**: The **VU** option is identical to UV mapping, except that the image map is rotated 90 degrees.
  - **XY**: The **XY** option works like a slide projector in that the "screen" being projected onto is the XY plane whose

size and position are determined using the **U_Scale**, **V_Scale**, **U_Offset**, and **V_Offset** parameters. Any surface not oriented with the selected viewing plane will distort the texture at render time.

  - **XZ**: Same as above but uses the XZ plane.
  - **ZY**: Same as above but uses the ZY plane.

- **Image Mapped**: The **Image_Mapped** pull-down menu offers the following choices:
  - **None**: The background color will be used for all areas of the object not covered by the texture map.
  - **Alpha**: The background color will be used for all areas of the object not covered by the texture map. The background color will also be blended with the texture map based on the alpha channel of the texture map.
  - **Clamped**: The edge pixels of the texture map are repeated to cover any area of the object not which the texture map does not cover.
  - **Tile**: The texture map will be tiled to ensure total coverage. Tiling is controlled using the **Mirror U** and **Mirror V** attributes, below.
- **Background**: The **Background** attribute specifies the background color.
- **Global Coordinates**: Checking the **Global_Coordinates** button forces projected maps to use global instead of local coordinates.
- **Mirror U**: Enabling the **Mirror_U** option can help hide the seams between texture cells when tiling textures.
- **Mirror V**: Enabling the **Mirror_V** option can help hide the seams between texture cells when tiling textures.
- **Texture Strength**: The **Texture_Strength** attribute defines the strength of the animated texture map, where 1=100%.
- **Frame Number**: The **Frame Number** attribute functions primarily as an input for other nodes (such as math and variable nodes), and allows you to retime the animation controlled by this node.
- **Loop Movie**: Checking the **Loop Movie** checkbox loops the animation.

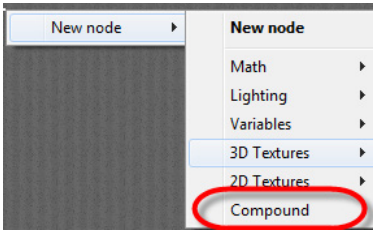
Compound Nodes

The Compound Node allows you to combine any Poser node type as an external input or output, providing a way to reduce clutter in the Advanced Material Room. You can create modular blocks that expose essential settings to the user in the main material

room. If the user wants to expose the other settings for editing, they can open up the compound node in a separate window.

Creating a Compound Node

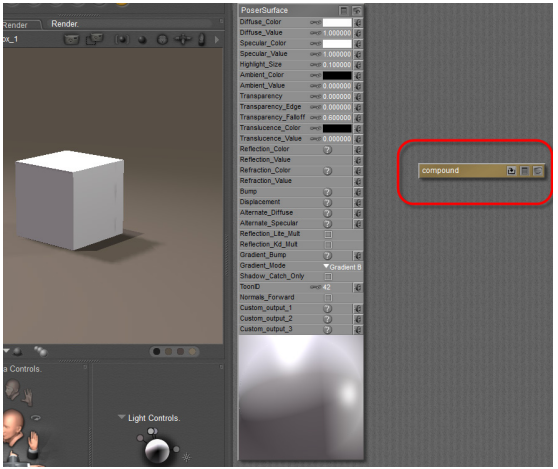
A Compound Node is created using the same methods as discussed in "Creating Nodes" on page 319. You will notice a new node type called **Compound** in the **New Node** menu. Initially, the new compound node will appear as shown at the bottom of the following figure. When you first create the compound node, there will be no input or output connections exposed. In order to add them, you will need to follow the steps that are outlined in "Editing Compound Nodes" on page 383.



Creating a new Compound node.

You can also select two or more nodes in the main Material Room window and collapse them into a compound node. See "Collapsing Existing Nodes into a Compound Node" on page 386.

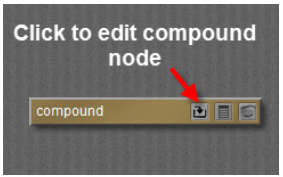
In the following figure, we start with a primitive cube that has no material settings. Then we create a new Compound node in the main material room window. You'll learn how to edit the compound node in the section that follows.



Start with a new compound node.

Editing Compound Nodes

After you create a new compound node (or collapse existing nodes into a compound node as described in the next section), click the first icon in the title bar to open the node in a separate editing window in the Material Room.

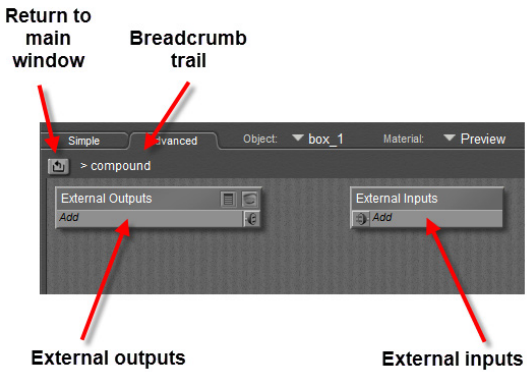


Click the Compound node icon to edit the compound node in a separate window.

When you enter the Compound Node editor, you'll see the following features:

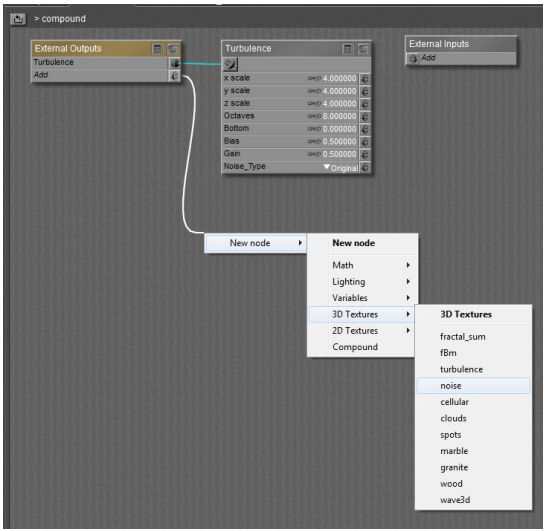
- **Return to Main Window:** To return to the main window in the Advanced Material Room, click the icon that appears at the upper left corner of the Compound Node editor.
- **Breadcrumb trail:** Compound nodes can be nested (in other words, you can have compound nodes within compound nodes). If you are editing a nested compound node, you'll be able to follow a breadcrumb trail to move forward and backward in the hierarchy.

- **External Outputs**: The nodes that you connect here will be exposed on the compound node as output plugs that you can connect to other nodes in the main window.
- **External Inputs**: The nodes that you connect here will be exposed on the compound as inputs plugs and settings that you can connect to other nodes in the main window.



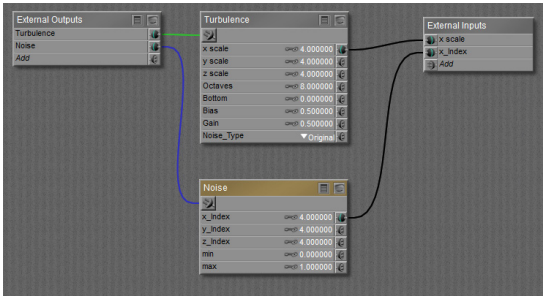
Compound node editor.

When creating connections to the external inputs and outputs, you'll use the same steps as you would in the main Material Room advanced view. In the following figure, a Turbulence node has been attached to the External Outputs, and a second external output (Noise) is in the process of being added.



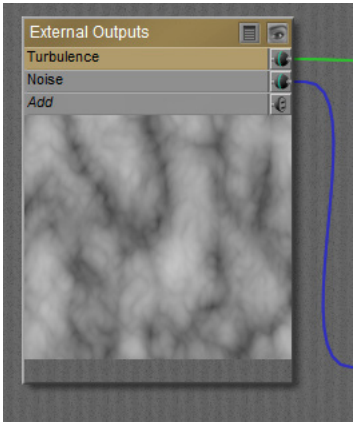
Adding external outputs.

Next, we'll connect one input each from the Turbulence and Noise nodes into the External Input connector in the compound node. What you have now is a very basic compound node that has two eternal outputs, and two external inputs.



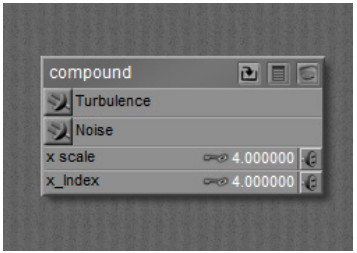
Connecting external inputs.

Click the Eye icon in the upper right corner of the External Outputs node to expand the preview. When you highlight the name of one of the external outputs, the preview will update to display the results that will be output through the compound node.



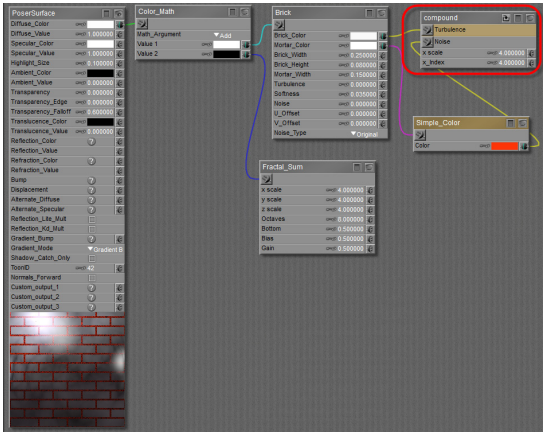
Previewing external outputs.

After you are finished editing, click the icon in the upper-left corner of the Compound Node view (at the left of the breadcrumb trail) to return to the main Advanced Material Room view. Your compound node will now display the external inputs and outputs that you created in the Compound Node editor window.



The compound node in the main window.

You can then connect your compound node into other nodes in the main material room, just as you do with any other node.



Connecting the compound node to other material nodes.

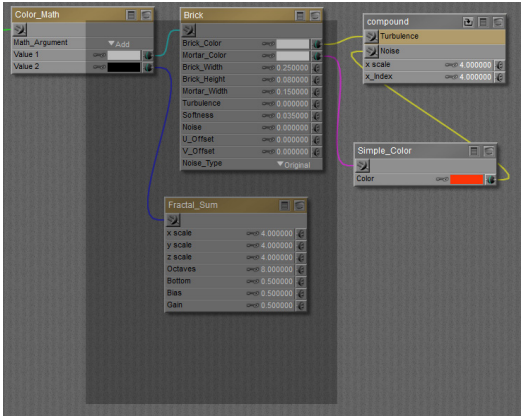
Collapsing Existing Nodes into a Compound Node

You can select several nodes that already appear in the Advanced Material Room window, and then collapse them into a single compound node. This helps reduce clutter in the main window,

and allows you to later go back and work on one aspect of your texture at a time in a separate window.

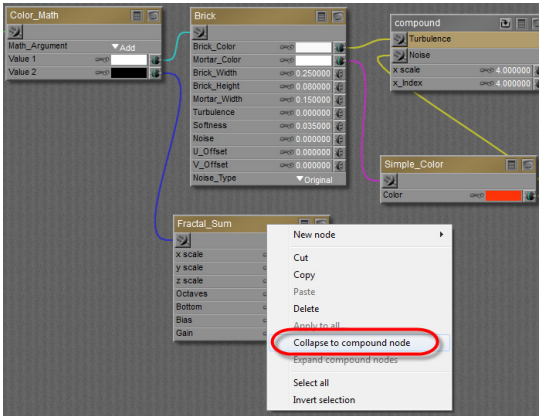
To collapse two or more nodes into a compound node, follow these steps:

1. Select two or more nodes in the Advanced Material View. You can select nodes by shift-clicking them, or by drawing a rectangular selection around them as shown in the following figure.



Selecting nodes.

2. Right-click over one of the selected nodes and choose **Collapse to Compound Node**.

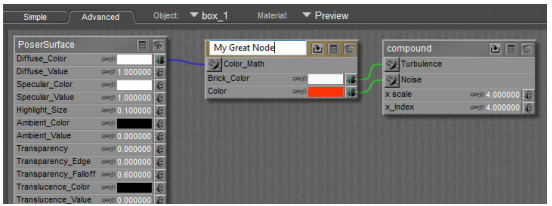


Collapsing a Compound node.

Renaming Nodes and Connections

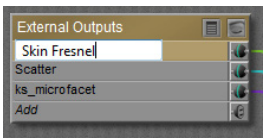
When you return to the main window in the Advanced Material room, the compound node is initially assigned a name of compound, followed by a numerical value. You can double-click

the name to enter a name that is more descriptive, as shown in the following figure.



Renaming a Compound node.

When you are editing nodes in Compound Node view, you can also rename the external inputs and outputs that you connect to the compound node, so that the user has a better understanding of how that input or output will affect the material.



Renaming an external output.

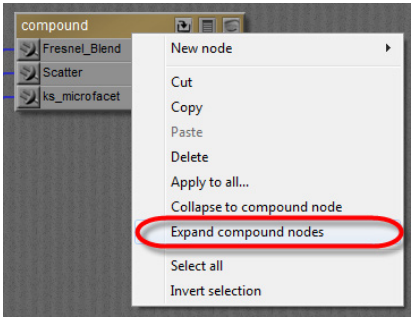


The connections in the compound node can also be rearranged by dragging the external input and output names up or down and arrange them in a logical manner . For example, you can place them in order from top to bottom to match up with the connections that you make to the PoserSurface node, so that the connections do not cross over each other.

Expanding Compound Nodes

You can use the Expand Compound Nodes command in the node menu to “uncollapse” the compound nodes into their individual components. This will place the individual nodes back into the main editor in the Advanced Material Room so that they are accessible on an individual basis.

To expand a compound node, right-click on the node you want to expand, and choose **Expand Compound Nodes** from the context menu.



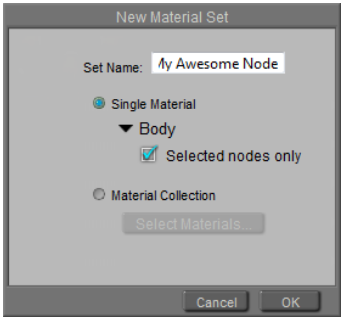
Expanding a Compound node.

Saving Compound Node Fragments to the Library

To save a compound node to the library, follow these steps:

1. Click to select the compound node that you want to save.
2. Switch to the Materials category in the library that you want to save the selected node into.
3. Navigate to or create the folder that you want to save the node into.
4. Click the **Add to Library** button in the Library window. The New Material Set dialog appears.
5. Enter a name for the library item in the Set Name field.
6. Check the **Single Material** option, and make sure that the **Selected Nodes Only** option is checked.
7. Click **OK** to save the compound node to the library.

A compound node fragment only saves the connections between the nodes that you selected when you saved the compound node fragment. If you later add that fragment to another material, you will need to connect the inputs or outputs from the compound node fragments to the appropriate nodes in your current material.



Saving a compound node.

Part 4: Rendering

Chapter 17: The Render Menu

The Render pull-down menu (in the top Poser menu bar) is where you render still images of your scene and access Poser's render settings.

Render

Selecting **Render > Render** renders your current scene using the currently selected renderer and that renderer's current settings. Please refer to "Part 4: Rendering" on page 391 for more information about the FireFly render engine and adjusting render settings.

Area Render

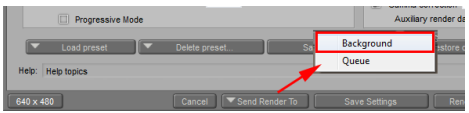
Selecting **Render > Area Render** enables the Area Render feature, which allows you to select a specific region of the current image to render, thereby saving processing time. Please see "Area Render" on page 89 for a complete description of this feature's functionality.

Render in Background

Render and work at the same time! Using Poser Pro's background rendering capabilities you have the ability to render large, complex still frame scenes while you work. With the FireFly render engine you can continue to work on your current scene while sending another project to render.

To Render in the background, from the **Main Menu** select **Render > Render in Background.**

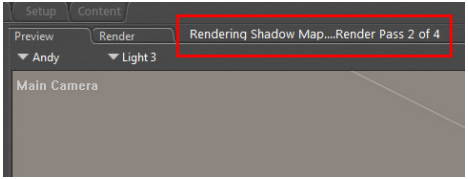
Alternatively from the **Render Settings** dialog, and from the **FireFly Tab,** you can also click on the **Send Render To** button and chose **Background** on the menu, to render a single image of the current state of the scene in the background.



Rendering in a background process.

Background renders are only available for single frames (images). The Background Render option will not be available for movies. We recommend using the Render Queue (see "Sending Jobs to the Queue Manager" on page 427) when rendering movies.

After the Background Rendering has initialized, the **Progress Bar** on the Document Window will show your Background Rendering progress as you continue to work.



Poser Pro's Background Rendering capabilities allow graphic artists to render and work at the same time.

Clicking on the **Preview Tab** will allow you to continue to modify your current project while it's rendering.

If you find you need to cancel the Background Rendering in progress, just click on the **Cancel** button in the upper right corner of the document window.



Cancel Render button.

Render in Queue

This command sends rendering jobs to the Queue Manager. For more information, see "Sending Jobs to the Queue Manager" on page 427 for further information.

Sketch Style Render

Selecting **Render > Sketch Style Render** renders your scene using the current Sketch Designer settings. Please see "Chapter 20: The Sketch Designer" on page 440 for information on working with the Sketch Designer. Once you've set your options, you can use this menu command for rendering at any time while working in your scene.

Antialias Document

Selecting **Render > Antialias Document** smooths rough edges in your **Document** window view for preview purposes. Antialiasing is a process of oversampling image data to smooth object edges and avoid a jagged appearance along them. The following images show a test render both without (left) and with (right) antialiasing enabled.



Normal preview (left); Anti-aliased (right).

You can specify whether or not to apply antialiasing during renders when specifying render settings. Please refer to "Chapter 18: The Render Settings Dialog" on page 397 for more information about specifying render settings.

Motion Blur Document

As you probably know, fast-moving objects appear blurry. The blur is caused by the fact that our eyes cannot "refresh" quickly enough to see that the object is no longer in its previous location. The **2D Motion Blur** feature lets you give your animations the illusion of motion, adding a whole new dynamic and level of realism to your renderings.

Please see "Chapter 19: Using The FireFly Render Engine" on page 404 for information about using the **3D Motion Blur** feature. You can also blur a single frame for test purposes by selecting **Render > MotionBlur Document**.



Using motion blur.

Render Settings

Selecting **Render > Render Settings** opens the **Render Settings** dialog. Please refer to "Chapter 18: The Render Settings Dialog" on page 397 for information about the **Render Settings** dialog.

Render Dimensions

Selecting **Render > Render Dimensions** brings up the Render Dimensions dialog, which contains settings that allow you to specify the dimensions of your render tab. See "Render Dimensions" on page 75 for more information on the **Render Dimensions** dialog settings.

Materials

Selecting **Render > Materials** opens the **Material** room. Please refer to "Chapter 14: The Material Room" on page 296 for information about the **Material** room.

Reload Textures

Selecting **Render > Reload Textures** will reload into memory all textures for the current scene preview display. This allows you to easily update any changes you may have made in other applications to the currently loaded textures.

Reuse Shadow Maps

If you do not make changes to lights or object positions between renders, there is no need to recalculate the shadow maps for

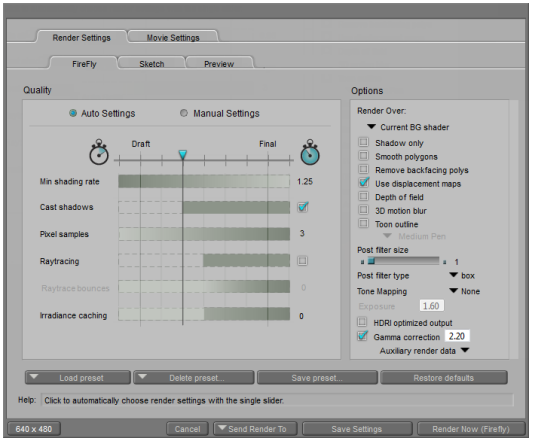
your scene, as they will not have changed. Selecting **Render > Reuse Shadow Maps** allows you to save the shadow map computations from your previous render and reuse them, thereby saving time with each subsequent render.

Clear Shadow Maps

Selecting **Render > Clear Shadow Maps** will cause Poser to recalculate the shadow maps for your scene during the next render. Use this option if you have made changes to lights or object positions, as such changes will affect the shadows in your scene.

Chapter 18: The Render Settings Dialog

To open the **Render Settings** dialog, select **Render > Render Settings**. This window appears as follows.



The Render Settings dialog.

Note that the **Render Settings** and **Movie Settings** dialogs appear as tabs within a single dialog, thereby making it easy for you to toggle between them.

Render Engines

Poser allows you to render still and animated scenes using three separate render engines. You can select which tool you wish to use by clicking on the relevant tab in the **Render Settings** dialog. The available Poser renderers are:

- **FireFly rendering engine**: This rendering engine supports the use of procedural shaders, contains many controls that let you control exactly how you want your rendered images/movies to appear, and has the capability of generating truly breathtaking results. Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for information on using the FireFly renderer.

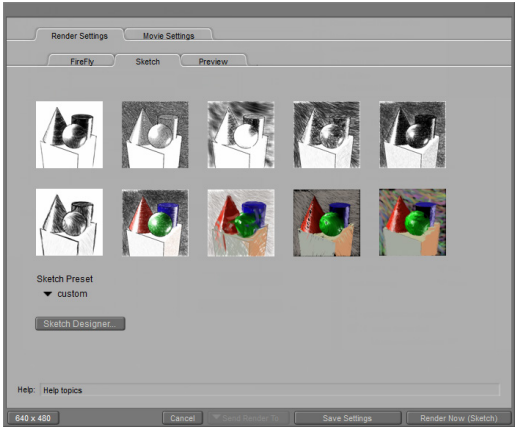
- **Sketch Renderer**: The **Sketch Renderer** simulates a variety of fine art techniques, to render your scene as a drawing or painting. This tab also provides access to the **Sketch Designer**, discussed in "Chapter 20: The Sketch Designer" on page 440.

- **Preview**: If you want to render quality high-resolution wireframe or silhouette (or any other display style) views of your scene, please choose the Preview rendering engine.

You can also select the **Preview** tab to configure your scene preview window options.

Sketch Tab

The **Sketch Tab** provides thumbnail previews of ten standard Sketch preset styles. Simply click on the appropriate thumbnail to select the desired preset, and then click the **Render Now** button to render your image using those preset values. Alternately, you can use the **Sketch Preset** pop-up menu to select from a list of standard presets and any custom presets you may have saved using the **Sketch Designer**. To easily access the **Sketch Designer** for fine tuning your sketch settings or creating new presets, simply click on the **Sketch Designer** button. Please see "Chapter 20: The Sketch Designer" on page 440 more information about using the **Sketch Designer** render engine, please see .

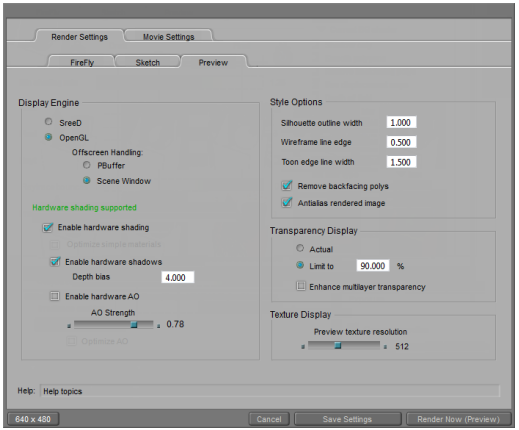


The Sketch Renderer.

Preview Tab

This tab allows you to customize the Scene Preview display in the **Document** window, using the following settings: The settings in this tab apply to the document preview, and the use of Preview for actual output.

The settings are discussed in the following sections.



The Preview Render tab.

All options on the Render Settings Preview tab except for Offscreen Handling are now stored in the document. Please set a Preferred Scene on General Preferences Document tab if you want your settings to persist between sessions.

Display Engine Settings

Select the appropriate radio button to use Poser's built-in SreeD software rendering, or OpenGL hardware rendering, for image previews. These settings apply to the document preview, and the use of Preview for actual output. Please refer to "OpenGL Hardware Acceleration" on page 76 for more information about the OpenGL hardware rendering option for Poser.

When using OpenGL for rendering, there are two additional options for offscreen handling. The default is **Scene Window**. *When rendering a final output with the Preview renderer, if you encounter blank areas where other windows were overlapping the scene window, you should switch to* **PBuffer**.

All options on the Render Settings Preview tab except for Offscreen Handling are stored in the document. Please set a Preferred Scene on General Preferences Document tab if you want your settings to persist between sessions.

Procedural Shader Preview

When using OpenGL hardware rendering, you can choose to see the effects of the procedural shaders you are using in your actual Scene Preview display, provided your system will support it.

Once you select OpenGL, Poser will automatically check whether or not your system will support the calculation of real-time procedural shader effects. Poser will then provide a message within the **Preview** tab, stating whether or not your system will support this feature. If you are not using OpenGL, Poser will provide a message that the status of this feature is undefined for your system; simply switch to OpenGL to have Poser confirm the support status.



Procedural shader preview is available for scenes using up to eight light sources.

- **Enable Hardware Shading:** You can enable procedural shader previews by clicking the checkbox. This feature is enabled (checked) by default.



When Hardware Shading is enabled, the preview renderer will only display five lights, due to complexities of depth map shadows, AO, and normal mapping. When Hardware Shading is turned off, you can preview up to eight lights.

- **Optimize Simple Materials:** Enable shader optimization by checking the checkbox. When shader optimization is enabled, shaders will not be generated for simple materials. Optimization is enabled by default.
- **Enable Hardware Shadows:** Uncheck this option to disable enhanced real-time shadows when using hardware shading. The **Depth Bias** setting is dependent on the scene, the light placement, and the camera hither and yon settings. You want to find the smallest value that works well for your scene and hardware. An offset of 4 is generally a good starting point for NVidia cards, and an offset of 1 is a good starting point for ATI cards.



The crisper your shadows are (that is, the larger your shadow map sizes are), and the more your light shines on a surface, the lower your hardware shadow **Depth Bias** *setting should be.*

The performance of the procedural shader preview feature will be dependent upon your system's hardware. Complex scenes with a large number of shaders may slow preview performance; if you are working with a large number of shaders, you may wish to disable this feature.



The procedural shader preview feature does not support bump or displacement maps. Additionally, certain nodes are not supported, such as some raytracing effects, and some of the Variable nodes.

- **Enable Hardware AO**: When checked, Ambient Occlusion is displayed according to the capabilities in the graphics hardware.
- **AO Strength**: Controls the extent at which the space ambient occlusion effect is applied.

Scene Style Options

You can also specify various **Style Options** for your scene preview display, by entering your desired values in the appropriate fields. These options include the following:

- **Silhouette Outline Width**: The **Silhouette Outline Width** option allows you to specify the width of the lines used in the Outline display style.
- **Wireframe Line Edge**: The **Wireframe Line Edge** option allows you to specify the width of the lines used in the Wireframe display style.
- **Toon Edge Line Width**: The **Toon Edge Line Width** option allows you to specify the width of the Toon Outline display option, as enabled via the FireFly render settings.
- **Remove Backfacing Polys**: Polygons facing away from the camera will not be rendered when this option is checked.
- Check the **Antialias rendered image** option to smooth out rough "stairstep" edges that might appear in diagonal or curved-shaped areas of high contrast.

Click the **OK** button to apply your settings.

Transparency Display

You can set the **Transparency Display** to the actual transparency, or a specified limit, by clicking the appropriate radio button.

Selecting the **Actual** button will make any fully transparent surfaces invisible in your scene preview.

- If you wish to have some indication of where those items are in your scene preview, you can specify a limit to the transparency by selecting the **Limit to** button, and entering a maximum transparency percentage value. In the final render, transparent items are always rendered using the actual transparency settings.

- Objects with multi-layered transparency, such as hair, can sometimes appear to have inverted polygons in areas where the layers overlap. Check the **Enhance multi-layer transparency** option to improve the display of multi-layered transparent objects. The preview display runs slower when this option is enabled.

Texture Display Resolution

Adjust the **Preview Texture Resolution** slider to your liking. Lower settings provide less detail in your scene preview, but save on system resources. Higher settings provide more realism, but may result in slower performance while building your scene in preview mode.

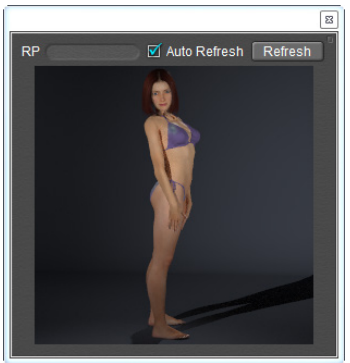
Movie Settings

You can access the **Movie Settings** window by toggling the **Movie Settings** tab next to the **Render Settings** tab. Please refer to "Keyframe Controls" on page 452 for more information on movie settings.

Real-time Raytrace Preview

Choose **Window > Raytrace Preview** to enable the real-time raytraced viewport, which provides a more accurate preview render without having to render your scene.

If the **Auto Refresh** option is enabled, the Raytrace Preview window will update automatically as you make changes in your scene, reducing the need for preview renders as you make changes. To update the window manually, uncheck the **Auto Refresh** option and click the **Refresh** button to update the preview.



The Raytrace Preview.

The Raytrace Preview window functions just like any other Poser palette, which can be docked or floated. It appears only in the room in which you initially opened it. For example, if you turn the Raytrace Preview window on in the Pose Room, but then switch to the Material Room, you will not see the Raytrace Preview window unless you choose the **Window > Raytrace Preview** command in the Material Room. When you return back to the Pose Room, the first Raytrace Preview window will still be open there.



The Raytrace Preview rendering levels are in the Render Settings "Progressive Mode", a truncated set of parameters that you can use to speed up rendering by reducing the number of rays or use of displacement maps. Several manual settings will be disabled when using progressive mode. Uncheck this option if you need more flexibility with manual render settings.

Tips & Tricks

This section contains a few tips and tricks for improving still and animated renders:

- Experiment with low render settings and gradually increase them until you get the results you want. This will render your scene using the optimal balance between quality and speed. Small Web animations might need lower quality rendering while a piece of fine art might require very high settings.
- Still and animated renders use the currently selected camera. Be sure to select the proper camera before rendering, particularly if camera motion is part of your animation.
- By default, Poser renders using the **Texture Shaded** display style.
- Use the draft and production rendering options to save time while working and produce highly realistic results.

Use prop-based hair and figure-based clothing instead of strand-based hair and dynamic cloth where you do not need dynamic effects. This will conserve computing resources.

Chapter 19: Using The FireFly Render Engine

This chapter describes the FireFly technology features and render settings:

The FireFly renderer includes a wealth of powerful features, all of which help to create beautiful, realistic renders in little time. Those aspects of FireFly that are configurable are described in the following section. The following features enhance FireFly's performance and results:

- **High Dynamic Range (HDR) Image Support for IBL**: Poser supports both High Dynamic Range (HDR) and Low Dynamic Range

- HDR images are comparable to analog photo film, with regards to the amount of information stored in the image. HDR light probes have a significantly higher amount of information, but are much harder to produce.

  There are a number of different ways to create HDR images. Several tutorials appear on the Internet for using Photoshop CS2 or later to create HDRI images. Some of them appear at http://www.photoshopgurus.com *or* http://www.photoshopcafe.com*, for example.*

  - You can use LDR images with Image Based Lighting (IBL). LDR light probes are relatively easy to create, using a mirrored ball to capture the light information in a given environment. However, the amount of information captured is much less than with an HDR image, and therefore the quality of the light probe is lower. For more information about Image Based Lighting and light probes, see "Diffuse Image Based Lights (IBL)" on page 263.

- **Occlusion Culling**: FireFly ignores invisible scene elements while rendering, in order to improve render performance. **Occlusion culling** determines which scene elements have visible impacts on the scene, and which may be culled (ignored). FireFly runs occlusion culling calculations for both the object and shadow render passes, to determine whether each scene element (a) is visible within the scene, and (b) casts any visible shadows. Occlusion culling cannot be used in conjunction with raytracing, as raytracing calculations include all scene elements, visible or not.

  A scene element's visibility or invisibility with regards to occlusion culling is not the same as the Visibility setting the Properties palette for that element. When unchecked, the Visibility property setting actually hides an object within the scene, so that the object is not included in any render calculations regardless of its placement within the scene. Occlusion culling

calculations apply to items that are set to be visible within the scene, but are obscured from the camera's perspective by other scene elements.

- **Texture Filtering**: Texture filtering improves the appearance of surfaces rendered using 2D image maps, giving you better quality images, and avoiding aliasing and other artifacts. Tiled texture loading uses texture filtering to reduce the time required for processing. Texture filtering can be configured for individual textures on the **Image Map** node in the **Material** room (see "Image Map" on page 373 for more information).



Without Texture Filtering (top); With Texture Filtering (bottom).

- **Tiled Texture Loading**: Upon your first FireFly render Poser generates temporary files on the hard disk from the textures within the scene, and then selectively accesses them during render time. Poser also creates a cache in memory that contains the most recently used texture tiles. Tiled texture loading makes use of other features, such as texture filtering to reduce processing time. Depending upon your system's resources, you may wish to increase the memory cache size to offset the amount of disk access required for

tiled texture loading, as this feature may use a lot of hard disk space (potentially more than 1 GB). For information about increasing the memory cache size, see "Render Preferences" on page 37.

- **Multi-threaded Rendering**: The Multi-threaded Rendering feature takes advantage of the increased processing power of the multi-processor or multi-core computer systems that are now available. Using this feature, you can configure FireFly to render any number of separate threads simultaneously, which results in reduced render times for most renders. The number of threads can be specified in the **General Preferences** dialog (see "Render Preferences" on page 37 for more information).



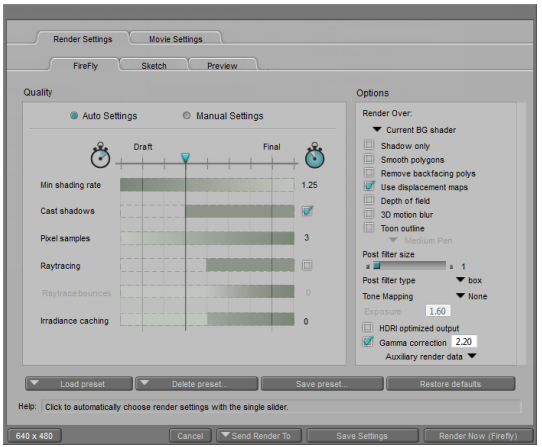
We recommend rendering your scene with as many threads (CPU cores) as your system possesses. This is the default preference after installing Poser. If you are unsatisfied with the resulting performance, or if the render fails to complete, then reduce the number of threads and/or maximum bucket size.

- **Rendering in a Separate Process**: By default, Poser runs the application and the FireFly render engine within a single process on the CPU. This means that both the application and the render engine share the maximum memory allotment given to a single process. Rendering in a separate process means that the render engine alone has access to that same maximum memory allotment, which can yield significant performance advantages for highly complex scenes, depending upon the memory configuration of your specific system. In addition, rendering in a separate process provides greater stability due to the compartmentalization of tasks, as well as allowing your system to manage memory more efficiently. However, rendering in a separate process does require more resource overhead for setting up the render. Therefore, if you are running primarily area renders or simple small renders, we recommend that you do not use this feature as the setup overhead will negate the performance benefits. However, for large complex renders, rendering in a separate process will definitely yield significant benefits. You can enable or disable this feature in the **General Preferences** dialog (see "Render Preferences" on page 37 for more information).

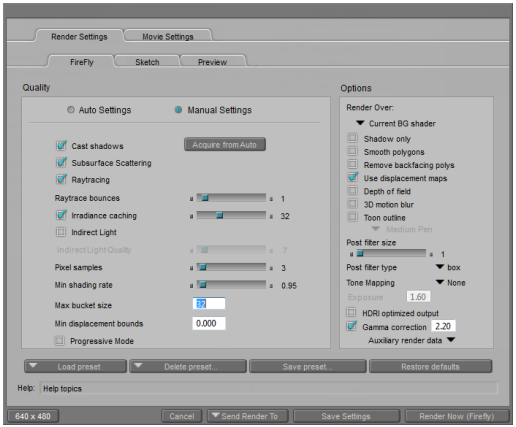
Firefly Tab: Quality Settings

The FireFly tab offers you a choice between specifying your render settings automatically or manually. Check the **Auto Settings** or **Manual Settings** radio button to display the appropriate render setting controls. Note that the Auto and Manual settings are stored independently, so making changes to one will not affect the state of the other. The Auto settings are

useful when you first start using Poser's FireFly render settings, because they allow you to quickly setup and render your scenes.



Auto Settings.



Manual Settings.

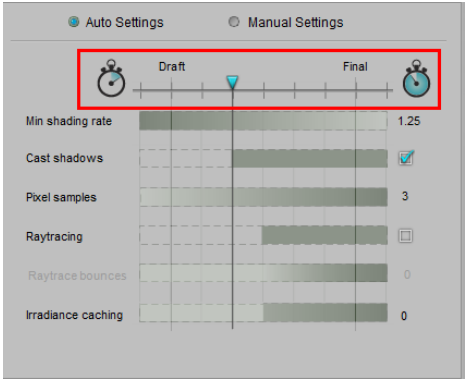
Auto Settings: Draft vs. Final Quality

The Auto Settings option contains a Render Quality slider, that ranges from Draft Quality (faster render times) to Final Quality (slower render times). Moving this slider will automatically adjust the values of the specific render settings, as shown on the graphs below the slider. The values of the render settings (Min

shading rate, Pixel samples, Raytrace bounces, and Irradiance caching) are depicted using a gradual shaded bar, with lighter color representing smaller values and darker representing larger values. Render settings such as Cast Shadows and Raytracing are either enabled for the render or not, so those settings are depicted using a solid color bar indicating the point at which they become enabled.

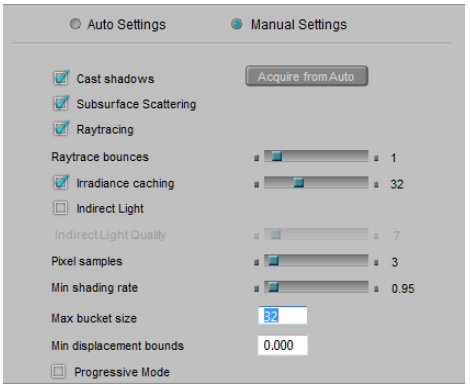
At the Draft Render Quality, the rendering settings will provide faster renders at lower quality. Use this option while creating your scene to get an idea what it will look like once it's completed. At the Final Render Quality, the render settings yield high-quality renders, but with increased render times. Use this option for your final output. There are also options below, above, and between Draft and Final quality which will increase or decrease rendering time depending on your selection.

For a description of the settings that are found in the Auto Settings view, refer to "Manual Settings" on page 409.



Increase or decrease render quality with the Render Quality slider.

Manual Settings



Manual settings.

- **Acquire From Auto**: Clicking the **Acquire From Auto** button applies the current Automatic Quality Settings to the individual Manual Quality Settings parameters.

- **Cast Shadows**: This option is set automatically in Auto Settings. Checking the **Cast Shadows** checkbox causes the rendering engine to calculate shadows when rendering. Individual settings will override this general setting. For example, if a figure in your scene is set to not cast shadows, then it will cast no shadows even if **Cast Shadows** is turned on for all other objects in the scene. However, if the **Cast Shadows** checkbox is not enabled, no shadows will be rendered regardless of individual object settings. Enabling this option adds realism to your renders but can affect render time.

- **Subsurface Scattering**: Enables subsurface scattering in the render engine. Materials that use subsurface scattering will not render properly if this option is disabled. For more information on some materials that use subsurface scattering properties, see "Subsurface Skin" on page 347, "Scatter" on page 351, and "ks Microfacet" on page 344.

- **Raytracing**: This option is set automatically in Auto Settings. Checking the **Raytracing** box enables raytracing, and vice versa. Enabling raytracing greatly enhances renderings, especially for curved surfaces, shadows, reflections, and refraction. However, it also greatly increases rendering times. Raytracing projects rays from the camera through every pixel visible in the render window, also called the View pane. Each pixel is then set to the color value returned by the ray projected through it, based on the ray's point of intersection with an object in the scene. If the ray fails to intersect any objects, the pixel will be set to the background color. To determine whether the point of intersection is in shadow, a secondary ray is projected

from the intersection point towards each light source. If the shadow rays intersect an object, the original intersection point lies in the shadow of that object. For reflections, when the ray intersects a reflective surface, a new ray is traced starting from the point of intersection and the color returned by that ray is incorporated into the color of the original intersection. This process is called **recursive raytracing** because reflected rays can spawn more reflected rays as long as they keep intersecting reflective objects. The images below show an example of raytracing. You can set the number of reflections (bounces) using the **Raytrace bounces** option (see below).

- **Raytrace Bounces**: This option is set automatically in Auto Settings. When raytracing is enabled, the **Raytrace bounces** option specifies how many "bounces" or recursions the renderer will use when raytracing. You should select the number of raytrace bounces based on the number of reflective or refractive surfaces that will interact in your scene. Higher numbers can add realism if the scene requires complex raytracing calculations. However, as higher numbers require longer render times, in a simple scenario increasing the number of raytrace bounces will just waste computation time.



When using Indirect Lighting with transparent surfaces, set the Raytrace Bounces setting to at least 2 for proper IDL calculations.



One raytrace bounce (left); three raytrace bounces (right).

- **Irradiance Caching**: This option is set automatically in **Auto Settings**. Irradiance Caching is used to accelerate Ambient Occlusion, Gather and Indirect Light effects. This is done by reusing and interpolating values instead of expensively calculating them separately for every shading point. This process speeds up calculations by tracing less rays. The irradiance caching quality can be adjusted using the Irradiance caching slider. A lower setting means lower quality: FireFly will use more estimations, resulting in shorter processing times but less accuracy. A higher setting equals higher quality: FireFly will run more new calculations, resulting in longer processing times but increased accuracy (see "Indirect Light" on page 413).



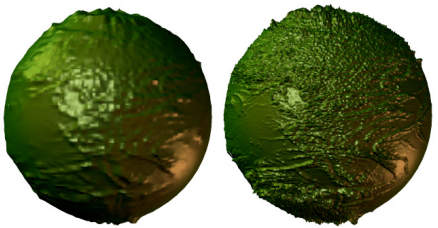
If the quality of your render is unsatisfactory with irradiance caching on, you can disable it to calculate indirect lighting with a "brute force" method. To disable, uncheck the box that appears to the left of the Irradiance Caching slider.

- **Indirect Light**: Only enabled when Raytracing is enabled. See "Indirect Light" on page 413.



When using Indirect Lighting with transparent surfaces, set the Raytrace Bounces setting to at least 2 for proper IDL calculations.

- **Indirect Light Quality**: See "Indirect Light" on page 413.
- **Pixel Samples**: This option is set automatically in Auto Settings. Select the XY pixel sample rate by moving the **Pixel Samples** slider. Alternatively, you can click the dots at either side of the slider to increment (right) or decrement (left) the sample size. Pixel sampling rates determine how many pixels are sampled when calculating antialiasing for a single pixel. For example, a setting of 3 creates a 3-pixel by 3-pixel grid with the pixel being sampled in the center. At render time, the renderer would examine the 3x3 area when determining the color and other values to assign to the pixel currently being rendered. Expanding this number can refine your renders but will greatly affect render times. 3x3 is considered a good default.
- **Minimum Shading Rate**: This option is set automatically in Auto Settings. The **Minimum Shading Rate** value determines the level to which object polygons will be subdivided (or diced) into micro-polygons. For example, a shading rate of 1 means that polygons will be divided into micro-polygons that each occupy approximately one pixel of the rendered image, and a value of 4 means that each micro-polygon will cover approximately 4 pixels of the rendered image. Values less than one (such as 0.2) cause each micro-polygon to be less than a pixel in size. Micro-polygons within a given polygon are as identical in size, shape, and area as possible. At render time, the renderer will subdivide each polygon, sample each micro-polygon, and assign the micro-polygons' average color to the pixel being rendered. Enter your desired sampling rate in the Minimum Shading Rate field, or adjust the slider to the desired value. Decreasing this value can refine your renders but increases render time. You can set this value on a per-object basis using the desired object's Properties palette. Setting this value in the Render Settings dialog applies it to the entire scene, and overrides all per-object settings that are lower than this global value. If an object has a higher shading rate, Poser will use the object's shading rate when rendering that object.



High minimum shading rate (left), loss of detail; Low minimum shading rate (right), full detail visible.

- **Maximum Bucket Size**: The **bucket** is the area being rendered at any one time. Enter your desired value in the **Maximum Bucket Size** field. For example, entering a value of 10 creates a rendering bucket that is no greater than 10-pixels by 10-pixels in size. At render time, the renderer will render one such bucket area at once. Increasing the bucket size increases the area being rendered at once but requires greater system resources. Use caution when enlarging the bucket beyond its default size, and monitor your system resources. Note that Poser will automatically detect when the specified bucket size will consume excessive resources, and in such cases will override the specified bucket size and subdivide the buckets into smaller sizes. Smaller sized buckets require less RAM, but will take longer to render.

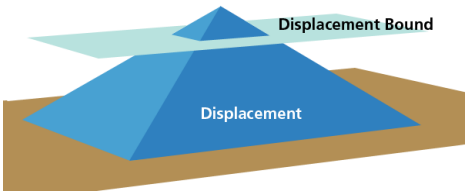
- **Minimum Displacement Bounds**: This feature is enabled only when **Use Displacement Maps** is checked in the Rendering Options window. The **Minimum Displacement Bounds** value is measured in Poser units (as specified in the **General Preferences** dialog), and determines the amount of **displacement** the render engine anticipates. Displacement mapping is a rendering technique that adds realistic bumps and indentations to surfaces. This is normally preferable to modeling deformations directly, since you can alter the **displacement map** (template used for calculating displacement) rather than editing the object. Further, adding such detail directly to an object could exponentially increase its polygon count and therefore greatly affect render time. When setting the **Minimum Displacement Bounds**, keep in mind that it is possible for displacement deformations to exceed the render bucket boundaries. In other words, even though the actual geometry of a given object may be entirely contained within the current render bucket, the object still may cross into adjacent buckets through the displacement of its surface. If a particular displacement exceeds the boundaries of the currently rendered bucket at any point, you will see a hole or **patch crack** at the affected location. To avoid this problem, the render engine takes into account a volume exceeding the actual geometry when determining whether

or not an object is contained within a specific bucket. This volume is specified by the displacement bounds. Smaller bounds result in fewer objects within the current bucket and therefore faster rendering, but increase the risk of geometry cracks along the bucket boundaries. Larger bounds will prevent cracks but will increase render time. The above diagram illustrates this concept. In this case, the top of the pyramid exceeds the bucket bounds and will therefore be cut off, leaving a patch crack. Poser will automatically determine the displacement bounds value, by evaluating the shader trees defining the materials. If the shader tree is particularly complex, Poser might not be able to compute an appropriate value. In such a case, you should specify a higher value in the **Minimum Displacement Bounds** field. This will become the minimum value Poser is allowed to use for the displacement bounds when rendering.

- **Progressive Mode**: Check this option to get a very fast raytraced render. Several manual settings will be disabled when using progressive mode. Uncheck this option if you need more flexibility with manual render settings.



The Interactive Preview Window and progressive mode render without any caching for AO or IDL. Quality can be improved by using a higher number of pixel samples, which comes with proportionally higher render times. For more information on The Raytrace Preview window, see "Real-time Raytrace Preview" on page 402.



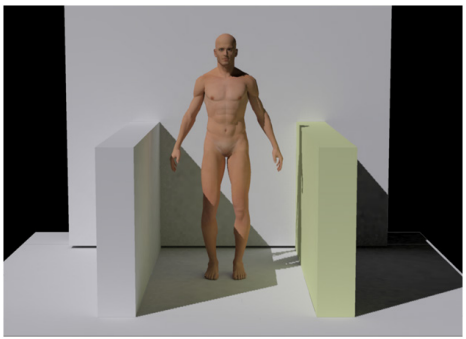
Displacement bounds limit the amount of displacement used in a render.

Indirect Light

Poser's indirect light feature provides increased realism by adding light that naturally bounces off of objects to illuminate other surrounding objects. To use indirect light, create a scene

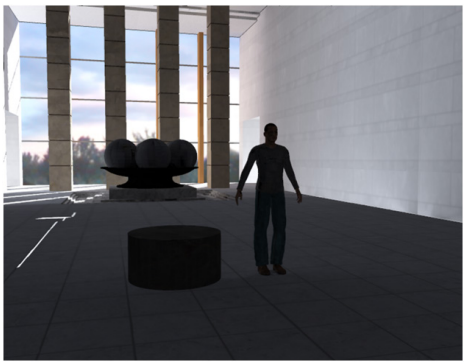
that contains objects from which light will bounce onto your figure(s). For example, you can scale one or more primitive cubes to use as walls behind or near your figure. Point a directional light at the walls and the figure, and the light will bounce off the walls to illuminate the figure near it.

Due to the number of interpolations and calculations required for this feature, the practical use of indirect light in animation will be dependent on the number of elements in your scene and the quality settings set in your renderer.



Indirect lighting bounces light from surrounding objects.

Irradiance caching is used to calculate rays for locations where they can easily be determined. In-between locations are interpolated. The render engine determines whether to calculate or interpolate the rays based on the distance and direction of the current location to the locations previously calculated and the distance to other nearby objects.



Bounced light from IDL creates more realistic renders.

Related Settings in the Render Settings dialog include:

- **Indirect light**: Check this option to add indirect light for more realistic lighting

- **Irradiance Caching**: Determines the ratio of shading points where indirect light will be calculated by raytracing vs. those that will be interpolated.
- Low values result in shorter render times, with more interpolation.
    - High values achieve more precise results at the expense of increased render times.
    - **Indirect Light Quality**: Indirect Light Quality determines the number of rays used to calculate the indirect light. Higher values mean higher quality at the expense of longer render times.

The renderer will perform one pass as it samples the light rays. The pre-pass displays red dots in the places where indirect light is calculated explicitly. Following the pre-pass, the final render is completed using the indirect light calculated in the pre-pass.

IDL Tips and Tricks

- **Scene Considerations:** Indirect Light is designed to simulate real-world lighting where light bounces from one object to another in your scene. It works best when the main objects in your scene are surrounded by some type of environment such as a box, an environment sphere, or a room built with the PICK props which you will find in the Props library. Try to use props and materials that simulate a real-world scene when you build a scene that uses IDL.
- **Watch the Pre-pass**: During the IDL pre-pass, you'll see red dots appear in the areas where indirect light is calculated. The Irradiance Caching setting controls how sparse or dense the calculations are. If the dots are too sparse, set the Irradiance Caching slightly higher and render again. Conversely, if the dots are too dense you can reduce the Irradiance Cache setting.
- **Smearing**: If you see smearing in your scene, it probably means there is not enough detail being picked up in the indirect light. Increase the irradiance cache setting to reduce the smearing.
- **Splotchiness:** Splotchiness occurs when there are too many samples taken. If you find that the dots are too dense during the IDL pre-pass, it may result in splotchiness. Turn down the Irradiance Caching setting, and increase the IDL Quality setting.
- **Watch the number of lights:** You won't need as many lights in your scene when using IDL. Start with one or two lights, using the first one to light your main subject, and a second light at about 15% intensity to offset shadows if they are too dark. Also position your lights appropriately as they relate to the source of the light (such as sunlight in day

scenes, moonlight or artificial light in night scenes, or light through windows or from lamps in interior scenes).

- **Shadows**: For more realistic shadows, use Ray Traced shadows. For your main light, start with a Blur Radius of around 10, Shadow Samples of around 40, and falloff set to constant. Also use a Shadow Min Bias setting that is appropriate for your display units setting. For example, if your display units are in inches (as set in the Interface tab of the General Preferences dialog), set the Shadow Min Bias to .1 inch. Adjust these settings as appropriate for your scene

- **Normals**: Indirect light is always calculated in the direction of the normals. You will want to check the Normals Forward option (usually checked by default) in the Poser Surface root material node. This option is discussed in "Root Material (PoserSurface) Node" on page 325.

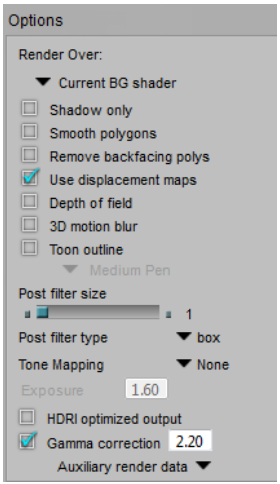
- **Watch for Ambient glow**: There are times when you desire ambient glow from materials that are designed to be self-illuminating (LED's, computer screens, candle light, an illuminated ceiling, and so on). There may be other times when content uses colors or values in the Ambient channel that cast undesirable light when IDL is enabled. This is particularly noticeable in skin textures and can leave the character looking "flat."To check for objectionable ambient glow, keep IDL enabled but turn all lights off. Then render your scene. If you see light being cast from undesired places, you'll need to adjust the ambience of the offending materials in the Material room. After you have fixed the objectionable materials, turn your lights back on and re-render.

- **Animation Considerations**: When rendering out an animation while using IDL, make sure that multi-threaded rendering is not being used (set Number of Threads to 1 in the Render tab of the General Preferences dialog). If you leave the setting at 2 or higher, your renders will come out jittery, as the shadows and lighting will not line up from frame to frame.



To create a transparent object with an interesting glow, change the Transparency, Transparency Edge, and Transparency Falloff settings to .8 and mix with higher Ambient values and IDL features.

FireFly Options Settings

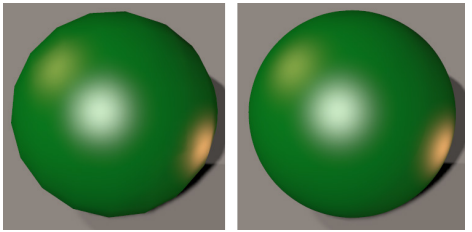


Firefly Options.

- **Render Over**: These options specify the background to be used when rendering images or movies. Check the appropriate radio button for the option you wish to select.
  - **Background Color**: Selecting **Background Color** renders the image/movie over the **Document** window's background color. Please refer to "Colors" on page 96 for information about changing **Document** window colors.
  - **Black**: Selecting **Black** renders the image/movie over a plain black background.
  - **Background Picture**: Selecting **Background Picture** renders the image/movie over the background image in your scene. Please refer to "Importing Background Pictures" on page 778 for information on importing background pictures.
  - **Current Background Shader**: Selecting **Current BG Shader** renders the image/movie over the specified background shader. Please refer to "Root Background Node" on page 329 for information about using background shaders.
- **Shadow Only**: Checking the **Shadow Only** checkbox will cause only the shadows from your scene to be rendered; everything else in the scene will be completely white. This feature is most useful for production rendering, as it allows you to render just the shadows, thereby allowing you to edit them independently from the rest of the scene. You can then take the shadow only render into an image editing program,

and composite it with the unshadowed scene. This setting overrides all other render settings.

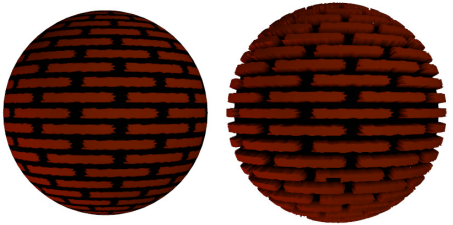
- **Smooth Polygons**: Checking the **Smooth Polygons** checkbox enables **polygon smoothing**, and vice versa. When enabled, the FireFly rendering engine uses polygon subdivision to smooth hard corners on objects. If your scene contains hard edges that you don't wish to have smoothed, you should define those hard edges either by specifying smoothing groups or by setting a crease angle threshold to determine which polygons are affected. Please see "Smoothing Geometry" on page 422 for more information about smoothing groups and setting the crease angle threshold. This option can be disabled for specific objects as needed, in the object's Properties palette.



Without Polygon Smoothing (left); With Polygon Smoothing (right).

- **Remove Backfacing Polys**: Check the **Remove Backfacing Polys** option to turn off rendering of all polygons that do not face the camera. This option saves rendering time, but can effect realism when using raytracing. The polygons that are rendered depend upon the angle and position of the camera and objects in your scene.

- **Use Displacement Maps**: Checking the **Use Displacement Maps** checkbox enables (checked) or disables (cleared) using displacement maps in your rendered output. Please see "About Maps & Templates" on page 283 for a description of maps in general, the "Displacement Map" on page 287 for a description of displacement maps, and "Chapter 14: The Material Room" on page 296 for information about the **Material** room (maps are added to nodes that are part of shaders).



Without Displacement (left); With Displacement (right).

- **Depth of Field**: Widening the lens aperture of the camera allows you to achieve a **Depth of Field** effect. The farther away items are from the focal plane, the more blurred they will appear. The **Depth of Field** checkbox allows you to enable or disable this effect when rendering your scene. Please refer to "Camera Parameters" on page 252 for information on configuring Depth of Field settings.

- **3D Motion Blur**: As you probably know, when you shoot a photo of a fast moving object, it appears blurry. The amount of blur is directly related to the length of time that the camera's shutter remains open while taking the shot. In a similar manner, Poser's **Motion Blur** feature lets you give your animations the illusion of motion, adding a whole new dynamic and level of realism to your renderings. Checking the **3D motion blur** checkbox enables motion blurring for your scene when rendering. When this option is enabled, adjusting the shutter open and close times affects the amount of blurring. Please refer to "Camera Parameters" on page 252 for more information about the **Shutter Open** and **Shutter Close** parameters.

- **Toon Outline**: The **Toon Outline** option uses post-processing during the rendering process to draw an outline around the edges of cartoon images. You can select from nine outline brush styles. We recommend applying a Toon shader node to your images, and then complementing that shading with the **Toon Outline** option. Check the **Toon Outline** checkbox to enable this feature.

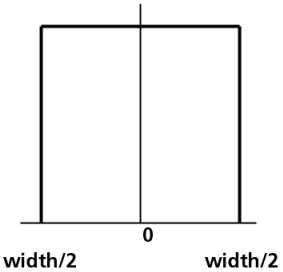


Toon Outline.

- **Post Filter Size**: The post filter **supersamples** pixels, that is, samples the colors at various points inside a pixel to arrive at the final pixel color. This is done in order to reduce or eliminate various forms of **aliasing** (jagged edges) that can occur under different circumstances. The final pixel color is a weighted average of the supersample. Increasing this value increases the area used for supersampling, but

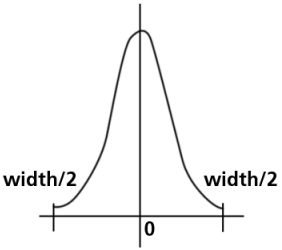
affects rendering time and resources. You can adjust this value by moving the **Post Filter Size** slider or by clicking the dots on either slide of the slider to increment (right) or decrement (left) the value.

- **Post Filter Type**: A post filter operates on an image and modifies its appearance by applying a specific weighting algorithm to the supersamples taken for each pixel. The specific algorithm used for determining relative sample weights depends upon which filter you select using the **Post filter type** pull-down menu. Your options are as follows:
  - **Box**: A **Box** filter gives equal weight to all samples within a sampling region with a diameter equal to the pixel filter size.



Box filtering example.

  - **Gaussian**: A **Gaussian** filter gives a variably decreasing amount of weight to all samples within a radius equal to half the pixel filter size, with the maximum reduction in weight occurring farthest from the center of the sampling region.



Gaussian filtering example.

- **Sinc**: A **Sinc** filter uses a decreasing sine wave calculation to assign weight to samples within a radius roughly half the pixel filter size. The sine wave effect is similar to ripples radiating from the center point, where samples will be given weight according to their relative positions with regards to the "crests" and "troughs" of the ripples.



Sinc filtering example.

- **Tone Mapping**: This feature is useful for scenes with a high dynamic range. Tone Mapping provides more control for brightness, saturation, and post-render processing to produce better images. It helps control overly bright areas in an image to produce better, less blown out final renderings with deeper contrast, helping to bring the brightest areas back into a reproducible range. It helps preserve as much information from a high dynamic range source as possible in an LDR image or display. Two modes of tone mapping are available.
  - **Exponential**: Works like film. The more you expose film, the less sensitive it gets. This is a post rendering filter that uses an exponential curve to gently approach white. The brighter it gets, the less sensitive gets.
  - **HSV (Hue, Saturation, Value) exponential**: Treats V exponentially, none on H, S. Brightness doesn't desaturate or overbrighten color. It not physically

accurate, but may be easier to control in scenes where you want to get brights into a normal range without going to white. .

- **Exposure**: Editable when either Exponential or HSV Tone Mapping are selected. This setting is the exponent used in Exponential calculations.

- **HDRI optimized output**: Check this option to generate an image that is HDRI compatible. For further information, see "High Dynamic Range Image (HDRI) Export" on page 784.

- **Gamma Correction**: See "Gamma Correction and Linear Rendering" on page 432 for more information.

- **Auxiliary Render Data**: Allows you to choose properties for output to individual PSD layers. For further information, see "Rendering Layered PSD Files" on page 434.

Once you have finished entering your desired settings, click **OK** to store them. Render settings are saved when you save your scene. Clicking **Cancel** closes the **Render Settings** dialog without storing your changes.

To render your scene as a still image, select **Render > Render** or click the **Render Now** button in the **Render Settings** dialog.

To render animations, please refer to "Keyframe Controls" on page 452 for more information.

Saving and Loading Presets

Although FireFly settings are not saved with your Poser scene, you can save and load FireFly Presets (including both Auto and Manual Quality settings, as well as FireFly Options settings). Simply click on the appropriate Preset button along the bottom of the FireFly tab for the function you wish to perform. The Load Preset and Delete Preset buttons will display pop-up menus listing the presets that shipped with your copy of Poser, as well as any additional presets you may have saved. Note that if you make changes to a loaded preset, your changes will not be saved unless you use the Save Preset button to record them. The Save Preset button will allow you to save the current FireFly render settings with a name of your own choosing. The Restore Defaults button will restore all FireFly render settings to their default locations.

Smoothing Geometry

Poser provides some additional features that make geometry look smoother during render time, without having to add additional geometry. The smooth shading feature affects an object's shading without changing the geometry of its edges. Smooth shading will render creased edges between polygons as rounded, continuous surfaces rather than as hard edges. In this way, smooth shading allows you to achieve a consistently

smooth shading effect, without having to alter the geometry by subdividing polygons to minimize the creases.

By default, if there are no smoothing groups specified, smooth shading will be applied to all figures and objects within a scene, according to the **Crease Angle** specification in the **Properties** palette for each given current actor. Additionally, you can customize smooth shading in one of two ways, as described in the following sections.

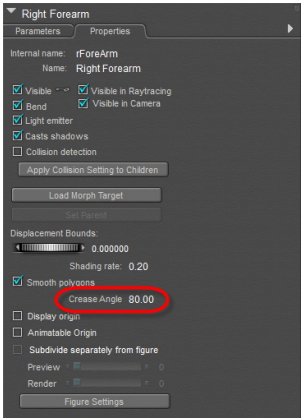
Geometry smoothing is affected by the following settings, as described in the sections that follow:

- **Crease angles**, as set in an actor's Properties palette or globally in the Document tab of the General Preferences dialog.
- **Smoothing groups**, definable in the Group Editor.
- The **Smooth Polygons** option in the Firefly Render Settings dialog.

Crease Angle

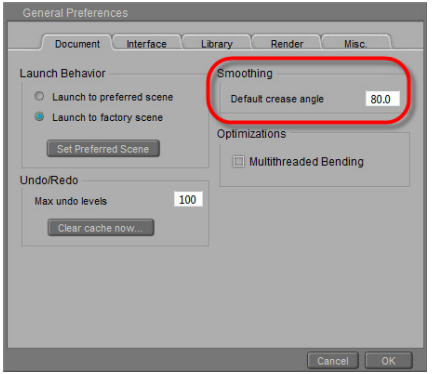
Crease angle represents the angle between the normals of adjoining polygons. The **Crease Angle** property establishes a threshold up to which smooth shading will be applied. In other words, if the crease angle threshold is set to 70, smooth shading will be applied to all polygon creases with angles smaller than 70 degrees. Polygon creases with angles greater than 70 degrees will not be smoothed.

You can specify the **Crease Angle** threshold in the **Properties** palette for each individual actor within a figure or object. By default, **Crease Angle** is set to 80 degrees for all actors.



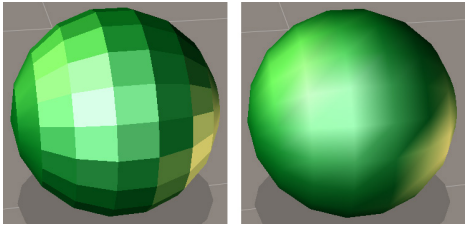
You can set crease angles for an element in the Properties dialog.

To change the crease angle globally, select **Edit > General Preferences**, and click on the **Document** tab.



Global scene crease angles can be set in the General Preferences dialog.

The following images provide examples of a sphere with crease angles set at 10 degrees and 80 degrees, respectively.



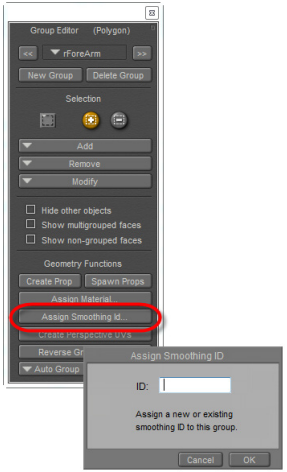
Different crease angle settings: 10 degrees (left) and 80 degrees (right).

Smoothing Groups

You can use the **Group Editor** palette to establish smoothing groups, which define the specific polygons to which smooth shading should be applied. This approach is useful in that it allows you to customize smooth shading at the polygon level, and gives you the ability to have hard edges intermixed with smooth creases. Smoothing group settings will override the crease angle setting for those specific polygons.

Select the **Grouping** tool from the **Editing Tools** palette, which will bring up the **Group Editor** palette. You can either assign all polygons in one or more of your figure's existing object groups

to smoothing groups, or you can create specific new smoothing groups, which will enable you to customize smooth shading at the polygon level. Please refer to "The Group Editor" on page 681 for more information about creating new groups.



Assign Smoothing IDs in the Group Editor.

Once you have your groups established, simply click on the **Assign Smoothing ID** button to designate the currently selected group as a smoothing group. At render time, polygon creases between all adjoining polygons within the same smoothing group will be smoothed. Polygon creases between adjoining polygons in different smoothing groups will not be smoothed, and will therefore be rendered as hard edges. Thus you should take care as to which Smoothing ID you assign to each specific polygon group.



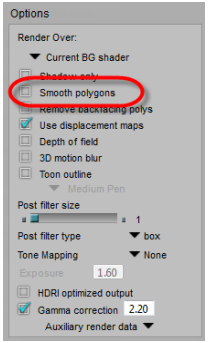
Different polygon groups can be assigned the same Smoothing ID, which will ensure smooth shading across the geometric breaks between groups. To do this, simply create a smoothing ID for the initial group, and then select that same ID from the pop-up list when assigning Smoothing ID's to the other groups.

Poser will recognize and support existing smoothing groups in imported geometry. Thus, if you import figures or objects from another 3D application, Poser will apply smooth shading according to the imported smoothing group definitions, in the same manner as if the smoothing groups had been assigned within Poser.

Smooth Polygons

In the render settings, smooth polygons activates polygon subdivision to smooth hard edges at render time. If your image contains visible rough edges because your polygon mesh is

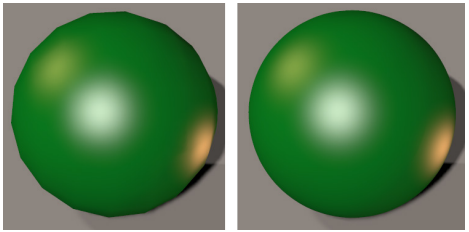
sparse, then the render time polygon smoothing can render those edges smooth. See "FireFly Options Settings" on page 417 for more information about applying this option.



Enable or disable Smooth Polygons settings in the Render Settings dialog.

Note that the render time polygon smoothing will not override hard edges specified by either the crease angle or smoothing groups. Thus, you can specify hard edges definitively using either of those methods, and still apply render time polygon smoothing to all other edges.

The following figure illustrates the render time polygon smoothing effect. On the left is a sphere with a crease angle set to 80 degrees, with no polygon smoothing. On the right is the same sphere with polygon smoothing enabled.



Spheres shown without (left) and with (right) polygon smoothing.

Network Render Queue

Rendering large and complex scenes (jobs) can take a long time to process and monopolize your computer system. The Queue Manager distributes jobs between one or several nodes in a Network Render Queue. When you use the Queue Manager for remote tasks, the Network Render Queue will distribute jobs based on the systems that are available. You can send single-frame or multiple-frame jobs to the Queue Manager.

Sending Jobs to the Queue Manager

Once the Queue Manager is running on your system and/or on another network node, you can send jobs to render in the Queue. Poser Pro will launch the Queue Manager if it is not already running on your system. However, in order process a job in the Network Render Queue, the Queue Manager must be running on the remote system(s).

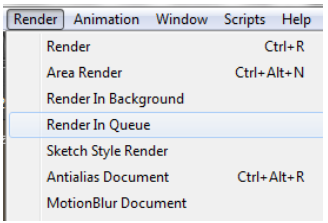
The first time you send a job to the Queue Manager you will be prompted to locate the Poser Pro application using the standard File Chooser. Navigate to where the Poser Pro application is installed, select Poser Pro and click **OK**.

Using the Render Queue for a Single-Frame job

To send a single-frame job to the Render Queue, from the **Main Menu,** select **Render > Render In Queue.** The current frame with the current FireFly Render Engine settings will become the rendered job. Name the job, select a file format from the pull-down menu, and specify the output location. Click **Save.** This will submit the job to the Queue Manager and add the job to the job list. Sending a job to the Queue launches the Queue Manager if it is not already running.



When you send a single frame render to the Queue, the filename that you enter will be appended by the frame number that you are rendering. For example, if your project is on frame 30 when you render a still image, the image that is rendered in the Queue will be named (filename)_0030. Previous renders of the same frame will be overwritten.

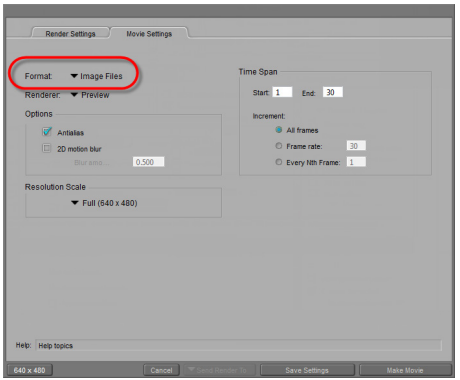


The Render in Queue command creates a render job.

Using the Render Queue for a Multi-Frame Job

To send a multi-frame job to the render queue, from the Main Menu, select **Animation > Make Movie**. In the Movie Settings dialog select **Image Files** from the **Format** pull-down menu. The Movie Settings will become the job properties, including: Options, Resolution, Time Span and Increment. (For more

information on Movie Settings refer to "Movie Settings" on page 402).

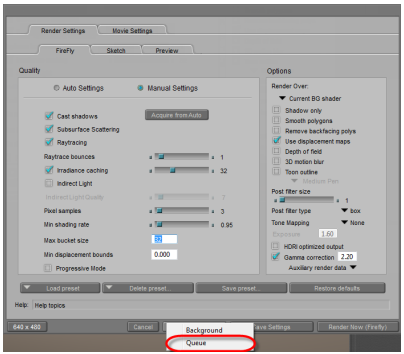


The Movie Settings tab in the Render dialog.

Once the movie settings have been defined they cannot be changed, and the job will retain those properties when sent to the Render Queue.

Next, switch to the Render Settings tab. Click on **Send Render To** and select **Queue**. Name the job, select a file format from the pull-down menu, and specify the output location. Click **Save**.

This will submit the job to the Queue Manager and add the job to the job list. Sending a job to the Queue launches the Queue Manager if it is not already running.



Rendering to the Render Queue.

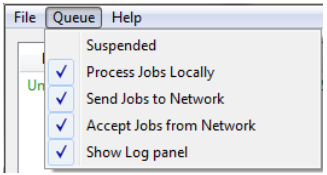
Once you have submitted a job to the Queue, you can begin editing, start another project in Poser Pro, or start working in another application.

Using the Queue Manager

The Queue Manager has three sections: The **Queue Menu,** the **Job List** and the **Selected Job Panel.**

Queue Menu

The Queue Menu allows you to configure how jobs are distributed for processing.

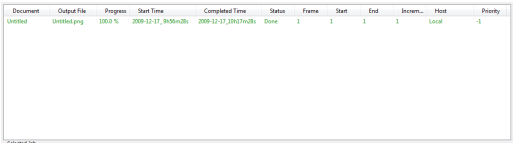


The Render Queue menu.

- **Suspended:** Selecting **Queue > Suspended,** suspends the operation of all jobs.
- **Process Jobs Locally:** Enabling or disabling **Queue > Process Jobs Locally,** specifies whether or not the Queue Manager will use your local system to render your jobs.
- **Send Jobs to Network:** Enabling or disabling **Queue > Send Jobs to Network,** specifies whether or not the Queue Manager will distribute jobs to other systems.
- **Accept Jobs from Network:** Enabling or disabling **Queue > Accept Jobs from Network,** specifies whether or not the Queue Manager will process tasks from other systems. Local jobs will always have priority.
- **Show Log Panel:** Enabling **Show Log Panel** lets you see a detailed log of the jobs being processed. The Log can be useful for troubleshooting and tracking how other machines are being utilized.

Job List

The **Job List** shows a job's properties including **Document, Output File, Start Time, Completed Time, Status, Frame, Start, End, Increment, Host and Order.** On the **Selected Job Panel** sort the jobs by clicking on any of the property headers. This will not change the job order.

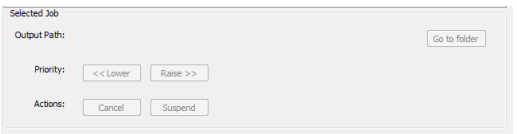


The Render Queue Job List.

- **Document:** The name of the document in Poser Pro.
- **Output File:** The job name when submitted to the Queue.
- **Start Time:** The time the job was received by the Queue Manager.
- **Completed Time:** The time the job was completed.
- **Status:**
  - **Running:** The job is currently being processed.
  - **Waiting:** The job is waiting to be processed.
  - **Suspended:** The job is on hold.
  - **Done:** The job is processed and is shown on the job list for reference.
- **Frame:** Indicates the frame that is currently being rendered.
- **Start:** Derived from the movie settings dialog (see "Movie Settings" on page 402).
- **End:** Derived from the movie settings dialog (see "Movie Settings" on page 402)
- **Increment:** Derived from the movie settings dialog (see "Movie Settings" on page 402.)
- **Host:** Indicates the node this job came from.

Selected Job Panel

Select a job to access the following options.



The Selected Job panel.

- **Output Path:** Displays the output location of a selected job.
- **Go To Folder:** Find the output location of your job anytime by highlighting the job and clicking on the **Go To Folder**. This will bring you to the output location.

- **Order:** Once a job is sent to the Queue Manager the job will appear on the job list. You can change the order of the jobs by selecting **<<Lower** or **Raise > > .**
- **Actions:** Select a job from the Job List to change its status using the following actions:
  - **Cancel:** Click **Cancel** to abort a job (Running, Waiting or Suspended).
  - **Delete:** Click **Delete** to remove a completed job from the Job List (Done).
  - **Suspend:** Click **Suspend** to put a running or waiting job on hold.
  - **Resume:** Click **Resume** to continue processing a suspended job.

If you are experiencing difficulty with the Network Render Queue, verify the following:

- All network cables are plugged in and the network is functioning properly.
- Remote systems in the Network Render Queue are up and the Queue Manager application is installed and running.
- Your personal firewall is allowing communication between Poser Pro and the Queue Manager, locally and remotely.
- If you are unable to resolve a network communication issue, contact your Network Administrator.

64-Bit Render Engine

Poser Pro ships with 2 versions of its FireFly render engine: A 32-bit and a 64-bit version. Traditionally computers utilize a 32-bit Operating System, which can only address a limited amount of memory. However, there is an increasing amount of computers that are equipped with a 64-bit Operating System. If your computer has a 64-bit Operating System, Poser Pro will use its 64-bit FireFly Render Engine to access as much memory as possible.

To utilize the 64-bit FireFly Render Engine, you must select **Render in Background** (Mac OSX, Windows) or launch the 64-bit version of Poser Pro (Windows only).

Hardware Requirements for 64-bit Render Engine

- Intel Core 2 Duo CPU or better
- AMD Athlon 64 CPU or better

Poser Pro supports the following 64-bit operating systems:

- Mac OS X 10.6
- Mac OS X 10.7
- Mac OS X 10.8
- Windows XP x64
- Windows Vista 64
- Windows 7 64
- Windows 8 64

Poser Pro will automatically select the appropriate Render Engine for your system. If you are using a 32-bit system and render in Firefly, Poser Pro will use the 32-bit Render Engine. If you are using a 64-bit system and render in FireFly, it will use the 64-bit Render Engine. This allows the Render Engine to access more memory thereby better utilizing available memory.

Gamma Correction and Linear Rendering

By configuring the gamma correction you can specify the gamma that has been applied to textures, and the gamma that will be applied to exported images. This allows you to perform linear rendering for improved luminance accuracy.

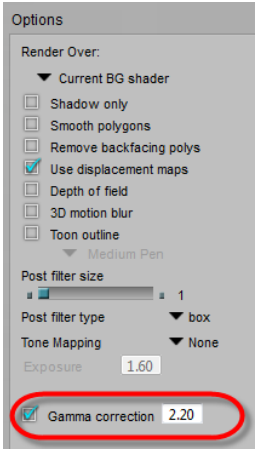
When you create a new scene, the default setting for Linear Rendering is 2.2. You must use the FireFly Render Engine to set the gamma value. When you are opening a document from a previous version of Poser, you will need to enable the gamma correction if you want to perform linear rendering.



Gamma settings are propagated to the Preview Renderer when hardware shading is enabled. There is no separate gamma configuration option for the Preview renderer; instead, they are taken from the Firefly render settings, Texture Manager, and gamma nodes in the Advanced Material Room.

HDRI files will be read and written in a linear fashion with a Gamma value of 1.0, ignoring whatever gamma value might be specified in that location.

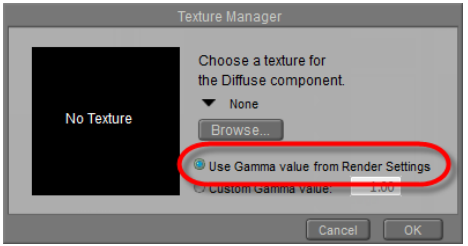
To enable Gamma Correction, choose **Render > Render Settings**, select the FireFly Tab and then check the Gamma Correction Box from the Options Panel. The default gamma value is 2.2 for most image formats. You have the option to specify a custom gamma value in the text field. The text field is only accessible only when the Gamma Correction Box is enabled.



Set the Gamma Correction value in the Render Options window.

Gamma Correction Per Texture

Poser Pro's **Gamma correction** on the **Texture Manager** allows you to specify gamma values per texture, giving you the ability to exclude certain textures from scene-wide gamma correction for maximum flexibility when dealing with displacement or normal maps.



Gamma correction for individual textures can be set in the Texture Manager.

Local gamma correction is important if you know that not all your incoming data has the same gamma value applied and you know you need to adjust the value for certain textures. Gamma correction on the Texture Manager allows correction per texture.

Most all applications read and write displacement maps linearly, even if the format used might specify a different gamma value. When you display a displacement map, it might look slightly different from the effect it will end up having on the geometry, therefore we recommend that you adjust the Gamma Value to 1.0 for Displacement Mapping, as well as for Normal Maps. Also use 1.0 for Transparency, or whenever a grayscale map is used to drive an effect.

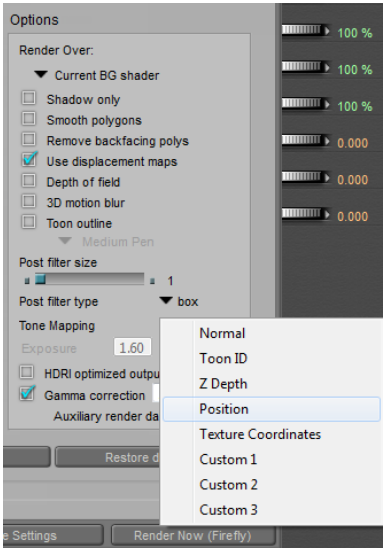
For information on how to access the Texture Manager please refer to "Chapter 17: The Render Menu" on page 392.

Once you are in the **Texture Manager** you can specify a custom gamma value in the text field for the selected texture.

Rendering Layered PSD Files

Poser features additional options in the Render Settings dialog that allow you to specify additional information that can be output to a layered PSD file for further compositing in Photoshop. After you create your scene in Poser, you open the Render Settings dialog and check or uncheck the auxiliary render data options that you want to include in the Photoshop file. Then, you render your image and save it as a Photoshop PSD file. When you open your image in Photoshop you will see the full render as the Background layer. Each additional data option that you checked will appear on its own individual Photoshop layer.

The Render Options section of the Render Settings window includes an Auxiliary Render Data drop down menu that allows you to select from the following options:



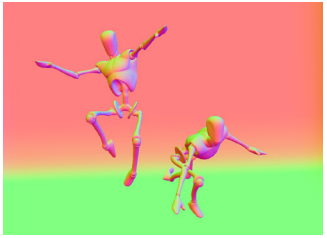
Check or uncheck layers to be output to PSD files in the Render Options window.

When you open your PSD in Photoshop, the complete rendered image appears in a layer named Background. Depending on the other options that you check in the Auxiliary Render Data drop-down, you may see additional layers as described below.



Background layer in Photoshop.

- **Normal**: The world space normal of the frontmost surface, encoded as RGB values with x=red, y=green, z=blue. Normal layers are identified by the letter N in Photoshop.



Normal layer in Photoshop.

- **Toon ID**: The toon ID of the frontmost surface, where each ID gets its own RGB color. Toon ID layers are identified by the letters ID in Photoshop.



Toon ID layer in Photoshop.

- **ZDepth**: The distance of the frontmost surface from the camera, encoded as grayscale. ZDepth layers are identified by the letter Z in Photoshop.



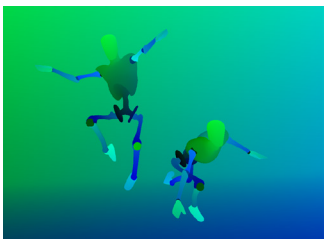
ZDepth layer in Photoshop.

- **Position**: The world space position of the frontmost surface, encoded as RGB values with x=red, y=green, z=blue. Position layers are identified by the letter P in Photoshop.



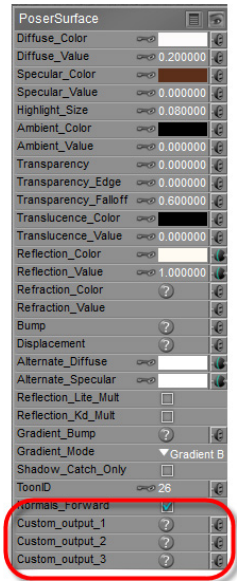
Position layer in Photoshop.

- **Texture Coordinates:** The UV coordinates of the frontmost surface, with u = red and v = green. Texture Coordinate layers are identified by the letters UV in Photoshop.



Texture Coordinates layer in Photoshop.

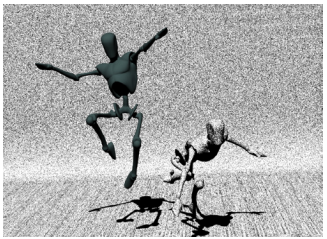
The remaining three options correspond to three inputs on the bottom of the Poser Surface Node as shown below.



Custom Output connectors on the Poser Surface Node.

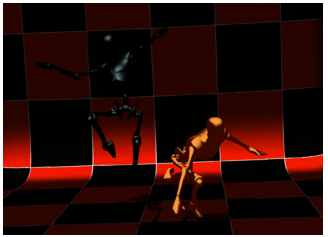
The render will export the nodes that are plugged into these inputs on the Poser Surface Node. If nothing is attached to the Poser surface node on these inputs, the output to PSD is as follows:

- **Custom1**: If your scene contains any materials that have connections to the Custom_output_1 connector on the PoserSurface Node, they can be rendered to a Photoshop layer when you check this option. If there are no materials with connections to Custom_output_1, checking this option will create a layer that contains Diffuse only.



Custom 1 layer in Photoshop with grainy grayscale effect for custom input.

- **Custom2**: If your scene contains any materials that have connections to the Custom_output_2 connector on the PoserSurface Node, they can be rendered to a Photoshop layer when you check this option. If there are no materials with connections to Custom_output_2, checking this option will create a layer that contains Specular only.

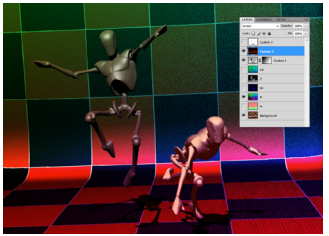


Custom 2 layer in Photoshop showing custom adjustments to the two characters in the scene.

- **Custom3**: If your scene contains any materials that have connections to the Custom_output_3 connector on the PoserSurface Node, they can be rendered to a Photoshop layer when you check this option. If there are no materials with connections to Custom_output_3, checking this option will create a layer that contains Shadow only as shown below.



Custom 3 layer in Photoshop.

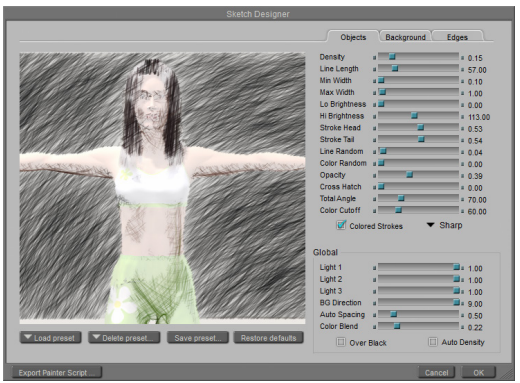


Various layers combined in Photoshop.

After rendering the desired layers, you can bring the saved PSD file into Photoshop, where you will be able to use blend styles in the Layers palette to composite the layers together to create interesting effects.

Chapter 20: The Sketch Designer

Poser's **Sketch Designer** renders scenes as sketch-like drawings using black-and-white or colored brush strokes that you can tailor to your liking. Simulate pen, pencil, pastel, charcoal, and even watercolors and paintings without ever having to pick up a pencil or brush!



The Sketch Designer.

You can save **Sketch Designer** renders and reload them later for further work. The Sketch Designer also lets you create amazing animations that look like hand-drawn movies. For best results, try rendering scenes using plenty of detail (hair, clothing, etc.) and dramatic lighting.

To access the Sketch Designer, select **Window > Sketch Designer**. Alternately, you can access the Sketch Designer via the **Sketch** tab in the **Render Settings** dialog, which also contains other render and movie settings.

Sketch Elements

The Sketch Designer recognizes three distinct divisions within your scene:

- **Objects**: Checking the **Objects** radio button allows you to determine the sketch style for objects and figures in your scene.
- **Background**: Checking the **Background** radio button allows you to determine the sketch style for your scene's background.
- **Edges**: Checking the **Edges** radio button allows you to determine the sketch style for the edges of objects and figures in your scene.

Presets

You can use the **Presets** pop-up window above the preview tab to select one of the available preset sketch styles. You can also use the sliders and other options to create an almost infinite variety of styles.

The **Presets** pop-up also allows you to create and remove sketch presets. To create a preset, adjust the sketch style to your desired settings, then select **Presets > Create Preset**. Enter a name for your preset and click **OK**. Your new preset will appear in the Presets menu.

To delete a preset, select the preset you wish to delete using the **Presets** menu, then select **Presets > Delete Preset.**



The Delete Preset option allows you to remove the sketch presets included with Poser. Once deleted, you must reinstall Poser to restore your factory default sketch presets.

Checkboxes

The Sketch Designer has three checkboxes:

- **Over Black**: Checking the **Over Black** checkbox renders your scene over a black background with white strokes. When disabled, the background is white with black strokes.
- **Auto Density**: Checking the **Auto Density** checkbox causes stroke density to reach an automatic density based on the current scene, ignoring the **Density** slider setting (see below). When disabled, the density is calculated based on the **Density** slider setting.
- **Colored Strokes**: Checking the **Colored Strokes** checkbox causes sketches to be rendered in color. When disabled, sketches are rendered in black and white.

Brushes

The **Sketch Designer** includes several predefined brushes, available using the **Brushes** pull-down menu. For maximum effect, try using these brushes with both the **Min Width** and **Max Width** sliders set to higher values.

Sketch Parameters

The **Sketch Designer** includes the following parameters, controllable using sliders. Moving a slider to the right increases the selected value, and vice versa. These parameters customize many characteristics of the sketched lines. Your sketch redraws each time you adjust a value, allowing you to see the results of your changes.

- **Density**: The **Density** slider controls the density of lines in the sketch.
- **Line Length**: The **Line Length** slider defines the length of strokes.
- **Min Width**: The **Min Width** slider defines the width of the edge of each stroke, which affects the brightness of the original image.
- **Max Width**: The **Max Width** slider defines the width of the center of each stroke, which affects the brightness of the original image.
- **Lo Brightness**: The **Lo Brightness** slider determines the band of tone. A low setting only draws lines in the darkest parts of your scene. If the **Over Black** option is disabled, setting this control to 0 produces the best results.
- **Hi Brightness**: The **Hi Brightness** slider determines the band of tone. A lower setting only draws lines in the darkest parts of your scene. If the **Over Black** option is enabled, setting this control to 1 produces the best results.
- **Stroke Head**: The **Stroke Head** slider determines the amount of taper at the stroke's head.
- **Stroke Tail**: The **Stroke Tail** slider determines the amount of taper at the stroke's tail.
- **Line Random**: The **Line Random** slider controls line randomizations. Higher settings result in more randomly shaped lines.
- **Color Random**: The **Color Random** slider controls color randomizations. Higher settings result in more random colorization.
- **Opacity**: The **Opacity** slider determines the clarity of lines. Lower values create more transparent strokes.
- **Cross Hatch**: The **Cross Hatch** slider controls the frequency of cross-hatching in the strokes.
- **Total Angle**: The **Total Angle** slider determines the total amount of angle change that a stroke can have before it stops drawing. Higher values darken the image. Lower this value when you have lower **Density** settings.
- **Color Cutoff**: The **Color Cutoff** slider determines the threshold of color changes allowed for a stroke. Use this slider in conjunction with **Total Angle**.
- **Light 1, 2, and 3**: The **Light 1**, **Light 2**, and **Light 3** sliders determine the extent to which the first three lights in your scene contribute to the direction of strokes. Higher values make the strokes go in the direction of the selected light(s).

- **BG Direction**: The **BG Direction** slider defines the direction of the background strokes.
- **Auto Spacing**: The **Auto Spacing** slider controls the amount of space between strokes if the Auto Density option is enabled.
- **Color Blend**: The **Color Blend** slider determines how much color in the **Document** window will be blended into the sketch.

Rendering Sketches

After setting up your sketch, you can render it to the **Document** window. This is useful if you want to export a movie rendered using the Sketch Designer renderer. To render to the **Document** window, select **Render > Sketch Style Render**.

Exporting Painter Scripts

Clicking the **Export Painter Script** button in the lower left corner of the **Sketch Designer** exports the current **Sketch Designer** settings to Corel Painter. This has been tested to work with Painter 6 and previous versions, and is not supported for later versions though it may work with them.

Part 5: Animating

Chapter 21: The Animation Menu

The **Animation** pull-down menu lets you control various aspects of your Poser animations.

Make Movie

Setting **Animation > Make Movie** opens the **Make movie** window. Please refer to "Chapter 24: Rendering Animations" on page 510 for more information on rendering animations in Poser.

Recalculate Dynamics

Choose one of the options in the **Animation > Recalculate** submenu to recalculate all cloth dynamics, all hair dynamics, all physics dynamics, or all dynamics. For more information about dynamics, see "Chapter 26: The Hair Room" on page 533, "Chapter 27: The Cloth Room" on page 550, and "Chapter 23: Using Bullet Physics" on page 493.

Retime Animation

Selecting **Animation > Retime Animation** allows you to adjust the timing of your animations. Please refer to "Retiming Keyframes" on page 467 for more information.

Resample Key Frames

Selecting **Animation > Resample Key Frames** opens the **Resample Keys** window, which allows you to increase or decrease the number of keyframes in your animation: Please refer to "Resampling Key Frames" on page 468.

Loop Interpolation

If your animation contains looping cycles (such as a walk) that do not match evenly (causing jerky motions between the end of one loop and the start of the next), toggling **Animation > Loop Interpolation** on can smooth out your animation.

Quaternion Interpolation

Quaternion interpolation is a mathematical formula that can smooth rough animations. If your animation remains jerky after editing keyframes and all other efforts at smoothing it out,

selecting **Animation > Quaternion Interpolation** can possibly help. This option should be toggled on as a last resort.

Skip Frames

Selecting **Animation > Skip Frames** toggles skipping frames on and off. This option can help speed playback.

Mute Sound

Selecting **Animation > Mute Sound** toggles sound muting during animation playback. A check mark appears when muting is enabled, and vice versa.

Clear Sound

Selecting **Animation > Clear Sound** deletes the sound previously imported into your Poser scene.

Play Movie File

Selecting **Animation > Play Movie File** allows you to open a movie file for playback within Poser. A standard **Open** dialog appears, allowing you to browse to your desired movie file.

Chapter 22: Animating with Poser

Poser allows you to animate figures and props, giving life to your scenes. You can use your work in multimedia projects, on the Web, and in videos by exporting rendered results to Windows AVI, Macintosh QuickTime, or Flash movie format. AVI movies are rendered in 32-bit color, which by default includes an alpha channel (mask) for each frame. This can aid in compositing the animation with other movie footage. QuickTime movies can also contain an Alpha channel if set to render at millions of colors.

Once rendered, exported animations can be opened and edited in post-production tools such as Adobe Premiere and Adobe After Effects, where you can edit sequences and add special effects. While you can create long animations, we recommend creating a series of shorter animations and piecing your scenes together using an editing application. Real movies follow this guideline as well: Each time a camera angle changes, you're seeing a new take of a scene or a different scene altogether. This includes cases such as conversations, where the camera is switching back and forth between the participants. Poser includes many powerful tools designed to help you create stunningly realistic animations. Animation is easy to learn but hard to master. Start with short simple movies and work up as your skills improve. The results may surprise you!

Animation Overview

At its simplest, the animation process is as follows:

1. Decide how many frames you want in your animation. One way to do this is to decide how long your animation will be in seconds, then multiply that by the your desired number of frames per second (**frame rate**).
2. Create a starting pose.
3. Select your next keyframe.
4. Create a new pose.
5. Repeat Steps 3 and 4 until your animation is complete.

Poser uses a technique called keyframe animation to simulate motion based on a series of still poses. You set up a series of poses at different points in time. These are the keyframes. Poser fills in the gaps, interpolating between keyframes to create the illusion of motion. This keeps you from having to move your figure each time you want to create a motion, such as is done in stop-frame animation, where each frame is individually positioned (many "Claymation" movies use stop-frame animation).

What You Can Animate

What can you animate using Poser? Just about everything! Here are some examples:

- **Figures (humans, animals, clothing, etc.)**: If you can imagine a motion, you can create it using Poser! Please refer to "Chapter 9: Posing Figures" on page 176 for information about posing human figures, and to "Posing Animals" on page 210 for some information about posing animals.
- **Hands**: Gestures and small motions add incredible realism to videos. Many amateur animators ignore hands when animating, which subtly detracts from your scene's realism. Please refer to "Posing Hands" on page 208 for information about posing hands.
- **Faces**: Animating faces can add emotion and power to your scene and can also mimic speech. Please refer to "Posing Faces" on page 204 for more information about posing faces.
- **Props**: You can animate props by moving them about the Poser workspace, parenting them to other actors, etc. Please refer to "About Props" on page 219 for more information about props.
- **Lights** and **Cameras:** Change color and position of lights and zoom, pan, or bank cameras over time.
- **Deformers**: You can animate magnets, waves, morph targets, and parameters. Please refer to "Using Deformers" on page 615 for more information about deformers.
- **Force Fields**: You can animate **Force Fields** to create realistic wind effects for strand-based hair and dynamic cloth. Please refer to "Wind Force Fields" on page 633 for more information about force fields.
- **Materials**: You can animate material shaders as described in "Part 3: Materials" on page 280.
- **Walk Paths**: You can create paths that your figures walk along, as described in "Creating a Walk Path" on page 478.
- **Background**: You can animate the background using the **Material** room. Please refer to "Part 3: Materials" on page 280 for more information about the **Material** room.
- **Movie nodes**: You can play movies on any object using movie nodes in the **Material** room.

By default, your animation moves over the **Document** window's background. You can have still or animated backgrounds in your scenes. Please refer to "Importing Background Pictures" on

page 778 and to "Importing Movies" on page 777 for more information about backgrounds in Poser scenes.

Inverse Kinematics

You can use IK or not in your animations, however it is a global setting. If enabled on a figure's limbs, it's on for the duration of your animation, and vice versa. You can turn it on or off while you work, but the final state is what will "stick" in your final animation. Toggling IK on and off can affect your animation; it's best to pick an option before starting to animate and stay with it to avoid having unexpected changes occur in your animation. Please refer to "Inverse Kinematics (IK)" on page 177 for more information about Inverse Kinematics.

Animation Tools

Poser has five animation tools:

- **Animation controls**: The simple, single channel **Animation** controls allow you to create quick click-and-drag animations as well as preview your work. Access the **Animation** controls by clicking the handle at the bottom of your Poser workspace. See "Using the Animation Controls" on page 450 for more information.



If not displayed, choose **Window > Animation Controls** *to show the Animation Controls. They will dock or float depending on how you last used them.*

- **Animation Palette**: The **Animation** palette contains the advanced editing features, with which you can create more complex animations. Among other things, you can edit keyframes, animation layers and individual actors, and create Animation Sets. Access the **Animation** palette by selecting **Window > Animation Palette**. Please refer to "Using the Animation Palette" on page 454 for more information about the **Animation** palette.

- **Graph**: Each actor in your scene has a **Graph** for each of its possible motions, allowing you to exercise minute control over your animations. Access the **Graph** for any parameter by using the desired parameter dial's menu as described in "Parameters Palette" on page 197. Please refer to "Using Graphs" on page 458 for more information about the **Graph**.

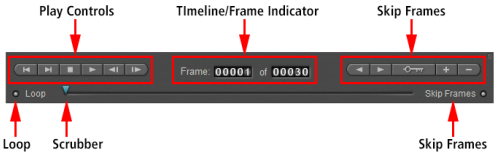
- **Walk Designer**: Creating realistic walking movements is a very time consuming animation task to get right. Poser's **Walk Designer** takes the effort out of this process and lets you quickly create realistic walks (for human figures only). Access the **Walk Designer** by selecting **Window > Walk**

Designer. Please refer to "Using the Walk Designer" on page 474 for more information about the **Walk Designer**.

- **Talk Designer**: Speech is one of the most important aspects of many animations; due to the complexity of the human face, it is also one of the most challenging things to animate realistically. Poser's **Talk Designer** animates facial expressions, eye and head movements to create realistic lip sync animations based upon speech sound files that you import. Access the **Talk Designer** by selecting **Window > Talk Designer**. Please refer to "Using the Talk Designer" on page 482 for more information about the **Talk Designer**.

Using the Animation Controls

The **Animation controls** are dockable and floatable. This palette contains the tools most commonly used when creating animations. They allow you to add and edit keyframes and preview your animation. If the Animation controls do not appear on your screen, choose **Window > Animation Controls** and place them where you find it most convenient (generally the top or bottom of your document window is the common location). The **Animation controls** appear as follows, and consists of the controls described in the following sections:



Animation Controls.

Timeline/Frame Indicator

The center portion of the **Animation controls** displays the **Timeline**, which represents the total time of your animation in Poser. This timeline contains a pointer (**Scrubber**) representing the location of the current frame relative to the entire animation, which is visible in the **Document** window. The **Scrubber** is very commonly used to quickly find specific points within animations. Click and drag the **Scrubber** to quickly navigate your animation.

Just above the **Scrubber** is the **Frame Indicator**, which indicates both the total number of frames in your animation and your current position within that timeline, with the left field indicating position and the right indicating animation length. For example, if the two numbers read 60 and 120, that means

that you are viewing the 60th frame of an animation that is 120 frames long.

You can jump to a specific frame by clicking the left number field and entering the frame number you wish to jump to. You can also add or remove frames by clicking the right number field and entering the number of frames you wish in your animation. Entering a larger number lengthens your animation and vice versa. Shortening animations will cut the excess frames from the end. For example, if you reduce an animation from 120 to 90 frames, you will lose the final 30 frames.

Recording Keyframes

Poser records changes made to figures, props, materials, etc. as keyframes. Create keyframes by moving the scrubber to a new point on the timeline and making your desired change(s) to your scene. Recorded keyframes store new body part positions, new prop positions, material settings, etc. for each figure and prop within your scene. You can only record one set of position parameter settings for any given keyframe. For example, if you select a frame and move a figure's arm up then change your mind and move the arm down again, the downward position is what will be "remembered" and what will affect your animation. To make a figure's arm wave up and down:

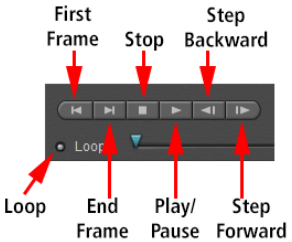
1. Select a starting pose.
2. Move the scrubber to the point in time/frame number you wish to edit.
3. Raise the arm using the **Editing** tools.
4. Move the scrubber to a later point in time/frame number.
5. Lower the arm, again using the **Editing** tools.
6. Continue creating keyframes until the motion sequence is complete.



Camera animation must be enabled for the currently selected camera In order to automatically record keyframes. If animation is disabled, you can add keyframes manually (see following subsection).

Play Controls

The **Play** controls appear on the left side of the **Animation controls** and allow you to preview your animation using VCR-like controls. From left to right, the **Play** controls are as follows:



The Play Controls.

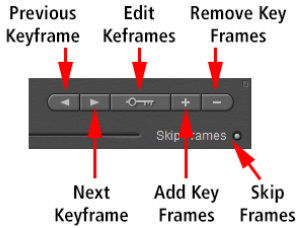
- **First Frame**: Clicking the **First Frame** button moves to the first frame in your animation.
- **End Frame**: Clicking the **End Frame** button moves to the last frame in your animation.
- **Stop**: Clicking the **Stop** button stops animation playback at the current frame.
- **Play/Pause**: Clicking the **Play** button plays your animation at normal speed, including background movies and sounds (if any). While your animation is playing, this button becomes the **Pause** button. Clicking it freezes the animation at the current frame.
- **Step Backward**: Clicking the **Step Backward** button moves back to the previous frame (i.e., the frame before the current one).
- **Step Forward**: Clicking the **Step Forward** button moves forward one frame (i.e., the frame after the current one).
- **Loop**: Checking the **Loop** radio button causes your animation to repeat itself continuously when playing until you click the **Stop** button.
- Animation previews run in the **Document** window. Be sure to select the appropriate tracking mode (see "Tracking Mode" on page 93).

Keyframe Controls

In most cases, Poser's automatic animation engine records keyframes as you create animations. Sometimes, however, you'll want to manually add keyframes, such as when camera animation is disabled. It is important for you to track the status of camera animation, as you could create a series of keyframes without realizing that the animation is off. As mentioned above, if camera animation is disabled, you must manually add keyframes in order to record them. You may also need to fine-tune animations, which may necessitate recording additional keyframes. For example, you could position the figure's left foot at Frames 10 and 20, with Poser calculating its position for

the tween frames. If you wanted to refine this, you could add a keyframe at Frame 15.

The **Keyframe** controls allow you to quickly and easily add, preview, and remove keyframes within your animation. From left to right, the **Keyframe** controls are:



The Keyframe Controls.

- **Previous Keyframe**: The **Previous Keyframe** button returns to the previous keyframe.
- **Next Keyframe**: The **Next Keyframe** button advances to the next keyframe.
- **Edit Keyframes**: Clicking the **Edit Keyframes** button opens the Animation Palette, discussed next.
- **Add Key Frames**: Clicking the **Add Key Frames** button adds a keyframe at the current frame number. For example, if you have existing keyframes at Frames 15 and 30, you could drag the **Scrubber** to Frame 22 and insert a keyframe by clicking the **Add Key Frames** button. You can also insert a keyframe by moving to any frame in your animation and making a change in your scene. This change will automatically be recorded as a new keyframe.
- **Remove Key Frames**: Clicking the **Remove Key Frames** button removes the currently selected keyframe. For example, if your character's arm is over his head in Frame 1, down at Frame 15 and out to the side in Frame 30 and you remove the keyframe in Frame 15, the figure's arm will move out to the side position specified in Frame 30 without dropping to the figure's side. To delete a keyframe, use the **Next Keyframe** or **Previous Keyframe** buttons to locate your desired keyframe, then click the **Remove Keyframe** button.
- **Skip Frames**: Check this radio button to skip frames during playback. This helps conserve system resources while previewing your animation before you render it.

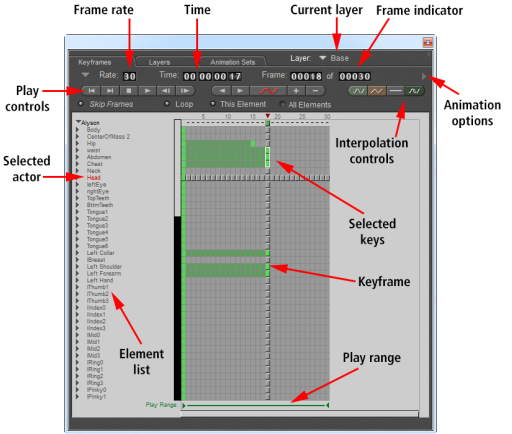
Using the Animation Palette

The **Animation** palette contains three tabs: the **Keyframes** tab, the **Layers** tab, and the **Animation Sets** tab. Each of these tabs will be described in detail in the following sections. To display the **Animation** palette, you can either select **Window > Animation Palette**, or click the **Display Animation Palette** button in the **Animation** controls as described above. To close the palette, either select **Window > Animation Palette** again, or click the small box in the upper left corner.

The upper section of the **Animation** palette contains several controls that appear on all three tabs. These are as follows:

Common Controls

Several controls and options are common to all of the tabs in the Animation Palette. These options are discussed below.



The Animation Palette.

Current Layer

The **Current Layer** pop-up menu appears at the very top of the **Animation** palette. This menu allows you to select a specific animation layer within the current animation. Please refer to "Layers Tab" on page 469 for more information about animation layers.

Frame Rate

The frame rate specifies the number of frames played per second. To change the scene frame rate, you can either click the current frame rate and enter your desired number in the text box that appears or click the arrow to the left of the current frame rate and make your selection from the **Frame Rate** pull-down menu. Choices are 12, 15, 18, 24, 25, 30, 50, and 60 frames per second. Some common frame rate settings are:

- **NTSC**: 30
- **PAL**: 25
- **Film**: 24
- **Flash**: 12 (recommended) or 15



For Poser integration into other apps, the user will need to determine the frame rate to match that of the hosting software. The default frame rate in Poser is 30 fps, but other applications might use 24 fps. Users will need to create a file with the same frame rate. This needs to be handled specially for each app.



You can also set the output frame rate using the **Movie Settings** *window (*"Keyframe Controls" on page 452*). This setting is independent from your scene frame rate, as specified in the* **Animation** *palette (see above). Additionally, you can generate a quick preview render by specifying the* **Every N-th Frame** *setting in the* **Movie Settings** *window. Again, this setting is for output purposes only, and is independent of your scene frame rate.*

Time

The **Time** control displays the amount of time in your animation between the first frame and the currently selected frame. Time is displayed in SMTPE format (Hours:Minutes:Seconds:Frame). You can jump to a specific point in time by entering your desired numbers in the fields. For example, if you jump to 1 minute in an animation using 24 frames per second, you'll arrive at Frame 1440 (24 frames/sec times 60 seconds).

Frame

The **Frame Indicator** is identical to its counterpart in the **Animation** controls. You can jump to a specified frame and add or remove frames from your animation as described in "Timeline/Frame Indicator" on page 450.

Play Controls

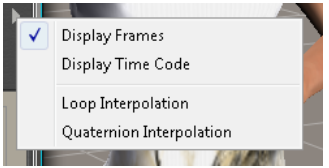
The **Play** controls are identical to their counterparts in the **Animation** controls. See "Play Controls" on page 451 for more information.

Play Range

By default, the entire animation plays when previewing animations using the **Play** controls. You can, however, opt to view only a portion of your animation during preview. This feature is useful if you have a long animation and only want to focus on small portions at a time. The **Play Range** indicator appears at the bottom of all three tabs on the **Animation** palette. To adjust the play range, drag the beginning and/or end point to your desired starting and ending frames, respectively.

Animation Palette Options Menu

Clicking the **Options** arrow at the top right of the Animation Palette opens the **Animation** palette **Options** menu, which contains the following options:

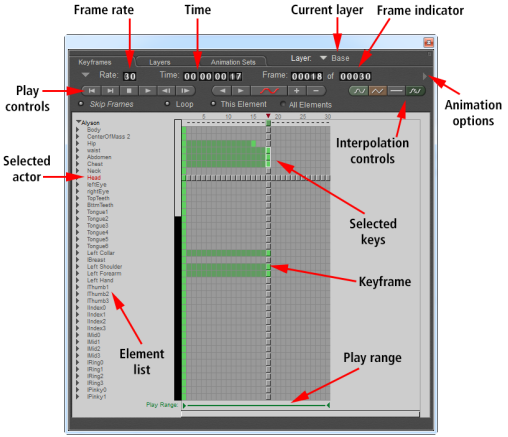


Animation Palette options menu.

- **Display Frames**: Selecting the **Display Frames** option toggles the **Timeline** columns to display using animation frames.
- **Display Time Code**: Selecting the **Display Time Code** option toggles the **Timeline** columns to display, representing your animation's running time.
- **Loop Interpolation**: Selecting the **Loop Interpolation** option toggles loop interpolation on and off. Please refer to "Loop Interpolation" on page 445 for more information.
- **Quaternion Interpolation**: Selecting the **Quaternion Interpolation** option toggles quaternion interpolation on and off. Please refer to "Quaternion Interpolation" on page 445 for more information.

Keyframes View

The **Keyframes** view is where you edit the keyframes in your animation. It shows the layout of the keyframes and allows you to set and move between them. You can also play animations directly from this palette. The **Keyframes** tab appears as follows:

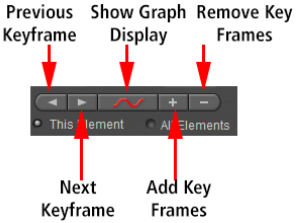


The Keyframes view of the Animation Palette.

When you first display this tab, it shows any keyframes you previously created using the **Animation** controls, for the currently selected animation layer. Please refer to "Layers Tab" on page 469 for more information about animation layers. If you wish to see the keyframes contained within a different animation layer, select the name of the new layer from the **Current Layer** pop-up menu. In addition to the controls described above, the **Keyframes** tab contains the following elements:

Keyframe Controls

The **Keyframe** controls are almost identical to their counterparts in the **Animation** controls. The main difference is that the keyframe controls in the Keyframes palette feature a button that allows you to open the Graph palette.

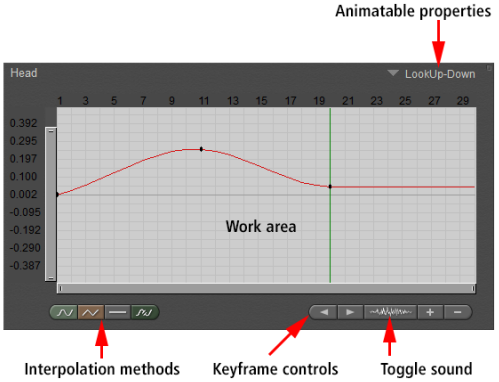


Keyframe Controls.

- **Previous Keyframe**: The **Previous Keyframe** button returns to the previous keyframe.
- **Next Keyframe**: The **Next Keyframe** button advances to the next keyframe.
- **Show Graph Display**: Clicking the **Show Graph Display** button opens the Graph, discussed in "Using Graphs" on page 458.
- **Add Key Frames**: Clicking the **Add Key Frames** button adds a keyframe at the current frame number. For example, if you have existing keyframes at Frames 15 and 30, you could drag the **Scrubber** to Frame 22 and insert a keyframe by clicking the **Add Key Frames** button. You can also insert a keyframe by moving to any frame in your animation and making a change in your scene. This change will automatically be recorded as a new keyframe.
- **Remove Key Frames**: Clicking the **Remove Key Frames** button removes the currently selected keyframe. For example, if your character's arm is over his head in Frame 1, down at Frame 15 and out to the side in Frame 30 and you remove the keyframe in Frame 15, the figure's arm will move out to the side position specified in Frame 30 without dropping to the figure's side. To delete a keyframe, use the **Next Keyframe** or **Previous Keyframe** buttons to locate your desired keyframe, then click the **Remove Keyframe** button.
- **Skip Frames**: Check this radio button to skip frames during playback. This helps conserve system resources while previewing your animation before you render it.

Using Graphs

When you double-click a keyframe, the Graph palette for that keyframe appears. An element's **Graph** palette allows you to perform precise edits on keyframes and modify the interpolation methods used in your animation. The **Graph** palette contains the following functions:



The Graph Palette.

- **Animatable Properties**: The **Animation Properties** pull-down menu allows you to select all of the animatable properties for the currently selected element.
- **Interpolation Methods:** See "Selecting Interpolation Types" on page 459.
- **Keyframe Controls**: See "Keyframe Controls" on page 457.
- **Work Area**: See below.

The following subsections describe the **Graph's** functionality in further detail.

About the Graph Palette

The **Graph Work Area** consists of two axes and a graph. The horizontal axis represents time in frame numbers. The vertical axis' values change depending on the selected attribute. If you choose a position attribute such as **xTrans**, the values represent positions in 3D space (Cartesian coordinates). If you select an editing property such as **Bend**, the axis represents degrees. A morph parameter's values are measured in percentages.

The **Graph** itself shows the actual change in the attribute over the course of your animation. Its shape indicates the type of interpolation being used. You can also use the **Graph** palette for synchronizing sound to motion, as described in "Syncing Sound & Motion" on page 482.

Selecting Interpolation Types

The **Graph** contains controls allowing you to specify interpolation methods, which can be specified on both the element and frame range levels. The **Interpolation** controls appear as follows:



Interpolation Controls.

To choose an interpolation method, select the elements and frame range to modify, then click your desired Interpolation button. The **Animation** palette uses color codes to depict varying interpolation methods.

- **Spline**: Green

  Splines can sometimes go beyond and exceed the maximum keyframed values depending on the slope created by tightly-spaced keyframes. Adding additional keyframes can constrain the slope into more pleasing levels.

- **Linear**: Red
- **Constant**: Grayed out
- **Break Spline**: A hash mark appears where **Break Spline** has been applied.

Editing the Graph

You can edit the graph to achieve varying degrees of interpolation. For example, to decrease the amount of **Spline** interpolation, straighten the curve. You can set the curve's shape using preset interpolation methods or by dragging the curve's points to obtain your desired shape. You can also apply different interpolation methods to different parts of the graph using the **Break Spline** function.

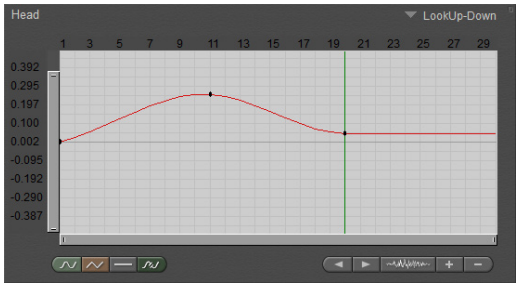
Be aware that changing the graph's shape affects the selected element's motion. To edit the graph, use the **Animation Properties** pull-down menu or select **Graph** from the **Parameters** palette (see "Using Graphs" on page 458) to select the attribute to be edited. Next, drag any point on the graph in the direction you want to move the curve. The curve will reshape itself based on your chosen interpolation method(s). Use the scrollbar to view parts of the graph that are not currently being displayed.

To change the type of interpolation applied to a portion of the graph, click and drag to select the frames you wish to change. Your selected area will become highlighted. Next, click one of the **Interpolation** buttons at the bottom of the palette. This can add keyframes to your animation.

Vertical lines on the graph denote keyframes. You can move these points to change when keyframes occur, and can also add

keyframes by clicking the point on the line where you want to insert the keyframe.

The **Current Frame** indicator is a visual reminder of the frame you're currently working on. To select a keyframe, click the **Next Keyframe** or **Previous Keyframe** button, as appropriate, click a keyframe indicator, or drag the **Current Frame** indicator to the frame you wish to edit. Click and drag a rectangle to select a range of frames.



Keyframes displayed in the Graph.

You can also perform the following functions using the **Graph**:

- To move keyframes, select the keyframe(s) you want to move, and drag forward or backward in the timeline to a new location.
- To add a keyframe, drag the **Current Frame** indicator to your desired location and click the **Add Key Frames** button.
- To delete a keyframe, move the **Current Frame** indicator to the desired keyframe and click the **Delete Key Frames** button.
- To cut, copy, and paste, use the editing hotkeys (**[COMMAND]**/**[CTRL]**+[X], **[COMMAND]**/**[CTRL]**+[C], and **[COMMAND]**/**[CTRL]**+[V], respectively) or choose the appropriate command from the **Edit** menu.
- To close the **Graph** palette, click the small box in the upper left corner.

Using the Graph With the Animation Palette

If you open the **Animation** palette, you can access the **Graph** palette for the currently selected scene element by clicking the **Display Graph Palette** button, or by double-clicking a keyframe in the **Animation** palette. With both palettes open, you have the following options:

- Double-clicking any element in the **Animation** palette's **Element** list switches the current **Graph** palette to the selected element.

- Pressing **Opt/ALT** while double-clicking any element in the **Animation** palette's **Element** list opens a new **Graph** palette for the selected element while not affecting any other open **Graph** palettes. You can use this function to open as many **Graph** palettes as you like at one time, which can greatly speed up your animation work. You can even open more than one **Graph** palette for each element, allowing you to (for example) adjust the Right Forearm's **Twist** and **Bend** at once to achieve smooth realistic movement.

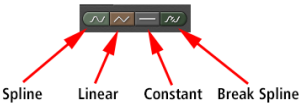


When you have more than one **Graph** *palette open at once, changing elements by double-clicking them will only change the most recently opened* **Graph** *palette. All other* **Graph** *palettes will retain their current settings. If you need to change more than one* **graph** *palette, close out all unneeded palettes, then re-open them by selecting your currently needed elements.*

Interpolation Controls

The process of filling in the blanks between keyframes (the area known as **tween frames**) is called interpolation, and the frames between keyframes are called tweens. Interpolation determines how intermediate poses are created. Please refer to "About Poser Files" on page 847 for a general discussion about interpolation.

Poser supports four types of interpolation, which allows you to make subtle changes to your animations. Interpolation settings apply to a range of frames, meaning that you can use different interpolation methods at different intervals in your animation. The **Interpolation** controls allow you to specify the interpolation method.

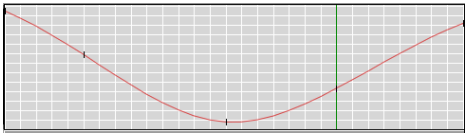


Interpolation Controls.

From left to right, the buttons are:

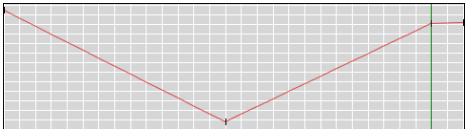
- **Spline**: Places tween poses and settings on a curve. Motion begins at one keyframe, accelerates to full velocity, and gradually slows down as it approaches the next keyframe. For example, if the first keyframe has an arm by a figure's side and the second one has it raised, the arm will begin moving slowly, accelerate to a constant velocity, and slow as it reaches the second keyframe. This is not to say that the movement will be fast; actual speed of motion depends on the amount of change between keyframes and the number of tween frames. In our above example, having the second keyframe 5 frames from the first would make a very rapid

motion, while having 100 frames would make a very slow motion. The key thing to remember is that this type of animation resembles a smooth curve and is normally the most realistic.



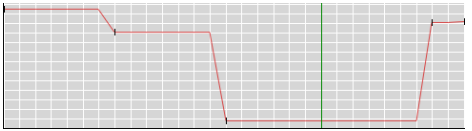
Spline Interpolation.

- **Linear**: Takes the two keyframes and divides the motion between them equally with no acceleration or deceleration of the moving items. In the above example, the arm would move at a constant velocity from keyframe to keyframe. If you created a third keyframe with the arm back down, the change direction at the second keyframe would be abrupt.



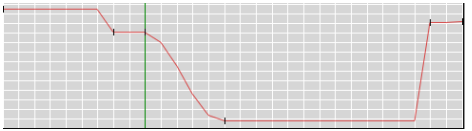
Linear Interpolation.

- **Constant**: This has no intermediate poses. If you set a series of poses with different keyframes, the first pose will be maintained until the second keyframe, at which point it will instantly change to the second pose, which will be maintained until the third keyframe, and so on.



Constant Interpolation.

- **Break Spline**: Stops interpolation at the selected point so you can begin a new interpolation style. This is useful for blending different interpolation styles. For example, a bouncing ball moves in a smooth arc until it hits the floor, at which point it undergoes an abrupt change in direction and speed. This is one scenario where changing interpolation styles can aid your animating work.



Breaking interpolation.

Skip Frames

Clicking the **Skip Frames** radio button enabling this option drops frames when previewing your animation, speeding up playback. Click the button again to toggle its functionality off.

Loop

Clicking the **Loop** radio button causes your animation to repeat itself continuously when playing until you click the **Stop** button. Click the button again to toggle its functionality off.

This Element/All Elements

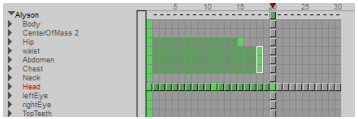
This option selects whether changes made using the **Keyframes** tab (interpolation type, keyframe changes, etc.) apply to the entire scene or just to the selected element. Click the **This Element** or **All Elements** radio button, as appropriate, to make your selection.



Selecting elements to change.

Elements List/Timeline

The **Elements List** displays a list of all elements in your scene. The **Timeline Area** displays your animation frames and all of the keyframes stored for each body part/prop/material/etc. Keyframes appear in red, with tween (interpolated) frames appearing in different colors according to their interpolation type (see "About Poser Files" on page 847). You can expand and collapse element listings by clicking the triangles next to elements in the list. Each element can be further expanded to display its properties and parameters that can be animated. For example, you can view the **Scale** and **Transition** elements for a figure's forearm. The following image displays a portion of the **Elements List** for a scene.



The Element List.

To select an element, click it in the **Element List**. This selects the desired element in the same manner as clicking it in the **Document** window, using the **Current Actor** menu or selecting it using any of the other available selection methods. Poser highlights the currently selected element in the **Elements List** as well as that element's row in the **Timeline**. Use the vertical scroll bar on the right of the **Elements List** and expand and collapse branches to view all of the elements in your scene. Collapsing branches saves space in the display.

When you collapse an entire figure in the Elements List, the keyframes displayed will only be those pertaining to that figure's location in the Poser workspace. You'll need to expand the Elements List to show posing/parameter changes.

Double-clicking an element in the list, or selecting an element and clicking the **Show Graph** button, opens the **Graph** for the selected item. Please see "Using Graphs" on page 458.

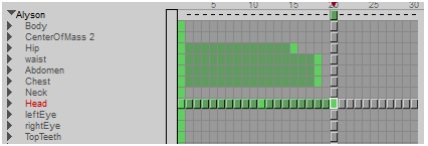
Editing Keyframes on the Timeline

You can use the **Timeline** to select, add, edit, or delete keyframes. The **Timeline** appears as a grid that displays keyframes for each element in your scene. Columns indicate time, with each column corresponding to a single animation frame or point in time (See "Elements List/Timeline" on page 464). The **Ruler** at the top of this area indicates whether the columns indicate frames or points in time. Each row corresponds to an element in your scene. As described above, the **Timeline** presents information using color codes. Use the horizontal and/or vertical scrollbars to navigate the **Timeline** if necessary.

Selecting Keyframes

By default, Poser selects the first frame in your animation (Frame 1) when you open the **Animation** palette. You can select any frame by clicking in or above its column. You can also enter a number in the **Frame** field. When you select a keyframe, Poser displays the current element's row and time column, creating an intersection.

Selecting a different keyframe moves the intersection to the newly selected point. To select a keyframe, click any one of the light green squares on the **Timeline** grid.



Selecting Keyframes.

Adding & Removing Keyframes

Adding keyframes stores a specific pose and/or saves a Poser-created interpolation (tween) frame. You can add keyframes for the entire scene or the selected element by checking either the **This Element** or **All Elements** radio button as described in "This Element/All Elements" on page 464. When **This Element** is selected, keyframes are only recorded for your currently selected element. When **All Elements** is selected, keyframes are recorded for every element in your scene. To add a keyframe:

1. Select **This Element** or **All Elements**, as appropriate.
2. Select the frame or point in time where you wish to add the keyframe.
3. Click the **Add Keyframes** button.

Removing Individual Keyframes

Removing keyframes can modify how your animation appears. You can clear a keyframe for a specific element or your entire scene by selecting **This Element** or **All Elements**, as appropriate. Removing a keyframe does not delete the frame, but removes the saved information. To remove a keyframe:

1. Select **This Element** or **All Elements**, as appropriate.
2. Select the frame or point in time where you wish to remove the keyframe.
3. Click the **Delete Keyframes** button.

Removing Multiple Keyframes

To remove an entire range of keyframes, click and drag over the keyframes you wish to delete in the Timeline and press [DEL]. To remove multiple specific keyframes, press and hold **Shift** while selecting individual keyframes, then press [DEL].

Moving Keyframes

While creating animations, you may decide to have one or more keyframes occur earlier or later than your present settings. You may also want to apply the settings in some keyframes to others. Poser allows you to move both individual and multiple

keyframes. To do this, click the keyframe you wish to move and drag the colored cell horizontally to its new location. To move multiple keyframes, select them and drag your selection to its new location on the timeline.

Copying Keyframes

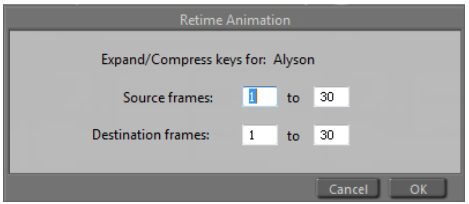
You can copy keyframes, figure parts, and parameters appearing in the **Element List**. By doing this, you can (for example) have several Poser figures marching in perfect step. Although Poser does not limit how you copy and paste keyframes, you should avoid mixing data (such as copying **Scale** parameter settings to a **Rotation** parameter). You can also obtain unexpected results by copying movements from one side of a body to another. If you do copy parameters from side to side, you will need to make the affected parameters negative on the side you copied to.

Choose **Edit > Copy** or press **[COMMAND]**/**[CTRL]**+[C] to copy frames to your clipboard. When you reach your destination, select **Edit > Paste** or press **[COMMAND]**/**[CTRL]**+[V].

Alternatively, you can click the desired keyframe then press and hold **Opt**/**ALT** while dragging the keyframe to its new location. You can move multiple keyframes by selecting them and **Opt**/**ALT**+dragging your selection to its new location.

Retiming Keyframes

Selecting **Animation > Retime Animation** opens the **Retime Keys** dialog, which allows you to adjust keyframe timing in your animation.



The Retime Animation dialog.

By specifying source and destination frame ranges, you can change the amount of time a motion or motions take to occur. This command does not destroy any keyframes, meaning that you can use it to repeat motions by copying them from one time to another. Selecting a motion in one area and selecting a non-overlapping destination re-maps the motion to another time without deleting the original motion.

To retime keyframes:

1. Open the **Retime Keys** dialog box.

2. Enter the start and end frames for the section of animation you want to retime in the **Source Frames** fields.

3. Enter the range of frames to retime the animation to in the **Destination Frames** fields. If the destination range is longer than the source range, the animation is expanded or slows down, and vice versa.

4. Click **OK** when finished.

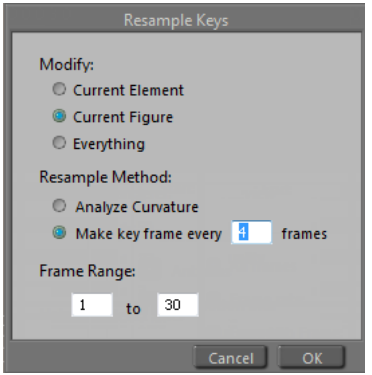


When using this command, all existing keyframes in the Destination Range are deleted.

Resampling Key Frames

Selecting **Animation > Resample Key Frames** opens the **Resample Keys** window, which allows you to increase or decrease the number of keyframes in your animation.

This window has the following options:



The Resample Keys dialog.

- **Modify**: Check the appropriate radio button to sample keyframes for the **Current Element** (prop, body part, etc.), **Current Figure** (entire figure), or **Everything** (entire scene).

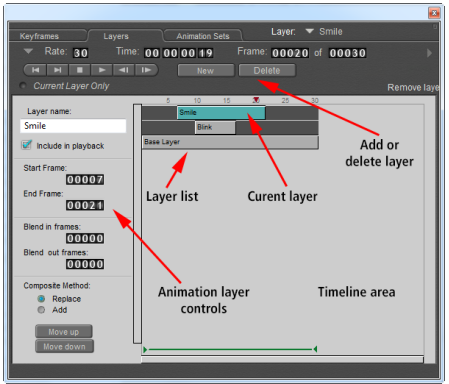
- **Resample Method**: You have two options for resampling keyframes:

- **Analyze Curvature**: Causes Poser to examine the amount of curvature (change over time) in your animation and automatically assign new keyframes.
- **Make key frame every X frames**: Check this radio button and enter a value in the **Frames** field to create a keyframe every X frames, where X is the value you entered in the field.

- **Frame Range**: If you want to resample key frames in a specific portion of your animation, enter the start frame and end frame in the Frame Range fields.

Layers Tab

Animation layers, also known as non-linear animation, provide you with the ability to separate different parts of an animation into independent pieces, which can be individually edited, moved, or even hidden, with respect to the entire animation. At render time, the various layers are composited together into a single animation, according to your specifications. The **Layers** tab on the **Animation** palette contains the controls that allow you to create, configure, move and delete animation layers.



Layers tab in the Animation Palette.



If you switch from the **Layers** *tab to the* **Keyframes** *tab, you will see any keyframes that exist in the currently selected animation layer. If you wish to see keyframes from another layer, use the* **Current Layer** *pop-up menu at the top of the* **Animation** *palette to select any existing layers, without having to return to the* **Layers** *tab.*

Base Layer

When you first begin to create an animation, only one layer will exist; this is known as the Base layer. The Base layer is always present, and if you wish, you can create your entire animation just in this single layer. The frame count of the Base layer is equivalent to the length of the entire animation. The Start frame of the Base layer is always Frame 1, and the End frame is the last frame in the entire animation. Thus, changing the End frame of the Base layer changes the length of your animation, which will affect any other layers whose End frames coincide with the End frame of the Base layer.

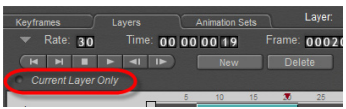


You cannot change any properties of a Base Layer other than the End frame.

Creating, Deleting & Previewing Animation Layers

In addition to the shared controls common to all three tabs on the **Animation** palette (see "Using the Animation Palette" on page 454 for a description of these controls), the upper section of the **Layers** tab also contains three buttons:

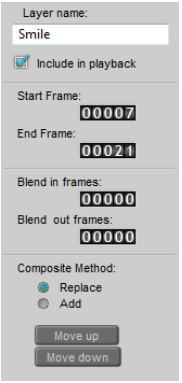
- **New**: Click the **New** button to create a new animation layer.
- **Delete**: Click the **Delete** button to delete the currently selected animation layer. This feature is disabled when the Base layer is selected.
- **Current Layer Only**: Click the **Current Layer Only** radio button to temporarily exclude all other animation layers from the playback. Doing so allows you to isolate the specific animation contained within the current layer, which can be helpful in scenes with multiple layers.



Current Layer Only option.

Animation Layer Controls

The lower portion of the **Layers** tab contains additional controls that allow you to configure a selected layer, and the **Timeline Area**, which displays the various layers in editable segments, allowing you to see the hierarchy of the layers as well as where each layer is placed in the timeline of the entire animation. The **Layer** controls are as follows:



Layer Controls.

- **Layer Name**: Once you have created a new layer, you can change its default name to anything you want. Simply select the layer in the Timeline display, and type the new name in the text field.
- **Include in Playback:** Check or uncheck this option to include or exclude the selected clip when you preview your animation.
- **Start/End Frame**: The **Start frame** and **End frame** controls allow you to specify the Start and End frames for the selected layer. While the Base layer always equals the length of the entire animation, other layers can be of any length up to the entire animation length, and can start and end at any point within the duration of the animation. You can change the Start and End frames by clicking on the frame number and typing a new value into the field. Alternately, you can click on the layer segment in the **Timeline Area** and drag it to a new position; the segment length will remain constant, but the Start and End frames will change. Clicking and dragging on either the beginning or the end of the layer segment will change the Start or End frame respectively, without moving the position of the segment within the animation timeline. The length of the layer segment will adjust to accommodate the new Start or End frame number.
- **Blend In/Out Frames**: The Blend In/Out feature allows you to gradually blend an animation layer into, or out of, the full animation. This feature could be used, for example, to create the effect of wind gradually picking up or fading away. The **Blend in frames** and **Blend out frames** settings allow to you specify over how many frames the linear blend will occur. The Blend In/Out frame count is indicated on the layer segment display as an additional shaded segment attached to either the beginning or end of the layer segment.



If the animation contained within a specific layer is a gradual movement, then the Blend feature may not be effective, particularly if the **Blend In/Out frame** *counts are set too low.*

- **Composite Method**: While compositing the full animation, Poser begins with the Base layer, and works upwards through the layer hierarchy incorporating each layer one by one. The **Composite method** setting allows you to specify the manner in which the individual layers will be composited. The two options for compositing animation layers are **Replace** and **Add**.
  - **Replace**: This is the default composite method for animation layers. Selecting **Replace** means that any action on a given parameter for a specific actor will replace any actions on the same parameter, on all layers below the selected layer. For example, let's suppose that Layer1 is below Layer2 in the animation layer hierarchy. Let's also suppose that in Layer1 James' chest is twisted twenty degrees to the left, but in Layer2 his chest is twisted only ten degrees to the left. With the **Replace** option, the Layer2 setting will replace the setting from Layer1.
  - **Add**: Selecting **Add** means that the values for all rotation and translation parameters will be added to one another as Poser composites each layer into the animation. Using the above example, the twenty degrees of Twist from Layer1 would be added to the ten degrees from Layer2, resulting in a greater effect of thirty degrees of Twist. However, if Layer1 had included a twist of negative twenty degrees, while Layer2 had included a twist of positive ten degrees, then the **Add** option would result in a final twist effect of negative ten degrees.
- **Move Up/Down**: If you select the **Replace** composite method, the specific order of the layers within the layer hierarchy will be very important, as parameter settings in higher layers replace those in lower layers (see above for additional explanation). You can change the order of layers within the hierarchy by clicking the **Move up** or **Move down** button to move the selected layer either up or down one level. Clicking the button a second time will repeat the action.

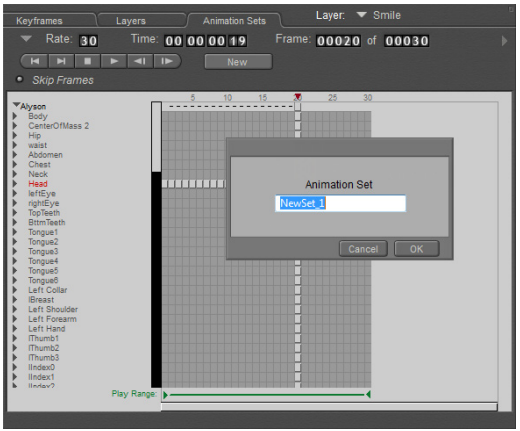
Animation Sets Tab

Animation sets allow you to store a series of animation clips that are frequently used in combination. For example, you could animate a figure raising its arm above its head and save the limb's movements to a named animation set.

Creating & Editing Animation Sets

To work with animation sets, open the **Animation** palette by selecting **Window > Animation Palette**. Click the **Animation Sets** tab to open the **Animation Sets** palette, as shown.

The **Frame Rate**, **Time** control, **Frame Indicator**, **Play** controls, and **Skip Frames** button all function as described in previous sections of this chapter.



Creating an Animation Set.

- To create a new animation set, click the **New** button and name your new set. Doing so will populate the **Animation Sets** tab with additional editing controls.
- To delete an animation set, select the set from the pop-up menu to the right of the **Attributes** button, and click the **Delete** button.
- To add selected items and/or frames to your animation set, click and drag to make your selection and click the **+** button. You can select any combination of items/frames. The start and end frames will be made identical for all items in the animation set.
- To remove selected item(s) and/or frame(s), make your selection and click the **–** button.



Several buttons allow you to add, remove, and set attributes for your animation set items and frames.

- To save an animation set, you will need to save the pose to the Library. To save an animation set pose, first open the Pose library. Click the **Save to Library** button at the bottom of the Library palette to display the **New Set** dialog. Next, click the **Select Subset** button at the bottom of the

dialog to open the **Select Objects** dialog. Click the **Select from Animation Set** button to display a list of the available animation sets. Choose one of the sets, and click **OK** to save the animation set to the library. Repeat for additional sets you want to save.

Setting Animation Set Attributes

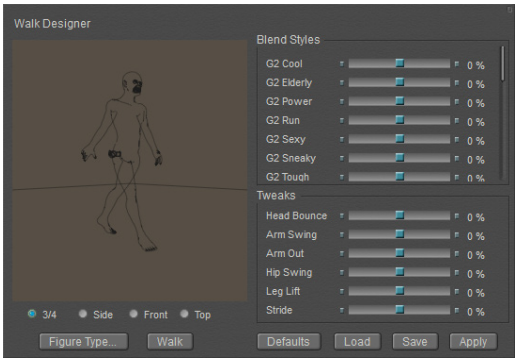
The **Attributes** button is for use with Python scripts. You can add any arbitrarily named attribute with an associated value. Using Python scripts, you can use these attributes any way you wish. For example, you could create a Python script that causes a figure to blink their eyes repeatedly. For more information on using Python scripts with Poser, please refer to "Part 8: PoserPython" on page 836, or to the PoserPython Methods Manual that accompanied your Poser installation.

Applying Animation Sets to Figures

You can also apply animation sets to figures. For example, if you create an animation set of an arm being raised, applying that set to your current figure will cause its arm to raise in the exact way specified by the animation set. This feature can help you save time by allowing you to reuse complex animations over and over.

Using the Walk Designer

Of the wide range of human motions, walking is among the hardest to simulate with any degree of accuracy. Walking looks simple: just place one foot in front of the other. In reality, however, it is an incredibly complex motion involving a variety of muscles in the legs, torso, arms– practically the entire body. Thus, creating an accurate walk simulation entails a great deal of precision posing. Poser's **Walk Designer** allows you to bypass most of this and create a realistic walk using just a few simple steps.



The Walk Designer.

Creating the Walk

To open the **Walk Designer**, select the figure you'd like to animate in the Poser scene, then choose the **Window > Walk Designer** menu command.

Unless you want your figure to walk in place (without a walk path), create a walk as follows:

1. Create a walk path (your figure will follow this path when walking)
2. Create a walk using the W**alk Designer**.

The **Walk Designer** has two sections. The upper set of controls creates the walk's larger motions, while the lower set lets you set up the walk's secondary motions. To preview a walk, click the **Walk** button at any time while using the **Walk Designer**. The preview will loop indefinitely and the button will change to **Stop**.

Views

As you can see in the previous graphic, the Walk Designer includes a real-time preview of the walk being created. As you change the parameters, the walk changes to reflect your updates. You can specify the angle from which to preview your walk by checking the appropriate radio button underneath the Preview tab:

- **(default)**: Checking the radio button looks at the figure on an angle.
- **Side**: Checking the **Side** radio button looks at the figure's side.
- **Front**: Checking the **Front** radio button looks at the figure's front.
- **Top**: Checking the **Top** radio button looks down from the top.



The Walk Designer reflects your current Poser workspace's foreground, background, and shadow colors, as well as tracking mode.

Figure Types

This step is optional, however it can address potential issues such as irregular or jerky motions in generated walks. To load a figure type, click the **Load** button in the Walk Designer and use the standard **Open** dialog to locate your desired character (*.CR2) file. Please see "Appendix B: Poser File Structure" on page 847 for more information about Poser file types, including CR2 files.



Try loading the same figure you're working on. For example, if creating a walk for the Don figure, load him into the Walk Designer for best results.

Blend & Tweak Styles

Once you've loaded your figure type, you can begin designing your walk. By default, the sliders are all in the middle of their ranges. This combination applies a workable default walk. Dragging a slide to the right increases its value and effect, and vice versa. To create a walk:

1. Drag the **Blend** sliders to create the large motions. Use the preview to view all of the available settings. Try using combinations of several settings, and remember that small changes can produce dramatic results.
2. Adjust the **Tweak** sliders to fine-tune the walk.
3. When your walk looks the way you want it to, click the **Done** button to open the **Apply Walk** dialog (see below).



Clicking the Defaults button restores all sliders to their default positions.

Loading & Saving Walks

You can load and save walk files using the **Walk Designer**. This is not the same as saving animated poses to the **Library** palette. To save a walk, create it, then click the **Save** button to open a standard dialog box allowing you to specify the name and location for the saved walk. Select your desired path, enter a name for the saved walk, and click **OK**.

To load a walk, click the **Load** button to open a standard **Open** dialog, allowing you to specify a path and filename for the walk file to load.

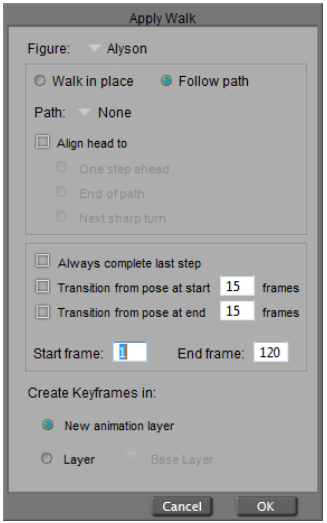


For greatest realism, load walks created using the same figure type.

Applying Walks

Once you've created your walk, you need to apply it to the figure's walk path (see "Creating a Walk Path" on page 478 for instructions on creating walk paths). The **Walk Apply** dialog allows you to specify various options for applying your newly created walk. If you want your figure to walk in place, you can use this dialog without having a walk path.

You have the following options when applying walks:



The Apply Walk dialog.

- **Figure**: If your scene has more than one figure in it, the **Figure** pull-down menu allows you to select the figure to apply the walk to.

- **Walk in Place/Follow Path**: Clicking the **Walk in Place** radio button causes the selected figure to walk in place without going anywhere. You can use this option to create a walk without a walk path. Alternately, if you wish your figure to follow a walk path, click the **Follow Path** radio button.

- **Path**: If your scene has more than one walk path, you can use the **Path** pull-down menu to specify the walk path to use.

- **Align Head to**: Checking the **Align Head to** box lets you control how the figure's head acts as it moves along the walk path. **One Step Ahead** keeps the head aligned with the body and produces the most head movements. **End of Path** keeps the figure's head looking at the end of the walk path no matter where it leads. **Next Sharp Turn** aligns the head to the turns in the walk path, the head only moving when the path curves.

- **Always Complete Last Step**: Checking the **Always complete last step** box forces the walk animation to complete within the allotted time. This is useful if the walk ends in mid-stride at the end.

- **Transition From/To Pose at Start/End Frames**: The **Transition from pose at start** and **Transition from pose at end** options allow your figure to smoothly transition

into and out of the walk at the beginning and end of the walk cycle, respectively. When enabled, Poser interpolates between the figure's pose at the start of the walk and the settings you specified in the **Walk Designer**, and vice versa at the end of the cycle. For example, you can use this feature to quickly set up a runner by posing the figure in the crouched starting position, designing a run, and specifying a realistic transition time. When you play your animation, the runner will come off the starting blocks and begin the run. Checking one or both boxes enables the specified option(s). Once enabled, enter the number of frames to be used for the transition. Longer time periods (more frames) allow more realistic movements and vice versa.

- **Start Frame**: Enter the frame in your animation where the walk will begin in the **Start Frame** field.
- **End Frame**: Enter the frame in your animation where the walk will end in the **End Frame** field. Poser suggests a value that is expected to yield a natural walk speed. The more frames allocated, the more time a figure will take to walk along the specified path.
- **Create Keyframes in**: The **Create Keyframes in** setting allows you to select either a new or existing animation layer for your walk keyframes. Animation layers allow you to organize your animations, save and reuse specific aspects of a larger animation.

We recommend that you create the keyframes in a new animation layer; click the "New animation layer" radio button to select this option. Alternately, you can choose to use an existing animation layer by clicking the "Layer" radio button, and selecting the name of the layer from the pop-up menu. If you do not wish to use animation layers, you can simply write all keyframes to the Base Layer. For more information about animation layers, please see "Layers Tab" on page 469.

Creating a Walk Path

Creating a walking figure is a two-step process. The first step entails creating a walk path for your selected figure that defines where s/he is going to walk. The figure can walk in place or along a path.

Walk paths are designed to work with the **Walk Designer** (see "Using the Walk Designer" on page 474). While the **Walk Designer** specifies how your figure walks, a walk path specifies where. The path is a curve drawn in the **Document** window that sets the figure's course as it moves about the Poser workspace. Create the path, design the walk, and the figure walks along the path from start to end, stopping at the end.

To create a walk path, Select **Figure > Create Walk Path**. A default path appears in the Poser workspace. We recommend shifting to the **Top** camera and zooming out to get the best view

of your scene and walk path, but you can work using any camera you like. The following image shows a default walk path.



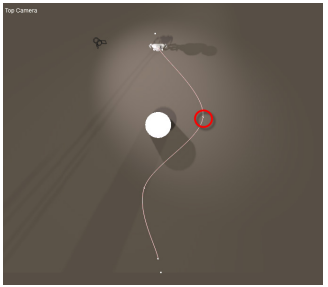
Default walk path.



Walk paths must be created on the ground plane.

Shaping Curves

The curve's position is defined using control points. Click and drag control points to shape your path any way you like.

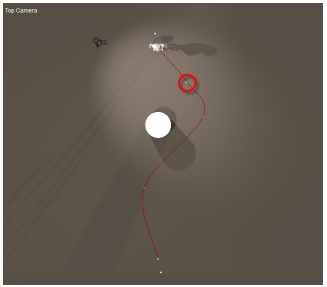


Drag a control point to reshape the curve.

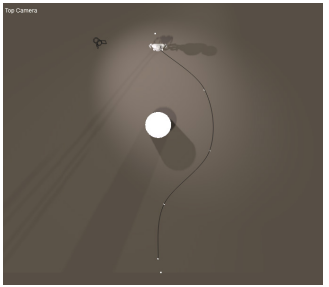
You can position the beginning and end of the walk path by dragging the end control points. You can also reposition the entire walk path by selecting the ring that appears when your cursor is near the walk path, which functions like the **Figure Ring** discussed in "Selecting Body Parts" on page 181.

Adding and Removing Control Points

To add control points, simply click anywhere along the line. Your new control points appear. Adding control points can add detail and/or lengthen your walk path.



You can add or remove points on the walk path.



A reshaped walk path.

To delete control points, press and hold **Opt**/**ALT** while clicking the point you wish to remove.

Once you have completed your walk path, use the **Walk Designer** to design a walk for your figure. Please refer to "Using the Walk Designer" on page 474 for more information about the **Walk Designer**.

Because of the nature of the spline used for walk paths, it is impossible to create a hard right-angle turn. These and other abrupt direction changes can result in unnatural-looking walks.

Once you have created a walk using the Walk Designer, you can delete the walk path. The figure will still behave as though the walk path was present.

Sound

Poser allows you to import sounds, which play when your animation plays. This is a great way for you to add soundtracks, speech, etc. to your animations. To import a sound clip, select **File > Import > Sound** and use the standard **Open** dialog that appears to locate your desired sound file. If you wish to import a speech sound clip for use with the **Talk Designer**, select **File > Import > Lip Sync Audio** (see below for information on the **Talk Designer**). Imported sounds attach to your animations at the first frame and play whenever the animation is played. Also, you can only import one sound file. If your animation calls for more than one sound, edit your desired sounds together in an audio editing application and create a new sound file for importing into Poser.

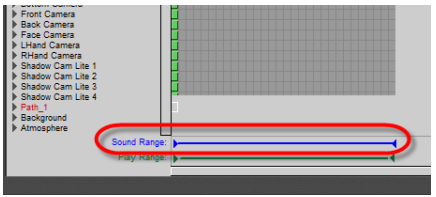
Importing Sound

Selecting either **File > Import > LipSync Audio** or **File > Import > Sound** allows you to import WAV, MP3, and other audio format sound clips that you can use as a soundtrack for your animation. Imported speech or sounds are added to the beginning of your animation and play every time you play your animation. Upon selecting this option, a standard **Open** dialog appears, allowing you to select the filename and location of the sound file you wish to import. If you selected the **LipSync Audio** option, the **Talk Designer** will open with your specified audio file selected. Please refer to "Syncing Sound & Motion" on page 482 for information on working with imported sounds.

Importing sounds files will add keyframes based on the current frame rate selected. For example a two second long sound file will expand the default animation to 60 frames if a frame rate of 30 frames per second has been selected for the animation.

Editing Sound

Sound duration appears in the **Sound Range** bar at the bottom of the Animation Palette. You can clip imported sounds by shortening the sound bar. However, if sound playback begins at any frame other than 1, the beginning of the sound will be clipped.

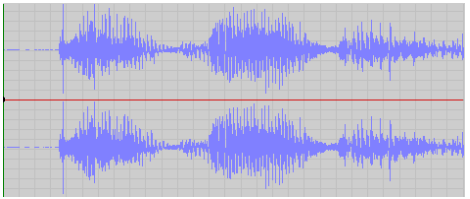


The sound range is displayed at the bottom of the Animation Palette.

To specify start and end frames for the sound, drag arrows on either side of the sound bar.

Syncing Sound & Motion

The **Graph** palette displays a graphic representation of the sound file called a waveform, which lets you see where changes in sound occur. You can use this information to position keyframes in your animation. Simulate speech by matching peaks in the waveform with changes in mouth position, as shown above. To display waveforms in the **Graph** palette, open it as described in "Using Graphs" on page 458 and click the **Toggle Sound Display** button to toggle waveform display on and off.



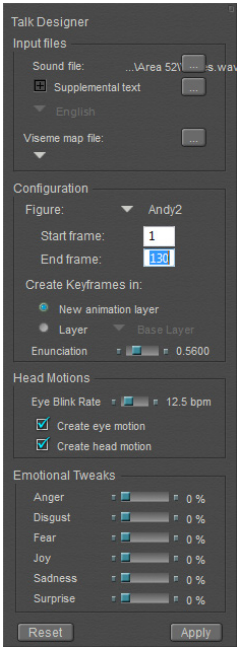
A sound appears as a waveform in the Graph palette.

Using the Talk Designer

Poser's **Talk Designer** automates the task of animating facial features for speech. The **Talk Designer** synchronizes morph targets, Emotional Tweak controls, and powerful eye and head motion modelling algorithms with your sound file, making it much easier to animate realistic facial expressions for speech.

The **Talk Designer** is configured using the **Talk Designer** palette. Choose **Window > Talk Designer** to open the palette.

Select **File > Import > Lip Sync Audio** to import a sound file, as described above. At the end of the import process, the **Talk Designer** palette will automatically open with your imported audio file selected.



The Talk Designer.

Select **Window > Talk Designer** to open the **Talk Designer** palette at any time.

Configuring the Talk Designer

The **Talk Designer** palette settings are described in the following sections. When you have configured the **Talk Designer** to your satisfaction, click the **Apply** button at the bottom of the palette to generate a lipsync animation based upon the settings you specified.

Input Files

- **Sound file**: Clicking the "..." button next to the **Sound file** setting allows you to browse to the location of the sound file you wish to use for your lipsync animation. Poser supports WAV file, as well as AIFF files on the Macintosh.

- **Supplemental text**: For better accuracy, we recommend that you include the text of the spoken words in the **Supplemental text** field. Text entries in this field will be required if you need to specify an alternative language. You can click the "..." button to browse to a text document, or click on the "+" button to open a text box and enter the text directly.

- **Language**: If you add supplemental text, use the Language pull-down menu to specify the language used. In order

to select another option from the **Language** menu, you must have text entered in the **Supplemental Text** field. After entering your text, you will have the option to select **English**, **French**, **German**, or **Japanese**.

- **Viseme map file**: A viseme map file provides information about which phonemes (speech sounds) are matched to which specific visemes, or facial expressions. These viseme map files are directly linked to the morph target setup of the individual figure. If you are working with any of the newer figures included with Poser, you can simply use the default viseme map file for the figure. If you wish to use a figure from a previous version of Poser, please make sure that a viseme map is provided in the associated pop-up menu. If you use a figure from a third-party source that was created with a different morph target setup, you will need to provide the viseme map file that accompanies the figure. We recommend that you place the viseme map file into the \Runtime\LipSync\ folder that accompanies your Poser installation. Doing so will add the file to the pop-up menu in the **Talk Designer** palette. Alternately, you can click the "..." button to browse to the location of the viseme map file, if you wish to keep it in another location.



If you are unsure whether or not your custom figure was created following the morph target standards for included Poser figures, you can try your animation using the default viseme map file. Smith Micro cannot support third-party figures. If you are dissatisfied with the results, you will need to contact the content creator.

Configuration

- **Figure**: Specify which figure in the scene you wish to use for the lipsync animation, by selecting the name of the figure from the pop-up menu.
- **Start frame**: Specify the Start Frame number for the actual lipsync animation. By default, the **Start Frame** setting is set to the Start Frame of the entire scene animation (frame 1).
- **End frame**: Specify the End Frame number for the actual lipsync animation. By default, the **End Frame** setting is set to the End Frame of the entire scene animation (generally frame 30, unless you have specified a different scene End Frame). Once you load a sound file, the **End Frame** setting will default to match the length of the sound file.



If the End Frame number specified in the **Talk Designer** *is greater than the End Frame for the entire scene animation (as specified on the Base Layer), then additional frames will be appended to the scene to accommodate the difference.*

- **Create Keyframes in**: The **Create Keyframes in** setting allows you to select either a new or existing animation layer for your lipsync animation keyframes. Animation layers allow you to organize your animations, save and reuse specific aspects of a larger animation.

  We recommend that you create the keyframes in a new animation layer; click the "New animation layer" radio button to select this option. You will be asked to name the new layer. Alternately, you can choose to use an existing animation layer by clicking the "Layer" radio button, and selecting the name of the layer from the pop-up menu. If you do not wish to use animation layers, you can simply write all keyframes to the Base Layer. For more information about animation layers, please see "Layers Tab" on page 469.

- **Enunciation**: The **Enunciation** slider allows you to configure the degree to which the **Talk Designer** will adjust a figure's visemes, or facial morphs, in response to changes in the audio file's perceived energy. Poser automatically adjusts visemes to correlate to the energy of the selected sound file. However, you can use the **Enunciation** slider to raise or lower the degree of reaction, to counteract or supplement the automatic viseme adjustment. Move the slider to the right to increase enunciation, or to the left to decrease.

Head Motions

- **Eye Blink Rate**: The **Talk Designer** can add intermittent eye blinks that have been modeled on studies of actual human blink rates, in order to animate blinks realistically in relation to the animation of speech. The **Eye Blink Rate** slider allows you to specify an average blink rate, measured in blinks per minute (BPM). To change the average blink rate, simply click and drag the slider, or click on the numerical value in the text box and enter a number directly. The default value is 12.5 BPM. A setting of zero (0 BPM) disables the automatic blink feature, which means that with this setting you must animate all eye blinks manually.

- **Create eye motion**: When people speak, their eyes generally look in different directions with relation to their subject matter and surroundings. Adding eye movements can result in a more realistic animation. Check the **Create eye motion** checkbox to have Poser add eye movements to your lipsync animation.

- **Create head motion**: People naturally move their heads during speech, which means that adding head motion to your animation can yield more realistic results. Check the **Create head motion** checkbox to have Poser add head motion to your lipsync animation for you.

Emotional Tweaks

The **Talk Designer** includes six **Emotional Tweaks**, which are morph targets that can be used in conjunction with speech. These morph targets are based upon facial expressions associated with the following emotions:

- Anger
- Disgust
- Fear
- Joy
- Sadness
- Surprise

Each of these **Emotional Tweaks** is adjusted by a slider, which ranges between -100% and 100%. The values within this range represent the degree to which each particular emotion will manifest in the facial expressions of the figure during the lipsync animation. Feel free to mix and match the **Emotional Tweaks** slider values to suit your specific needs. To adjust the values, you can either move the sliders to the right or left, or you can click on the numerical value to the right of the slider and enter a number directly.

Importing BVH Motion Capture Files

Selecting **File > Import > BVH Motion** allows you to import motion-capture files in the popular BVH format. A standard **Import** dialog appears, allowing you to select your desired path and filename.

To determine the correct axis or scale for the BVH files consult the developer's readme or documentation. Developers such as Biovision or House of Moves will provide this information. Or, you can specify whether a figure's arms are aligned in the X or Z axis during import. The align axis is determined at the time of recording. Choose the correct axis so your figure will move correctly. Begin by selecting the body. Import the BVH file and select the **Z-Axis** arm alignment and **Scale Automatically** options. Some actors may not be recognized, but the BVH file will still load. If you make a mistake, return to Frame 1 and re-import the file. Imported BVH keyframes are applied to the currently selected figure and can be edited like any other keyframe (see "Editing Keyframes on the Timeline" on page 465).



In some cases, figures can float above the surface of the floor after you import BVH data. Choose the **Scripts > Utility > dropFigToFloorAllFrames** *command for a useful Python utility that drops the figure to the floor across all keyframes.*

Advanced Animation Techniques

This section is where we stop talking about technical details for a moment and focus on a few artistic considerations. Editing animations is pretty easy work in and of itself. Getting your animation to look just the way you want it and adding realism are the hard parts. A jerky movement can turn smooth and flowing or an unrealistic motion can become realistic if you keep a few simple techniques in mind.

Keyframes and Timing

How should you space keyframes? Begin by considering time and frame rate. Space keyframes so that the motion looks natural at the selected frame rate. For example, if you have a motion that requires 4/5 of a second, you'll need 24 frames at 30fps, 20 frames at 24fps, 9 frames at 12fps, etc. The basic formula is frame rate (in frames per second) times motion duration in seconds = number of frames required.

Creating Realistic Motion

Now that you've gotten the number of frames required for a motion down, what's next? Break down the motion into component parts. For example, look at a baseball player swinging a bat. At first glance, it may look like the arms are moving. Upon closer inspection, however, you see that the entire body is in motion. Some movements, like the arms and legs, are more pronounced that others. So, begin with the large movements then go back and work on the finer adjustments. Using our baseball player example, you could start with two keyframes: One at the beginning of the swing, the other at the end.

Previewing this animation with only two keyframes would probably give you a pretty good result, however the details are where your animations will shine.

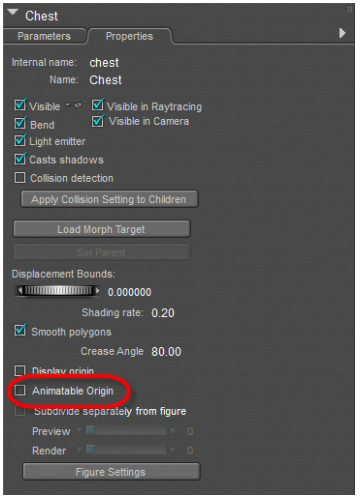
Now that the major motions are roughed in, let's add some detail. For example, add the hip swings, shoulder tilts, etc. The subtle details may not be overly noticeable, but your viewers will pick up their presence or absence though they may not be able to tell you what's wrong with your animation if these elements are not present. Poser's **Animation** palette and graph (described in the previous sections) are ideal for this fine-tuning. Smooth transitions don't occur in all movements. For example, when a bat strikes a fast-moving baseball, there is an immediate change in direction. This is an animation where linear interpolation might be better suited. You can adjust splines in the Graph

palette, or change interpolation types to create motions. You can adjust splines or change interpolation types in the Graph palette.

By working this way, you can create any kind of action and can make that animation look as realistic as possible.

Animatable Origins

The **Animatable Origin** option appears in the Properties palette when a prop is selected, or when a body part on a poseable figure is selected.



The Animatable Origin option.

When checked, the **Animatable Origin** option allows you to animate the actor's origin as the actor is translated, rotated, or scaled. This allows you to optimally position the joint origin if the shape of the actor changes drastically by scaling or morphing.

Consider the example shown in the following figures, which was prepared by Nerd3D. In this example, the default Andy figure has been morphed into an alien shape.



A drastically morphed character.

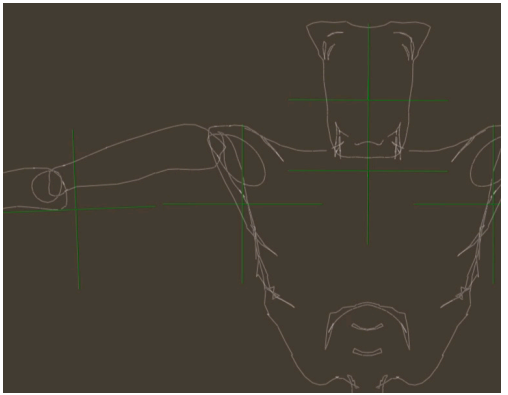
Because the width and shape of the shoulders has changed so much from the original figure, the upper arm no longer rotates with proper respect to the new shape and size of the shoulder. When the "Alien Andy" morph is dialed in and the arm is raised up, the arm rotates through the shoulder.



When the upper arm on the morphed character is rotated, its joint .center is no longer appropriate for the morphed body shape.

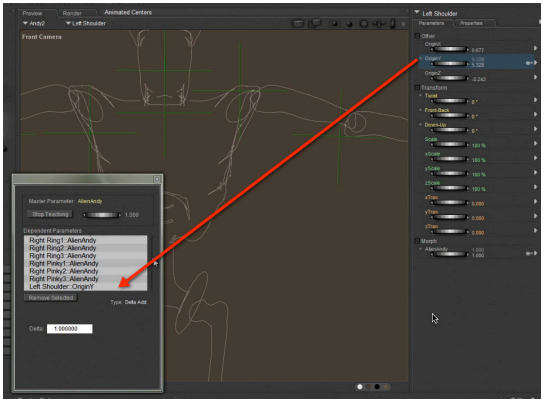
When using animatable origins, you will get much better bending if you first merge your spherical and capsule zones into weight maps first, as outlined in "Adding a Weight Map" on page 747. At a minimum, convert the body parts where the mesh is most affected by the morph (the shoulders, forearms, head and neck in the case of this alien morph). Affected actors will also allow you to create joints that bend more naturally in respect to the joints around them.

After you convert your body parts into weight maps, use the Properties palette to set the Animatable Origin option on for each origin you need to change. You'll also want to make sure that the Display Origin option is checked so that you can see and position the origin. When viewed in Outline display mode, you can easily see which origin points need to be adjusted when the morph is dialed in.



Original joint centers as they appear in relation to the morph.

The Dependency Editor, discussed in "Using Dependent Parameters" on page 666, allows you to link the morph with the new positions of the joint centers. For example, after the "Alien Andy" morph is dialed in, you would open the Dependent Parameters editor and click Start Teaching to record the new positions of the joint centers that you want to change. Any changes you make to the joint positions are changed in the Dependent Parameters editor as shown in the following figure.

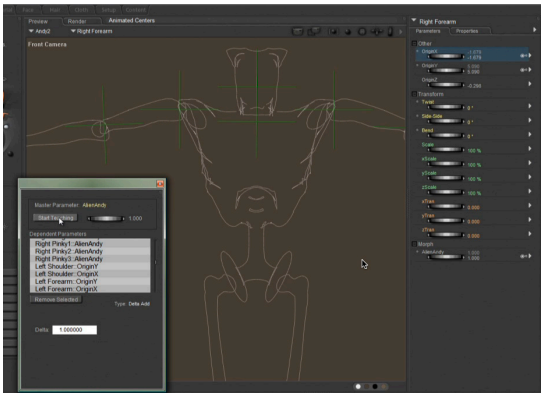


The Dependent Parameters editor will track positions of the Origin X, Y, and Z dials after "Start Teaching" is pressed.

After you adjust the X, Y, and Z origin of the current joint, click **Stop Teaching**. Select the next joint you want to edit, and **Start Teaching** again.

DO NOT use Figure > Symmetry to copy the new joint positions to the other side of the body. Doing so will copy the positions of all joints into the Dependent Parameters editor.

Continue as such until all of your joints are adjusted. They will all be recorded in the Dependent Parameters editor. After you have them all set up, click **Stop Teaching** again. After all of your joints are positioned you will see the morphed character pose much more naturally, and the way it is supposed to.



The new positions of the joints.

Long/Complex Animations

If you are trying to make a long movie or one that incorporates changing cameras, you should create small clips and edit them together in a video editing application such as Adobe Premiere.

Saving Animations to the Library

You can save animations to the **Library** palette as still (single-frame) or animated (multiple frame) poses for use with other figures/props. See "Adding Items to the Library" on page 162 for more information on saving still or animated poses to the **Library**.

Chapter 23: Using Bullet Physics

The Physics Simulation palette allows you to incorporate Bullet physics into your Poser animations. To open the palette, choose **Window > Bullet Physics Controls.**

After you create a simulation, the objects in your simulation can be assigned one of three object types, which are detailed further in the sections that follow:

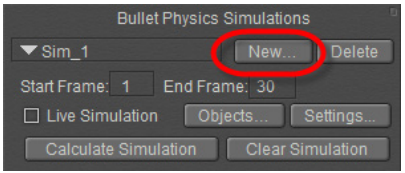
Creating a Simulation

The Physics Simulation palette allows you to create one or more physics simulations in your Poser project. Each simulation defines the following:

- The objects that will be included in that physics simulation.
- The frames in your animation project in which the physics calculations will be applied to the defined objects
- Settings that will be applied to all of the objects included in that simulation.

To create a new simulation, follow these steps:

1. From the Physics Simulation palette, click the **New** button to create a new simulation.
2. The **Simulation Name** dialog will prompt you to enter a name for the simulation. After you enter the name, click **OK** to create the simulation.
3. To limit your simulation to certain frames in your project, enter the starting and ending frames of the desired frame range in the **Start Frame** and **End Frame** fields.



Setting up a new simulation.

Using Live Simulation

As you configure the settings and constraints that you apply to the physics objects in your scene, you can view the effects of those settings in real time. Check the **Live Simulation** option to preview how your simulation settings and weight painting

affect the physics objects in your scene. The live previews are especially helpful while you paint constraint maps that control how the objects respond to gravity, motion, and collision with other objects.

Live simulations do not add keyframes to the Animation Palette.

The Live Simulation button will be disabled until after you set up the simulation objects in your scene.

Pressing the **Clear Simulation** *button will return the objects to their default state. You will need to uncheck the* **Live Simulation** *option before clearing the simulation.*

Calculating Simulations

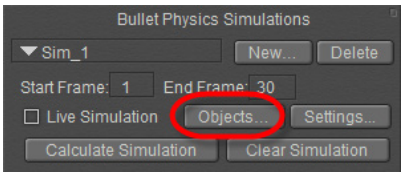
Click the **Calculate Simulation** button to calculate your simulation frame by frame for the currently selected simulation. Keyframes will be added to the Animation palette for each object in the current simulation.

Keyframes that are added to the Animation Palette after calculating a simulation will be removed when you click the **Clear Simulation** *button.*

Use the **Animation > Recalculate Dynamics > All Physics** *menu command to calculate all of the physics simulations in your current project.*

Object Types

After you create a new simulation, you need to set up the simulation objects in your scene. Click the **Objects** button to open the **Select Objects** dialog.

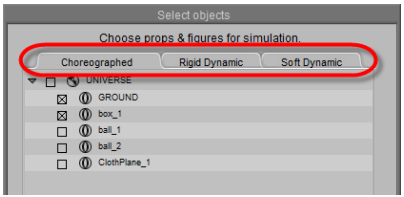


Click the Objects button to define your physics objects.

The Select Objects dialog displays three tabs: **Choreographed**, **Rigid Dynamic**, and **Soft Dynamic**. As you switch from one tab

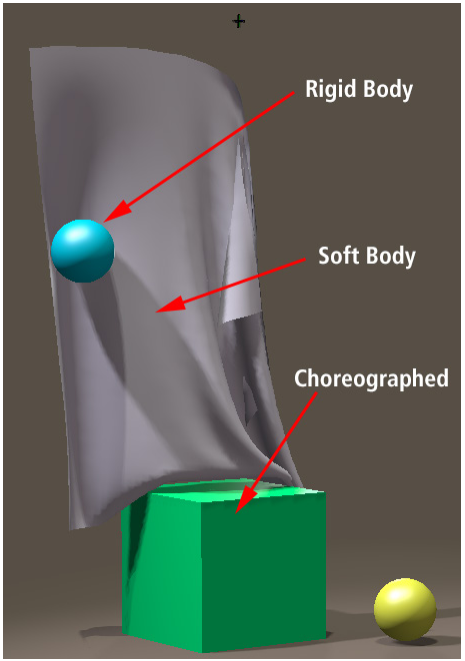
to the next, you place a check beside each of the objects in your scene that you want to designate as that object type.

- **Choreographed** is used to define stationary or animated objects in your scene that the dynamic objects will collide with. See "Physics Object Types." on page 496.
- **Rigid Dynamic** is used for hard-bodied objects that will have physics applied to them. These objects will maintain their shape when they interact with other objects in the scene. See "Rigid Dynamic Objects" on page 497.
- **Soft Dynamic** is used for soft-bodied objects that will have physics applied to them. The shape of these objects are affected by collision with other objects in the scene. See "Soft Dynamic Objects" on page 497.



The Select Objects dialog allows you to assign the objects in your scene to one of three types of objects.

When you assign physics objects in your scene, keep in mind that you don't have to assign every object in your scene as a physics object. For example, if your scene is composed of many walls and furnishings inside a room, the only objects that you need to assign to the current physics simulation are those that will directly come into contact with each other in the simulation that you are configuring.

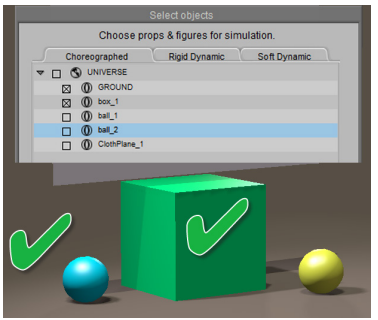


Physics Object Types.

Choreographed Objects

Choreographed objects are those which either remain stationary or are animated manually with keyframes. When assigning choreographed objects, you only need to assign the objects that you expect the other physics objects to collide with.

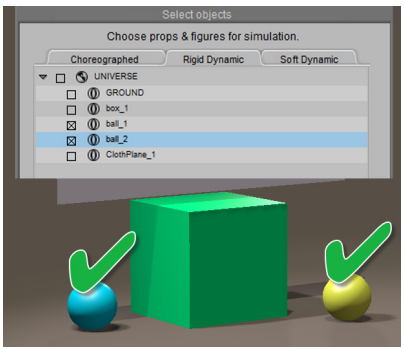
A simple example is shown in the figure that follows. There are five objects in the scene: the ground, a large box, two balls, and a cloth plane. Only two objects in the scene are assigned as choreographed objects: the ground, and the large box in the center. These two items will not move, and the other objects in the scene will collide against them.



Choreographed objects are those that other physics objects collide against.

Rigid Dynamic Objects

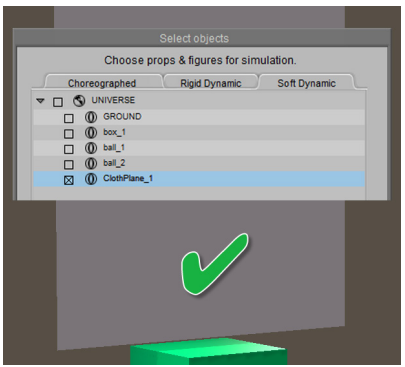
Rigid dynamic objects are those which will interact with other objects, but which will maintain their shape when they collide with other objects in the scene. The figure shown below shows two balls that are selected as rigid body objects. They will maintain their shape when they collide against the other objects in the scene.



Rigid dynamic objects maintain their shape when they collide against other objects.

Soft Dynamic Objects

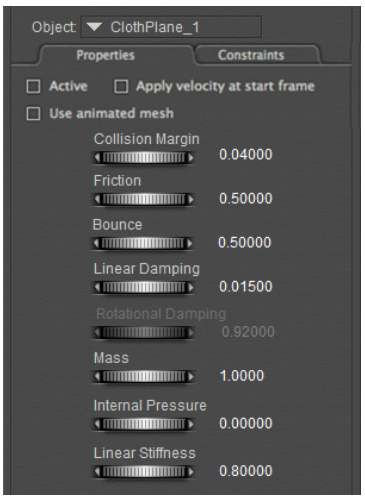
A soft dynamic object will change its shape or appearance when other objects collide against it. One obvious example is a cloth plane, as shown in the following figure. However, it's also useful for other items such as a rubber ball that squashes and stretches in response to its collision with the ground; or jiggle that you can add to a heavy cartoon figure as he or she walks or runs across the scene.



Soft dynamic objects change shape when they collide against other objects.

Setting Object Properties

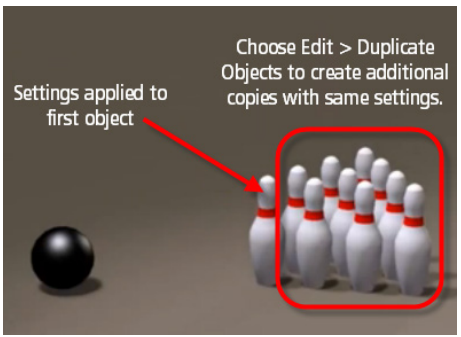
The Properties tab in the Physics palette allows you to assign properties to each of the physics objects in your scene. The properties that are available depend on the type of object you are configuring.



Setting Object Properties.

Select the object that you want to configure from the Object menu, and then click the Properties tab to display the following options:

If your scene includes several objects that need to share the same physics properties (for example, ten bowling pins), create the first object and set its physics properties. Then use the **Edit > Duplicate Object** command to duplicate the first object and its physics properties. The duplicated object will automatically be added to the current simulation. Alternatively, you can save the first object to the Library with its physics properties, and then add it from the Library to the current simulation.



You can duplicate objects to add a new object with the same physics settings.

- **Active**: Check this option to apply the physics simulation calculations to the currently selected object. You can uncheck the option to remove the object from the calculations without affecting the other settings that are applied to it.

- **Apply Velocity from First Frame**: If an object is animated up to the starting frame of a physics simulation, check this option to set the initial velocity of the object to be the same when the simulation starts. For example, if you want a bowling ball to move at a certain speed and direction, move the frame before you want the physics to take over. Advance to the next frame and move the ball to reflect the speed and direction that you want the ball to move. This will set the base velocity which will be taken into account when the simulation is calculated.

- **Use Animated Mesh**: When this option is checked, a new collision geometry will be created at every frame for the selected choreographed object, to support morphs, bending, magnets, etc. It generates a convex hull for each frame from the bent parts.



If you want the physics to take over at a frame other than 1, make sure that you set the appropriate start frame in the Physics Palette, as described in "Creating a Simulation" on page 493.

- **Collision Margin**: Defines the amount of distance that will be allowed between physics objects and the objects they collide with. Penetration can occur if the margin is set too low.



The Collision Margin setting is related to your preferred units. which are set in the Interface tab of the General Preferences dialog, described in "Interface Preferences" on page 33. *For example, if you have your preferred units set to Millimeters, the value 5.0000 will represent 5 millimeters.*

- **Friction**: Lower friction amounts cause objects to move more easily over other objects. A value of 1 will make the object very sticky, and a value of 0 will make the object more slippery.

- **Bounce**: Low values make the object less bouncy; higher values make the object more bouncy. When bounce is set to 0, the object will not bounce. A value of 1 makes the object bounce indefinitely.

- **Linear Damping**: (Hard and Soft Body objects only). The amount of energy that is lost during each iteration when an object moves linearly (such as from side to side). Without damping, the object will appear to vibrate in the scene. A value of 1 will absorb shock. A value of zero will remove damping from the object.

- **Rotational Damping**: (Hard Body objects only). Similar to linear damping, except that this setting controls the amount of energy that is lost during each iteration when an object is rotating or spinning.

- **Mass**: (Hard and Soft Body objects only). A relative measurement that affects how objects of a higher mass interact with objects of a lower mass. Items with a lower mass setting will accelerate more after a collision than items of a larger mass. Stronger forces will be needed to move objects that have a higher mass. When objects with a higher mass interact with objects of a lower mass, the objects of lower mass will move more easily. Using the example of a bowling ball and pins, the mass of the bowling ball (example: 16 units) should be set higher than that of the pins (example: 2 units) in order for the pins to react appropriately when the ball strikes them.

- **Internal Pressure**: (Soft Body objects only). Specifies the internal pressure of the object. Objects that have a greater internal pressure will collapse upon themselves less than objects that have a smaller amount of internal pressure.

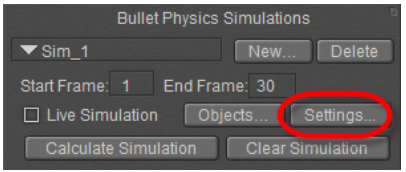
- **Linear Stiffness**: (Soft Body objects only). Lower the linear stiffness to make the object more stretchy; increase the value to make it more stiff.



Choose **Edit > Memorize > All** *after all of the objects in your scene are set up. This allows you to go return to the original placement of your objects after you experiment with settings during live simulation.*

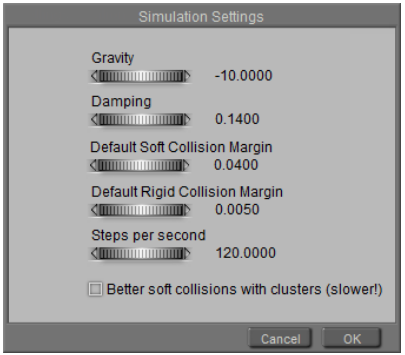
Simulation Settings

Click the Settings button in the upper section of the Physics Palette to configure general settings for the current simulation.



Click the Settings button to configure general settings for the simulation.

The **Simulation Settings** dialog opens, and you can configure the following properties for the simulation:



Simulation Settings dialog.

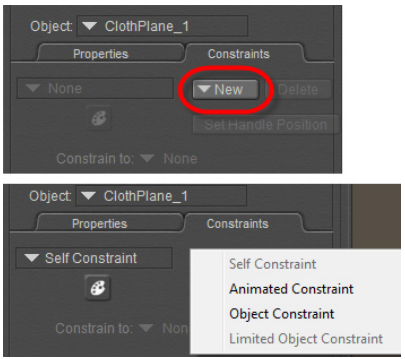
- **Gravity**: Controls the strength of the gravity in the scene. Values below zero pull objects downward, while values above zero act like "anti-gravity" and make objects rise.
- **Damping**: Controls the amount of resistance that your objects have to gravity. Lower values make the object less resistant, and higher values make the object more resistant.
- **Default Soft Collision Margin**: Controls the distance that soft body objects have to be before collisions are recognized. The Default Soft Collision margin is the default value assigned to soft-bodied objects when you add them to a simulation.
- **Default Rigid Collision Margin**: Controls the distance that hard body objects have to be before collisions are detected. The Default Rigid Collision Margin is the default value assigned to rigid-bodied objects when you add them to a simulation.
- **Steps Per Second**: Defines the number of small steps that the simulation will take per second. Increasing the Steps per Second setting will give more stable results and better penetration persistence in your simulations. Calculations will take longer with higher steps per second.
- **Better Soft Collisions with Clusters (Slower)**: Improves simulation of soft bodied objects when collisions take place, and can help prevent objects from penetrating through soft-bodied objects. Using clusters on detailed objects can slow calculations considerably.

Object Constraints

The Constraints tab in the Physics palette allows you to configure one of three different types of constraints for your physics

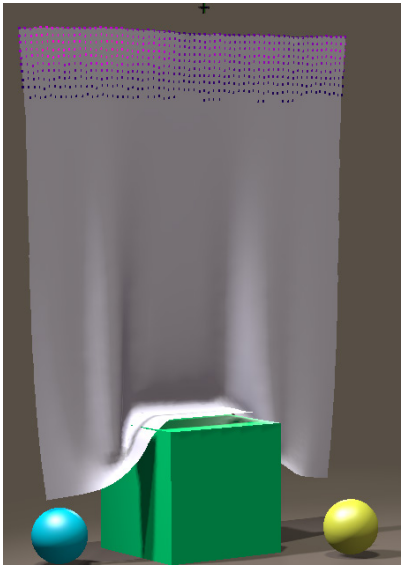
objects. It also features painting tools that allow you to paint vertex maps that determine how the object responds to physics.

To add a constraint to the currently selected physics object, click the **New** button in the Constraints tab. You'll see a menu that allows you to choose one of several constraint types. These are:



Creating a new constraint

- **Self Constraint**: Defines how the object responds to physics calculations. Each object can have only one self-constraint. After you add a self-constraint, all vertices are initially set to fully dynamic. Use the vertex painting tools to constrain the vertices that you paint.

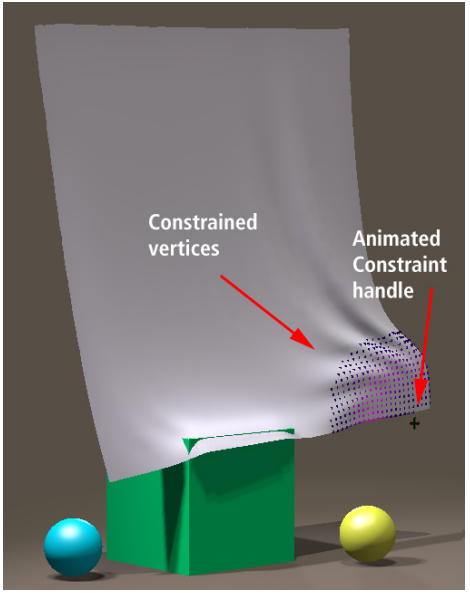


Self Constraint with painted vertices on a cloth plane.

- **Animated Constraint**: Allows you to use a handle to animate an object. The handle can be assigned as a child of

any other object in your scene, or animated in any way you choose. The handle serves as a transform that you can move things around with. The handle will pull on the vertices that you paint. To configure an animated constraint:

- Position the animated handle where you want it to appear. Generally, the handle should be positioned near the object that you are adding the animated constraint to.
- Press the **Set Handle Position** button.
- Use the painting tools to constrain selected vertices to the animated handle.

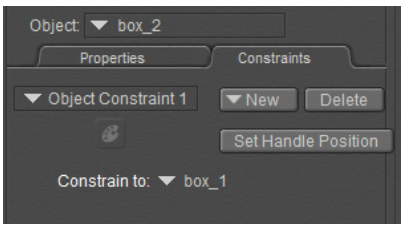


Animated Constraint handle with constrained vertices.

- **Object Constraint**: Constrains one object to another so that they move together. You use a handle to define the point at

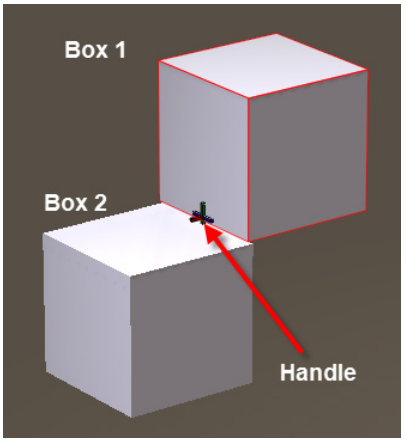
which the two objects are supposed to connect to each other, and tries to keep both objects connected at that point. For example, if you have two rigid boxes, named **Box 1** and **Box 2**, that you want to connect together at a certain point:

- Select **Box 2**, and click the **New** button in the Constraint tab to create an **Object Constraint** for this object.
- For the **Constrain To** object, select **Box 1**.
- Position the handle at the point where you want to connect the two objects.



Setup for an Object Constraint.

- Click the **Set Handle Position** button after you position the handle.

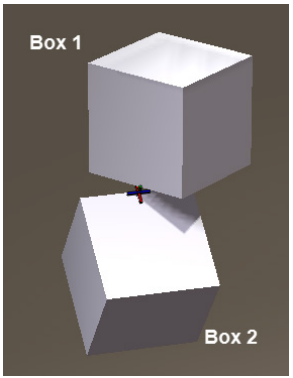


Setup for an Object Constraint.

You can chain multiple items together in this manner. For example, you can add another object (such as a third box), and then create another Object Constraint that links Box 3 to Box 2.

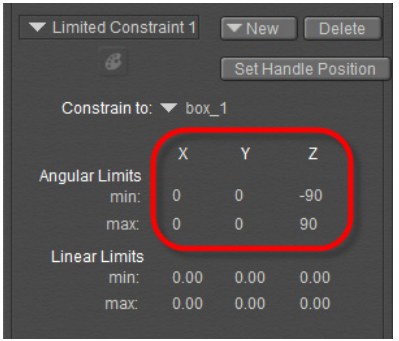
Soft bodied objects may drift away from the handle during simulation. Adding a second Object Constraint between the same two objects may improve performance.

- When you click the **Live Simulation** or **Calculate Simulation** button you should see your objects moving together. For example, you can drag Box 1 around, and Box 2 will automatically follow it.



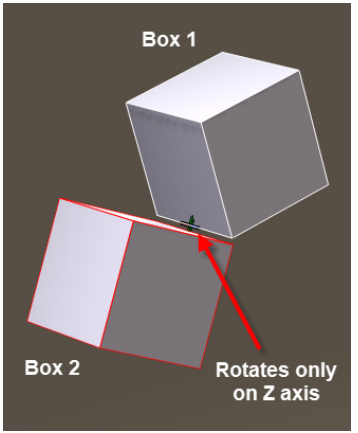
Move Box 1 and Box 2 will follow it.

- **Limited Object Constraint**: Constrains one rigid object to another so that they move together, and also allows you to limit rotation or translation in the X, Y, and/or Z direction. The Limited Object Constraint can only be applied to a Rigid Body object. Again, you have two rigid boxes, named **Box 1**, and **Box 2**. You want them to connect together at a certain point, but you want to limit the rotation of Box 2 to the Z axis:
  - Select **Box 2**, and click the **New** button in the Constraint tab to create a **Limited Object Constraint** for this object.
  - For the **Constrain To** object, select **Box 1**.
  - Position the handle at the point where you want to connect the two objects. (The result should look similar to the setup shown previously for the Object Constraint.)
  - Click the **Set Handle Position** button after you position the handle.
  - The lower section allows you to set the limits for the X, Y, or Z translations and rotations. In this example, we want to allow rotation only on the Z axis. The X and Y axis rotations are set to 0 minimum and maximum.



Limiting rotations to the Z axis only.

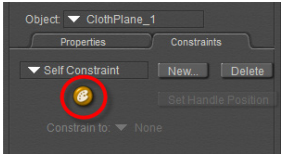
- When you click the **Live Simulation** or **Calculate Simulation** button you should see your objects moving together, with the translations or rotations set as you configured for the Limited Object Constraint. In our example, you can drag Box 1 around, and Box 2 will automatically follow it but the rotation will be limited to the Z axis.



Move Box 1 and Box 2 will follow it with limited rotations.

Painting Constraints

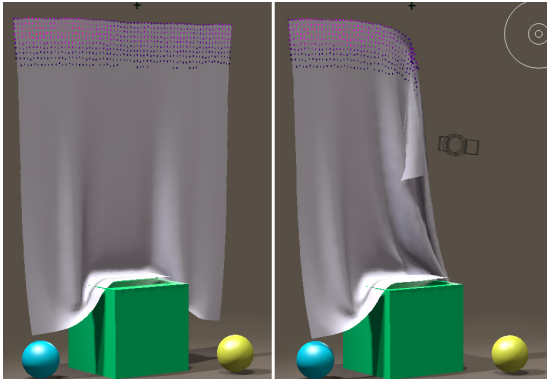
After you set up one of the constraint types mentioned in the previous section, you can use the paintbrush tool to paint a vertex map that defines how the object will respond to that constraint type.



Paintbrush tool.

After clicking the Paintbrush icon, the Dynamics Weights palette opens. This palette allows you to paint the vertices on the object to control how they will be affected by the physics engine. As you paint, the vertices are coded with various colors.

- Where no color appears, the object will be 100% affected by the dynamics in the physics calculations.
- Where color appears, darker colors define areas that will be affected by dynamics the most; brighter colors will define areas that will be less affected.
- Green areas define areas that will not be affected by the physics calculations.



Cloth plane with self constrained vertices fully (left) and partially (right) across the top.

The Dynamics Weights palette contains the following sections and settings:

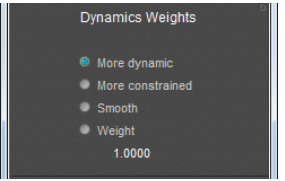
- Painting Modes section: Choose one of the following painting modes for your dynamic weights paintbrush:
  - **More dynamic**: Select this painting mode when you want to make the object more responsive to physics

calculations. Vertices will appear with no color when they are fully dynamic.



Initially, all vertices of an object are set to fully dynamic unless you check the **Invert Colors** *option mentioned below.*

- **More constrained**: Select this painting mode when you want to paint areas on an object to reduce the amount of response to physics calculations. Vertices will appear as bright green when vertices are fully constrained, and the object will retain its base shape in those areas.
- **Smooth**: Choose this painting mode when you want to smooth or blend transitions between areas that are more dynamic and areas that are more constrained.
- **Weight**: Choose this painting mode when you want to paint with a predefined strength value. Enter the desired value in the Weight field that appears beneath the option.



Dynamics Weights Palette.

Deleting Constraints

To delete a constraint, follow these steps:

1. From the Object menu in the Physics Simulation palette, select the object that contains the constraint you want to delete.
2. Switch to the Constraints tab, if necessary.
3. Select the constraint that you want to delete from the list of available constraints (which appears just above the paintbrush).
4. Press **Delete** to delete the selected constraint.

Deleting a Simulation

If more than one simulation exists in your scene, first click the simulation that you want to delete from the list in the Simulation Palette. Then click the **Delete** button in the upper section of the Physics Simulation palette.

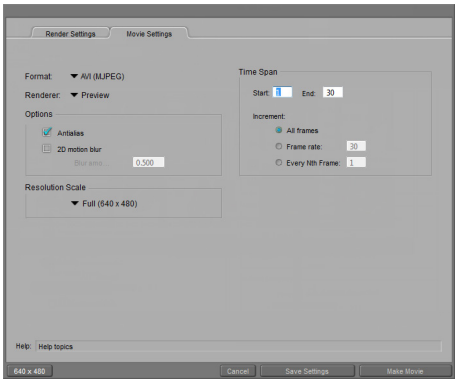
Saving Objects with Bullet Physics

After you create objects that have Bullet Physics applied, you can save them to the Library with their settings intact. This allows you to save items that bounce, or jiggle, or use specific hard or soft-bodied settings.

After a Bullet Physics object is saved to the Library, you will need to resimulate the object(s) when you load them into your scene. If an object is shared between two or more simulations, it will only save the current simulation that was selected when you saved the object to the Library.

Chapter 24: Rendering Animations

Your can access the **Movie Settings** window by selecting **Animation > Make Movie**. This window can also be accessed via the **Render Settings** dialog. The **Movie Settings** window appears as follows.



The Movie Settings dialog.

To use the **Movie Settings** window:

1. Select your desired movie format using the **Format** pull-down menu. Your available options are:

   - **Image Files (Mac and Windows):** This option creates an **Image Sequence**, which is a series of still images, one for each frame in your animation. For maximum value results and optimal quality, we recommend using the **Image Files** option to render your final movie, and then using a compositing tool for editing and post-production work.
   - **Flash (Mac and Windows):** Adobe Flash is a popular format for animations posted on Web sites. If you have selected Flash format, click the **Options** button for settings specific to that format. The Flash movie options will be discussed in detail later in this chapter. See "Flash Options" on page 515 for more information.
   - **Quicktime (Mac Only):** Default Macintosh movie format. We recommend that you use this format only for preview purposes while still working on your animation, as it provides the fastest possible access to rendered results. See "QuickTime Options" on page 513 for more information.
   - **AVI (Windows Only)**: Three options are available in Windows for AVI format. Choose **AVI (MJPEG)** to produce an AVI file of any dimension, using a higher amount of compression (for streaming); choose **AVI**

(DV) to produce a 720x480 pixel DV-quality AVI file. Choose **AVI (Uncompressed)** to produce an AVI file of any dimension, which will not be compressed.



AVI DV format will produce a 720 x 480 pixel AVI file, regardless of your render settings. If your project render settings are not set to the same aspect ratio, the movie will be stretched to fit within the 720x480 movie file.

- **iPad Videos (Windows Only):** Two options appear in Windows to save your files in M4V format. Choose iPad Video (small) to render a M4V file that has a higher amount of compression. Choose iPad Video (large) to create a M4V video file with less compression and higher quality.



iPad Small and Large options may not be available on earlier versions of Windows.

- **WMV/ASF (Windows Only):** Three options appear for WMV/ASF format, for varying compression options: **Medium Quality, High Quality,** and **Uncompressed.**



WMV/ASF options use Windows Media Audio 10 and Windows Media Video 9.



WMV output presets are also available in Windows Vista, and Poser will write out valid WMV files if you choose the WMV/ASF preset. While Media Player for Windows Vista does not support WMV files, you will be able to play them in any third-party media player that runs under Windows Vista and has WMV support.

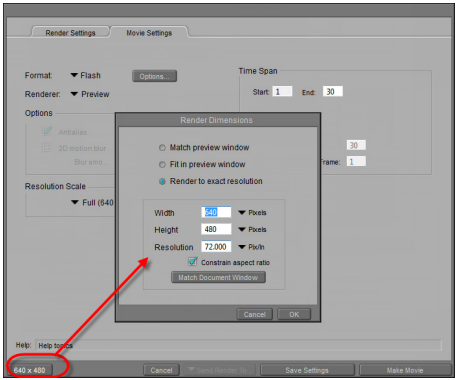
2. Select which renderer you wish to use for your animation using the **Renderer** pull-down menu. Your options are the **FireFly**, **Sketch** or **Preview** render engines. See "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about the FireFly renderer, and "Chapter 20: The Sketch Designer" on page 440 for more information about the Sketch Designer renderer. The Preview renderer provides a quick draft-quality render of your movie.

3. Under the **Options** section, check the appropriate checkboxes when available:

   - **Antialias**: Antialiasing is available with the Preview render engine, to improve the quality of images in draft preview renders.
   - **2D Motion Blur**: This option provides realistic 2D motion blurring effects to images and animations rendered with the FireFly or Preview render engines.

Use the **Blur Amount** value to customize the results of this effect.

4. Click the button in the lower left corner of the Movie Settings tab to open the Render Dimensions dialog. Enter the desired dimensions for your movie.



Setting Render Dimensions.

5. Specify your desired export **Resolution Scale**. The **Quick-Scale** pop-up menu offers quick access to four different render scale options: **Full Size**, **Half Size**, **Quarter Size**, and **Preview Size**.



Note that the Resolution Scale feature is not intended to replace the **Frame Size** *value, but rather is a tool for facilitating quick render previews, as the smaller scale render sizes require less time to calculate.*



The production frame is determined by the aspect ratio resulting from the output width and height. You can set the production frame to be visible in the Document window's scene preview area, by selecting **Display > Production Frame** *from the menu bar.*

6. Specify your **Time Span** settings:

- **Range**: Enter the start and end frame numbers for the portion of your animation that you wish to render in the **Start** and **End** boxes. This feature is useful if you wish to save a subset of the total animation. For example, if you create a 60-frame animation, you could opt to save a 15-frame movie beginning 35 frames into the total animation.
- **Increment**: Click the appropriate Increment radio button to specify how many frames to render in your movie output. Your choices are as follows:

All Frames: Clicking the All Frames button will render all frames in the specified range, as defined by the movie's frame rate.

Frame Rate: Click the **Frame Rate** (number of frames per second) radio button to use the movie's current output frame rate (as opposed to the actual frame rate of the Poser keyframe data) or specify your own. Enter the desired frame rate in the box, if you wish to specify a frame rate other than the rate defined for the document (for example, lower frame rates are generally recommended for Flash output). Higher numbers give smoother animations but require longer rendering times and take up more room on your hard drive. Please refer to "Frame Rate" on page 455 for a listing of common frame rates.

Every Nth Frame: Clicking this radio button allows you to render fewer frames, for fast preview purposes. For example, rendering every 2nd frame takes half the time as rendering every frame, and so on. Specify your desired "N" value in the box.

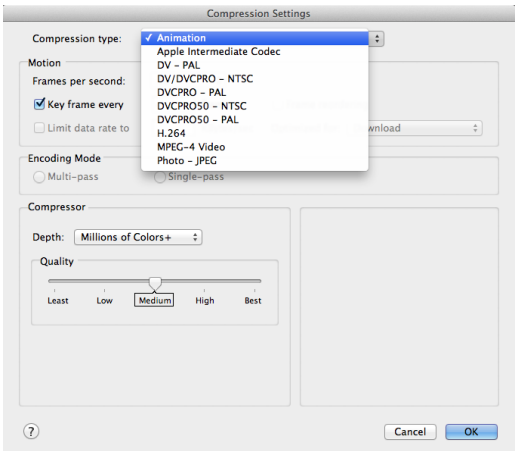
7. Click the **Make Movie** button to open the **Save Movie** dialog box, which allows you to browse for your desired folder, then click the **Save** button to save your new animation to the selected folder. Animation renders can take some time depending on your scene, animation settings, and computer, so please be patient.

QuickTime Options

When you choose Quicktime format and click the Options button, the Compression Settings dialog opens. This dialog includes the following settings for 32-bit Macintosh systems:



Certain Codecs may require a specific image aspect ratio in order to function properly.



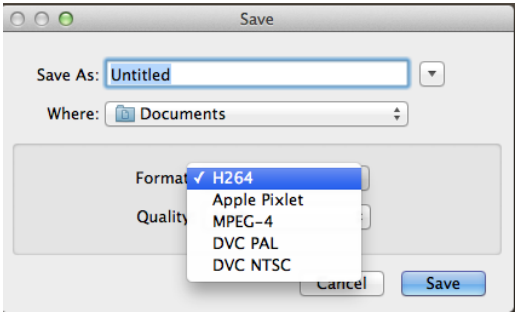
The Compression Settings dialog (32-bit Macintosh systems).

- **Compression Type:** Select which Codec you wish to use from the **Compression Type** pop-up menu. Note that certain Codecs offer additional configuration settings, as mentioned below. Available choices are **Animation**, **Apple Intermediate Codec**, **DV-PAL**, **DV/DVCPPRO-NTSC**, **DVCPRO-PAL**, **DVCPRO50-NTSC**, **DVCPRO50-PAL**, **H.264**, **MPEG-4 Video** and **Photo-JPEG**.

Certain Codecs may require a specific image aspect ratio in order to function properly. Depending on the codec you select, the selections will vary.

For information on Motion, Encoding Mode, and Compression settings, refer to QuickTime documentation at http://images.apple.com/quicktime/pdf/QuickTime7_User_Guide.pdf.

When running Poser on a 64-bit Mac, the choice set for Quicktime movies is a more contemporary selection set than previous versions of Quicktime.



The Save dialog (64-bit Macintosh systems).

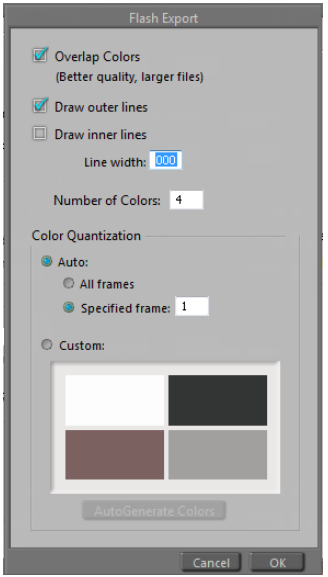
- **Format:** Select which Codec you wish to use from the **Compression Type** pop-up menu. Note that certain Codecs offer additional configuration settings, as mentioned below. Available choices are **H.264** (saves as .MP4), **Apple Pixlet** (saves as .MOV), **MPEG-4** (saves as .MP4), and **DVC Pal**, or **DVC NTSC** (which save as .DV).

Certain Codecs may require a specific image aspect ratio in order to function properly. Depending on the codec you select, the selections will vary.

- **Quality**: Choose the level of quality that you desire. Choices are **Maximum**, **High**, **Normal**, **Low**, and **Minimum**.

Flash Options

Clicking the **Flash Options** button opens the **Flash Settings** dialog. You have the following options when exporting Adobe Flash movies:



The Flash Export dialog.

- **Overlap Colors:** Checking the **Overlap Colors** checkbox causes Adobe Flash to take the color that is used the most

and create a silhouette of the entire object (such as a figure or prop). The next color is placed on top of the first, and so on, with each layer of color containing the layers above it. Selecting this option makes for larger files, but will increase the quality of the final file. Deselecting this option causes blocks of different colors to appear next to each other with no overlapping, which could cause the animated object to appear broken or discontinuous.

- **Draw Outer Lines**: Checking the **Draw Outer Lines** checkbox draws a border around the entire silhouette.
- **Draw Inner Lines**: Checking the **Draw Inner Lines** checkbox draws lines around each color layer.
- **Line Width**: Enter the desired line width (in pixels) in the **Line Width** box.
- **Number of colors**: Enter the desired number of colors in the **Number of colors** box. Note that adding colors will increase the file size and download time for people viewing this file via the Web. Four colors are good for most situations, though the maximum possible is 253.
- **Color Quantization**: Quantization is the process of selecting the specified number of colors that best represent your Poser figure. You can select either **Auto** or **Custom** quantization of colors. In either case, your color choices will be saved with the project file.
- **Auto Quantization**: Check the appropriate radio button to select if you want the quantization to occur across **All Frames** or at a **Specified Frame**.
  - **All Frames**: This option can be useful in situations when you want color quantization to be applied to each frame; for example, if you are animating materials.
  - **Specified Frame**: If you selected **Specified Frame**, enter the frame number where the quantization should occur in the **Specified Frame** field.
  - **Custom Quantization**: You can select custom colors by clicking within the color preview windows to bring up the Poser Color Picker. The number of custom color preview windows will be determined by the **Number of Colors** setting (see above). Mousing over any of the preview windows will display the RGB color values for that color at the top right of the Custom Color display window. Click on the **AutoGenerate Colors** button to restore the default custom color values.



For optimal results when exporting to Flash format, use the scene preview Cartoon display style when preparing your scene.

Part 6: Customizing Content

Chapter 25: The Face Room

Adding realistic custom faces and creating a personalized head can be an extremely complex undertaking, but Poser's powerful **Face** room greatly simplifies the process. In just a few minutes, you can make your figure look like you, one of your friends, or anyone! With a few steps, you can reshape a figure's face using a collection of dials that drive sculpting morphs, or import facial photographs to match the face in the images.



By default, an HTML Help window opens when you enter the face room. This window contains additional tips and tricks for obtaining optimal results. If you do not see this window, please select **Window > Room Help**.

The **Face** room creates heads for use with the following figures (listed from newest to oldest):

- Poser 10/Poser Pro 2014 figures: Rex and Roxie
- Ryan, Alyson, and their ethnic variations, including lo res versions
- Poser 7 Figures: SimonG2 and Sydney G2
- Other G2 Figures: JamesG2, Jessi G2, Kelvin G2, Koji G2
- Apollo Maximus
- Miki, Miki 2, Miki 3, and Miki 4
- Poser 6 Figures: James and Jessi
- Poser 5 Figures: Don and Judy

The Face Room is shown below, with all palettes and options docked. If you need to show the Face Room windows, choose **Window > Room Tools > Face**, and select **Face Preview**, **Photo Lineup**, **Texture Preview**, **Face Texture Tool**, **Face Shaping Tool** as desired. These windows are described in the sections that follow.



The Face Room.

The number of palettes and options that you see in each room depends upon your screen resolution. At higher resolutions, the default work spaces display more palettes, while at lower resolutions you see fewer palettes.

The **Face** room contains the following interface elements in addition to some of the standard elements.

- **Photo Lineup (1)**: The **Photo Lineup** area is where you load images and align them using a variety of tools. Activating the **Apply Shape** checkbox generates geometry matching your photos. The texture map and the geometry based on the photos gets generated on the fly.
- **Face Texture Tool (2)**: The **Face Texture Tool** area lets you apply a multitude of ethnic and other settings to modify the current head texture map.
- **Face Preview window (3)**: The **Face Preview** window displays a preview of your 3D head with textures. This window features **Mini Camera** controls in its upper right corner. You can also use the **Face Shaping Tool** (see "The Face Shaping Tool" on page 527) to sculpt the face to your exact specifications.
- **Random Face button (4)**: Clicking the **Random Face** button creates a completely random face. This will erase any prior work you've done in the **Face** room and should be used with care. The **Random Face** feature is a great way to create realistic-looking characters by clicking a single button. Click it as many times as you like until you get the look you want!
- **Reset Face Room button (5)**: Clicking the **Reset Face room** button restores the default head shape and texture.

This will erase all of your prior **Face** room work. Use this option with care.

- **Texture Preview window (6)**: The **Texture Preview** window lets you see your head texture map as you edit it and also allows you to load and save textures for further work.
- **Action buttons (7)**: The **Action** buttons are where you apply customized head geometries to your figures, spawn morph targets, or import head texture maps.
- **Face Shaping Tool palette (8)**: The **Face Shaping Tool** window is where you control the **Face Shaping** tool, which is the equivalent of the **Morphing Tool** (see "Creating Morphs with the Morphing Tool" on page 642) for the **Face** room. You can modify heads by using the parameter dials and/or the tool in this room.

Each of these areas is discussed below in this chapter.

As mentioned above, there are several methods for creating custom heads.

- Using two images to shape the geometry and create a texture map.
- Using the **Face Shaping** tool to sculpt the head as you desire.
- Using the **Texture Variation** area to create custom texture maps quickly and easily.
- Using the **Random Face** feature.

The **Face** room allows you to do any or all of these things when creating heads. We'll discuss the other functionality in the subsequent sections. For now, let's walk through using images to create a custom head.



If you want to reset the Face room to its default state, click the Reset Face room button. This erases all loaded images, deletes geometry changes, and loses any texture modifications you might have made. Use this option with care!

Using Images to Create Heads

Creating custom 3D heads from existing images/photographs (digital or scanned) requires the following steps:

1. Load the images.
2. Align the images (if needed).
3. Align the geometry to the images.
4. Apply the new shape to your figure.

Apply the images you used to create the head as a texture map, then apply the geometry shape and texture to the head.

Once you've completed these steps, you can proceed to use the **Face Shaping** tool and/or the **Texture Variation** functionality. If you do not want to use your own images, feel free to skip ahead and explore the other head creation/customization methods.

Step 1: Images

Creating a personalized head that matches a real person involves using two pictures to create a texture map. Let's load some images and build a personalized head!

Please follow these simple guidelines for optimum results:



Select an evenly lit front and profile picture for best results.

- **Front image**: The front image should be a straight-on front view with the subject directly facing the camera and with the camera level with the subject's face. The picture should be close enough to capture plenty of detail. Lighting should also be adjusted to capture the most detail. Overly bright lighting will give the image a washed-out appearance, while overly dark lighting will not show off enough detail. The person's mouth should be closed and the overall facial expression should be neutral for best results.

- **Side image**: The side image should be a direct side view with the subject facing 90 degrees from the camera and with the camera level with the subject's face. The remaining guidelines for the front image apply to the side image as well. Ideally, the front and side views should be taken from the same distance.

The above images are great examples of ideal images. You can use less than ideal or even mismatched images, however you may get some unpredictable results. Each image has its own alignment tools that can help position it optimally (see next step). Of course, you can always experiment and have fun if you want to!

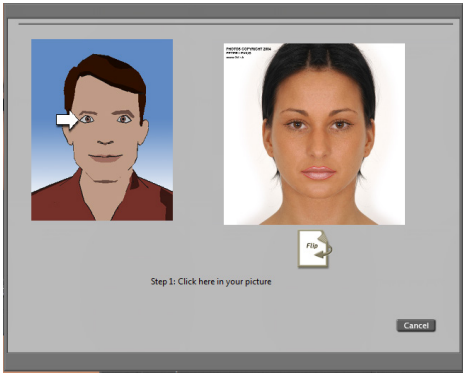
The **Face** room supports most common image formats.

You must import existing images. Poser does not have the functionality to create images. Images can be photographs, line drawings, paintings, etc. The Face room accepts most common image formats. Textures generated from these images are sized at 512x512 pixels by default.

Step 2: The LineUp

Begin by clicking the **Load** icon (see below) for the front or side image in the **Photo Lineup** area and locate the image you want to use. For each image, Poser will ask you to locate several points on the face. This will help it align and match the default 3D head to the images, which you can then fine tune. To locate the specified facial point on your own photo, click its location as shown in the example face.

For the front image, you'll be asked to locate the outside corner of the figure's right eye and left corner of the lips, as shown below.



The Photo Lineup area.

For the side image, you'll need to locate the top of the right earlobe and the front of the chin in the same manner as you did for the front image.

The side image uses the subject's right side. If your side image is of the subject's left side, you can click the Flip icon to reverse the image.

Once loaded, the images appear in the workspace and the 3D head and texture map appear.



Tools in the Photo Lineup area.

Loading the images and locating the requested areas allows Poser to do a good job of approximating the location and shape of the head geometry. You may, however, wish to go in and perform some manual adjustments of the geometry's location relative to the image.

To do this, each of the two images in the **Photo Lineup** area has the following tools:

- **Load**: Clicking the **Load** icon opens a standard OS dialog allowing you to browse for and select your desired front image. Once you load an image, you'll be prompted to locate various facial features. This helps Poser custom-fit the 3D head to the images, as described above.
- **Delete**: Clicking the **Delete** icon deletes the currently loaded image.
- **Zoom**: Clicking and dragging the **Zoom** icon allows you to zoom in or out of the current image, allowing you to more precisely position and shape the head geometry. Clicking the **Zoom** icon and dragging to the right or up zooms in, while dragging to the left or down zooms out. This tool simply shifts your point of view; it does not affect the images or the geometry. You cannot zoom out beyond your image's original size.
- **Pan**: Clicking and dragging the **Pan** tool moves the image in the same direction as your mouse movement. This is particularly useful if you need to zoom in to a particular area. You can individually pan the front and side images up, down, left, or right. The front image will pan in the X and Y axes (side-side and up-down) and the side image will pan in the Y and Z axes (up-down and front-back). This tool simply shifts your point of view; it does not affect the images or the geometry.

- **Rotate Geometry**: Improper rotation may cause unsatisfactory photo lineup results. Ideally, the head should not be rotated relative to the camera. However, many photos show the head slightly rotated about the X axis (up and down), the Y axis (looking left to right), or the Z axis (tilting left to right). The **Face** room automatically detects and compensates for some rotation (about the Z axis in the front view and about the X axis in the side view), but you may still need to perform additional manual adjustments for best results.
  - To rotate about the X axis (front view), click and drag the mouse horizontally while pressing **Shift**.
  - To rotate about the Y axis (front view), click and drag the mouse horizontally while pressing **Opt**/**ALT**.
  - To rotate about the Z axis (front view), click and drag the mouse horizontally without pressing any keys.
  - To rotate about the X axis (side view), click and drag the mouse horizontally without pressing any keys.
- **Scale Geometry**: Clicking and dragging the **Scale Geometry** tool scales the geometry to align it to the image. This feature is useful if your loaded image(s) are larger or smaller than the geometry outline. You can pan up, down, left, and/or right. This tool scales the geometry without altering the image or your point of view.
- **Pan Geometry**: Clicking and dragging the **Pan Geometry** tool and dragging the mouse pans the geometry. This feature is useful if your loaded image(s) are not perfectly aligned with the geometry. The front image will pan in the X and Y axes (side-side and up-down) and the side image will pan in the Y and Z axes (up-down and front-back). This tool pans the geometry without altering the image or your point of view.

Poser does a good job at calculating how to shape the head based on the images, however you'll probably need to fine-tune the head for best results. The head appears superimposed on the images with red lines showing the facial features and green control points. In this case, the head is a bit off-center as can be seen by both the superimpositions and the texture map. How do you fix this? Easy: Perform a little virtual surgery.

Step 3: Cyber Face Lifts

Looking at your loaded images, you will see the red outlines of a head superimposed on the images. Each major facial feature (eyes, nose, mouth, chin, etc.) has one or more control points, which appear as green dots. All you need to do is move the control points until they match the underlying image. Do this by placing the mouse pointer over the control point you wish to move. The cursor will change, at which point you can drag the selected control point up, down, left, or right. For example, you'd move the middle nose point until it's just under the bridge of the

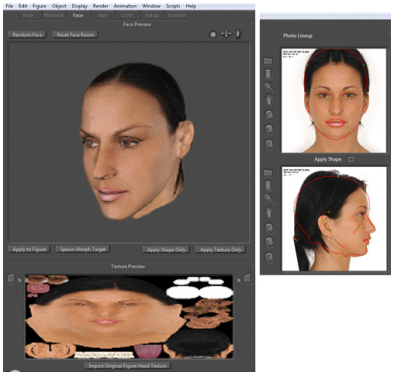
nose and the two side points until they're at the corners of the nostrils, and so on. As you move the control points, you'll see the head beginning to conform more and more to the figure. You will also see lines indicating how each control point has moved from its original position. If you wish to undo a control point move, simply use the **[COMMAND]/[CTRL]**+[Z] command to return the control point to its previous position.

You can also move the entire head using the **Rotate Geometry**, **Scale Geometry**, and **Pan Geometry** tools, which are described above. These tools move the head outline and alter the head geometry to match. To move your image without altering the head geometry, use the **Pan Image** tool, also described above. This will cause the image to slide over the geometry.

If you make a mistake while moving the control points, you can press **[COMMAND]/[CTRL]**+[Z] or select **Edit > Undo** to undo your most recent change.

Please refer to the Face room HTML Help window for additional tips & tricks. By default, this window appears when you enter the face room. If it does not appear, select **Window > Room Help** *to open the window.*

Here's an example after adjustments.



Results after adjusting the photo lineup points.

You can use the Zoom tool to move in closer to your images for even more precise control over the results.

Step 4: Applying the Geometry/Texture

The texture map is created in real time as you work. Enable the **Apply Shape** checkbox to apply your images to create a custom

head, which will appear in the **Face Sculpting** window. The head geometry is dynamically updated as long as **Apply Shape** is active.



Enabling the **Apply Shape** *checkbox will erase any work you may have done with the Face Shaping tool. If you want to use a combination of images and shaping, be sure to work with the images before using the* **Face Shaping** *tool. This also occurs with textures; loading images will undo any work you have done in the Texture Variation area (see below).*

Creating Custom Textures

The **Face** room includes the **Texture Variation** area, which allows you to create custom head textures from scratch or modify existing textures. The Face Room generates a new texture and blends between the imported texture and the original Poser figure's texture and attempts to color match the new texture to the base figure if selected by the user. It also allows the user to select the imported Face Room photo resolutions for the new texture. .

To access the **Texture Variation** area, click the **Texture Variation** tab in area 2 of the **Face** room. This area allows you to:

- Create new textures from scratch by modifying the default texture.
- Modify textures created by loading images as discussed above.
- Edit loaded texture maps (see below).



Be sure to load/create your texture before using the Texture Variation area, as doing so afterward will lose your changes.

The **Texture Variation** area uses parameter dials that function similarly to the dials in the **Parameters** palette, whose functionality is described in "Parameters Palette" on page 197. You can use the **Parameter Dial** menu to access dial settings, reset a dial, or open the selected dial's **Graph** (discussed in "Using Graphs" on page 458). You cannot, however, memorize **Texture Variation** dials. The available **Texture Variation** dials are:

- **Facial Color**: The **Facial Color** dials modify the color of several facial regions and include **Beard dark/light**, **Eye sockets light/dark**, **Eyebrows lower light/dark**, and **Eyebrows upper light/dark**.
- **Ethnicity/Age & Gender**: The **Ethnicity/Age/Gender** dials generate ethnic, age, and gender traits and include **less/**

more African, **less/more European**, **less/more Southeast Asian**, **less/more East Indian**, **Younger/Older**, and **Male/Female**.

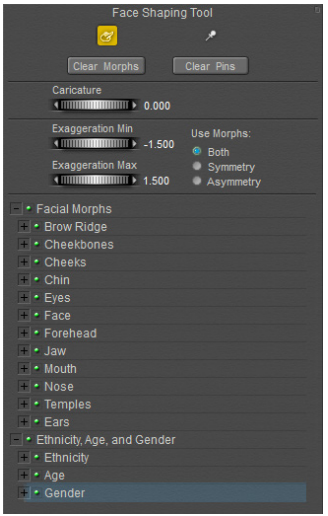
- To modify your texture or the default texture, simply adjust the dials. Your work will appear in real time in both the **Face Sculpting** and **Texture Preview** windows.



Textures created in the Face room are scaled to 512x512 pixels. If you used higher resolution for photo matching and want to keep the higher resolution, choose **Yes** *in the dialog that appears after pressing* **Apply to Figure**. *To use larger texture maps, you can also import a custom texture, then modify it.*

The Face Shaping Tool

The **Face Shaping Tool** allows you to visually sculpt your custom head by selecting and moving vertices. The **Face** room contains a wide array of custom vertex editing parameters for the Poser head that allow you to create virtually any face imaginable. By default, the **Face Shaping Tool** is active whenever your cursor is within the **Face Sculpting** window. Just as with the **Morphing** tool (see "Creating Morphs with the Morphing Tool" on page 642), you can use any combination of clicking and dragging morph targets and/or adjusting **Face Shaping** parameter dials in the **Face Shaping Tool** palette.



The Face Shaping Tool.

To use the Face Shaping Tool:

1. Click the portion of the face you wish to adjust and drag the mouse. This selects the vertex nearest the spot where you clicked and moves it in the direction you drag the mouse. You can use the **Mini Camera** controls in the upper right corner of the **Face Sculpting** window to position the head exactly where you want it at any time before, during, or after sculpting. Vertices are moved relative to your viewing angle. For example, if you are looking at the face head-on, clicking and dragging will move the morph up, down, left, and right. If you are looking at the top of the head, dragging will move vertices left, right, forward, and backward.

2. The **Face Shaping Tool** can manipulate all selected parameters in the **Face Shaping Tool** palette. Checking the checkbox next to a parameter dial includes the specified vertex parameter when using the tool, and clearing it means the tool will not affect the specified vertex parameter. Even if a parameter is enabled, it may or may not be affected by your use of the tool. For example, selecting a vertex in the forehead may affect the eyebrows but may not affect the mouth. Select your desired parameter(s), then click and drag any vertex on the head.

3. Once you have a portion of the head the way you want it, you can click the **Pin** button to freeze the selected vertex from further manipulation. Pinned vertices may move as you keep adjusting other portions of the body part, however they will retain their current settings.

You can use the **[COMMAND]**/**[CTRL]**+[Z] command to undo a specific parameter change made with the **Face Shaping Tool**. Or, if you want to reset all morph targets to their default values (0), you can click the **Clear Morphs** button. Also, if you want to clear all pins, simply click the **Clear Pin Points** button. Both buttons are located in the **Face Shaping Tool** palette along with other functionality (see below).

The Face Shaping Tool Palette

The **Face Shaping Tool** adjusts the parameters available in the **Face Shaping Tool** palette, which uses parameter dials that function similarly to the dials in the **Parameters** palette. You can use the **Parameter Dial** menu to access dial settings, reset a dial, or open the selected dial's **Graph** (discussed in "Using Graphs" on page 458) You cannot, however, memorize **Face Shaping Tool** dials.



This is different than creating facial expressions since you are actually modifying head geometry instead of simply applying morphs to create a facial expression.

When sculpting a head, you can use the **Face Shaping Tool**, the dials in the **Face Shaping Tool** palette, or any combination you wish. The available **Face Shaping Tool** parameter dials are:

- **Facial Morphs**: The **Facial Morphs** dial groups includes the following sub-groups and dials.
  - **Brow Ridge**: The **Brow Ridge** dials are **High/Low**, **Inner Up/Down**, **Outer Up/Down**, and **Forward Axis Twist.**
  - **Cheekbones**: The **Cheekbones** dials are **High/Low**, **Shallow/Pronounced**, **Thin/Wide**, and **Protrusion Asymmetry**.
  - **Cheeks**: The **Cheeks** dials are **Concave/Convex**, and **Round/Gaunt**.
  - **Chin**: The **Chin** dials are **Forward/Back**, **Pronounced/Recessed**, **Retracted/Jutting**, **Shallow/Deep**, **Small/Large**, **Short/Tall**, **Thin/Wide**, **Chin Axis Twis**t, **Forward Axis Shift**, and **Transverse Shift**.
  - **Eyes**: The **Eyes** dials are **Up/Down**, **Small/Large**, **Tilt Inward/Outward**, **Together/Apart**, **Height Disparity**, and **Transverse Shift**.
  - **Face**: The **Face** dials are: **Brow/Nose/Chin Ratio**, **Forehead/Sellion/Nose Ratio**, **Light/Heavy**, **Round/Gaunt**, **Thin/Wide**, **Coronal Bend**, **Coronal Shear**, and **Vertical Axis Twist**.
  - **Forehead**: The **Forehead** dials are: **Small/Large**, **Short/Tall**, **Tilt Forward/Back**, and **Forward Axis Twist**.
  - **Jaw**: The **Jaw** dials are **Retracted/Jutting:**, **Wide/Thin**, **Jaw-Neck Slope High/Low**, and **Concave/Convex**.
  - **Mouth**: The **Mouth** dials are **Drawn/Pursed**, **Happy/Sad**, **High/Low**, **Protruding/Retracted**, **Tilt Up/Down**, **Underbite/Overbite**, **Mouth-Chin Distance Short/Long**, **Corners Transverse Shift**, and **Twist and Shift**.
  - **Lips**: The **Lips** dials are **Deflated/Inflated**, **Large/Small**, and **Puckered/Retracted**.
  - **Nose**: The **Nose** dials are **Coronal Shear**, **Transverse Shift**, **Up/Down**, **Flat/Pointed, Short/Long**, **Tilt Up/Down**, **Tip Transverse Shift**, **Transverse Shift**, and **Vertical Axis Twist**.
  - **Nose Bridge**: The **Nose Bridge** dials are **Shallow/Deep**, **Short/Long**, and **Transverse Shift**.
  - **Nose Sellion**: The **Nose Sellion** dials are **Up/Down**, **Shallow/Deep**, **Thin/Wide**, and **Transverse Shift**.
  - **Nose Region**: The **Nose Region** dials are **Concave/Convex** and **Frontal Axes Twist**.
  - **Temples**: The **Temples** dial is **Thin/Wide**.
  - **Ears**: The **Ears** dials are **Up/Down**, **Back/Front**, **Short/Long**, **Thin/Wide**, **Vertical Shear**, and **Forward Axis Shear**.

- **Ethnicity, Age, and Gender**: The **Ethnicity/Age/Gender** dials generate ethnic, age, and gender traits and include **less/more African**, **less/more European**, **less/more Southeast Asian**, **less/more East Indian**, **Younger/Older**, and **Male/Female**.

- **Standard Figures > Poser 5**: The **Standard Figures > Poser 5** dials generate the appearance of one or more of the standard Poser 5 figures and include **Don**, **Judy**, **Will**, and **Penny**.

To create/modify your head, simply adjust the dials or use the tool directly on the head. Your work will appear in real time in the **Face Shaping Tool** window.

Caricatures

The **Caricature** dial allows you to exaggerate or de-exaggerate the head and facial features. It has a meta effect, meaning it impacts the results of the other sculpting tools. Increasing the value increases the exaggeration, and vice versa, as follows:

- The default value is 0.

- Values > 0 apply exaggeration to the head, and values<0 but greater than –1 apply de-exaggeration.

- A value of –1 corresponds to the default head. For example, if you created a long nose with the other tools, a value of 1 creates a very long nose, –1 is the default nose, and –3 creates a very short nose.



Caricature values near –1 will work for overall de-exaggeration, however other tools (Face Shaping, Random Face, etc.) will have little effect due to the Caricature dial's meta effect.

Use Morphs

The **Face** rooms's morph database contains both symmetric and asymmetric targets. The **Use Morphs** radio buttons allow you to select between the following options:

- **Both**: This option makes all morph targets in the database available for interactive face sculpting. When you click on a point on the face, Poser will select morphs from either the symmetric or asymmetric morph target sets, depending on what morphs are available at that location and what will yield the best results.

- **Symmetry**: This option makes only the symmetric morph target set available.

- **Asymmetry**: This option makes only the asymmetric morph target set available. Adding slight asymmetry to the face can often improve the realism of a computer generated face, as no human face is perfectly symmetric.

Loading/Saving/Previewing Textures

The **Face** room loads a default Face Room texture (different for each Face Room compatible figure), which you will see in the **Texture Preview** window. The **Texture Preview** window shows real-time previews of your head's texture beginning with the default and through any changes you make by loading images and/or customizing textures. You can also load and save textures to your hard drive for later use. To load a texture, click the **Load Texture** icon on the left side of the **Texture Preview** window, which opens a **Load Head Texture** window that allows you to browse for the file you wish to load. You can modify loaded textures.

To save the texture being displayed in the **Texture Preview** window, click the **Save Texture** icon on the right side of the **Texture Preview** window, which opens a standard **Save As** dialog (see "Saving a Scene" on page 67 for information about the **Save As** dialog).

Applying Custom Heads/Textures

Once you've finished making changes to the head and/or texture, you may perform the following actions:

- **Apply to Figure**: Clicking the **Apply to Figure** button applies the head and texture that you created in the **Face** room to the currently selected figure in your scene. Face Room compatible figures are listed at the beginning of this chapter.

- **Apply Shape Only**: Clicking the **Apply Shape Only** dial applies the head shape to the currently selected figure without applying the texture map.

- **Apply Texture Only**: Clicking the **Apply Texture Only** dial applies the head texture to the currently selected figure without applying the head shape.

- **Spawn Morph Target**: Clicking the **Spawn Morph Target** button allows you to save the head as a morph target. Please refer to "Spawning Morph Targets" on page 661 for more information about spawning morph targets.

- **Import Figure Head Texture**: Clicking the **Import Figure Head Texture** button imports the currently selected figure's head texture, which you can then modify by creating textures as described above. Imported textures

retain their original sizes. For example, if you import a 1000x1000 texture, all changes you make to it in the **Face** room will retain the imported size. This is a great way to create textures that are larger than the **Face** room's default 512x512 size.



If you apply one or more heads to a scene with no figure, the applied head(s) will become props. If your scene has multiple figures, the head will be applied to the currently selected figure visible in the Select Figure menu.



To remove a custom texture after applying it to your figure, go into the material room and select the **faceroomskin** *material. You can then replace the applied texture map with one of your own, remove the image map, etc. as desired.*

Saving Faces

To save faces from the **Face** room, you must save PZ3 files containing the applied head. You can also spawn morph targets.

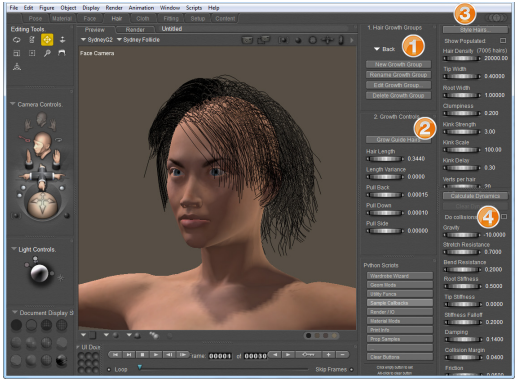
Chapter 26: The Hair Room

Poser's **Hair** room allows you to create dynamic strand-based 3D hair for your figures or props. You can add hair wherever you like on any object in your scene and can add shaders in the **Material** room (see "Chapter 14: The Material Room" on page 296) to give your hair almost any appearance from bleach blond to moss, lichens, grass, etc. (a shader tree is created for each hair group and is accessible in the **Material** room). You can even apply **Force Fields** (see "Wind Force Fields" on page 633) to create realistic wind effects for your animations!

Hair contains many polygons that require hefty computing resources.

The **Hair** room appears as follows at 1280 x 960 resolution.

The number of palettes and options that you see in each room depends upon your screen resolution. At higher resolutions, the default work spaces display more palettes, while at lower resolutions you see fewer palettes:



The Hair Room.

In addition to some standard tools, the **Hair** room has the following interface elements:

- **Hair Growth Groups Controls (1)**: The **Hair Growth Groups** controls allow you to create, edit, and delete hair growth groups.
- **Growth Controls (2)**: The **Growth Controls** allow you to specify how hair grows on growth groups.

- **Styling Controls (3)**: As the name implies, the **Styling Controls** allow you to control the appearance of hair.
- **Dynamics Controls (4)**: The **Dynamics Controls** allow you to control how your hair behaves during animations.

The following subsections will walk you through creating strand-based hair.

You can find skull-cap props in the **Hair > Poser Content > People > Alyson > Hair Props** *and* **Hair > Poser Content > People > Ryan > Hair Props** *categories within the* **Library** *palette.*

Step One: Defining Hair Groups

Skullcap props for Ryan and Alyson and other figures have hair props pre-created. You can use the grouping tool to spawn props for this purpose too.

If you want to be able to use the hair you are creating for other figures, please refer to "Adding Strand-Based Hair to the Library Palette" on page 548 *for more information before proceeding.*

The first step in creating strand-based hair is to define one or more group of polygons as a **hair group**. *A hair group is a cluster of polygons that has been defined as an area on which hair will grow. A prop or skullcap can contain more than one hair group. For example, you can create multiple growth groups on a skull cap or hair prop to create a part in the hair; or small sections of a conforming hair prop, or a smart hair prop can be detailed with wisps of hair.*

Please refer to the "Using the Group Editor" on page 681 *for a general discussion about groups.*



Hair Growth Group settings.

To do this:

1. Select the object you wish to grow hair on.

2. Click the **New Growth Group** button in Area 1 of the **Hair** room to create a new group called **Hair_1** by default. Subsequent hair groups are numbered sequentially (**Hair_2**, etc.). You can rename groups by entering a new name in the **New Growth Group Name** box that appears. Click **OK** to proceed or **Cancel** to abort.

3. Click the **Edit Growth Group** button to enable the **Grouping** tool and open the **Group Editor** palette. Be sure that you have the correct hair group selected before selecting polygons for the group. Please refer to "The Group Editor" on page 681 for information about using the grouping tools.

4. Select the polygons you wish to include in the hair group you are creating.

You can create as many growth groups as you like, such as head hair, moustaches, beards, chest, back, etc.



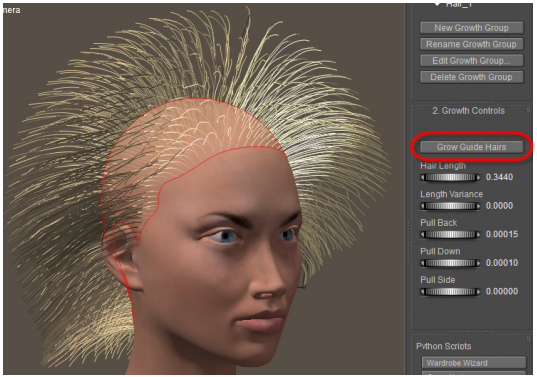
Assigning polygons to a hair group.

Be sure that you have the correct hair group selected in the Group Editor palette before selecting polygons for the group!

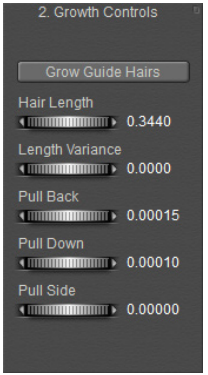
Step Two: Growing Hair

Once you've created a hair growth group, the next step is to grow the guide hairs.

As the name implies, guide hairs influence how nearby hairs will grow. To do this, click the **Grow Guide Hairs** button. The currently selected hair group will sprout guide hairs.



Growing hair on a Hair Group.



Hair Growth Controls.

Guide hairs both shape the hair group and increase performance by allowing you to toggle displaying the fully populated hair group on and off (see below). Either before or after growing the guide hairs, you can apply some general parameters to determine the overall hair shape. These are:

- **Hair Length**: The **Hair Length** parameter determines the overall length of the guide hairs and subsequent populated hairs. Increasing this parameter lengthens the hair and vice versa.
- **Length Variance**: Real hair tends to vary somewhat in length. The **Length Variance** parameter allows you to control how much the hair length will vary in the currently selected hair group. A value of 0 means that all guide hairs

are exactly the same length while a value of 1 adds a great deal of variation.

- **Pull Back**: Most hair on peoples' heads tends to be combed or pulled back along the scalp. The **Pull Back** parameter controls the extent to which guide hairs are pulled pack. Increasing this value pulls the guide hairs farther back and flattens them along the scalp. Negative values push the hair forward and away from the scalp.

- **Pull Down**: Just as most hair is pulled back, it can hang down thanks to styling, gravity, or both factors. The **Pull Down** parameter determines the extent to which this occurs. Increasing this value pulls the hair down and flattens it along the head and vice versa. Negative values create anti-gravity hair.

- Once you've completed this step, your hair will be in place and will have its rough shape.



Don't confuse the Pull Back and Pull Down parameters as replacing gravity or other dynamics that you can set after styling the hair. These parameters merely set the hair's starting positions.

Step Three: Styling Hair

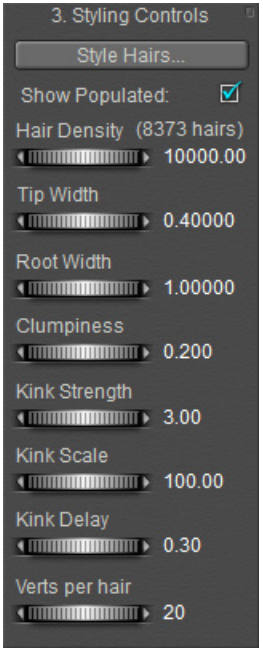
Now that you've grown the guide hairs and set some basic parameters for how the hair will look, your next step is to style the hair the way you want it. You can do this by setting the included styling parameters and/or by using the **Hair Edit** tool.

You can use the **Hair Edit** tool at any time after growing hair, although we recommend that you complete the previous step. Please see the following subsection for information on using the **Hair Edit** tool.



You can toggle the Show Populated function on and off while you work to check your results as you go.

The hair styling parameters are as follows:



Styling Controls.

- **Show Populated**: Checking the **Show Populated** checkbox displays both the guide hairs and the population hairs. This will show you exactly how the hair will look, but does increase display refresh time. The status of this box will not affect population of hair in the final render. Hair will always appear populated in a FireFly render.

- **Hair Density**: The **Hair Density** parameter controls the total number of hairs in the group. The number of hairs are displayed next to the dial's label. Increasing this number makes the hair fuller and more lush. The ability to Control the total number of hairs is a powerful feature since it allows you to create custom effects, however the total number of hairs can impact rendering and redraw times. Experiment with this number to get optimum coverage without adding too many hairs.

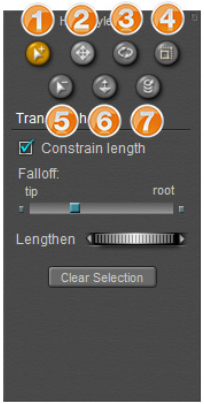
  As a matter of trivia, there are roughly 100-150 hairs in eyelashes per lid, roughly 500-1,000 hairs on each brow, and roughly 100,000 to 150,000 hairs on the head..

- **Tip Width**: The **Tip Width** parameter controls the hairs' widths (diameters) at their tips. Hair usually thins somewhat as it progresses from root to tip, so this number will typically be less than the **Root Width** parameter, below.

- **Root Width**: The **Root Width** parameter controls the hairs' widths (diameters) at their roots. Hair usually thins somewhat as it progresses from root to tip, so this number will typically be larger than the **Tip Width** parameter, above.
- **Clumpiness**: The **Clumpiness** parameter determines the hairs' tendency to form dreadlock-like bunches.
- **Kink Strength**: The **Kink Strength** parameter is the measure of how wavy/curly hair is. Increasing this value increase the hairs' waviness, and vice versa.
- **Kink Scale**: The **Kink Scale** parameter determines the size of hair waves/curls. Increasing this value increase the hairs' waviness, and vice versa.
- **Kink Delay**: The **Kink Delay** parameter specifies the distance from the root at which the hair begins to curl/wave. Increasing this value increase the distance from the root, and vice versa.
- **Verts Per Hair**: The **Verts per hair** parameter controls how many vertex points are in each strand of hair. Increasing this value results in smoother, more flowing hair but increases the system resources needed to render/redraw your scene.
- **Style Hairs**: Clicking the **Style Hairs** button selects the **Hair Select** tool and opens the **Hair Style Tool** palette (see below).

Using the Hair Edit Tool/Palette

The **Hair Select** tool is only available in the **Hair** room. It allows you to directly edit guide hairs and create a nearly infinite variety of hair styles (parts, tails, etc.). You can access it by either selecting it in the **Editing** tools or by clicking the **Hair Select** button as described above. The **Hair Style Tool** palette appears as follows:



Hair Styling tools.

You have the following controls available for directly manipulating guide hairs:

- **Add Hairs to Selection (1)**: Select the **Select Hairs** tool, then click and drag a rectangle around the guide hairs you wish to select for further styling. Unselected guide hairs are not affected by the **Hair Edit** tools. Selected hairs are all affected equally. Selecting more guide hairs can be faster, however you can select as few as one hair for precise control over the style.



You can style selected hairs in the hair group.

For finer control over which hairs are selected, try switching cameras or using the Magnifier tool to zoom in close.



Hair growth is based on the parent object's polygon count. If you wish to add detailed hair groups to a low-poly prop or to a portion of a figure with a low poly count, you can spawn a prop of the area you wish to grow hair on, subdivide that prop in your favorite 3d modeling application, then re-import the prop and apply it where needed. This is the same idea as skullcaps except that you are not limited to heads.

- **Translate Hairs (2)**: The **Translate Hairs** tool moves the selected hair vertically around or laterally around the camera's X and Y axes depending how you drag. The translation may occur on the hair's X, Y, and or Z-axes depending on the position of the camera relative to the hair.
- **Curl Hairs (3)**: The **Curl Hairs** tool bends a guide hair. Hair rotation works in three dimensions, allowing you to make a lot of progress very quickly. Dragging perpendicular to the hair rotates it up and down (relative to your point of view). Dragging parallel to the hair rotates it in and out, again relative to your point of view.
- **Scale Hairs (4)**: The **Scale Hairs** tool allows you to scale the selected hair along the camera's X and Y axes. The hair's affected axes will vary depending on the camera's position relative to that item. Dragging in towards the root reduces the scale, and dragging away from the root increases the scale. Dragging laterally scales hair in two dimensions, and dragging vertically scales hair in the third dimension. The axes affected depend on your currently selected camera position. You can also press and hold **Shift** while using this tool to scale the selected hair(s) evenly in all three dimensions.
- **Remove Hairs from Selection (5)**: Select the **Deselect Hairs** tool, or simply hold down the **[CTRL]** key, then click and drag a rectangle around the guide hairs you wish to deselect from further styling. The **Hair Edit** tools do not affect unselected guide hairs.
- **Translate In/Out (6)**: The **Translate Hairs In-Out** tool moves the selected hair(s) along the Camera's Z axis (in and out). This translation may take place along the hair's X, Y, and/or Z axes. Dragging down pulls the hair towards you, and vice versa.
- **Twist (7)**: The **Twist Hairs** tool rotates selected hair(s) along their own axis.

In addition to the editing tools, the palette has the following controls:

- **Constrain Length**: Checking the **Constrain Length** checkbox forces all selected guide hairs to retain their current lengths no matter how you use the hair editing tools. Clearing this box allows the length to vary depending on

how you use the hair editing tools (for example, you could use the **Hair Translate** tool to lengthen some guide hairs to create a ponytail.

- **Falloff**: The **Falloff** slider controls the portion of the hair affected by the styling. Moving the slider to the left causes the tools to only act near the tip of the hair. Moving the slider to the right causes the styling tools to affect more of the hair's length. With the slider all the way to the right, the entire hair is affected from root to tip.
- **Lengthen**: Moving the **Lengthen** dial to the right lengthens the selected guide hairs and vice versa.
- **Clear Selection**: Clicking the **Clear Selection** button deselects all selected guide hairs.

To exit this tool, either click the **Close** box on the palette's upper right-hand corner or select another **Editing** tool.

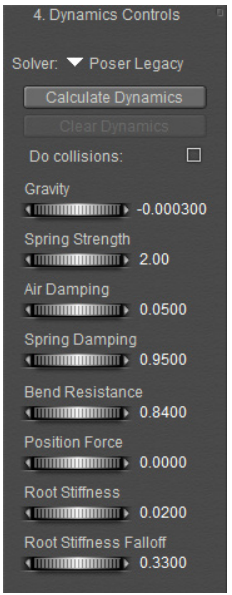


The Hair Edit tools do not affect figures or props in your scene, and the Document Editing tools do not affect hair.

Step Four: Setting Hair Dynamics

You've got your hair grown and styled. Now let's add some dynamics to control how the hair will behave during animations.

Poser Legacy

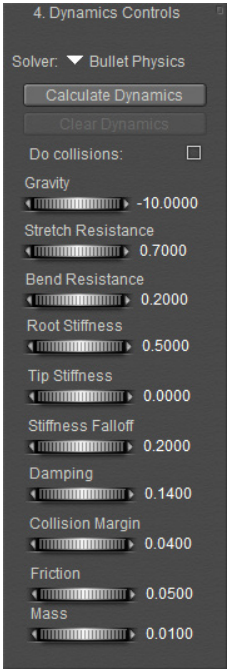


Dynamics Controls.

- **Do Collisions**: Checking the **Do Collisions** box enables collision detection for the current hair group, which will prevent hairs from penetrating other objects in the scene (for example, long hair will not penetrate a figure's head). In order to ensure proper collision detection, make sure that all body parts with which you want the hair to collide have the **Collision Detection** checkbox set on the **Properties** palette.
- **Gravity**: The **Gravity** parameter controls the strength of gravitational force acting on the hair.
- **Spring Strength**: The **Spring Strength** parameter determines the hair's springiness. Increasing this value increases the springiness. A rubber band is a good example of an object with a high amount of springiness.
- **Air Damping**: The **Air Damping** parameter specifies the hair's air resistance that occurs whenever the hair is moving through the air. Short hair has a lower resistance than long hair. Set this parameter with care as excessive values could cause the hair to behave unpredictably.
- **Spring Damping**: The **Spring Damping** parameter controls the hair's elasticity.
- **Bend Resistance**: The **Bend Resistance** parameter controls the hair's resistance to bending or folding upon itself.
- **Position Force**: The **Position Force** parameter is a force that pulls the hair vertices towards their choreographed position. Increasing this value decreases hair dynamics, and vice versa.
- **Root Stiffness**: The **Root Stiffness** parameter determines how stiff the hair is at its root.
- **Root Stiffness Falloff**: The **Root Stiffness Falloff** parameter controls how quickly the hair's root stiffness decreases from root to tip.
- **Calculate Dynamics**: Clicking the **Calculate Dynamics** button applies the current dynamic settings to the selected hair group. The number of frames in the keyframed animation determines the calculation length. Populated hairs do not display during calculation.

Bullet Physics Solver

The Bullet Physics solver offers improved performance and appearance for dynamic hair. When using Bullet Physics for hair, you create growth groups, grow, and style hair as outlined in the previous sections in this chapter. Then you choose the Bullet Physics solver from the Dynamics Controls section in the Hair Room.



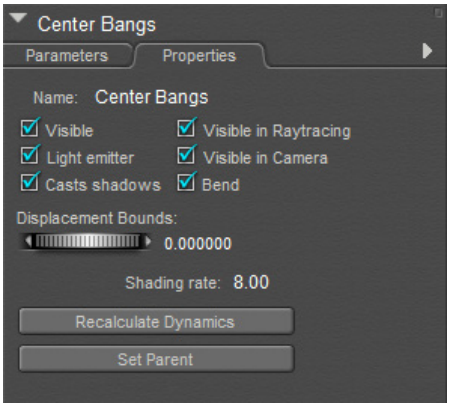
Dynamics Controls.

- **Do Collisions**: Checking the **Do Collisions** box enables collision detection for the current hair group, which will prevent hairs from penetrating other objects in the scene (for example, long hair will not penetrate a figure's head). In order to ensure proper collision detection, make sure that all body parts with which you want the hair to collide have the **Collision Detection** checkbox set on the **Properties** palette.
- **Gravity**: Controls the strength of gravitational force acting on the hair. Decrease the setting to reduce the amount of gravitational force, or increase the setting to add more gravitational force.
- **Stretch Resistance**: Determines the stretchiness of the hair as it is pulled by gravity. Increase the setting to make the hair less stretchy (more resistant to stretching).
- **Bend Resistance**: The **Bend Resistance** parameter controls the hair's resistance to bending or folding upon itself.
- **Root Stiffness**: The **Root Stiffness** parameter determines how stiff the hair is at its root (the end that comes from the head).
- **Tip Stiffness**: The Tip Stiffness parameter determines how stiff the hair is at its tip (the end of the strand).

- **Stiffness Falloff**: The **Root Stiffness Falloff** parameter controls how quickly the hair's root stiffness decreases from root to tip.
- **Damping**: The **Damping** parameter specifies the hair's air resistance that occurs whenever the hair is moving through the air. Short hair has a lower resistance than long hair. Set this parameter with care as excessive values could cause the hair to behave unpredictably.
- **Collision Margin**: Controls the amount of space that exists between the hair and the objects that it collides against, before a collision is detected. If the collision margin is set too low, hair can "disappear" inside the objects it collides against.
- **Friction**: Controls the amount of friction from the hair to the choreographed objects in the scene set to collide against. No hair self collision using Bullet.
- **Mass**: Mass will not have an effect using the Bullet Physics for hair.

Hair Properties & Parameters

To access a hair object's parameters and properties, you must first select the desired hair object, which appears in the Current Actor menu under the Props category. Strand-based hair has the following properties and parameters:



Hair Group Properties.

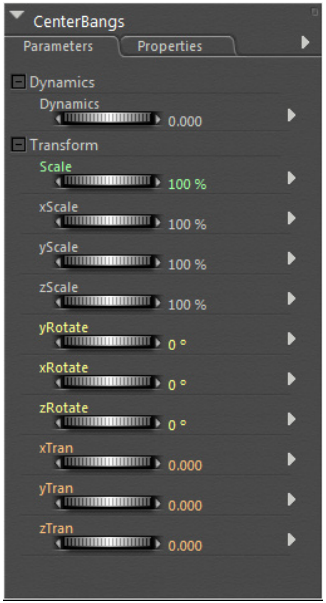
Hair Properties

- **Name**: The **Name** field displays the hair object's name. Enter a new name in this field if you desire.

- **Visible**: Checking the **Visible** checkbox makes the hair object visible and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 for information on animating the **Visible** property.
- **Visible in Raytracing**: Checking the **Visible in Raytracing** checkbox makes the hair object visible in raytraced reflections, such as if the figure is in front of a mirror. Clearing this checkbox makes the figure not appear in reflections.
- **Bend**: Checking the **Bend** checkbox enables bending for the selected hair object and vice versa. Bends are discussed in "Bend Body Parts" on page 114. Remember that selecting **Display > Bend Body Parts** bends all scene objects and this property only affects the currently selected body part.
- **Casts Shadows**: Checking the **Casts Shadows** checkbox forces the selected prop to cast a shadow, which will be visible in your scene. Clearing this box means the selected hair object casts no shadow.
- **Displacement Bounds**: The **Displacement Bounds** property determines the hair object's displacement boundary. Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about displacement bounds.
- **Recalculate Dynamics**: The **Recalculate Dynamics** option recalculates the dynamics for the current hair object.
- **Shading Rate**: The **Shading Rate** allows you to specify the desired shading rate for the currently selected hair object. Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about shading rates.

Hair Parameters

Strand-based hair has the following parameters:



Hair Group Parameters.

- **Dynamics**: The **Dynamics** parameter sets the amount by which the previously specified dynamics will be played during animations. A setting of 1 means the dynamics will play exactly as specified, a value of 2 means the dynamics will behave as though all values were set to 200% of their current settings, and so forth. Numbers below 1 reduce the amount by which dynamics are applied, and negative numbers apply the dynamics in reverse.

- **XYZRotate**: The **xRotate**, **yRotate**, and **zRotate** parameter dials rotate the hair object around the selected axis.

- **Scale**: Increases or decreases the size of the hair object in all axes.

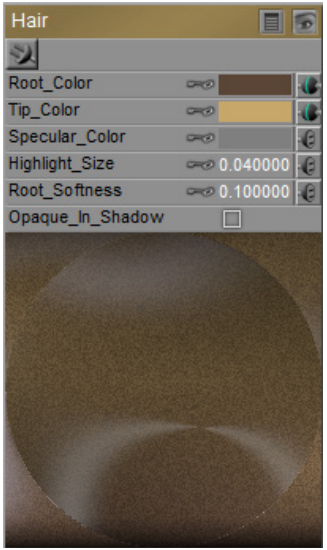
- **XYZScale**: The **xScale**, **yScale**, and **zScale** parameter dials increase or decrease the size of the hair object in the selected axis.

- **XYZTran**: The **xTran**, **yTran**, and **zTran** parameter dials move the hair object along the selected axis.

Hair Colors and Materials

Each strand-based hair object in your scene has its own shader tree, which is accessible in the **Material** room, allowing you to color your hair and add interesting effects. Please refer to "Chapter 14: The Material Room" on page 296 for more

information about the **Material** room. As with any other object, you can select strand-based hair by clicking it in the **Document** window, using the **Current Actor** menu, etc.



Hair Shader.

Adding Strand-Based Hair to the Library Palette

Strand-based prop hair differs from geometry-based prop hair because it needs underlying geometry in order to "grow." Strand-based hair grows in strands, much like real hair, rather than being made from textured polygons like geometry-based hair. You can't add strand-based hair to figures/props in the same manner as prop-based hair. As a result, you can't save strand-based hair to the **Library** palette unless it is growing from underlying geometry.

There are three ways to save strand-based hair for later use:

- Saving a PZ3 file with the hair object in it (you can do a merge function later, as explained in "Importing Poser Documents or Props" on page 779).
- Saving a prop/body part with a hair object on it. In this case, simply add the prop with the hair to your scene. For example, you could use the Group Editor to select polygons on a character's head and create a skullcap prop, grow hair on that prop, and save the hair and prop to the **Library** palette.
- The **Library** palette includes skullcaps designed to fit the Don, Judy, James and Jessi figures. These skullcaps are available in the **Hair** category under their respective figures.

To use a skullcap, add it to your scene, create and style hair, then save the skullcap with your new hair style back to the **Library** palette for use on other figures. Add skullcaps to figures just as you would prop-based hair. This is the preferred method for saving strand-based hair.



Skullcaps are also useful because they have a higher polygon count than the underlying head, giving you more detailed control over hair surfaces. You can spawn props from any figure or prop, subdivide them in your favorite 3D modeling application, then apply them anywhere you like to obtain more detailed results.

To save strand-based hair to the **Library** palette:

1. Open the **Hair** category in the **Library** palette. Locate or create a folder in which to save your new hair.
2. Click to select the hair that you want to save.
3. Click the **Add to Library** button. A message informs you that you will need to save the hair group along with its parent prop. Click OK to continue.
4. Click **Select Subset** in the Set Name dialog. When you select your hair groups, make sure that you also choose the prop that the hair groups are attached to. For example, if you grew the hair groups directly on the figure's head, make sure that you also include the Head in the props that you select.!



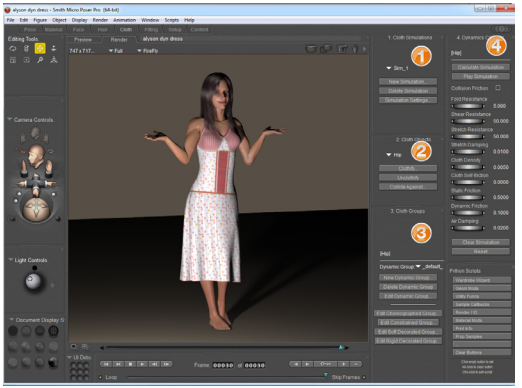
Strand-based hair is created on a per-object basis for each scene.

Chapter 27: The Cloth Room

Poser's **Cloth** room allows you to create realistic cloth that behaves like real fabric. Want to add custom clothing to a figure? Create a tablecloth? How about a flying carpet? Poser offers powerful tools that help you create dynamic cloth that responds realistically when animated. You can even apply a **Force Field** for realistic wind effects!

Using the Cloth Room

The **Cloth** room appears as follows.



The Cloth Room.

The number of palettes and options that you see in each room depends upon your screen resolution. At higher resolutions, the default work spaces display more palettes, while at lower resolutions you see fewer palettes.

In addition to standard UI elements, the **Cloth** room contains the following UI elements:

- **Cloth Simulations (1)**: The **Cloth Simulation** area allows you to create, delete, and set up cloth simulators.
- **Cloth (2)**: The **Cloth** area allows you to convert objects to and from dynamic cloth objects and to set up collision detection for your cloth.
- **Cloth Groups (3)**: The **Cloth Groups** area is where you set up dynamic, choreographed, constrained, and decorated cloth groups.
- **Dynamics Controls (4)**: The **Dynamics Controls** group sets up dynamic parameters.



The cloth room help contains additional information about importing props for use as cloth.

Conforming vs. Dynamic Cloth

As mentioned in "The Figures Category" on page 139, conforming clothing is a Poser figure, while dynamic cloth consists of props with dynamic and other behaviors applied to simulate cloth. Poser supports both types of cloth.

Dynamic cloth adds incredible realism to your scenes by causing cloth objects to move as they would in real life. For example, you can use dynamic cloth to create the following types of items in your Poser scene:

- A tablecloth that drapes over a table
- A slip cover over furniture
- A flowing skirt that moves as a figure walks

Dynamic cloth objects require increased computing resources beyond those of conforming clothing. Items such as socks, bikinis, or tights don't need to be dynamic since in real life these types of clothing tend to be close-fitting with little to no room for independent motion. You should generally use conforming clothing for these situations because it requires fewer computing resources.

Adding Dynamic Clothing

Dynamic clothing offers the most powerful means of clothing figures, allowing for realistic cloth draping and wrinkles. Additionally, it is very easy to create clothing props for use as dynamic clothing. Dynamic cloth retains its dynamics when saved to the **Library** palette, but you will need to create a new simulation whenever you add saved cloth objects. To add dynamic cloth to your current figure:

1. Select the item from the **Library** palette and add it to your scene, then switch to the **Cloth** room.

2. Create a new simulation group, and select **Body** as your desired collision object.

3. Recalculate the simulation.

Using Dynamic Clothing without a Figure

Dynamic cloth retains its dynamics when saved to the **Library** palette, but you will need to create a new simulation whenever you add saved cloth objects. To add dynamic cloth without a figure:

1. Select the item from the **Library** palette and add it to your scene, then switch to the **Cloth** room.

2. Create a new simulation group, and select your desired collision object(s), if any.

3. Recalculate the simulation.

Using Dynamic Clothing with Morphs

Step 1: Create/Set Up a Cloth Simulator

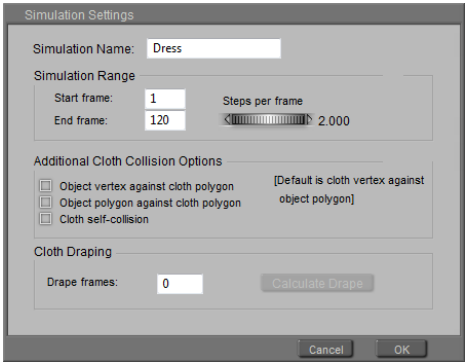
The first step in creating dynamic cloth is creating and setting up a cloth simulator. You may have as many simulators as you wish in your scene, however each simulator requires system resources (RAM/CPU cycles) and increases rendering time.



Cloth Simulations options.

Creating the Simulation

To create a simulator, click the **New Simulation** button in the **Cloth Simulation** area of the screen to open the **Simulator Settings** dialog.



Creating the Simulation.

The **Simulator Settings** dialog box has the following options:

- **Simulation Name**: Enter your desired name for the new simulator in the **Simulation Name** field. By default, simulators are numbered in the order they are created, e.g. **Sim_1**, **Sim_2**, etc.
- **Simulation Range**: You can either set the simulator to run throughout your entire animation or pick a set of frames during which the simulator is active by entering your desired frame numbers in the **Start Frame** and **End Frame** fields, respectively. Increasing the number of frames that a simulator is active requires greater amounts of system resources. During the frames prior to the start of a simulation, the cloth object will remain in its starting state. After the simulation ends, the cloth object will remain in its ending state for the rest of your animation. Additionally, the **Steps per frame** parameter dial controls the number of calculation steps per frame in order to smooth the cloth simulation. Increasing this value improves the simulation results but requires additional computing resources.
- **Additional Cloth Collision Options**: These checkboxes allow you to toggle the following additional collision detection options on and off. By default, collisions are calculated using cloth vertices against object polygons.
  - **Object Vertex against cloth polygon**: Checking the **Object Vertex against cloth polygon** checkbox performs additional collision calculations using object vertices and cloth polygons, which helps eliminate tears or holes that may occur when an object collides with the cloth. Enabling this option slows the simulation.
  - **Object Polygon against cloth polygon**: Checking the **Object Polygon against cloth polygon** checkbox

performs additional collision calculations using object polygons and cloth polygons, which helps eliminate tears or holes that may occur when an object collides with the cloth. Enabling this option slows the simulation.

- **Cloth self-collision**: Checking the **Cloth self collision** checkbox allows a cloth to detect its own polygons during simulation, preventing (for example) a cape or a flag from passing through itself. Enabling this option slows the simulation.

- **Cloth Draping**: The **Cloth Draping** options are:
  - **Drape Frame**: The **Drape Frame** value allows you to set the number of frames per object to settle the cloth.
  - **Calculate Drape**: Clicking the **Calculate Drape** button calculates the cloth object's draping behavior and caches the simulation. When calculating the simulation, cached drape settlings are added before beginning cloth simulations, meaning that the settled cloth drape is at frame 1 before the simulation begins.

When you have finished setting up the simulator options, click **OK** to accept your choices and create the simulator or **Cancel** to exit without creating the simulator.

The **Cloth Simulation** area has two other buttons:

- **Delete Simulation**: Simulation results are cached in a file during simulation computation, which Poser automatically loads to save time and resources. Clicking the **Delete Simulation** button deletes the cache contents.

- **Simulation Settings**: Clicking the **Simulation Settings button** reopens the **Simulation Settings** window, allowing you to alter your cloth simulator settings.



Think of a cloth simulator as an envelope supplying basic behavioral properties. You can have multiple cloth objects in each simulation and/or multiple simulations in each Poser scene. Each cloth object, however, can only belong to one simulation at a time. Increasing the number of simulations in a scene can add complexity and interest, but also requires increased computing resources.

The arrow at the top right of the **Cloth Simulation** area displays the currently selected simulator. Clicking this arrow opens a pull-down menu allowing you to select any of the cloth simulators in your scene for modification.

Step 2: Cloth Controls

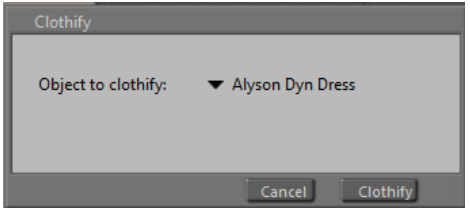
Now that you've created a simulator, your next step is to add cloth objects. Do this using the **Cloth** controls (area 2 of your screen).



Cloth Objects settings.

Clothifying Objects

To turn an object into a dynamic cloth object, select it and click the **Clothify** button to open the **Clothify** window, which displays a list of objects eligible to be turned into dynamic cloth. Use the **Object to clothify** pull-down menu to select your desired object, and click the **Clothify** button to make the cloth object, or **Cancel** to abort.



Choosing an object to clothify.

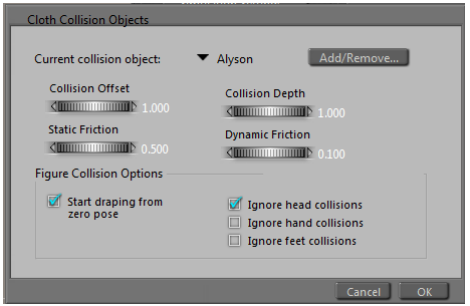
To turn a dynamic cloth object back into a normal prop, select it and click the **Unclothify** button. The prop will return to its pre-clothified shape, however it will retain its vertex groups and dynamic parameters, meaning you won't have to start from scratch if you re-clothify the object later.

You can also create static props and morph targets from cloth objects as described in "Creating Props and Morph Targets" on page 566.

Specifying Collision Objects

Once the simulator is created and you've specified the basic parameters and created dynamic cloth, the next part of the simulator creation process is defining the objects that will use collision detection (collision objects) with the cloth. Each

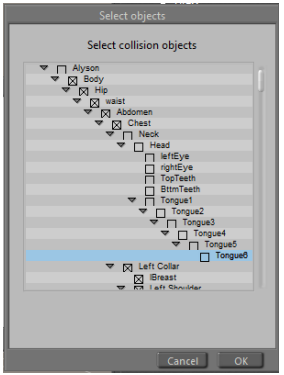
collision object will behave in accordance with the specified collision behaviors when contacting the cloth. Non collision objects will not use collision detection with the cloth object. To set up collision objects, click the **Collide Against** button to open the **Cloth Collision Objects** window.



Choosing collision objects.

The **Cloth Collision Objects** window has the following options:

- **Add/Remove Collision Objects**: Clicking the **Add/Remove** button opens the **Select Objects** window, which displays a hierarchical list of all the objects in your scene, including body parts on figures. By default, all scene objects are selected (selected objects are checked). Add and remove collision objects by checking/clearing the checkboxes next to each object listing in the window, then click the **OK** button to accept your choices or **Cancel** to abort. Added objects appear in the **Current Collision Object** pull-down menu in the **Cloth Collision Objects** window. You can set collision options for each collision object by selecting it using the pull-down menu and specifying the desired settings.



Select the object to clothify in the Select Objects dialog.

- **Collision Offset**: The **Collision Offset** parameter determines the distance between a cloth object and a collision object at which the collision detection calculations

begin. Increasing this value can help avoid accidental collisions, especially during animations, because Poser requires a little time to calculate actual collisions. Increasing this value too high can consume extra computing resources. Experimentation will quickly yield the proper value for each simulation. Please see "Collision Offset & Depth" on page 558 for more information.

- **Collision Depth**: The **Collision Depth** parameter specifies how close the cloth object must be to a collision object in order for a collision to take place. Increasing this value increases the distance at which the cloth and collision object will collide. This is useful when creating clothing, because the cloth will be kept away from the figure. Increasing this distance makes the cloth appear more static but avoids having body parts penetrate the cloth (such as a leg poking through a skirt). Experimentation will quickly yield the proper value for each simulation. Please see "Collision Offset & Depth" on page 558 for more information.

- **Static Friction**: The **Static Friction** parameter sets the coefficient of friction for the collision object. This is similar to the **Dynamic Friction** parameter except that this is the force required to get a stationary cloth in contact with a solid to start moving. For example, nylon over smooth plastic will have a very low amount of static friction while denim over wood will have a high amount. You can use the **Collision Friction** checkbox (see below) to use the collision object's value or the simulation's value.

- **Dynamic Friction**: The **Dynamic Friction** parameter sets the coefficient of friction for the collision object when the object is in motion. Moving a piece of cloth across a surface causes friction. Silk moving over a steel surface has low resistance, while cotton moving over skin or coarse sandpaper over rough wood has high resistance. You can use the **Collision Friction** checkbox (see below) to use the collision object's value or the simulation's value.

- **Figure Collision Options**: The **Figure Collision Options** allow you to specify how the current cloth object will behave when it drapes across/collides with a figure. Most clothes dressed on a figure are modeled in such a way so that they will fit on the target figure when the figure is in default pose. However, most simulations including figures and dresses will not use figure's default pose at the start of simulation. In order for the simulation to work correctly, we need to simulate the cloth draping process: given certain frames, the underlying figure will interpolate from default pose to the start pose, and the draping simulation ensures the cloth fits the figure at the start frame.

  - **Start Draping From Zero Pose**: Checking the **Start draping from zero pose** checkbox is used when creating cloth to be used as clothing on a figure. For

example, you can convert conforming clothing into dynamic cloth objects and drape them over a figure beginning from that figure's default pose. This is useful when applying dynamic cloth to a posed figure.

- **Ignore Head Collisions**: Checking the **Ignore head collisions** checkbox causes the collision detection not to apply when the cloth collides with a figure's head. This is useful for cloth that will not normally touch the head, such as shirts, pants, etc.
- **Ignore Hand Collisions**: Checking the **Ignore hand collisions** checkbox causes the collision detection not to apply when the cloth collides with a figure's hands.
- **Ignore Feet Collisions**: Checking the **Ignore feet collisions** checkbox causes the collision detection not to apply when the cloth collides with a figure's feet.



Adding collision objects increases the computing resources required to calculate cloth behavior and dynamics. Thus, you should specify the minimum number of collision objects possible.

When you have finished setting up the collision objects, click **OK** to accept your choices or **Cancel** to exit without setting up collision objects.

The arrow at the top right of the **Cloth** area displays the currently selected cloth object. Clicking this arrow opens a pull-down menu allowing you to select any of the cloth objects in your scene for modification.

Collision Offset & Depth

The **Collision depth** and **Collision offset** dials are limited to minimum 0.1cm and maximum 10cm.

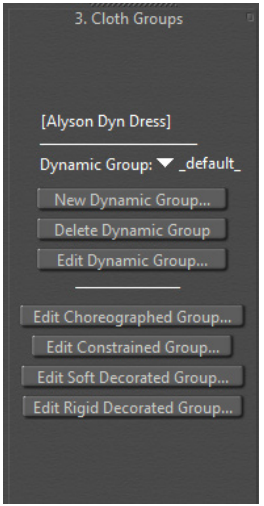


Before adjusting these settings, be sure to enable the Object vertex against cloth polygon and Object polygon against cloth polygon options in the Simulator Settings dialog.

A real piece of cloth has two sides (inside & outside) and thickness. A cloth mesh is composed of polygons, which mathematically have zero thickness. The **Collision Depth** *and* **Collision Offset** *dials emulate thickness by "extruding" the cloth inwards by the amount of* **Collision depth** *units and outward by the amount of* **Collision offset** *units. Thus, the cloth now has a "thickness" of collision offset + collision depth. Any specified collision object intersecting this volume will be treated as a collision.*

Step 3: Cloth Groups

Objects being converted to cloth must have single-sided, connected (welded) polygons without caps. Once you've created a cloth simulator and cloth object, the next step is to create cloth groups (groups of vertices) within each object, thus subdividing the cloth object into regions (in the same manner as, for example, dividing a body part into different material groups). The exception is decorative objects such as buttons, belt buckles, etc., which should be separate (non-welded) objects. Cloth groups use vertices instead of polygons, meaning that the **Group Editor** palette operates in vertex mode in the **Cloth** room (as opposed to polygons). You can convert polygon groups to vertex groups in the **Cloth** room by clicking the **Add Group** button to open a pop-up list of existing groups. Group names with the suffix **[P]** are polygon groups. Selecting polygon groups includes all vertices of the affected polygons.



Cloth Group objects.

There are four types of groups available for cloth objects:

- **Dynamic**: By default, cloth objects are created with one dynamic group (**_default_**) comprising the entire object. Dynamic cloth groups are simulated using the **Dynamics**

Controls (see following step), which determine how the cloth moves, folds or drapes as it responds to gravity, wind force and how an underlying figure/prop moves. Examples of moving figures and props include a ball underneath a carpet, or a figure underneath clothing. You can create multiple dynamic groups for each clothing object, and each dynamic group can have different dynamics settings. You cannot directly animate dynamic groups with regular keyframing.

- **Choreographed**: Each cloth object can have one choreographed group. An empty choreographed group is automatically created when you clothify an object. Choreographed vertices can follow keyframed movement or be excluded from the cloth simulation.

- **Constrained**: Each cloth object can have one constrained group. An empty constrained group is automatically created when you clothify an object. Constrained vertices "stick" to corresponding polygon faces of the underlying figure and are useful for cloth areas that have to follow the movement of the underlying body part. They can be used to prevent straps on a dress from slipping down the shoulders, or to create a skirt's belt that follows the waist's movements. If you do not place these vertices in a constrained group, gravity can cause the cloth to fall until the skirt hits the body or the ground. Constraining the belt vertices keeps the belt at the waist and reduces simulation time. If the belt contains complex geometry, the simulation will slow down.

- **Decorations:** Each cloth object can have two decorations groups (one "soft" and one "rigid". These groups are automatically created with empty contents when you clothify an object. The decoration groups animate, moving as underlying cloth moves while staying over the underlying body. Good candidates for decoration vertices include tiny or thin polygons such as pockets, belt loops, buttons, a knot in a tie, etc. These are usually items sitting on another cloth group and have only passive movement, either following underlying body movement or other parts of the cloth. Because of their small size and/or irregularity, these can cause issues if not placed into this group. The decorations group favors accessories that are geometrically separated from the cloth mesh object. There are two reasons for this:

  - If the decorations group shares vertices with the cloth mesh, the decorations vertices will not be simulated. This causes the simulator to treat these areas as boundaries, resulting in increased movement of these areas compared to neighboring regions of the cloth.

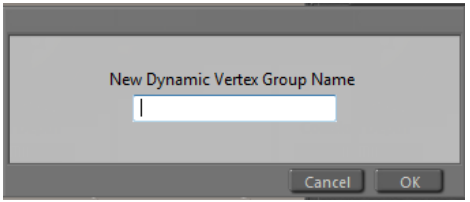
  - Welding accessories to the cloth mesh often creates a complex mesh where one edge is shared by more than two polygons.

The two types of decoration groups are:

- **Soft:** Objects in the soft decorated group move with the underlying cloth and can flex as the cloth flexes. A good example would be a belt loop.
- **Rigid:** Objects in the rigid decorated group move with the underlying cloth but do not bend or flex. Good examples of rigid decoration objects are buttons or the knot in a tie.

If you want the current cloth object to consist of a single dynamic group, you're done. Continue on to Step 4 (below) to set your dynamics. If, however, you want to create multiple groups, you can do so using the following buttons:

- **New Dynamic Group**: Clicking the **New Dynamic Group** button opens the **New Dynamic Vertex Group Name** box. Enter your desired name for the new dynamic group and click **OK** to proceed or **Cancel** to abort. By default, your entire cloth object consists of a dynamic group called **_default_**. Any vertices that are not part of other dynamic, constrained, choreographed, or decorated groups when you're done creating/editing groups will remain in the **_default_** group.



Assigning a name to a Dynamic Group.



Since each cloth object can only have one choreographed, constrained, and/or one each soft & hard decorated groups, you can only assign names to dynamic groups.

- **Delete Dynamic Group**: Clicking the **Delete Dynamic Group** button deletes the currently selected dynamic group.
- **Edit Dynamic Group**: Clicking the **Edit Dynamic Group** button opens the **Group Editor** palette, which allows you to add or remove vertices from the currently selected group. Please refer to "The Group Editor" on page 681 for information on using the **Group Editor** palette.

- **Edit Choreographed Group**: Clicking the **Edit Choreographed Group** button opens the **Group Editor** palette, which allows you to add or remove vertices from the currently selected choreographed group (**_choreographed_**). Please refer to "The Group Editor" on page 681 for information on using the **Group Editor** palette.

- **Edit Constrained Group**: Clicking the **Edit Constrained Group** button opens the **Group Editor** palette, which allows you to add or remove vertices from the currently selected constrained group (**_constrained_**). Please refer to "The Group Editor" on page 681 for information on using the **Group Editor** palette.

- **Edit Soft Decorative Group**: Clicking the **Edit Soft Decorative Group** button opens the **Group Editor** palette, which allows you to add or remove vertices from the currently selected soft decoration group (**_softDecorated_**). Please refer to "The Group Editor" on page 681 for information on using the **Group Editor** palette.

- **Edit Rigid Decorative Group**: Clicking the **Edit Rigid Decorative Group** button opens the **Group Editor** palette, which allows you to add or remove vertices from the currently selected rigid decoration group (**_rigidDecorated_**). Please refer to "The Group Editor" on page 681 for information on using the **Group Editor** palette.

Keep the following in mind when working with cloth groups:

- Adding vertices to the current group removes them from other groups.

- Removing vertices from the default group adds them to the choreographed group.

- Removing vertices from any group adds them to the default group.

The arrow at the top right of the **Cloth** area displays the currently selected cloth group within the currently selected cloth object. Clicking this arrow opens a pull-down menu allowing you to select any of the cloth groups in the current cloth object for modification. To work on a different cloth object, use the pull-down menu available in the **Cloth** area (Step 2).

Step 4: Cloth Dynamics Controls

Once you've created and edited cloth groups, the next step is to define dynamic properties for each of the dynamic groups in the currently selected cloth object. Dynamic properties control how the dynamic groups will move and behave when the dynamics are calculated. The **Cloth Dynamics Controls** have the following buttons:



The Group Editor is used in Vertex mode with Cloth Groups.

- **Calculate Simulation**: Clicking the **Calculate Simulation** button takes into account all of the simulation, object, group, and dynamics settings included in the current simulation and calculates the behavior of all of the cloth objects in the simulation for all of the specified frames. Please see above for information on specifying cloth simulation frame ranges.

  If a clothified object contains morphs that are dialed in at frame 1, there may be occasions when the morphs are doubled after the cloth simulation is calculated. One way around this issue is to set the morph back to zero on frame 1, and on the end frame. Then set the morph back to 1 before you recalculate it.

- **Play Simulation**: Clicking the **Play simulation** button plays the currently selected simulation, allowing you to see how the cloth behaves over time. If you don't like the current behavior, you can alter any of the **Cloth** room settings and try again.

- **Clear Simulation**: Clicking the **Clear Simulation** button empties all stored data in the current simulation (such as altering collision settings, adding/removing objects, editing groups, changing dynamics control settings, etc.), allowing you to specify new dynamics, thus modifying how the cloth object behaves. If you clear the simulation and

play the animation, what you are seeing is simply keyframe animation with no simulation being calculated.

The **Cloth** room includes the following dynamics controls:



Dynamics Controls.

- **Fold Resistance**: The **Fold Resistance** parameter specifies the resistance to out-of-plane bending (folding). Increasing this value lessens the cloth's ability to bend. Soft fabrics like silk fold very easily, so a low value (1.0) is appropriate. By contrast, hard leather tends not to fold, so a higher value would be appropriate.

- **Shear Resistance**: The **Shear Resistance** parameter controls the cloth's resistance to in-plane shearing, or side-to-side bending. A low shearing resistance allows the cloth triangles (caused, for example, when the corner of a rectangular piece of cloth is draped over a surface) to collapse in on themselves, so a value of 50.0 or thereabouts is appropriate. Wool has a low shear resistance while leather has a very high amount.

- **Stretch Resistance**: The **Stretch Resistance** parameter specifies the cloth's resistance to in-plane bending (stretching). Most cloth is highly resistant to stretching, with some exceptions like spandex, which is more elastic. The default of 50.0 gives a fairly high resistance to stretching suitable for cotton-type materials. A lower value might be suitable for stretchy materials such as Lycra.

- **Stretch Damping**: The **Stretch Damping** parameter controls the internal energy loss caused by the motion of the cloth fibers against each other. Higher damping causes the cloth to lose its motion more quickly. Excessively high values can make the cloth look like it is moving in syrup, and extremely low values can cause the cloth to behave irregularly. A value of 0.01 is suitable for more uses.

- **Cloth Density**: The **Cloth Density** parameter specifies the mass-per-unit area density of the cloth in grams per square centimeter. If you take a 1cm x 1cm piece of cloth and weigh it, the weight in grams is what this parameter should be set to. For example, silk is very light while leather is very heavy by comparison.

- **Cloth Self Friction**: The **Cloth Self Friction** parameter sets the coefficient of friction between one part of the cloth and another, or how easily the cloth moves over itself. Higher values prevent the cloth from sliding over itself. For example, rayon has a very low amount of self-friction while denim has a fairly high amount.

- **Static Friction**: The **Static Friction** parameter sets the amount of friction between the cloth and solid objects. This is similar to the **Dynamic Friction** parameter except that this is the force required to get a stationary cloth in contact with a solid to start moving. For example, nylon over smooth plastic will have a very low amount of static friction while denim over wood will have a high amount.

- **Dynamic Friction**: The **Dynamic Friction** parameter sets the coefficient of friction between the cloth and solid objects

when the cloth is in motion. Moving a piece of cloth across a surface causes friction. Silk moving over a steel surface has low resistance, while cotton moving over skin or coarse sandpaper over rough wood has high resistance.

- **Air Damping**: The **Air Damping** parameter specifies the cloth's air resistance that occurs whenever the cloth is moving through the air. Tightly woven cloth has a higher resistance than loosely woven fabric. Set this parameter with care as excessive values could cause the cloth to behave unpredictably.

- **Collision Friction**: Checking the **Collision Friction** checkbox ignores the cloth object's **Static Friction** and **Dynamic Friction** parameters, instead using those same parameters belonging to the collision objects themselves. Clearing this checkbox applies the cloth dynamic settings.

- **Reset**: Clicking the **Reset** button resets all cloth dynamics controls.

The label at the top right of the **Cloth Dynamics Controls** area displays the currently selected cloth object. To change the object, use the pull-down menu in the **Cloth** area (Step 2).

Cloth Parameters & Properties

To access a cloth object's parameters and properties, you must first select the desired cloth object.

- Dynamic cloth objects have the same properties as props. Please refer to "Prop Properties" on page 225 for information about prop properties.

- Dynamic cloth has the same parameters as strand-based hair objects. Please refer to "Hair Parameters" on page 546 for information about hair object parameters.

Creating Props and Morph Targets

You can convert cloth objects into static props or morph targets for use in scenes where a cloth-like look is desired without the need for a dynamic cloth object. For example, you could create a tablecloth using dynamic cloth and a table prop then convert the dynamic cloth object into a static prop for use in future scenes. If you did this, you would only need to include table legs where visible between the floor and the edge of the cloth, thereby giving you full realism while reducing your scene's polygon count.

As another example, you could drape a sheet over a figure to create a ghost. Then you could convert the draped sheet to a static prop and use the **Setup** room to turn it into a poseable ghost.

To create a prop from your dynamic clothing object:

1. Clothify an object as described above.
2. Use the **Animation** controls to move to your desired frame (the cloth shape changes with each frame as the simulation plays).
3. Use the **Grouping** tool to spawn a new prop. Please refer to "The Group Editor" on page 681 for information on using the **Grouping** tool and the **Group Editor** palette.

Creating a prop in this method preserves the shape of the original cloth object at the time you created the prop but removes all transformation (position, rotation, and scale). For example, if you stretch a square into a rectangle, the new prop will appear as a square deformed by the cloth simulation. In this case, reapplying the transformations applied to the original clothified object restores the original appearance to the static prop.

To create a morph target, follow steps 1 & 2 above, then spawn a morph target as you would for any other prop/body part as described in "Spawning Morph Targets" on page 661. You can then apply the morph target to a prop.



Morph targets created in this manner work in exactly the same manner as other morph targets, meaning that all dynamic motion is lost.

You can also export clothified props just like you would any other scene object. Exported cloth objects become static mesh objects in your chosen export format. To do this, follow steps 1 & 2 above, then export the object as described in "Exporting Files" on page 783.

Adding Dynamic Cloth to the Library Palette

Adding dynamic cloth to the Library palette is a special case that merits its own topic. To add dynamic cloth:

1. If not done yet, load your desired figure and be sure to disable Inverse Kinematics (see "Inverse Kinematics (IK)" on page 177). Next, open the **Joint Editor** palette (see "Chapter 33: Working with Joints, Weights, and Skinning" on page 719) and click the **Zero Figure** button.
2. If not loaded yet, load or import your desired cloth object and ensure it fits the figure without obvious intersections. If importing a static prop, convert it into dynamic cloth using the **Cloth** room as described in this chapter.
3. Select the cloth, then open its **Properties** palette and click the **Set Parent** button (or select **Object > Change Parent**)
4. The **Choose Parent** window appears. Select Hip, being sure not to check the **Inherit bends of parent** checkbox.

5. Open the **Library** palette to the **Props** category and select your desired subcategory as described above. Save the cloth object.

6. You will be prompted to save the object as a smart prop. Click **Yes**.



If your cloth object is not tied to a figure (such as a tablecloth), simply save it as a prop.

Chapter 28: The Fitting Room

The Fitting Room is designed to address the needs of those who want to use existing clothing to fit new characters. The concept is as follows ... you get a new figure, you find clothing that you like, and you use the Fitting Room to alter the fit of the clothing to fit the newly available figure. Along the way, the Fitting Room allows you to convert the new fit into a prop (for dynamic clothing) or figure (for conforming clothing), including adding groups, skeleton, and character morphs.

The fitting process is done semi-automatically, in that you can use one of five different fitting methods (**Prefit**, **Tighten**, **Smooth**, **Soft Features**, and **Rigid Features**) to control what areas of the clothing should move more or less than others: The calculations for each of these methods are done automatically in Poser, but you can use paintbrush tools to determine the strength at which each of these fitting methods are used. This gives you full control over the appearance and result of the fit.

Problems and Solutions

The Fitting Room may not convert every piece of clothing perfectly, and there are some known limitations in the types of geometry that are difficult for the fitting room to handle. The following are some issues that are currently known:

- Clothing that is modeled in sections, with unwelded seams, can become split apart at the seams when tightened. The Soft Features method cannot resolve this, as it s a result of smoothing. The smoothing algorithm moves vertices as they relate to their neighbors, and if a seam is not welded it moves the sides away from each other. To reduce the separation, use the Paint tools to subtract the smoothing down to zero on both sides of the seam.

- Clothing that has layered parts, such as a skirt and an overskirt, or two or more layers of overlapping geometry, can intersect and cause collisions.

- Setting all vertices to the Rigid Features method (examples: body armor, jewelry, jeweled Egyptian collars, etc.) can result in unexpected translations of the geometry.

- The Prefit method can cause conflicts with the Soft Features and Rigid Features methods. Prefit is run first, and it can balloon the geometry more than desirable in the areas that use Soft or Rigid Features.

- For clothing that incorporates more than one of the above issues you can, if desired, use Poser's GoZ plugin, Wardrobe Wizard, or a third-party 3D application to refit to your new character. Fit the clothing item as closely as you can. Then

import the morph as a full body morph in the Pose Room. Dial the morph in before you enter the Fitting Room. When you set up the Fitting Room simulation, uncheck the Zero Figure option to apply your morph to the figure. Then set all Tighten method vertices to zero and paint in only the areas that you need to tighten further. Then export as a prop or figure from the fitting room to complete the setup.

- Many skirts have the lower portion grouped entirely as a hip, and use body handles for posing. To group the lower portion as a hip, pay attention to the body parts that you select in the Transfer Figure dialog when you create the figure. Deselect all of the body parts that appear beneath the hip. When you have the Auto Group option checked, this will group the hip and the body handles into a single group. The thighs, buttocks, shins, etc. will not be included. You'll need to reassign the body handles to appropriately-named groups using the Group Editor or another method.

- For skirts that use the traditional grouping (such as when the hip runs down the center of the skirt to separate the left and right thigh groups), the hip group may not extend completely to the bottom of the skirt and will cause the center front and back of the skirt to appear "unwelded." You will need to regroup the skirt to include at least two rows of polygons (one row at each side of the front and back center lines) to add a separation between the thighs.

Preparing Your Scene

Before you enter the Fitting Room, you need to load the character and the clothing that you want to refit into your scene. The following image shows Miki 4, and a shirt from the Ryan 2 clothing library.



Load the character and clothing into your scene.

Adjust Scale, Position, and Rotation

When you bring a figure and clothing into the fitting room, both objects are converted to Poser unimeshes. What this means is

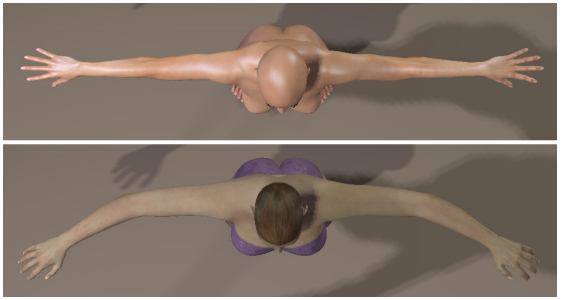
that any translation, rotation, or scaling will work on the entire object, rather than on individual body parts.

Because of this, you'll need to consider how the default poses of characters differ, and whether or not you will need to rotate body parts to match up the default poses more closely. Default poses of Poser figures can be quite different from one character to another. Arms and legs can be bent differently, one character might lean more forward or backward at the waist, and so on. If the differences are substantial, it's a good idea to use rotations on the clothing to more closely match the default pose of the character you want to fit.

For example, some characters are modeled with arms perfectly straight when they are in their default pose, while others have their arms and legs bent slightly differently. The steps that you take at this point differ slightly, depending on these differences.

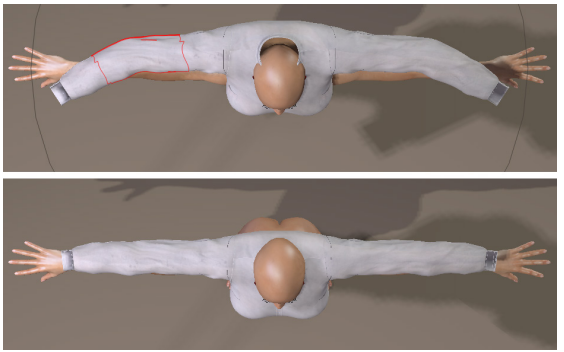
For example, if you are fitting a shirt, compare the bending of the arms. To begin, scale and move the clothing item to roughly match the figure. You don't have to account for all of the pokethrough when you do this. The idea is to just get the clothing item in roughly the right position so that you can adjust the arm bends.

- If the arms are straight on the character, and are also straight in the shirt, you can do the remainder of the fit in the Fitting Room.
- If the arms are straight in one case, but bent at the elbow in another (such as shown in the following figure), you'll need to adjust the rotations of the clothing before you enter the Fitting Room.



Default arm positions for Miki 4 (top) and Victoria 4 (bottom).

In cases where the default pose is different, it helps to adjust the rotations on the clothing before entering the Fitting Room. For example, if the arms are bent differently on the shirt that you're trying to fit, you can use the scale and rotation dials on the right arm to get the sleeve to match as closely as possible, and then use the **Figure > Symmetry** commands to apply the settings to the other side.



Rotation adjustments of Victoria 4 shirt before (top) and after (bottom).



Victoria 4 shirt roughly scaled, rotated, and positioned to fit Miki 4.

After you make your adjustments, you may still have pokethrough on the clothing in other areas. However, the controls in the Fitting Room will take care of this when you create your fitting simulation.

If you don't need to change any rotations on individual body parts, you can enter the Fitting Room without doing so. You will be allowed to adjust the overall scale and position of the clothing in the Fitting Room.

If you do make scaling and rotation adjustments in the Pose Room, you will need to uncheck the Zero Figure option when you create your fitting simulation as described in the following section.

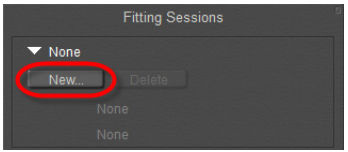
Creating a Fitting Simulation

After you add the clothing and figure to your scene, click the Fitting tab to enter the Fitting Room. At this point, the first step is to create a fitting session, which basically identifies the clothing item that you want to fit, and the character that you want to fit it to.

To create a new fitting session, follow these steps:

1. With the character and clothing loaded into your scene, click the Fitting tab to switch to the Fitting Room.

2. Click the **New** button at the top of the Fitting Sessions palette.



Click the New button to create a fitting session.

3. In the Session dialog, complete the following:

   - **Name**: Enter a name for the clothing fitting session.
   - **Object**: Expand the Object list to select the clothing item that you want to fit to the character.

Check the **Keep Deformations** *option for the* **Object** *if you applied morph targets or other deformers to the clothing in the Pose Room. For example, if you added magnets or applied a morph that raises or lowers the hem of a skirt, you can check the Preserve Deformations option to bring the skirt into the Fitting Room with that length.*

Uncheck the **Zero Figure** *option for the* **Object** *if you have made any rotation adjustments to the clothing to match the default pose of the character, as discussed in* "Adjust Scale, Position, and Rotation" on page 570.

It is standard practice for content developers to zero their figures (scale, position, and rotation) and then memorize those settings before saving the item to the library. However, sometimes this step is omitted, which can result in a non-zeroed figure being saved to the library. Checking the **Zero Figure** *option can address conformers that have not been zeroed before adding them to the library.*

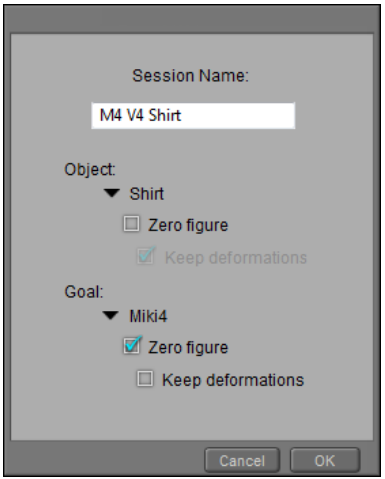
- **Goal**: Expand the Goal list to select the character that you want to fit the clothing to.



Check the **Keep Deformations** *option for the* **Goal** *if you applied morph targets or other deformers to the character in the Pose Room. For example, if you want to fit the clothing to a specific full body morph (such as Pregnant, or Body Builder) you can check this option to load the character into the Fitting Room with that body shape instead of the default body shape.*



Uncheck the **Zero Figure** *option f you have made any rotation adjustments to the figure.*



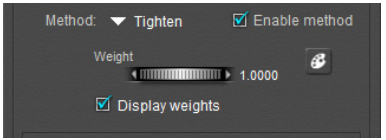
Select the Object (clothing item) and Goal (character).

4. Click **OK**. The clothing and character will appear in the Fitting Room as Poser unimeshes.

Fitting Simulation Methods

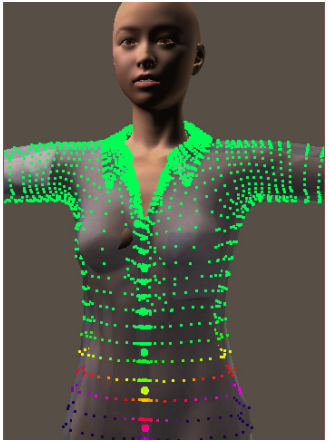
After you create your new Fitting Session, you'll see five different simulation methods associated with it: **Prefit**, **Tighten**, **Smooth**, **Soft Features**, and **Hard Features**. You can use each of these fitting methods singly, or in combination with each other to alter the fit of the clothing to fit the target character.

There are many controls and options that you see in common to all these method types:



Common method controls and options.

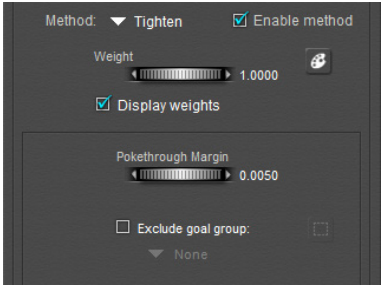
- **Method menu:** Allows you to choose one of five fitting methods that move the clothing in different ways to fit the clothing. You can use any of these methods singularly, or in combination with each other, to generate the new fit for the clothing.
- **Enable Method**: Enables or disables the currently selected fitting method. Uncheck this option if you do not want to use the currently selected method in the fitting session.
- **Weight**: Controls the strength at which the currently selected method will be applied to the clothing.
- **Display Weights**: Enables or disables the display of colored vertices that show you how much or how little the currently selected method is applied to each vertex in the object.



The Display Weights option shows and hides the display of colored vertices that show how strong the current method is applied.

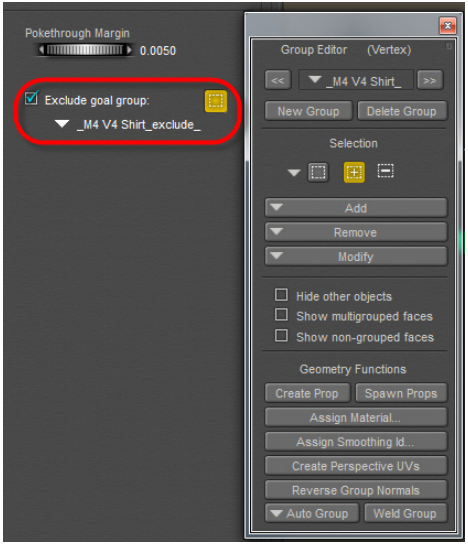
Tighten

When you initially create a new fitting simulation, you'll automatically be directed to the **Tighten** method by default. If you immediately press the **Fit** button in the upper section of the Fitting Room, you'll be able to get an idea of which areas need to be worked on further.



Tighten options.

- **Pokethrough Margin**: The pokethrough margin controls the amount of distance between the figure and the clothing item. The default setting creates a sufficient amount of space between the two to ensure that there is no pokethrough when the figure is posed. Decreasing the setting will bring the clothing closer to the figure, but may introduce pokethrough when posing the figure. Increasing the setting will create more space between the figure and the clothing.
- **Exclude Goal Group**: Check this option to select a group that you want to exclude from the **Tighten** fitting method. This will create a new group in the clothing called **_clothing name_**exclude, where **_clothing name_** is the name of the clothing item that is assigned in the fitting session. Click the Grouping Tool icon to open the Group Editor. This allows you to choose or create groups on the goal (the character you are fitting to).



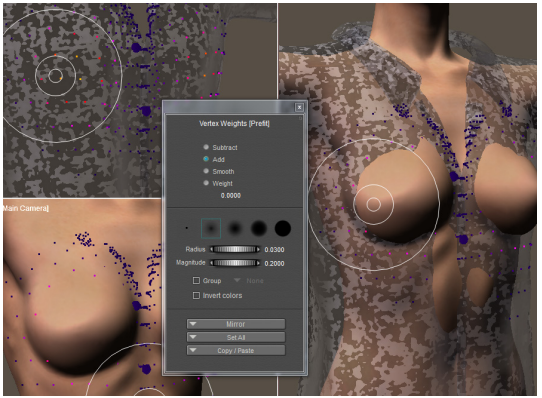
Excluding goal groups.

- **Paintbrush**: Click the Paintbrush icon to enable the vertex painting tools. Initially, all of the vertices in the clothing object appear with green color, which indicates that the **Tighten** method is applied at full strength. You can use the Paintbrush to reduce the effect in areas that you do not want to tighten as much.

Prefit

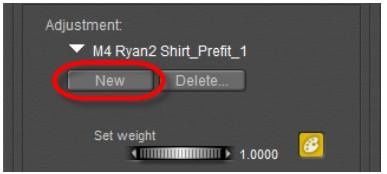
When you run a fitting simulation, the areas that you include in the Prefit method will be pulled inward or outward before the other fitting methods are calculated.

When you initially create a fitting simulation, it initially opens with the Tighten method controls displayed. A good way to determine areas where prefit might be required is to click the Fit button before you do anything else to the clothing. Then you can add Prefit to the areas where the figure pokes through the clothing.



Adding the Prefit method to areas that do not fit properly after clicking the Fit button.

In order to use the Prefit method, you will need to create a Prefit Adjustment. To do so, click the **New** button in the Adjustment section. A new adjustment will be created and automatically named for you.



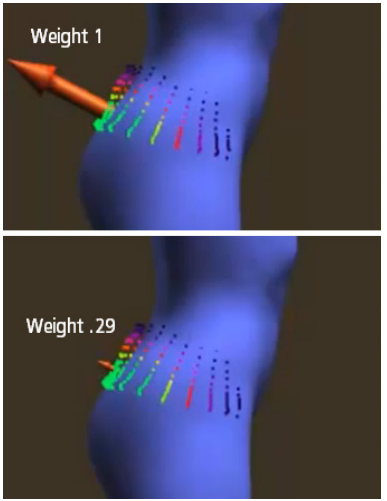
Click the New button to create a Prefit Adjustment.

After you create the Prefit adjustment, the following controls appear in the Fitting Sessions palette for the Prefit method:

- **Delete**: Click this button to delete the currently selected Prefit adjustment.
- **Set Weight**: Controls the weight at which the current Prefit adjustment will be applied to the clothing. A setting of 1 applies the method at its full strength.
- **Paintbrush**: Click the Paintbrush icon to enable the vertex painting tools.
- **Object Surface Normal**: Moves the clothing vertices that you add to the Prefit method inward or outward based on the direction of the normals in the clothing item.

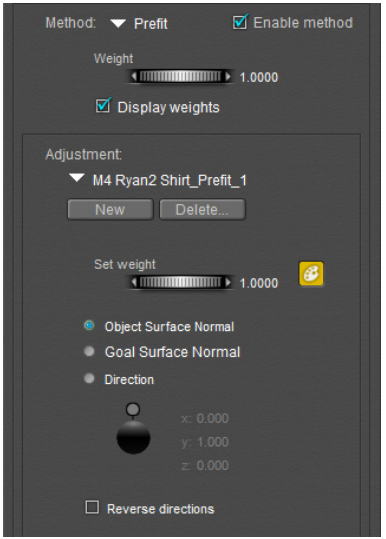
- **Goal Surface Normal**: Moves the clothing vertices that you add to the Prefit method inward or outward based on the direction of the normals of the character that you are trying to fit.
- **Direction indicator**: Moves the clothing vertices that you add to the Prefit method inward or outward in a specific direction. Drag the circular indicator around the globe to specify the direction of the prefit.

The Weight setting in the Prefit method controls the amount that the clothing will be moved during the Prefit method. The Direction indicator gives you a visual indication of this setting as you adjust the Weight setting. Adjust the Weight setting until the Direction indicator displays the amount at which you want the clothing to move in that direction.



The Weight setting will resize the direction indicator to display how much the Prefit method will move the clothing.

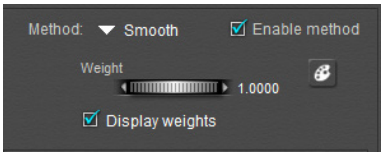
- **Reverse directions**: By default, the Prefit method will pull clothing vertices away from the character during the Prefit calculations. Check Reverse Directions to pull clothing vertices toward the character instead.



Prefit options.

Smooth

The Smooth method blends the vertices of the fitted clothing to reduce the amount of hard transitions. When you choose the Smooth method, you'll notice that all vertices are smoothed at maximum value (all appear green). Therefore, if you need to make any changes to Smoothing, it will be to reduce the effect of smoothing where you paint.



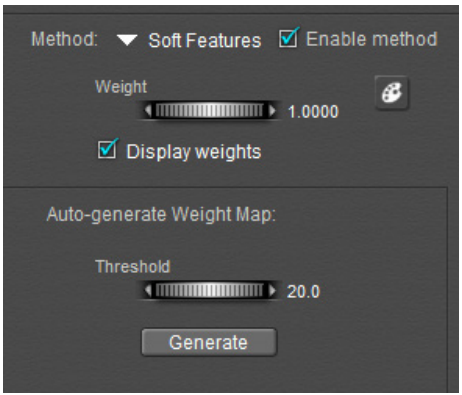
Smooth options.

- **Paintbrush**: Click the Paintbrush icon to enable the vertex painting tools.

Soft Features

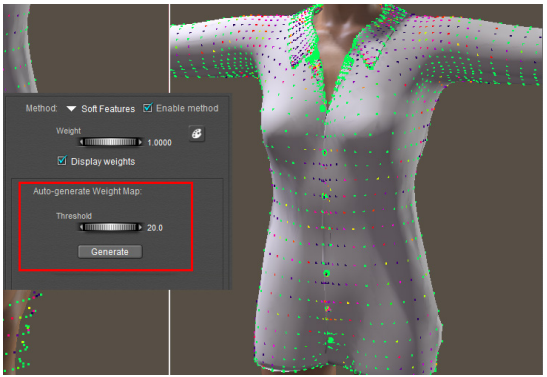
The Soft Features method is used for areas that are flexible, but which you want to maintain the overall shape as it moves more closely to fit the figure. Examples of soft features are pockets, collars, seam lines, hem lines, folds, wrinkles, and so on.

When you switch to the Soft Features method, you'll see vertices that are variously colored. Poser takes a "best guess" at the areas where the Soft Features method will be applied by analyzing charges in the polygonal density and changes in the surface normals.



Soft Features options.

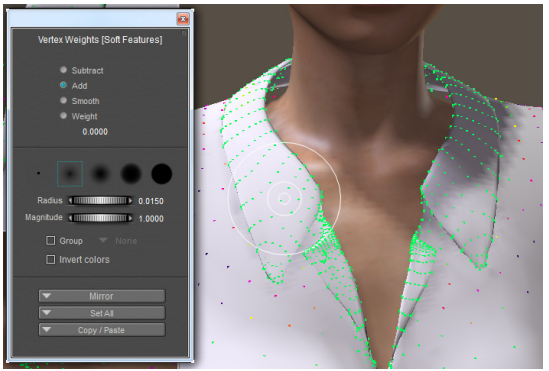
- **Auto-Generate Weight Map**: Use the Auto-Generate Weight Map controls as follows to adjust the Soft Features map
  - **Threshold**: Poser initially generates a Soft Features map based on the default threshold setting of 20. Increase the threshold to add more vertices to the Soft Features vertex map.
  - **Generate**: After you adjust the threshold setting, click the Generate button to update the Soft Features vertex map based on the new threshold value.



Auto-generating a Soft Features vertex map.

- **Paintbrush**: Click the Paintbrush icon to enable the vertex painting tools. When painting a Soft Features vertex map,

focus on areas where you want the shape to be retained as the clothing is fit to the figure. The following figure shows additional Soft Feature method added to the collar, and the result after the Fit is run.

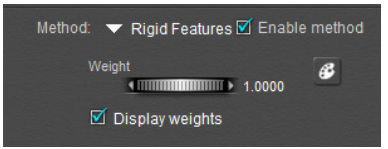


Additional Soft Features strength added to the shirt collar.

Rigid Features

Use the Rigid Features method on areas where you want to retain the shape when the clothing is fitted to the character. Examples of Rigid Features would include buttons, buckles, clasps, and other similar items. There is only one option for Rigid Features:

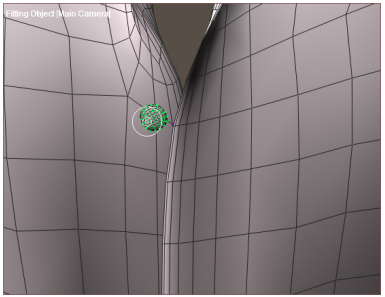
- **Paintbrush**: Click the Paintbrush icon to enable the vertex painting tools.



Rigid Features options.



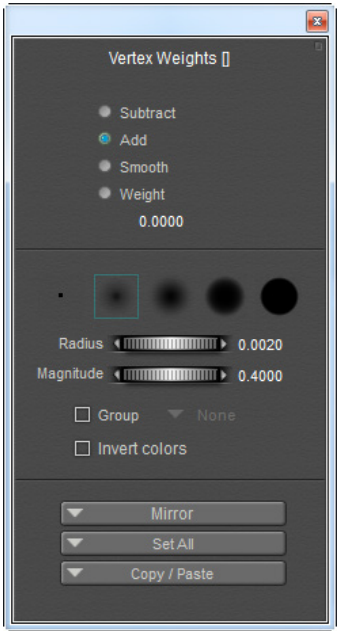
You might find it easier to paint Rigid Features while you have your Display set to Smooth Shaded Lined. It also helps if you reset the Fitting Simulation so that you can paint the rigid features while the clothing item is in its default shape and size. This allows you to more easily determine which vertices you need to paint.



Switching to Smooth Shaded Lined display mode to see polygons and vertices more clearly.

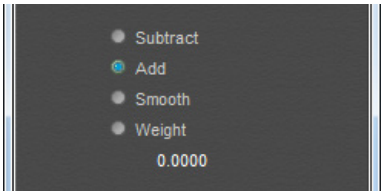
Painting Vertex Weights

When you click the Paintbrush icon in the Fitting Room, it opens the Vertex Weights palette shown in the following figure.



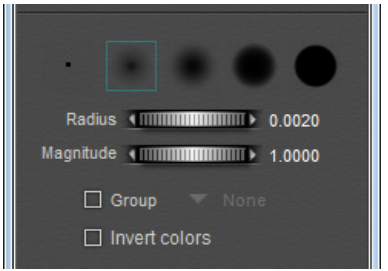
Vertex Weights palette.

The settings and options in the top section of the Vertex Weights palette are as follows:



Vertex weight painting modes.

- **Subtract**: Use the Subtract brush to remove or reduce the weight of the vertices that you paint.
- **Add**: Use the Add brush to increase the weight of the vertices that you paint.
- **Smooth**: Use the Smooth brush to blend transitions between adjacent areas that have wide variations in the amount of weight applied to them.
- **Weight**: Use the Weight brush to paint with a specific weight value, as entered in the Weight field.
- The middle section of the Vertex Weights palette contains five different brush styles, ranging from a very small brush designed to paint single vertices to other brushes that have varying degrees of softness around their edges. In addition, the following additional settings appear here:



Brush options.



Use the harder edge brushes to paint vertex weight on circular objects like round buttons, scale brush size to match the diameter of the button, then set a relatively high magnitude, center the brush over the button and click to quickly paint that button geometry.

- **Radius**: Controls the size of the brush. Move the slider left or right to adjust the size, or enter a specific value in the Radius text box.



You can increase or decrease the radius of the brush by .0005 each time you press the Up or Down arrow key. Press the Shift key while using the Up or Down arrow key to increase/decrease by .005.

- **Magnitude**: Controls the strength at which the effect is applied while you paint. Move the slider left to decrease the strength, or right to increase it. You can also enter a specific value in the Magnitude text box.



You can increase or decrease the magnitude of the brush by .0005 each time you press the Left or Right arrow key. Press the Shift key while using the Left or Right arrow key to increase/decrease by .005.

- **Group**: Check the **Group** option to isolate the effects of the painting to a specific group. Then select the group from the drop-down menu.
- **Invert Colors**: Check this option to reverse the color display of the vertices, so that vertices with low values will be displayed green, and vertices with high values will be displayed with darker colors.

The bottom section of the Vertex Weights palette contains controls that allow you to mirror, copy, paste, and set vertices to specific weights.



Mirror, Set, and Copy/Paste weights.

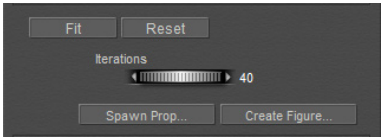
- **Mirror**: Allows you to copy weight painting from one side of a model to another. This helps save time, by allowing you to paint one side of a model and then mirroring the same values to the other side of the model.
- **Set All**: Allows you to set all vertices to 0, to 1, or to the value that you have entered in the **Weight** section in the top of the Vertex Weights palette.
- **Copy/Paste**: Provides commands that allow you to copy and paste weight values between objects.

Completing the Fitting Simulation

You can run the fitting simulation any time during the fitting process to test how the various methods are working on the clothing item. You will also need to run the fitting simulation

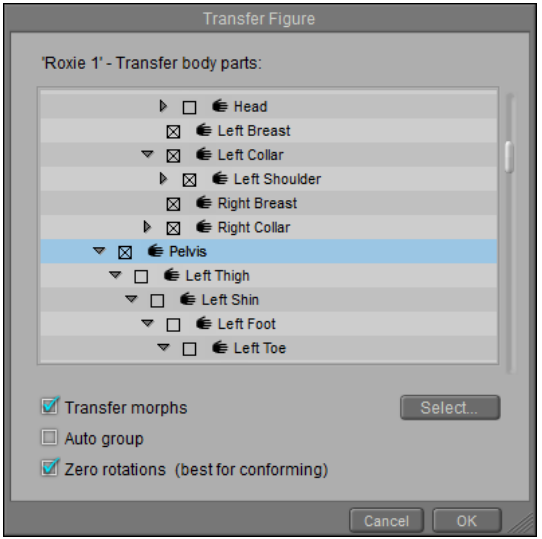
after you complete your fitting, in order to generate the clothing item that fits the character.

The controls to run the simulation and generate the final piece of clothing are at the top of the Fitting Simulation palette.



Rigid Features options.

- **Fit**: Click the **Fit** button to run the fitting simulation. You can do this at any time during the fitting process to check how each fitting method affects the clothing. You'll also need to do it before you spawn a prop or create the clothing figure to fit your specific figure.
- **Reset**: Clears the results of the fitting simulation from the clothing. This returns the clothing back to its default shape and position.
- **Iterations**: The number of times that fitting calculations are repeated to achieve the fit. Higher values take longer but can provide a more accurate fit.
- **Spawn Prop**: Click this button to create a prop based on the current shape of the clothing. You will be prompted to enter a name for the new prop. The new prop will appear in the Pose Room, but will not be rigged to conform to the figure.
- **Create Figure**: Click this button to create a new conforming figure based on the current fit. The steps are as follows:
  - The New Figure dialog prompts you to enter a name for the new conforming figure.
  - The Transfer Figure dialog appears. Use the Hierarchy List to check or uncheck the body parts that you want to keep in the figure.



Check the **Keep Morphs** *option to add character morphs to the clothing.*

- If you want to transfer morphs from the character to the clothing, check the **Transfer Morphs** option.
- Check the **Auto Group** option if you want to regroup the clothing to match the groups in the figure. If you have already added the correct figure groups using another means, you can uncheck the option to preserve the existing groups.
- Check the Zero Rotations option to set all rotations for each body part to zero. The results will be the same as what you achieve when you zero a figure after conforming new clothing to a figure.
- Then click the **Select** button to choose the morphs that you want to transfer to the clothing.



When you return to the Pose Room, conform the clothing to the figure. Then with the Body actor selected on the clothing, switch to the Properties palette. Check the **Include Morphs When Conforming** *option so that the clothing will automatically fit when you adjust the character's morphs.*



Check the **Keep Morphs** *option to add character morphs to the clothing.*

- Check the **Auto Group** option to group the clothing based on the groups in the figure. Uncheck this option if you want to use other methods to add groups to the clothing.
- When you switch to the Pose Room you'll see your new clothing item. Select it, and then choose the Figure > Conform To command to conform it to your character.



The original version of the clothing will still appear in the scene. You can safely delete the original version without affecting the copy that is in the Fitting Room.

Chapter 29: Wardrobe Wizard

Wardrobe Wizard is a utility that enables Poser clothing models originally created for one Poser figure to be worn by another. A very large number of figures are supported, and support for many past and current Poser/Smith Micro figures are built into Poser.

For a full complete list of figures that are supported by Wardrobe Wizard, see http://www.philc.net/store_WW_Extra_Figs.php.

Before you use Wardrobe Wizard to convert clothing, you may want to consider spending a few minutes reading these instructions. Doing so may explain many questions that you might encounter if you dive in before understanding what each feature does.

Using the Wardrobe Wizard

Choose **Scripts > PhilC > Wardrobe Wizard Menu** then open the Python window to view the Wardrobe Wizard button menu shown below.



Wardrobe Wizard options in the Python Palette.

The commands in this palette are as follows:

- **Convert**: Brings up the Plug in Graphical User Interface (GUI), which is explained in "Converting Clothing" on page 590.
- **Analyze Full Body Morphs**: Before you can add compatible Full Body Morphs to the clothing you must first allow Wardrobe Wizard to analyze the figure. This only needs to be done once, (unless you subsequently change the morphs

in the figure). Requires the figure to be selected in the scene. This process is described in "Analyzing Full Body Morphs" on page 596.

- **Smooth**: Allows smoothing operations to be undertaken on the clothing.
- **Inflate/Deflate**: Allows the clothing to be inflated or deflated.

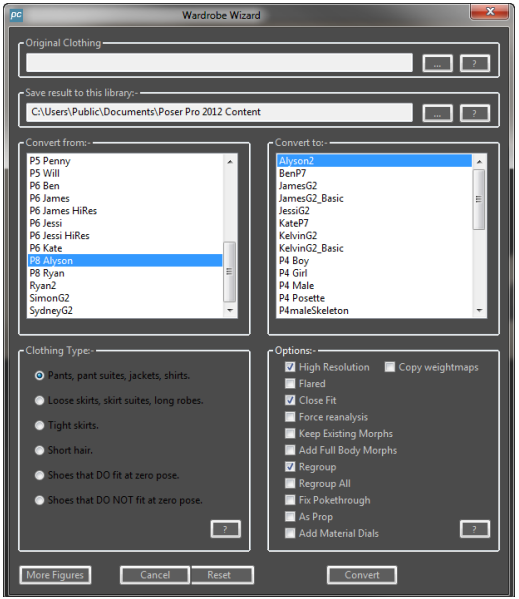


WW Smooth, **WW Smooth More**, *and* **WW Inflate** *full body morphs are automatically included in each clothing conversion. If the* **Add Material Dials** *option is selected, further refinement is provided by being able to smooth and inflate by material. See* "Choosing Additional Converting Options" on page 594 *for more details. The* **Smooth** *and* **Inflate** *menu buttons allow you to perform these tasks on any figure, independently of the conversion process.*

- **Utilities**: Access more utilities, as discussed in "Wardrobe Wizard Utilities" on page 599.
- **Zero Figure**: Zero Pose the figure. This is a convenience utility. Neither the figure nor the clothing needs to be within the scene when performing a conversion.
- **Load**: Load a character into the scene using a standard Windows or Mac file selection dialog rather than using the Poser library.
- **Help**: Brings up the Wardrobe Wizard help file.
- **Version**: Displays Wardrobe Wizard version, figure support and system information.
- **Back**: Reloads the default Python script buttons.

Converting Clothing

You do not need to have any clothing or figures in your Poser scene in order to convert clothing. Simply click the **Convert** button from the main Wardrobe Wizard palette to open the Wardrobe Wizard dialog shown in the following figure.



Converting clothing with the Wardrobe Wizard.

Choosing the Original Clothing

Using the **Original Clothing** section of the GUI select the clothing that you wish to convert. This may be either a single item or an number of items. They can be Poser clothing figures, props or OBJ files, either in their compressed or uncompressed format.



Choosing the original clothing.

Note that clothing figure files should contain only one item of clothing. If you have a multi item CR2 file then load it into Poser and save each item back to the library. You can then batch convert the set. If you have made multiple selections please note that any conversion option selected will be applied to the whole batch. Therefore do not convert pant suits within a batch containing skirts since each requires different settings.



Please note that gloves are not supported by Wardrobe Wizard.

Selecting the Target Library

Use the **Save Result to This Library** selector to choose the Target Folder into which you wish the converted clothing to be saved. For example if you wish the clothing to be saved to the Poser library you would select your Poser library installation folder

If you want to save your converted clothing to a remote Poser library you would select the folder above that library's **Runtime** folder.

Clothing will be saved to a character specific folder.

- The OBJ file will be saved to the **Runtime: Geometries: WardrobeWizard: Figure Name** folder. In this way you can easily reorganize your library if required.



You can move the figure CR2 and PNG files without worrying about editing the path to the OBJ file.

Selecting the Figures to Convert From and To

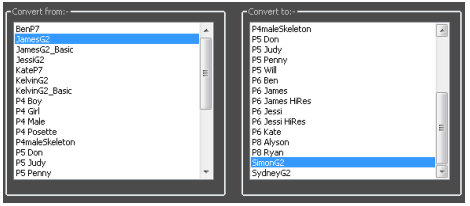
Use the **Convert From** scrollable list to select the figure that the original clothing was made for. All the figures that you have the support files for will be listed here.

Use the **Convert To** scrollable list to select the figure(s) that you wish the clothing to be converted to. All the figures that you have the support files for will be listed here.

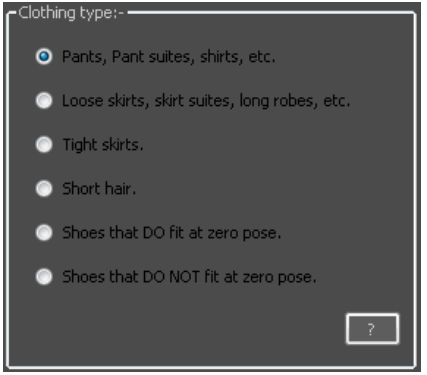


The names of your available figures will be visible in the **Convert to** *and* **Convert from** *lists. These are the "out of the box" versions of those figures. If you have these figures and receive a message that you do not have a supported figure, it may mean that the figure was customized by a third-party vendor. Sometimes when customizing a figure Poser or the user will alter the name of the OBJ file that the figure references. For example this can occur if the Poser* **Face room** *is used. The solution is to either use the out of the box figure or edit your custom figure to reference the original OBJ file.*

Click the **Extra Figure Support** *button at the bottom of the Wardrobe Wizard window to obtain the most recent information on where to obtain add-ons that provide Wardrobe Wizard support for third-party Poser figures.*



Choosing the figure to convert clothing from and to.



Choosing the clothing type.

Choosing the Clothing Type

Select the type of clothing that best describes the clothing being converted.

- **Pants, Pant Suites, Shirts, Etc**:- Choose this category for Pants, Jackets, or any clothing above the hips. Most anything that does not fit any of the other categories listed below will fit this category.
- **Loose Skirts, Skirt Suites, Long Robes, Etc**:- Choose this category for any skirt that tends to fall away from the hips. This also includes robes. This is probably going to be your preferred skirt option, including short skirts.

- **Tight Skirts**: Use this option for any skirt that tends to closely follow the line of the legs. You may want to use this option if the legs of the figure you are converting to are significantly spread apart.
- **Short Hair**: Choose this option for hair that does not extend past the neck.

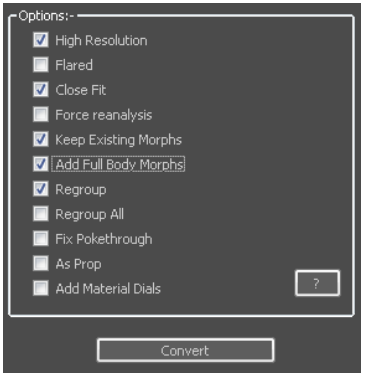


For long hair use **Pants, Pant Suites, Shirts, Etc.**

- **Shoes that DO fit at Zero Pose**: Use this option for any shoe, boot, thigh boot that fits the figure when both the figure and footwear are at their unconformed zero pose.
- **Shoes that DO NOT Fit at Zero Pose**: Choose this option for any shoe, boot, thigh boot that **does not** fit the figure when both the figure and footwear are at their unconformed zero pose. Please note that the more the shoe does not fit, the poorer the quality of the conversion will be. See "Footwear" on page 610 for more details.

Choosing Additional Converting Options

The Options section of the Wardrobe Wizard window contains several other options that you can check or uncheck for clothing conversion. These options are as follows:



Choosing additional conversion options.

- **High Resolution**: Choose from High (checked) or Normal (unchecked) resolution. Normal resolution will convert faster but at the expense of definition.
- **Flared**: Select this option for flared pants or flared sleeves.
- **Close Fit**: Only deselect this option if you are converting particularly baggy clothing.

- **Force Reanalysis**: When an item of clothing is first converted Wardrobe Wizard undertakes an analyses of it. The resulting data file is stored for future use. This greatly speeds up the time of any future conversion. However if for example you converted as a "Loose Skirt" and wish to see if perhaps selecting "Tight Skirt" may be better you would need to select the "Force Reanalyses" check box to ensure that Wardrobe Wizard redid the analyses with the new settings.

- **Keep Existing Morphs**: Wardrobe Wizard has the ability to retain any Full Body Morphs contained in the existing clothing. By selecting this check box you will subsequently be presented with a pop up list of all the available existing morphs and be able to select the ones that you wish to keep.

- **Add Full Body Morphs**: Wardrobe Wizard has the ability to add Full Body Morphs to the clothing to match the Convert To figure. For this you will first have to have Wardrobe Wizard analyze the figure. Also accessed via this checkbox option are the large number of very powerful clothing adjustment morphs. Please see the details in the "Full Body Morph" section above.

- **Regroup**: Generally leave this option selected. Only turn it off if there is some reason to not have Wardrobe Wizard regroup the model. Possibly some custom process that you wish to undertake.

- **Regroup All**: Forces a more aggressive regrouping algorithm, particularly in the torso. Use if the standard regroup option does not give satisfactory results.

- **Fix Pokethrough**: Any cloth that intersects the figure will be repositioned so that it remains above the skins surface. Use with care. This tool is also included in the Wardrobe Wizard Python Script buttons which may be a better time to use it since the converted figure will have been saved to the library at that point. However you will probably find that adjusting the newly created WW_Looseness morph in the clothing's BODY will give better results and be more controllable. FixPokeThru works with clothing intersecting the figure. It is not designed to work with clothing intersecting clothing.

- **As Prop**: Delivers the converted clothing as a Poser Prop rather than a conforming figure. You would use this if you wish to use the converted clothing as dynamic clothing in the Poser Cloth room.

- **Add Material Dials**: Provides the option to allow Wardrobe Wizard to create a set of full body morphs that result in smoothing or inflation by selected material. Very powerful, very useful, very easy to use. By way of a bonus if you select this option you get an extra "Shrink to fit dial". If you haven't read these instructions you will probable not realize that it is there.

- **Copy Weightmaps:** Provides the option to copy weight maps from the convert to figure into the converted clothing. Wardrobe Wizard will convert and save the clothing as normal then load the clothing and figure into the scene to facilitate the weight map copying process. Since the figure will probably be located in a remote library the user will be prompted to browse for its file. Upon completion the user will have the option to save the weight mapped clothing to a figure folder of their choice.

Once you have made your selections click the **Convert** button. Depending on your selections you may get supplementary pop up windows asking you to select such things as which morphs to keep etc. The progress will be displayed in the Poser Python output window.

Finding Your Converted Clothing

Upon completion open Poser and navigate to the designated library. Your converted figures will be in folders bearing the suffix “WW” followed by the name of the figure that they were converted to. The name of the clothing will be the same as the name of the original item, as will the thumbnail if one was available for the original.

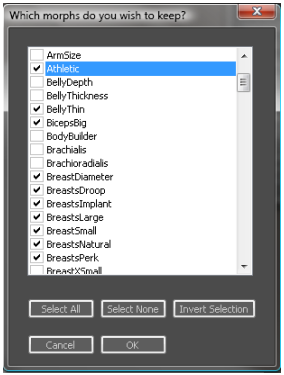
Analyzing Full Body Morphs

Wardrobe Wizard has the ability to automatically create full body morphs in the clothing to match those contained in the figure that you wish to convert to. In this way if you have a figure that has been customized using full body morphs you can use Wardrobe Wizard to build compatible morphs into the clothing. Before this can happen you will first need to have Wardrobe Wizard analyze that figure. If you have the Plug in GUI open as shown above click the “Cancel” button then proceed as below.

1. With the desired figure selected in the Poser scene, click the **Analyze Full Body Morphs** button.



Analyzing Full Body Morphs.



Select the full body morphs that you want to analyze.

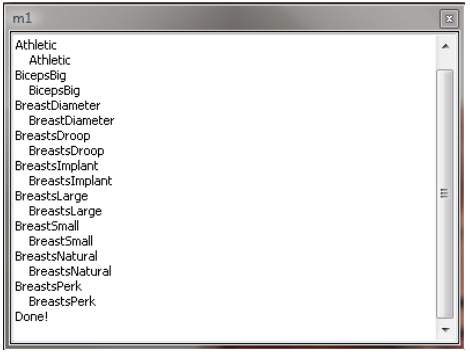
2. A dialog opens, and prompts you to select the morphs that you want to include in your clothing.

- Scroll through the list and check the options that you want to add into your clothing.
- If you want to include all of the figure's morphs in your clothing, click the **Select All** button.
- Click **Select None** to deselect all of the selections you have made.
- Click **Invert Selection** to switch the selected morphs to unselected, and vice versa.

- Click **Cancel** to exit the dialog without analyzing your selections.

3. Click **OK** to apply your selections. Wardrobe Wizard displays another dialog with a summary of the morphs that you selected.

4. Click **OK** again to perform the conversion. Wardrobe Wizard displays the progress as the morphs are being analyzed. When the process is complete, the dialog displays **Done!** at the end.



Wardrobe Wizard displays a dialog when the analysis is complete.



You only need to do this once for each figure that you wish to have Full Body Morphs added for. The data is stored as a MOR file for future use. You would only need to reanalyze the figure if you add/change the morphs in the figure. See additional tools below for dealing with characters with non-standard body morphs etc.

Refining the Full Body Morphs in Your Clothing

In addition to the Full Body Morphs that you have transferred from your figure to the clothing, Wardrobe Wizard also includes a large number of very powerful yet simple to use clothing adjustment Full Body Morphs. You will find these dials in the BODY section of your converted clothing, and listed under the heading **WW Adjustment Morphs**.

A number of other WW Adjustment morphs may be included when you make your selection from the pop up morph list during the conversion process. It is strongly suggested that you try them out. They provide a great deal of versatility in the converted clothing. To access these powerful morphs simply select the “Add Body Morphs” (plug-in:- “Add FBM’s”) and “Add Material Dials” checkboxes.

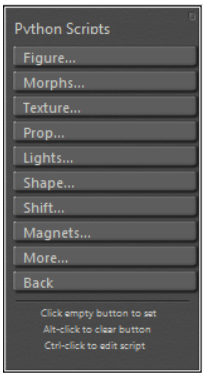
The following morphs are built into the clothing automatically by Wardrobe Wizard:

- **Smooth**: This will provide a dial in the clothing's BODY to enable small wrinkles to be ironed out.
- **Smooth More**: Similar to WW Smooth but applies to the edges of the clothing.
- **Inflate**: Easily adjust how tight/loose the clothing fits the figure. If you find a small area of the underlying figure poking through turn the WW Looseness dial a little. It is suggested that you initially try this rather than the "Pokethru" option.
- **Shift**: Translate the BODY or body parts. Use "Save Changes to Geometry" to make the adjustment permanent.
- **Cleavage**: This adjust the area of the clothing in between and below the breasts. It was noticed that when clothing made for a well endowed figure was converted to a figure of more petite proportions there would be some clothing "left over" that tended to sag. (Much the same as in real life). The WW Cleavage dial allows you to easily take in the slack.
- **Under Breast Smooth**: Sometimes required to provide additional smoothing to loose fitting ladies shirts.

Wardrobe Wizard Utilities

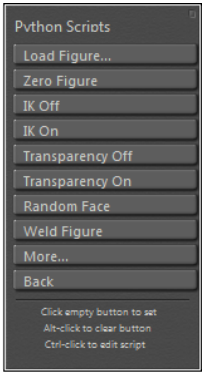
Clicking the **Utilities** button in the main Wardrobe Wizard script palette brings access to a number of utilities subdivided by function. These utilities are not key to converting clothing but are included as additional features that may prove useful.

The various utilities that are available appear in the menu shown below. These utilities are described in the sections that follow.



Other Wardrobe Wizard Utilities.

Figure Utilities



Wardrobe Wizard Figure Utilities.

Figure Utilities Menu 1

- **Load Figure**: Opens a dialog that allows you to navigate to a character library folder on your hard drive, and select a character file.
- **Zero Figure**: Select a figure and then click this button to set all joint rotations to zero, and scales to 100%.



We recommend that you turn IK off before using the Zero Figure option.

- **IK Off**: Select a figure and click this button to turn Inverse Kinematics off.
- **IK On**: Select a figure and click this button to turn Inverse Kinematics on. IK is applied to hands and feet with this option.
- **Transparency Off**: Turns transparency off. Only works in older versions of Poser.
- **Transparency On**: Turns transparency on. Only works in older versions of Poser.
- **Weld Figure**: Click this button to create a welded copy of the selected figure. The copy appears in the Select Actor menu and is named **new**.
- **More...**: Click to display Figure Utilities Menu 2.
- **Back**: Goes back to the previous menu.

Figure Utilities Menu 2

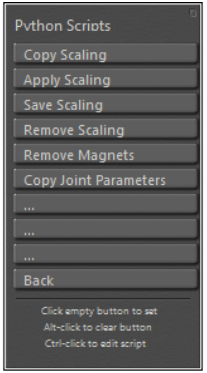


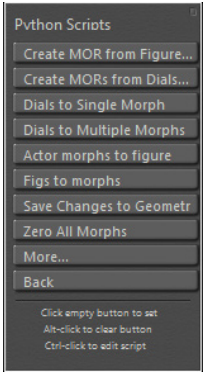
Figure Utilities (part 2).

- **Copy Scaling**: Copies scaling parameters into the clipboard.
- **Apply Scaling**: Applies copied settings to the currently selected figure.
- **Save Scaling**: After you copy scaling settings to the clipboard, saves the scripts to your hard drive. The script is found in your Poser installation folder as **Runtime \Python \poserScripts \PhilC \Wardrobe Wizard P10 \Scale.py**.
- **Remove Scaling**: Removes scaling settings from the figure that you click.
- **Remove Magnets**: Removes magnets from the figure that you click.
- **Copy Joint Parameters**: With two (or more) figures in the scene, allows you to copy joint parameters from one figure and apply them to another.
- **Back**: Goes back to the previous menu.

Morphs Utilities

Morph Utilities Menu 1

Clicking the **Utilities > Morph** buttons brings up these buttons.



Wardrobe Wizard Morph utilities.

- **Create MOR from Figure**: This will analyze the current character settings and create a morph analysis files (MOR file.) This eases converting clothing from custom figures that are 'dialed' from existing morphs; turns it into a 1-click conversion.
- **Create MORs from Dials**: This will analyze all the dials of the current character and create multiple morph analysis files (MOR files.) This is the same thing as the existing 'Analyze full body morphs' button, which creates a morph analysis for every clothing dial. It is intended to be used with figures such as V4, V41 and Apollo etc each of which contain some fancy string pulling in their figure CR2 files that result in non-standard Full Body Morph dials that Wardrobe Wizard can not recognize.
- **Dials to Single Morph**: This will convert all current character settings to a single Full Body Morph dial on the character. This is a powerful feature that will take the existing dials and magnets on the figure, and turn it into a single Full Body Morph dial on the BODY of the figure. Let's say you have a character that is based on V3 morphs, and requires 15 morphs to be injected and set. This button will let you turn them all into a single 'new' morph, that doesn't require the dials to be set, or even injected, any more.
- **Dials to Multiple Morphs**: This will convert all dials on the current character to multiple normal morphs on the character. This is similar to 'Dials to Single Morph' above, but creates multiple morphs, one per dial. The new morphs don't require the old dials to be set, or even injected, any more.
- **Actor Morphs to Figure**: This will transfer selected actor morphs to the body. This is useful to bring up hair morphs or chest morphs etc to the BODY level, where Wardrobe Wizard can analyze them.

- **Figs to Morphs**: Provides a method of creating a full body morph from a morphed version of the figure. The steps are:
  - Load the base figure and use the zero figure button.
  - Load the reshaped figure. (See **Save Changes to Geometry** below)
  - With the base figure selected click the Figs to morphs button. This will use the reshaped figure as a morph target and build a full body morph into the base figure.
  - Delete the reshaped figure.
  - Save the base figure to the library.
- **Save Changes to Geometry**: "Fixes" the figure's geometry to whatever is currently displayed in the scene. When the figure is saved back to the library this new geometry is saved as a new OBJ file. It is very possible that the joint parameters will not work well. Its purpose is to:
  - Provide a figure to be used as a morph target in "Figs to morphs" above.
  - Enable clothing that does not fit the figure at zero pose to be made to fit and hence produce a good conversion. See the "anything else" shoe example below.
- **Zero All Morphs**: Sets all morph dial values to zero.
- **More...:** Displays Morph Utilities Menu 2, described next.
- **Back**: Goes back to the previous menu.

Morph Utilities Menu 2

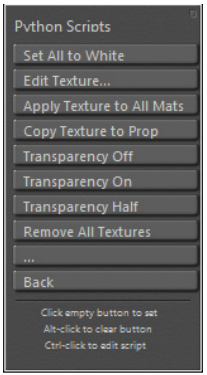


Morph Utilties (part 2).

- **Set All Morphs:** Sets all the morphs present in the figure to a value of 1.000 Intended as a quick way of setting all morphs recently created in a blank figure using magnets in preparation for using the Poser menu Figure/Create full body morph. Anything else and it just has novelty value.
- **Zero All Scaling:** Just what the button says.

- **Back**: Goes back to the previous menu.

Texture Utilities



Wardrobe Wizard Texture Utilities.

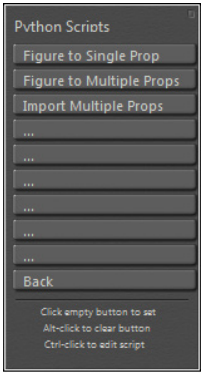
- **Set All to White**: Click this button to change all Diffuse Color settings to white. Links to texture maps remain connected to the root node.
- **Edit Texture**: Click this option to display a menu of texture maps that apply to the current figure. When you then select a texture map, the texture opens in the default program that your system uses for editing bitmaps (such as Photoshop or another image editor).
- **Apply Texture to All Mats**: Click this button to display a menu of texture maps that are applied to the current figure. When you then select one of the texture maps, it is applied to **all** materials in the current figure.



This option is not undoable, and is not recommended for content that uses multiple texture maps (such as figures that use separate head, body, teeth, and eyelash texture maps).

- **Copy Texture to Prop**: Allows you to copy material settings from one prop to another. They must both have the same material names.
- **Transparency Off**: Sets transparency to 0%.
- **Transparency On**: Sets transparency to 100%.
- **Transparency Half**: Sets transparency to 50%.
- **Remove All Textures**: Removes textures from the item that you click.
- **Back**: Goes back to the previous menu.

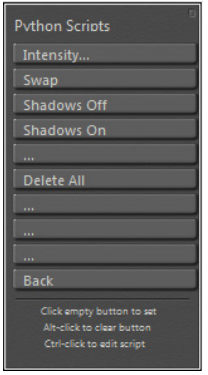
Prop Utilities



Wardrobe Wizard Prop Utilities.

- **Figure to Single Prop**: Converts the figure that you click into a single prop.
- **Figure to Multiple Props**: Converts the figure that you click into multiple props, and saves them to the Runtime \Python \poserScripts \PhilC \Wardrobe Wizard P10 \temp folder.
- **Import Multiple Props**: Allows you to import multiple props (for example, the individual props saved with the Figure to Multiple Props script mentioned above.
- **Back**: Goes back to the previous menu.

Lights Utilities



Wardrobe Wizard Light Utilities.

- **Intensity**: Provides several different options for increasing or decreasing the Red, Green, Blue, or all channels of a light.

- **Swap**: Flips the orientation of the lights so that right lights are moved to the left side, and left lights are moved to the right side of the scene.
- **Shadows Off**: Turns shadows off on all lights.
- **Shadows On**: Turns shadows on for all lights.
- **Delete All**: Deletes all lights in the scene.
- **Back**: Goes back to the previous menu.

Shape Utilities

Clicking on the **Utilities > Shape** buttons brings up the Shape buttons. They allow you to change the shape of the geometry. Once you have the shape you like save the figure to the library to make the shape permanent.

The tools are primarily used to fine tune the shape of skirts but may be used on other body parts also.



These utilities do not create a morph you actually change the geometry that gets saved to the OBJ file.

Now for those who really want to "get into it", here is an explanation of how these buttons work and how they can be customized. The list of formulas is in the data folder under 'formulas.txt.' Each line is a single formula consisting of the name, the direction to apply the adjustment in, the adjustment amount, and a set of numbers that control how the formula is applied.

That set of numbers is most similar to a 'convolution kernel.'

Examples:

- **0 0** Don't apply any adjustment.
- **1 1** All verts top to bottom get the adjustment equally.
- **1 0** Top half of the actor gets 100% of the adjustment, bottom half gets no adjustment.
- **1 0 0** Top THIRD of the actor gets 100% of the adjustment, bottom half gets no adjustment.
- **0 0 1** Top two thirds gets no adjustment, bottom third gets all the adjustment.

The 'number' of numbers on the line control how many sections to divide the actor into. Two numbers divides the actor into 2 parts top to bottom, 3 numbers divides it into 3 parts, 10 numbers divides it into 10 parts, etc.

The 'value' of the adjustment is the relative weight to give it.

Example:

```
pear xz .1 0 1 2 3 3 3 3 3 3 3 3 3 3 3
```

This says:

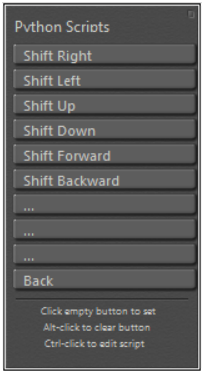
- Move in the xz direction only, which doesn't affect the length. .1 is the amount to move.
- There are 15 numbers following, that means divide the skirt up into 15 sections.
- The highest number is a 3 - that means all entries with 3 get 100% of the adjustment, entries of 2 gets 2/3 of the adjustment, entries of 1 gets 1/3 of the adjustment, entries of 0 get none of the adjustment.
- The first number is a zero - that means the top 1/15 gets no adjustment.
- The second number is a one - that means the next section gets 1/3 of the adjustment.
- The second number is a two - that means the next section down gets 2/3 of the adjustment.
- The following numbers are all 3's - that means the remainder of the actor gets 100% of the adjustment.

There are three Shape Utility menus, with various shapes named as follows. We suggest experimenting with these shapes to learn how you can combine them to achieve the shapes you need:

- Menu 1: Includes Undo, Flare, FlareFront, Taper, TaperFront, InflateThighX, InflateThighZ, and Inflate. Choose More to proceed to the second menu, and Back to return to the previous menu.
- Menu 2: Includes Undo, InflateXZ, InflateX, InflateZ, Pear, Hilo, Puff1, and Puff2. Choose More to proceed to the third menu, and Back to return to the first menu.
- Menu 3: Includes Undo, Puff3, Puff4, and Back (which returns to Menu 2).

Shift Utilities

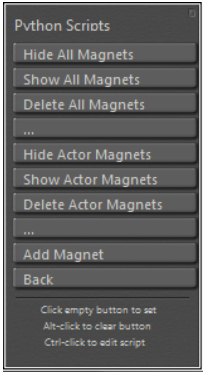
These buttons move the geometry in Poser's memory as opposed to translating the model in 3D space. Redundant in Wardrobe Wizard but retained here "just in case".



Wardrobe Wizard Shift utilities.

- **Shift Right**: Shifts selected geometry to the right.
- **Shift Left**: Shifts selected geometry to the left.
- **Shift Up**: Shifts selected geometry upward.
- **Shift Down**: Shifts selected geometry downward.
- **Shift Forward**: Shifts selected geometry forward.
- **Shift Backward**: Shifts selected geometry backward.
- **Back**: Goes back to the previous menu.

Magnets Utilities

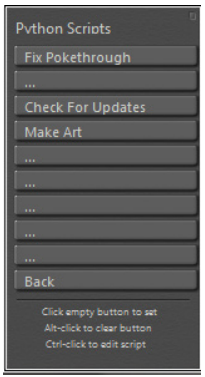


Wardrobe Wizard Magnet utilities.

- **Hide All Magnets**: Hides all magnets in the scene.
- **Show All Magnets**: Shows all magnets in the scene.

- **Delete All Magnets**: Deletes all magnets in the scene.
- **Hide Actor Magnets**: Hides all magnets on the currently selected actor.
- **Show Actor Magnets**: Shows all magnets on the currently selected actor.
- **Delete Actor Magnets**: Deletes all magnets on the currently selected actor.
- **Add Magnet**: Adds a magnet to the scene.
- **Back**: Goes back to the previous menu.

More Utilities



Additional Wardrobe Wizard utilities.

- **Fix Pokethrough**: If a section of clothing is intersecting the figure this button will move it to just above the surface of the skin. Use with care since some clothing models intentionally have polygons that intersect the skin. You may be better served by adjusting the “WW Inflate“ full body morph that automatically gets included in each clothing conversion. FixPokethru works with clothing intersecting the figure. It is not designed to work with clothing intersecting clothing

- **Check For Updates**: Opens your browser to a web page that provides information on obtaining the most recent updates for Wardrobe Wizard.
- **Make Art**: Provides a tongue in cheek solution to the often asked question of how Poser may be used to create art.
- **Back**: Goes back to the previous menu.

Footwear

Shoes

Original footwear correctly aligns to and covers the original figure when both the figure and the footwear are at the zero pose. This is achieved without the need to conform the footwear to the figure.

The over riding factor is that the footwear fits the figure, not the style of the heel.



Converting flat footwear.

Hi Heels

The original footwear only fits the figure providing that some bending or morphing of the figure or footwear is undertaken. And/or the feet must be set invisible.

The majority of Poser high heel styled shoes fall into this category.



Converting footwear with heels.

Other Types of Shoes

Models that have to be “shoe horned” into fitting the zero posed figure.

Note that some high heeled shoes are correctly modeled to fit the figure when at the zero pose. These then take up their high heel shape when the foot is bent. For these use the “Shoe” type of conversion. Try Shoe type first.

The above two methods are going to cover the majority of shoes but for those that fall through the cracks try this.

1. By hook or by crook get the shoe to fit the zero posed figure.
2. Use the Wardrobe Wizard Poser Python buttons Utilities > Morphs > Save Changes to Geometry.
3. Save the shoes back to the Poser figure library with a new name so as to not over write the originals.
4. Convert using the newly created Footwear using the “Shoe” type but if that does not work try the Hi Heel type.



Converting other types of shoes.

Common Questions (and Answers)

Q: Where can I get additional support for Wardrobe Wizard?

A: We suggest the following:

- For online information, video tutorials, etc. see http://www.philc.net/WardrobeWizard.php.
- To ask questions in the Wardrobe Wizard forum go to http://www.philc.net/forum/ (requires creating a free user account).

Q: Wardrobe Wizard starts to analyze the clothing but then says that it can not find the OBJ file.

A: Wardrobe Wizard can find paths in the CR2 file when the "figureResFile" is given in either of these two these formats:-

Relative Path

```
    Runtime:Geometries:Folder:SubFolder:filename.obj
    Runtime:libraries:character:Folder:SubFolder:filename.
obj
```

Absolute Path

```
    C:\Documents and Settings:Administrator:My
Documents:My Poser Files:Runtime:Geometries:Folder:SubFol
der:filename.obj
```

Open the CR2 file in a text editor to find the figureResFile line. It is usually within the first ten lines of the file.

Either will work but if the path is relative check to ensure that the CR2 file is within that same Runtime. If the path is absolute check that the file is actually where it is supposed to be.

Q: The conversion went well, but there is one small section that needs some extra adjustment. Using the Wardrobe Wizard smoothing or inflation morphs affects too great an area.

A: Use the Poser Morphing Tool to fine tune as required. This is a very useful tool that will allow you to smooth, push or pull small areas as required. Suggest setting the Magnitude to a very low value to allow fine control. For information about the Morphing tool, see "Creating Morphs with the Morphing Tool" on page 642.

Part 7: Content Creation Tools

Chapter 30: Modifying Figures & Props

This chapter explains how to create completely custom looks for your figures and props. For example, human bodies come in all shapes and sizes. You can modify proportions using various tools to achieve interesting effects.



A figure's head reshaped by a magnet.

Poser includes a wide variety of tools for figure/prop shaping. Here are some tips, tricks, and important things to keep in mind when editing figures and/or props:

- All Poser figures come with morph targets and full body morphs, allowing you to reshape one or more body parts. You can find more information about creating morphs in "Creating Morphs with the Morphing Tool" on page 642 and "Creating Morphs in Other Applications" on page 660.
- You can use the **Grouping** tool (see "The Group Editor" on page 681 to create cloth, hair, or other groups. You can also deform polygon groups as mentioned in "Using Deformers with Grouped Objects" on page 642. The **Grouping** tool is located in the **Editing** tools display.
- The **Scale** and **Taper** tools (see "Scale" on page 187 and "Taper" on page 188, respectively) can change a body or element's shape. The **Scale** and **Taper** tools are located in the **Editing** tools display.
- Deformers (magnets, force fields, and waves) can also alter shapes.
- You can replace body parts with props (see "Replacing a Body Part with a Prop" on page 228).
- You can save your work to the **Library** palette.

- You can modify entire figures or individual body parts. For example, enlarging the abdomen can create a beer belly. Widening the head broadens the face. Shaping figures is easiest when the figure is in its default pose where you can clearly see the results of each of your actions.
- You may want to hide the other figures and props in your scene for an uncluttered view.
- As you finish shaping and posing each body part, you can lock it as described in "Lock Object" on page 211. And, once you've posed your figure, you can guard against accidental changes by locking the entire figure as described in "Lock Figure" on page 215.
- Symmetry can be a huge time saver, allowing you to pose half your figure and apply the pose to the other side. Please refer to "Symmetry" on page 216 for information about using Symmetry. Also, try using cutting and pasting to apply poses across multiple figures.
- If your computer can support it, we recommend enabling **Full Tracking** mode (see "Tracking Mode" on page 93) so you can view your work in real time. This does require extra computing resources, which can affect performance depending on your computer's specifications and the complexity of your scene.

Using Deformers

Poser's deformers (magnets, force fields, waves, morphs) shape body parts, props, and figures into new and interesting forms. You can stretch a nose, make a belly bounce with a walk, make hair and clothing blow in the wind, and create almost any body shape you can imagine. You can animate deformer settings and positions, allowing you to create (for example) gusting winds (force field), bulging muscles (morph targets), etc. The Wave, Force Field, and Magnet deformers can also create custom morph targets.



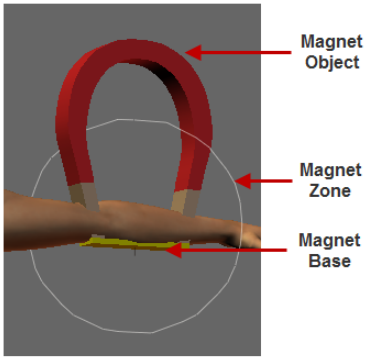
Deformers can be linked to joint rotations or other parameters using the Dependent Parameters Editor. Refer to "Using Dependent Parameters" on page 666 *for more information..*

Magnets

Magnets distort objects by stretching them. You can use the **Rotate**, **Twist**, **Translate**, and **Scale** tools on magnets. Please see "The Editing Tools" on page 184 for information on using the **Editing** tools. Here's an example of a sphere deformed by a magnet:



When the magnet is translated and scaled, the head is reshaped accordingly.



Parts of a magnet.

Creating Magnet Deformers

To create a magnet, select the object you wish to deform then select **Object > Create Magnet**. This creates three Magnet objects, which together comprise the deformer.

The three parts are:

- **Magnet Object**: The Magnet Object defines the behavior of the actual magnet.
- **Magnet Base**: The Magnet Base defines the zero point of the area to be deformed. Moving the Magnet Base moves the Magnet Object as well.

- **Magnet Zone**: The Magnet Zone defines the area being deformed. You can move and shape the Magnet Zone to suit your needs.

Magnets work by deforming the area within the Magnet Zone along the axis defined by the Magnet Base and Magnet Object in an amount dependent on the distance between the Magnet Object and the Magnet Base.

Using Editing Tools with Magnet Objects

To use **Editing** tools on a Magnet Object, select the magnet in the **Current Actor** pull-down menu, then select your desired **Editing** tool.

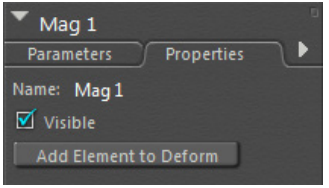
- **Rotate**: The **Rotate** tool rotates the Magnet Object around its three axes.
- **Twist**: The **Twist** tool rotates the Magnet Object along its own axis.
- **Translate/Pull**: The **Translate/Pull** tool moves the Magnet Object horizontally or vertically.
- **Translate In/Out**: The **Translate In/Out** tool moves the Magnet Object in or out from the center of the Poser workspace.
- **Scale**: The **Scale** tool increases or decreases the size of the Magnet Object.

Magnet Deformer Properties

Magnet Objects, Magnet Bases, and Magnet Zones have properties that you can edit using the **Properties** palette.

Magnet Object Properties

Magnet Objects have the following properties:



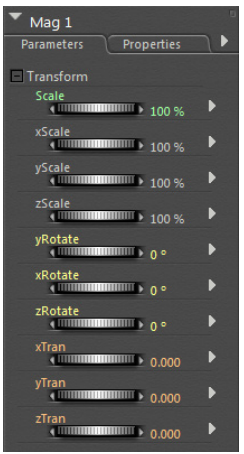
Magnet properties.

- **Name**: The **Name** property allows you to rename the **Magnet Object** by entering your desired name in this field.
- **Visible**: The **Visible** checkbox toggles visibility on and off. Checking the box makes the object visible, and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 for information on animating the **Visible** property.

- **Add element to deform**: Checking the **Add element to deform** button opens a hierarchy list, allowing you to select added elements to be deformed by the Magnet. This only works if the selected element(s) are within the Magnet Zone.

Magnet Object Parameters

Magnet Objects have the following parameter dials in the **Parameters** palette:

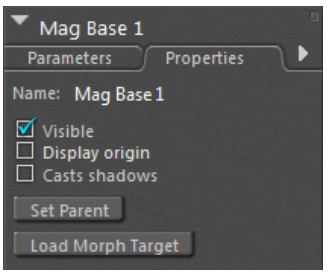


Magnet parameters.

- **Scale**: The **Scale** parameter dial increases or decreases the size of the **Magnet Object** in all axes.
- **XYZScale**: The **xScale**, **yScale**, and **zScale** parameter dials increase or decrease the size of the **Magnet Object** in the selected axis.
- **XYZRotate**: The **xRotate**, **yRotate**, and **zRotate** parameter dials rotate the **Magnet Object** around the selected axis.
- **XYZTran**: The **xTran**, **yTran**, and **zTran** parameter dials move the **Magnet Object** along the selected axis.

Magnet Base Properties

Magnet Bases have the following properties:



Magnet Base properties.

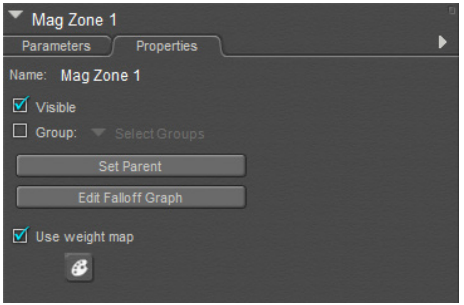
- **Name**: The **Name** property allows you to rename the Magnet Base by entering your desired name in this field.
- **Visible**: The **Visible** checkbox toggles visibility on and off. Checking the box makes the object visible, and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 for information on animating the **Visible** property.
- **Display Origin**: The **Display Origin** checkbox displays **the Magnet Base's axes**. This is useful because translations, rotations, etc. occur based on the Magnet Base's axes, not the Poser workspace's. See the "Chapter 31: Figure and Prop Editors" on page 681 for a discussion about local vs. global coordinates.
- **Casts Shadows**: Checking the **Casts Shadows** checkbox forces the selected body part to cast a shadow, which will be visible in your scene. Clearing this box means the selected body part casts no shadow.
- **Set Parent**: Clicking the **Set Parent** button allows you to make the Magnet Base a child of another element in your scene. Please refer to "Poser File Types" on page 848 for a description of hierarchical relationships and to "Changing a Parent" on page 231 for information on setting parents.
- **Load Morph Target**: Clicking the **Load Morph Target** button displays the **Load Morph Target** dialog, allowing you to load a custom morph target for the selected force field (which is then editable using the **Morphing Tool** as described in "Creating Morphs with the Morphing Tool" on page 642).

Magnet Zone Properties

Magnet Zones have the following properties:



Setting the Magnet Zone's display style to Wireframe can help make it more visible in your Document window.



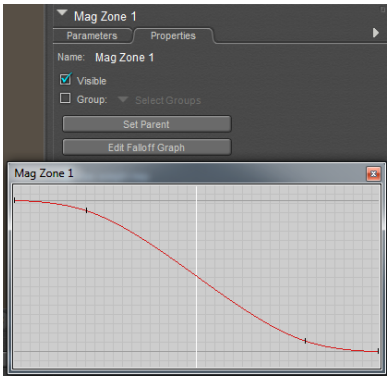
Magnet Zone properties.

- **Name**: The **Name** property allows you to rename the Magnet Zone by entering your desired name in this field.
- **Visible**: The **Visibility** checkbox toggles visibility on and off. Checking the box makes the object visible, and vice versa.
- **Group**: Checking the **Group** checkbox enables grouping, allowing you to deform a grouped portion of the selected element(s). You can create groups to deform, and groups can consist of portions of one or more body parts, props, etc. Please see "The Group Editor" on page 681 for information on using the **Grouping** tool. A group is selected when a checkbox appears next to the group listing.
- **Set Parent**: Clicking the **Set Parent** button allows you to make the Magnet Zone a child of another element in your scene. Please refer to "Poser File Types" on page 848 for a description of hierarchical relationships and to "Changing a Parent" on page 231 for information on setting parents.
- **Edit Falloff Graph**: Clicking the **Edit Falloff Graph** button allows you to edit the Magnet Zone's **Falloff** graph, which determines where the deforming area ends or falls off. Please see "Magnet Zone Falloff Graph" on page 620 for information on using this graph.
- **Use Weight Map:** Check this option to use a weight map to control the amount that the vertices are affected. Click the Paintbrush icon to open the Vertex Weights palette so that you can edit the magnet zone weight map. Vertices in the weight map are initially set to 100% strength. The controls in the Vertex Weights palette are described in "Painting Vertex Weights" on page 583.

Magnet Zone Falloff Graph

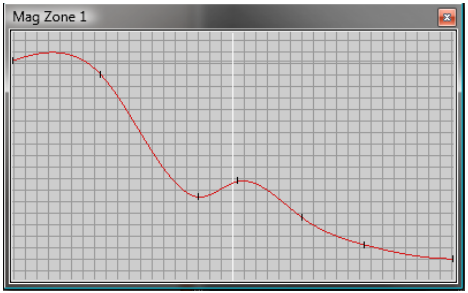
Selecting **Edit Falloff Graph** in the Magnet Zone **Properties** palette opens the **Magnet Zone Falloff** window.

The left side of this graph depicts the center of the Magnet Zone, and the right side is its edge. By default, a smooth curve appears, meaning that the magnet's influence gradually tapers off towards the edges of its zone. By adjusting this curve, you can alter the falloff properties.



The effects of a magnet zone can be shaped with a graph.

To move control points click and drag them up and down. Raising a control point increases the magnet zone's influence at the location. To add control points, click any spot along the curve. You cannot remove added control points.



A reshaped graph for the magnet zone.

Locking Magnets

You can lock magnets to prevent accidental changes. Please refer to "Lock Object" on page 211.

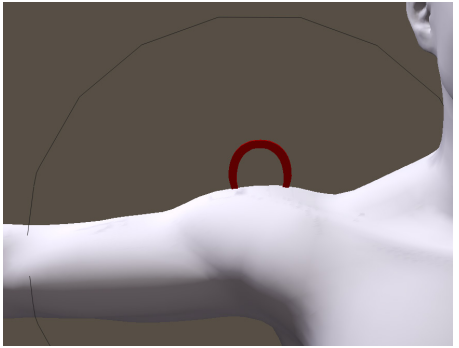
Using Magnets with Weight Maps

Poser Pro 2014 provides features that allow you to paint weight maps on magnets. This feature allows users of Poser Pro 2014 to define the areas that the magnet will affect with greater precision and flexibility than that offered with the graph editor.

Magnets are hidden by default in the Rex and Roxie CR2's.

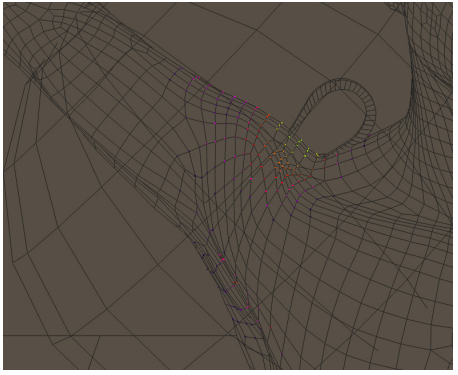
Weight mapped magnets can be used to improve bending when a joint, such as a shoulder, is raised or lowered. The falloff zone for the magnet can affect as few or as many vertices in the geometry as you choose, and you can control the strength at which the vertices are affected. This approach gives you more precise and specific results over using the graph editor that is discussed in "Magnet Zone Falloff Graph" on page 620.

The following figures demonstrate how a weight-mapped magnet works. In this example, a magnet has been added to Rex's right shoulder to control the shape of the shoulder when it is rotated upward.



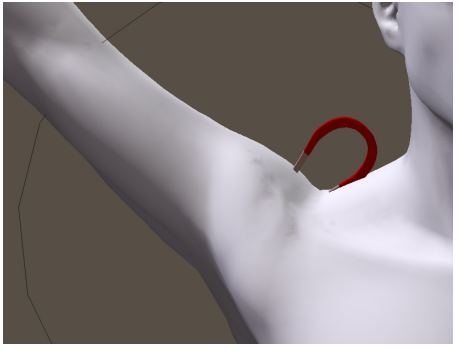
Magnet added to right shoulder.

After adding the magnet, the magnet zone is set up to use weight maps. The Poser Pro 2014 weight painting tools are used to paint specific vertices that the magnet will affect, and the strength at which they will be affected. The following figure, showing the body part in Hidden Line display mode, shows an example of the vertices that are painted on the upper and lower sections of the shoulder.



Weight map for the magnet.

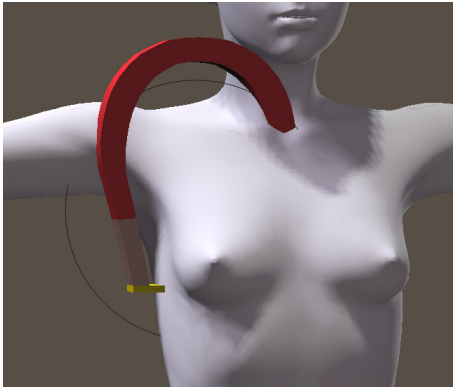
If the joint is rotated while painting the weight map, it helps the designer determine how the changes affect the body part as the joint is exercised. The following figure shows the shoulder rotated to the same angle as the previous Hidden Line view.



Effect of magnet when shoulder is rotated upward.

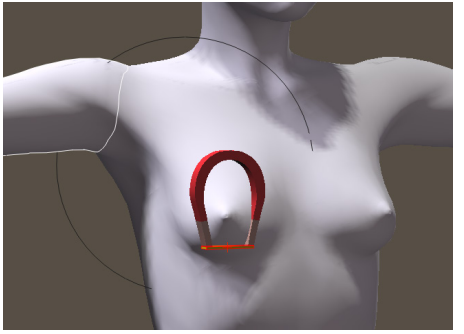
Adding Weight Maps to Magnets

Select the right collar, and choose **Object > Create Magnet**.

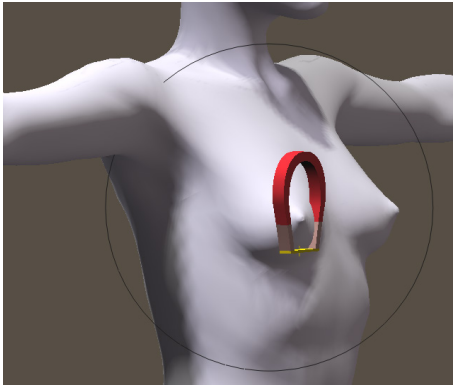


Create a magnet for the right collar.

Choose the magnet base and move it into position.

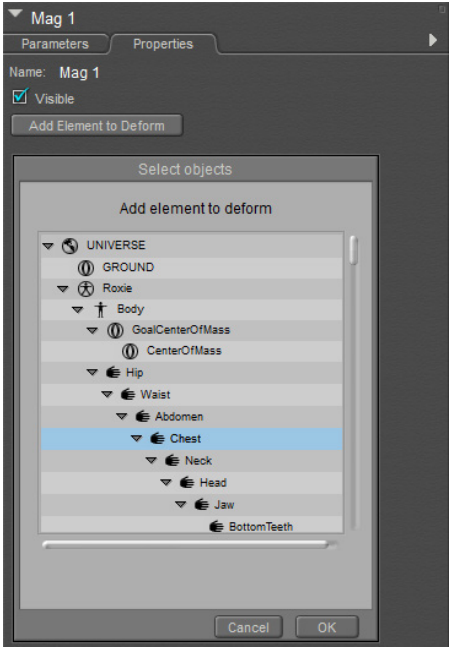


Scale and move the magnet base into position beneath the breast.



Scale the magnet zone up and move it into position.

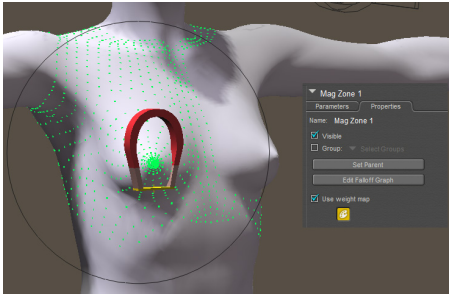
Select the magnet, and switch to the Properties Palette. Click the Add Element to Deform button, and then add the Chest as an element to deform.



Select the magnet and add the Chest as an additional element to deform.

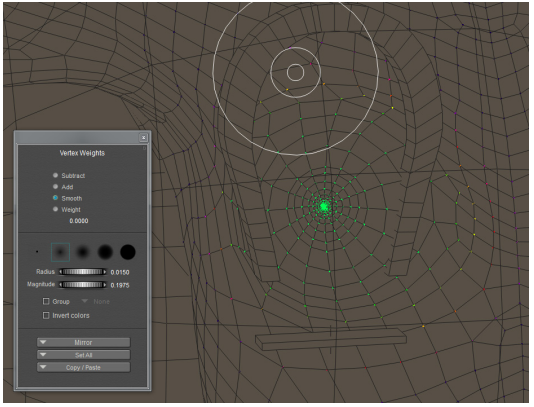
If you later need to exclude groups that you have added to a magnet, elect the magnet zone and switch to the Properties tab. The Group option allows you to check groups that will be affected by the magnet zone. Any unchecked group will not be affected. Choose a group once to place a checkmark, and a second time to remove an existing checkmark. For more information about magnet zone properties, see "Magnet Zone Properties" on page 619.

Next, select the magnet zone and check the Use Weight Map option in the Properties palette. Then click the Paintbrush icon to open the weight painting palette. Initially, all of the vertices on the right collar and the chest will display in green, indicating that the weight map values are all at full strength.

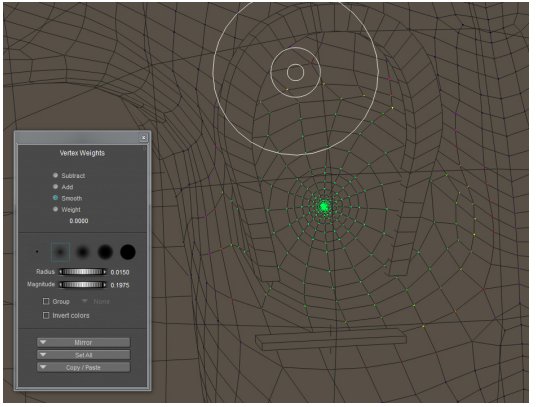


Enable the weight painting options for the magnet zone.

Use the Subtract brush to paint out the areas that you don't want the magnet to affect. This allows you to define the affected area with great precision. It is helpful to view the figure in Hidden Line display mode while you paint the vertices. Also be sure to move the magnet across the range of motion that you want the magnet to affect. In other words, if you want the magnet to raise the breast, translate the magnet on the Y axis. You may find that some areas will need to be smoothed to create a nice blend between the affected and unaffected vertices.

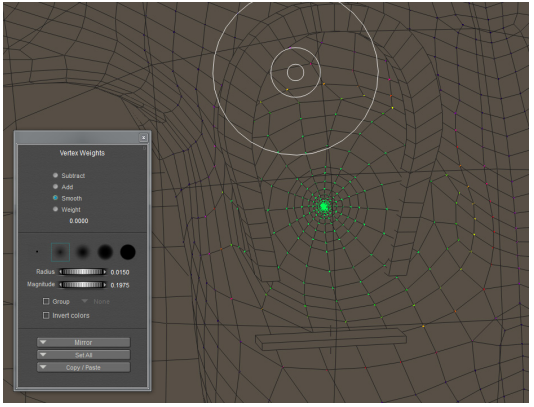


Paint and smooth the weight map to affect the areas that you want the magnet to affect.



The breast adjusted with the weight-mapped magnet.

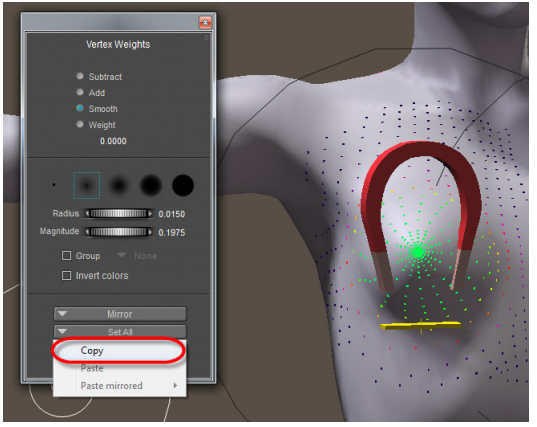
Now select the left collar, and create a new magnet. Position and scale the magnet base and magnet zone using the same values as the right breast (except for the X translations, which should be negative values on the right breast and positive values on the left breast).



Create a magnet for the left collar, scaling and positioning them the same as the right collar (except X translation settings are positive).

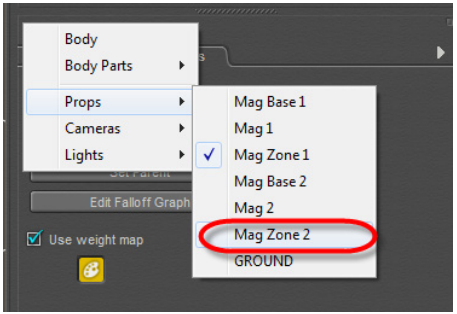
Select the new magnet and add the Chest as an element to deform, just as you did for the right collar magnet.

Now select the magnet zone for the right collar (the first one you created). In the Properties palette, click the Paintbrush icon to open the Vertex Weights palette. Click the Copy/Paste button at the bottom of the palette, and choose Copy to copy the weight map into your clipboard.



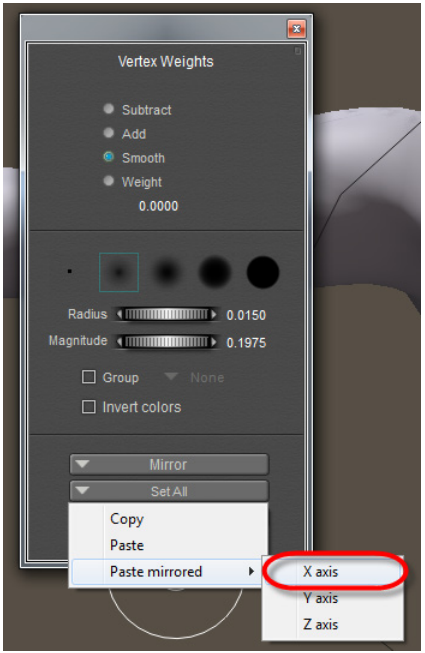
Copy the weight map from the right collar into your clipboard.

Use the Select Actor menu in the Properties Palette to select Magnet Zone 2 (the zone for the left collar).

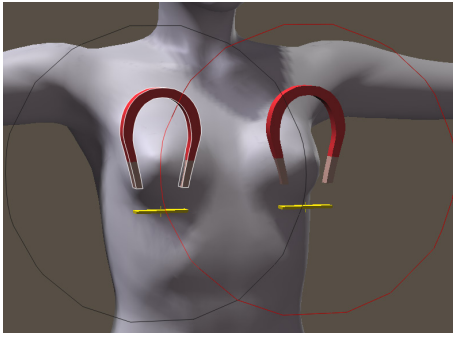


Select the second magnet zone from the Properties tab menu.

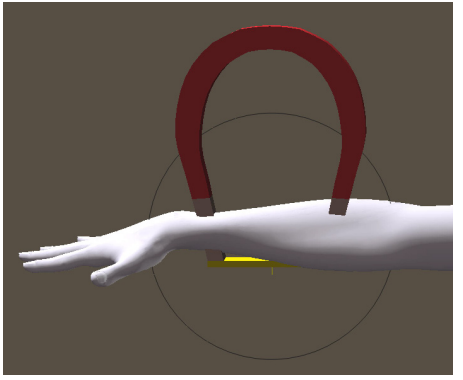
Click to activate the paintbrush for **Magnet Zone 2**, and then click the **Copy/Paste** button again. This time, choose **Paste Mirrored > X Axis** to mirror the weight map from the right breast over to the left breast.



Paste the weight map in the clipboard, mirrored on the X axis.



The final result.

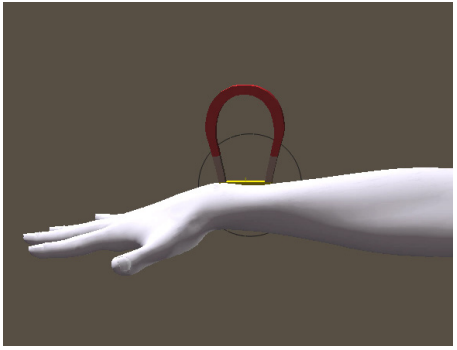


Create a magnet on the right forearm.

Animating Magnet Zones

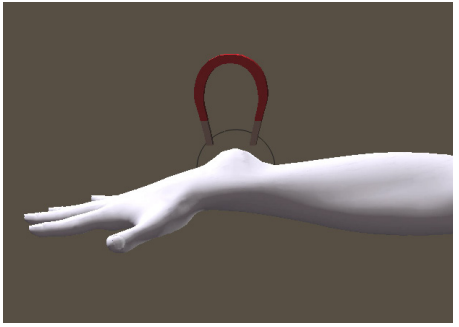
Select the right forearm and create a magnet using the **Object > Create Magnet** command.

Select the magnet base, and then scale and position the magnet over the right forearm. Then scale and position the magnet zone to surround an area along the top of the forearm.



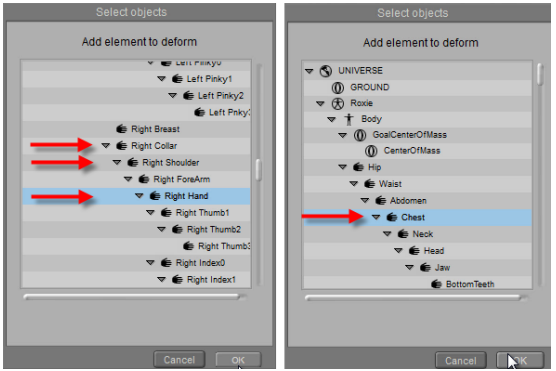
Scale and position the magnet base and magnet zone.

Select the magnet, and raise it along the Y axis to create a bump in the forearm.



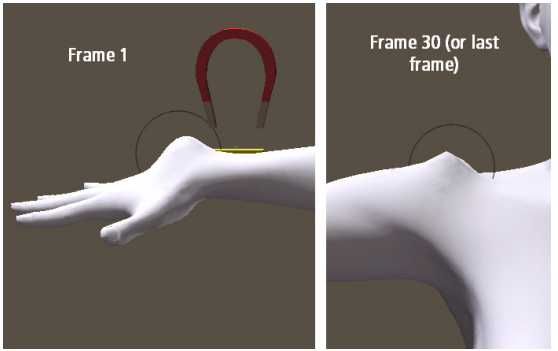
Scale and position the magnet base and magnet zone.

With the magnet selected, switch to the Properties palette. Click the Add Element to Deform button for each body part that you want the magnet to affect. Repeat this step to assign the Right Hand, Right Shoulder, Right Collar, and Chest.



For the magnet, add (one at a time) the Right Hand, Right Shoulder, Right Collar, and Chest as elements to deform.

Go to the first frame in your project. Select the magnet zone, and move it into position over the right hand. Then go to frame 30 (or the last frame in your animation), and move the magnet zone over the shoulder.

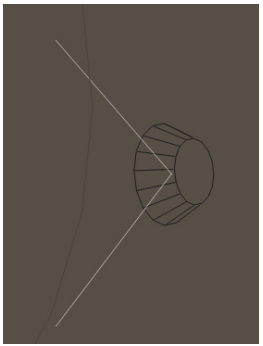


Position the magnet zone on the first and last frames of your animation.

As the animated joint zone passes over the affected body parts, you'll see the bump affecting the actors that you assigned as affected actors. The bump will affect the hand, then the forearm, the shoulder, the right collar, and the chest over the course of the animation.

Wind Force Fields

Selecting **Object > Create Wind Force** creates a wind force field that ads realistic wind to your scenes. Force fields affect strand-based hair and dynamic cloth.

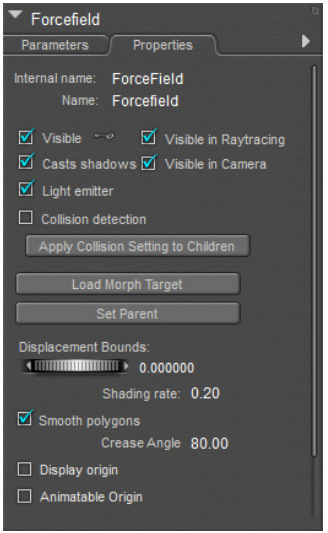


A Wind Force Field.

You can position force fields using the **Editing** tools just as you would any other prop.

Force Field Properties

Force fields have the following properties, available in the **Properties** palette:



Forcefield Properties.

- **Internal Name**: The **Internal Name** field displays the force field's internal (hidden) name, which Poser uses to track that part. You cannot edit a force field's internal name within Poser.

- **Name**: The **Name** field displays the force field name. Enter a new name in this field if you desire.

- **Visible**: Checking the **Visible** checkbox makes the force field visible and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 for information on animating the **Visible** property.

- **Visible in Raytracing**: Checking the **Visible in Raytracing** checkbox makes the force field visible in raytraced reflections, such as if the figure is in front of a mirror. Clearing this checkbox makes the force field not appear in reflections.

- **Casts Shadows**: Checking the **Casts Shadows** checkbox forces the selected force field to cast a shadow, which will be visible in your scene. Clearing this box means the selected force field casts no shadow.

- **Display Origin**: Checking the **Display Origin** checkbox display's the force field's origin. Please refer to "The Prop Origin" on page 225 for more information about force field origins.

- **Light Emitter**: When checked, allows the object to be included in indirect lighting calculations so that light will bounce off the object. When unchecked, indirect lighting calculations are skipped for the object. This allows you to create objects such as illuminated light domes, which can have high ambient values that will cast light, but that can also be turned off and not rendered.

- **Visible in Camera**: When checked, the object is visible in the camera and render. When unchecked, the object does not render. Used in conjunction with **Light Emitter**, described previously, to create light-casting objects.

- **Collision detection**: Checking the **Collision Detection** checkbox enables collision detection for the currently selected force field. Please refer to "Collisions" on page 75 for more information about collision detection.

- **Apply Collision Setting to Children**: Clicking the **Apply Collision Setting to Children** button applies the currently selected force field's collision detection setting to that part's children parts (if any).

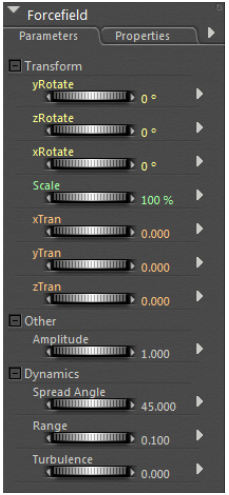
- **Load Morph Target**: Clicking the **Load Morph Target** button displays the **Load Morph Target** dialog, allowing you to load a custom morph target for the selected force field, which is then editable using the **Morphing Tool**. Please refer to "Creating Morphs with the Morphing Tool"

on page 642 for more information about loading morph targets.

- **Set Parent**: Clicking the **Set Parent** button allows you to make the force field a child of another element in your scene. Please refer to "Poser File Types" on page 848 for a description of hierarchical relationships and to "Changing a Parent" on page 231 for information on setting force field parents.
- **Displacement Bounds**: The **Displacement Bounds** property determines the force field's displacement boundary. Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about displacement bounds.
- **Shading Rate**: The **Shading Rate** allows you to specify the desired shading rate for the currently selected force field. Please refer to "Chapter 19: Using The FireFly Render Engine" on page 404 for more information about shading rates.

Force Field Parameters

Force fields have the following parameters, available in the **Parameters** palette:



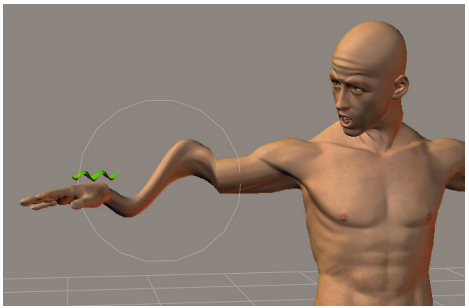
Forcefield Parameters.

- **Scale**: Increases or decreases the size of the force field in all axes.

- **XYZScale**: The **xScale**, **yScale**, and **zScale** parameter dials increase or decrease the size of the force field in the selected axis. This is only available for the force field.
- **XYZRotate**: The **xRotate**, **yRotate**, and **zRotate** parameter dials rotate the force field around the selected axis.
- **XYZTran**: The **xTran**, **yTran**, and **zTran** parameter dials move the force field along the selected axis.
- **Amplitude**: The **Amplitude** parameter controls the strength of the force field. Increasing this value increases the wind speed, and vice versa.
- **Spread Angle**: The **Spread Angle** parameter specifies the force field's angle of effecting degrees.
- **Range**: The **Range** parameter specifies the force field's range of effect in the currently selected units (feet, millimeters, etc.).
- **Turbulence**: The **Turbulence** parameter controls the amount of irregularity in the force field's wind stream and can be used to simulate gusts.

Wave Deformers

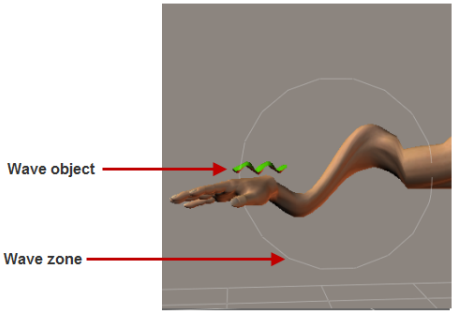
Wave deformers distort objects by creating wave paths. You can use the **Rotate**, **Twist**, **Translate**, and **Scale** tools on wave deformers. Please see "The Editing Tools" on page 184 for information on using the **Editing** tools. Here's an example of a sphere deformed by a wave.



A wave deformer applied to a forearm.

Creating Wave Deformers

To create a wave, select the object you wish to deform then select **Object > Create Wave**. This creates two Wave objects, which together comprise the deformer. The two parts are:



Parts of a Wave deformer.

- **Wave Object**: The Wave Object defines the behavior of the actual wave.
- **Wave Zone**: The Wave Zone defines the area being deformed. You can move and shape the Wave Zone to suit your needs.

Using Editing Tools with Wave Deformers

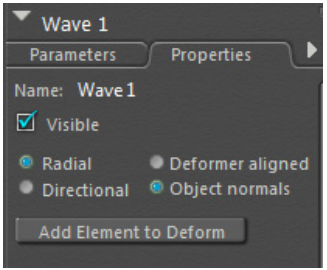
To use **Editing** tools on a Wave Object, select the wave in the **Current Actor** pull-down menu, then select your desired **Editing** tool.

- **Rotate**: The **Rotate** tool rotates the Wave Object/Zone around its three axes.
- **Twist**: The **Twist** tool rotates the Wave Object/Zone along its own axis.
- **Translate/Pull**: The **Translate/Pull** tool moves the Wave Object/Zone horizontally or vertically. This does not affect the Radial wave.
- **Translate In/Out**: The **Translate In/Out** tool moves the Wave Object/Zone in or out from the center of the Poser workspace.
- **Scale**: The **Scale** tool increases or decreases the size of the Wave Object.

Wave Object Properties

Wave Objects and Zones have properties that you can edit using the **Properties** palette.

Wave Objects have the following properties:

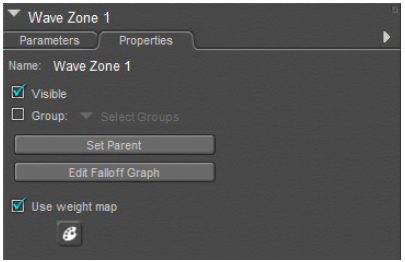


Wave Deformer properties.

- **Name**: The **Name** field allows you to rename the Wave Object by entering your desired name in this field.
- **Visible**: The **Visible** checkbox toggles visibility on and off. Checking the box makes the object visible, and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 for information on animating the **Visible** property.
- **Radial Wave**: Checking the **Radial Wave** radio button causes the wave to spread from its origin like ripples in a pond.
- **Directional Wave**: Checking the **Directional Wave** radio button causes the wave to spread in a linear fashion. The following two properties control the direction.
- **Deformer Aligned**: Checking the **Deformer Aligned** radio button cause waves to propagate along the direction of the Wave Object.
- **Object Normals**: Checking the **Object Normals** radio button cause waves to propagate along the affected object's normals.
- **Add element to deform**: Clicking the **Add element to deform** button opens a hierarchy list, allowing you to select added elements to be deformed by the wave. This only works if the selected element(s) are within the Wave Zone.

Wave Zone Properties

Wave Zones have the following properties:



Wave Zone properties.

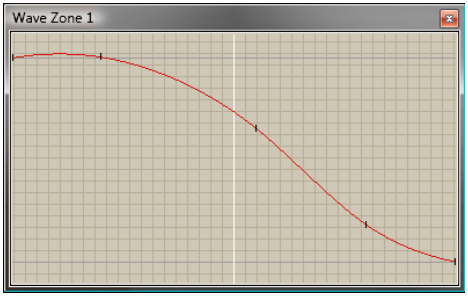
- **Name**: The **Name** field allows you to rename the Wave Zone by entering your desired name in this field.
- **Visible**: The **Visible** checkbox toggles visibility on and off. Checking the box makes the object visible, and vice versa. Invisible objects are not included in any render calculations, and do not appear in the rendered scene. See "Figure Properties" on page 193 for information on animating the **Visible** property.
- **Group**: Clicking the **Group** button allows you to deform a grouped portion of the selected element(s). You can create groups to deform, and groups can consist of portions of one or more body parts, props, etc. Please see "The Group Editor" on page 681 for information on using the **Grouping** tool. A group is selected when a checkbox appears next to the group listing.
- **Set Parent**: Checking the **Set Parent** button allows you to set a parent object for the Wave Zone. Please refer to "Changing a Parent" on page 231 for information about parenting objects.
- **Edit Falloff Graph**: Clicking the **Edit Falloff Graph** button allows you to edit the Wave Zone's **Falloff Graph**, which determines where the deforming area ends or falls off. Please see the following topic for information on using this graph.



Setting the Wave Zone's Display Style to Wireframe can help make it more visible in your Document Window.

- **Use Weight Map:** Check this option to use a weight map to control the amount that the vertices are affected. Click the Paintbrush icon to open the Vertex Weights palette so that you can edit the wave zone weight map. Vertices in the weight map are initially set to 100% strength. The controls in the Vertex Weights palette are described in "Painting Vertex Weights" on page 583.

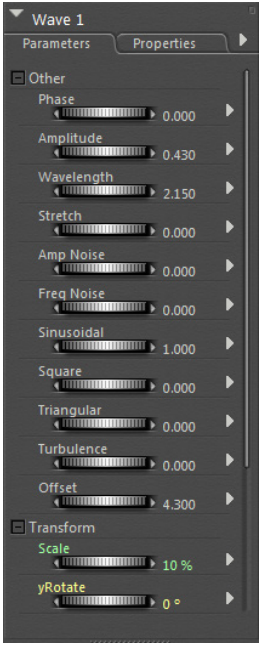
- **Wave Zone Falloff Graph**: Clicking the **Edit Falloff Graph** button in the Wave Zone Properties opens the **Wave Zone Falloff** window, which appears and functions in the same manner as the Magnet Falloff Graph depicted in "Magnet Zone Falloff Graph" on page 620.



Wave Zone falloff graph.

Wave Deformer Parameters

Wave deformers can use the following parameter dials in the **Parameters** palette:



Wave Deformer parameters.

First, there are certain parameter dials that are only available for waves:

- **Phase**: The **Phase** parameter dial defines the position of the wave in infinite time. Use this parameter when animating waves.
- **Amplitude**: The **Amplitude** parameter dial defines the wave's height.
- **Wavelength**: The **Wavelength** parameter dial defines the distance between wave crests (frequency).
- **Stretch**: The **Stretch** parameter dial controls the sharpness of each wave.
- **Amp Noise**: The **Amp Noise** parameter dial defines the randomness or noise of the wave's amplitude.
- **Freq Noise**: The **Freq Noise** parameter dial defines the randomness or noise of the wave pattern's frequency.
- **Sinusoidal**: The **Sinusoidal** parameter dial defines the size of the sine wave pattern.
- **Square**: The **Square** parameter dial defines the shape of the wave pattern. Increasing this value creates square-shaped waves.
- **Triangular**: The **Triangular** parameter dial defines the shape of the wave pattern. Increasing this value creates triangle-shaped waves.
- **Turbulence**: The **Turbulence** parameter dial defines the roughness of a wave pattern. Increasing this value creates jagged, turbulent waves, and vice versa.
- **Offset**: The **Offset** parameter dial defines if the wave's pattern is above, on, or below the wave's origin. Increasing this value brings the wave pattern above the origin. This is helpful if, for example, you want to keep clothing from deforming the underlying figure.

The following common parameters also apply to Wave objects:

- **Scale**: Increases or decreases the size of the Wave Object in all axes.
- **XYZScale**: The **xScale**, **yScale**, and **zScale** parameter dials increase or decrease the size of the Wave Zone in the selected axis. This is only available for the Wave Zone.
- **XYZRotate**: The **xRotate**, **yRotate**, and **zRotate** parameter dials rotate the Wave Object around the selected axis.
- **XYZTran**: The **xTran**, **yTran**, and **zTran** parameter dials move the Wave Object along the selected axis.

Using Deformers with Grouped Objects

You can create custom groups using the **Group Editor** palette as described in "The Group Editor" on page 681 and apply deformers to these groups. Groups can contain parts of one or more body parts/props. You can select these groups by name using the **Properties** palette for selected magnets or waves. To apply a deformer to a group:

Select the body part/prop containing the group.

1. Create the deformer as described above.

2. Select the deformer's Zone and access that zone's properties as described above. Check the **Group** checkbox, then select one or more groups from the pop-up that appears. A group is selected when a checkbox appears next to it.

This procedure deforms on the grouped sections of body parts/props.

Creating Morphs with the Morphing Tool

Morph targets are custom parameters added to body parts or props that allow you to reshape the affected part(s). Poser includes some built-in morph targets with the stock figures, and you can create your own. Morph targets allow you to easily resize and reshape items and are fully animatable.



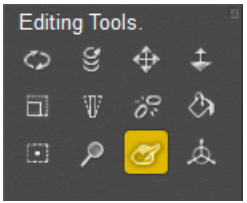
Faces reshaped with the Morphing Tool.

While morph targets appear as parameter dials in the **Parameters** palette, they are actually custom geometry containing the deformation, which you then apply using parameter dials. Does this seem confusing? It's actually pretty simple once you get the hang of it. Let's explore this functionality a little further.

You can create your own morph targets using Poser and/or another application. This manual primarily covers creating morph targets in Poser, but we will discuss using third-party applications in general terms. Within Poser, you use a combination of deformers and existing morph channels (such as the Surprised parameter) to create morph targets. Each morph target gets its own **Parameter** dial whenever the affected element(s) are selected and the morph target is loaded. For

example, if you create a morph called **Bulging Bicep** for the upper arm, you'll see the **Bulging Bicep** parameter dial in the **Parameters** palette when you've loaded the morph target and selected the upper arm.

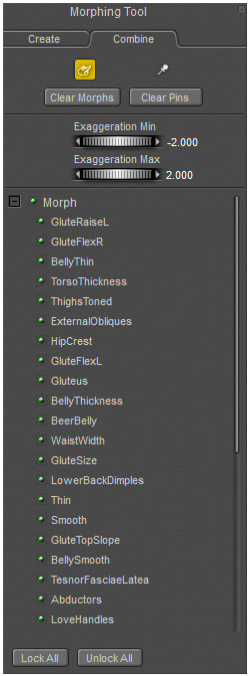
Clicking on the **Morphing Tool** in the **Editing Tools** display opens the **Morph Editor** palette. The **Morphing Tool** has two operational modes: Combine and Create, which are covered in the sections that follow. Click on the appropriate tab in the **Morph Editor** to switch between these two modes.



The Morphing Tool in the Editing Tools palette.

The Combine Tab

The **Combine** tab on the **Morph Editor** allows you to visually sculpt your figures' morph targets by clicking on a body part such as the head, then dragging the mouse to change the shape of that body part. The changes that you see are all based on the morphs that are already present in the body part. You can do this with any scene object that has morph targets.



The Morphing Tool Combine tab.

To use the **Combine** tab:

1. Select the body part you wish to sculpt, then select the **Morphing Tool**. The **Morph Editor** palette appears. The **Combine** tab displays all of the morph targets available for the selected body part:

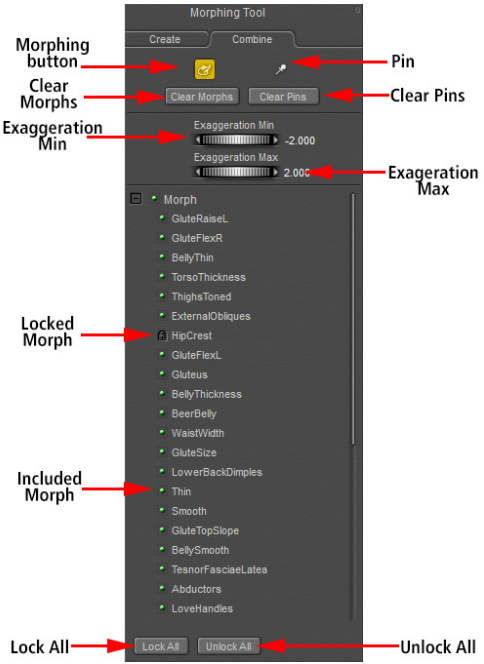
2. The list of morph targets is hierarchical and displays branches containing the available morph targets. Clicking the **–** icon next to an expanded branch collapses that branch, and clicking the **+** icon next to a collapsed branch expands that branch. You can also use the scroll bars to navigate the list. The **Morph Editor** will allow you to manipulate all selected morph targets. A green dot next to a morph target includes the specified morph target when using the tool, and a Lock icon means the specified morph target will not be affected by the tool. Even if a morph target is enabled, it may or may not be affected by your use of the tool. For example, selecting a vertex in the forehead may affect the eyebrows but will not affect the mouth. Select your desired morph target(s), then click and drag any vertex on the selected body part.



A face before and after using the Morphing Tool.

3. Once you have a portion of the body part the way you want it, you can click the **Pin** button then click one or more vertices to pin them, preventing further manipulation as you work on other areas of the object. Pinned vertices appear as red dots on the current object and may move as you keep adjusting other portions of the body part (depending on how many morph targets affect the pinned vertex), however they will retain their current settings. Also, pins are retained if you stop using the **Morphing Tool** and resume using it later. To stop pinning vertices, click the **Morphing** button (see below). You may notice some trembling if you adjust morphs that affect pinned vertices.

The **Morph Editor** palette has the following functions:



Elements found in the Morphing Tool Combine tab.

- **Morphing**: Clicking the **Morphing** button re-enables the **Morphing Tool**. Click this button after pinning vertices to resume adjusting morphs.
- **Pin**: Clicking the **Pin** button disables the **Morphing Tool** and allows you to pin one or more vertices as discussed above.
- **Clear Morphs**: Clicking the **Clear Morphs** button resets all morphs. Use this option with care as it will undo all of your changes, even if you exit and resume using the **Morphing Tool**.
- **Clear Pins**: Clicking the **Clear Pins** button removes all pins previously applied to the current object.
- **Exaggeration min/max**: Exaggeration refers to the degree to which a morph target's value will affect the vertices. The **Exaggeration Min** and **Exaggeration Max** values limit the extent of a morph target's possible effect when the Morphing Tool is operating. No morph target can be modified beyond these limits (see "Editing Parameter Dials" on page 201 for more information about parameter dial limits). Increasing these limits therefore increases the exaggeration effects of all morph targets. For a technical description of **Exaggeration Min/Max**, see the following note.



*Mathematically, each morph target defines a displacement vector (**v**) on each object vertex, and its exaggeration value defines a multiplier (**w**). Thus, a morph target's net effect is* **p** + **wv**, *where* **p** *is the original vertex position. If* **w**=*1, we add* **v**+**p**. **W** *can be any value. The larger* **w** *is, the more exaggeration this morph target's effect has. The* **Exaggeration Min** *and* **Exaggeration Max** *values globally define the limits for* **w** *across all morph target weights when the* **Morphing Tool** *operates.*

- **Lock All**: Clicking the **Lock All** button locks all morph targets, which disables morph-based shape changes. This is handy when you're satisfied with your overall shape and only want to fine-tune a few specific morphs. In that case, you could use this option then unlock only those morphs you want to adjust.
- **Unlock All**: Clicking the **Unlock All** button unlocks all morph targets, allowing you to modify them.



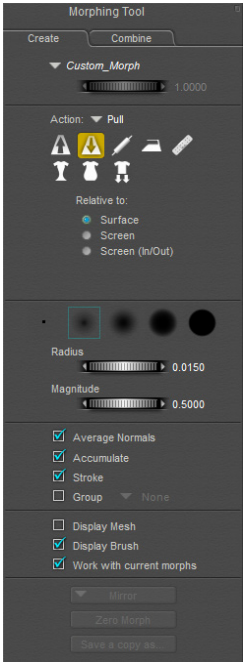
To move in the Z axis, press and hold **[COMMAND]/[CTRL]** *while dragging.*

The Create Tab.

The **Create** tab of the **Morph Editor** allows you to select and modify the mesh vertices to create new morph targets on a single body part or across joint seams to adjacent body parts. As with the **Combine** tab, you can apply the **Create** tab functionality to any scene object that has a mesh.

Deformations made to the mesh while using the **Create** tab can apply to the currently selected actor or to the entire figure. A parameter dial will appear only on body parts that are affected by the morph brush.

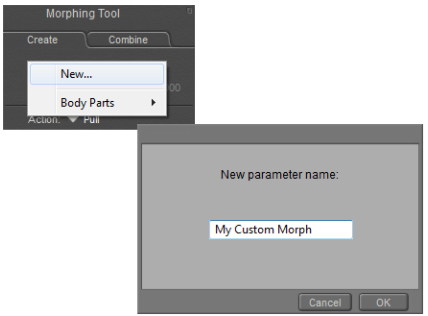
In addition to creating morph targets for individual actors, Poser also allows you to create Full-Body Morphs (FBMs). For more information about Full-Body Morphs, see "Creating Full-Body Morphs" on page 662.



Morphing Tool Create Tab.

To use the **Create** tab:

1. Switch to the Create tab in the Morphing Tool if necessary.
2. To create a custom morph, click the **Custom_Morph** text at the top of the Morphing Tool palette to display the menu.
3. To create a new morph, select **New**. You will be prompted to assign a name for the new morph.

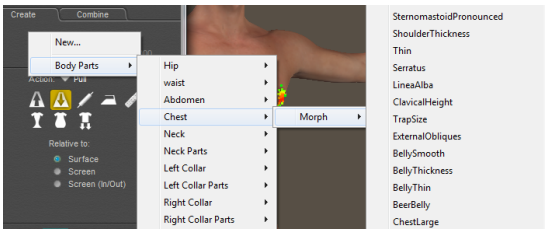


Choose New from the Custom Morph menu to create a new original morph.



If you do not assign a name or choose an existing morph before you begin painting, any changes that you make will be assigned the generic morph name of Custom Morph. You will need to use the **Save a Copy As** *button at the bottom of the Morphing Tool to save the morph under a new name.*

- To work on an existing morph, expand the **Body Parts** submenu to choose one of the body parts that uses that morph (such as **Waist**), the morph category (such as **Morph** or **JCM**), and then select the morph that you want to edit (such as **Pregnant**).



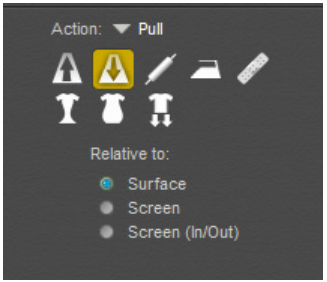
To modify an existing morph, expand the Body Parts menu to select the morph you want to modify.

4. After you name your new morph or select an existing morph, the name of the morph will appear at the top of the Create tab. Set the value of the morph to 1 to begin editing.



Set the value of the morph to 1 while you are editing.

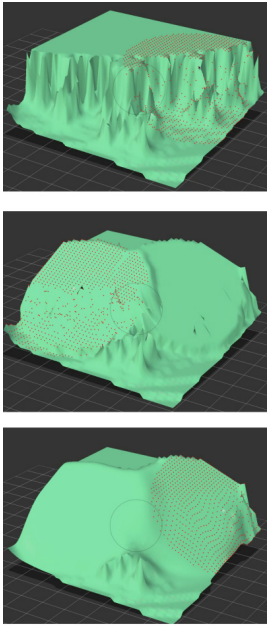
5. Click the icon for the action you wish to use to modify the vertices: **Push**, **Pull**, **Flatten**, **Smooth** or **Restore**. You can also choose one of the modes from the Action menu that appears just above the icons.



Vertex modification options in the Create tab.

- **Push**: Selecting **Push** will enable you to push the vertices in the impact region inward from the original surface of the mesh, to create a concavity such as a dimple or a dent.
- **Pull**: Selecting **Pull** will enable you to pull the vertices in the impact region outward from the original surface of the mesh. This task is very useful for cleaning up any inappropriate intersections between the figure and either conforming or dynamic clothing; you can select a region of the cloth, and simply pull it out past the point of intersection with the figure.

- **Flatten**: Takes all of the affected points and averages the plane that best fits through all those points. It then pushes all of the points to match that plane.
- The following image shows an irregularly shaped object in three stages: The top image shows the object before it is flattened with the morph tool. The middle image shows the object after a couple of areas have been flattened with the Morph tool. The brush shape used no falloff (the last brush option) and was set to a large size. The third image shows the object after changing the Morph brush to Smooth, and then passed through the rough areas in the center.



An irregularly shaped object (top); after flattening (middle) and then smoothed (bottom)..

- **Smooth**: With the **Smooth** option you can gradually reduce the amount of variation in the surface mesh, to create a smoother surface. This is particularly useful for surfaces with high frequency variations. Keep in mind that this option generally reduces definition.
- **Restore**: The **Restore** option gradually reverts your recent changes back towards the original unmorphed geometry state. This feature can be extremely useful in fine-tuning your modifications, as it allows you to back up recent changes by gradual degrees.



Restore *is not the same as Undo. If you make a change, and then select* **Edit > Undo**, *your entire change will be erased, and the mesh will revert to the state it was in before you made the change. By using* **Restore**, *you can revert the effects of your change gradually, thus allowing you to edit your modification without losing it completely.*

- **Tighten Fit**, Loosen Fit, and **Sag**: See "Using the Fitting Tools" on page 658.

6. Select the mode in which you wish to work: Relative to **Surface**, **Screen, or Screen (In/Out)**.

- **Surface**: When in **Surface** mode, all modifications you make to the mesh will be made along the direction of the surface normal. This is the default mode, as you are likely to want to sculpt in relation to the surface normal direction for most purposes.
- **Screen**: **Screen** mode allows you to deform the mesh in any direction you wish. This option is useful for situations when you may wish to sculpt the mesh in a transverse or vertical direction. Please note that the direction of the modification in Screen mode is determined by the current view of the figure as relative to the screen. For example, if you wish to deform the mesh towards the camera, you should rotate the figure ninety degrees, then make your modification by moving your mouse to the side.
- **Screen (In/Out)**: Deforms the mesh relative to the screen, moving the vertices toward or away from you.

7. Select your desired brush style from the five circular brush style icons. Poser's morph target creation feature uses a brush paradigm, which allows for varying degrees of precision when applying your modifications to the mesh. The left most brush style impacts only the closest single vertex to your mouse pointer, thus allowing for a great deal of precise control. The remaining brush styles all affect a region of the mesh. These regional brush styles have varying degrees of falloff; the modification will affect vertices within the impacted region to differing degrees, as determined by the falloff. For example, the second brush style from the left has a large falloff region, which means that while vertices

at the center of the region will be strongly impacted by your modifications, the impact will decrease gradually over most of the other vertices within the impact region. The falloff area decreases with the next two brush styles, and the right-most brush style has zero falloff, so that all vertices within the region are impacted equally.



Adjusting the size of the Morph Brush.

Enabling the Display Brush option in the lower portion of the Create tab will display a visual preview of the impact region. This preview is color coded to show the falloff effect: red indicates the area most strongly affected, yellow indicates less effect, and areas shown in green are the least affected within the impact region.

8. Adjust the **Radius** dial to increase or decrease the size of the impact region. If you have enabled the **Display Brush** option, the visual preview will adjust automatically to indicate the current impact region radius.

You can also use the Left or Right arrow keys to adjust the radius of the brush.

9. You may want to adjust the **Magnitude** dial to specify how much effect the **Morphing Tool** will have within the impact region. A high **Magnitude** setting will allow you to make large-scale dramatic changes, for faster workflow. A low **Magnitude** setting will allow you to make more precise, focused changes.

You can also use the Up or Down arrow keys to adjust the magnitude of the brush.

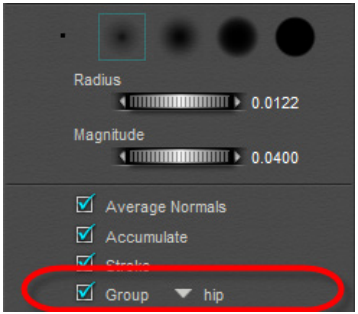


Radius and Magnitude settings control the size and strength of the Morph Brush.



We recommend that you start with a relatively low **Magnitude** *setting to allow you to become accustomed to the* **Morphing Tool**, *and then gradually increase the* **Magnitude** *as needed.*

10. By default, the Morphing Tool allows you to morph across multiple body parts. If you want to make changes to a single body part, check the Group option (shown in the following figure) and select a group from the popup menu.



You can limit changes to one body part in the Morphing Tool.

The **Group** option allows you to specify which specific polygons the **Morphing Tool** will affect. When you enable the **Group** option, the **Group** pop-up menu will display a list of all polygon groups that exist for the currently selected actor. You can select a group from this list to limit the effect of the **Morphing Tool** to polygons contained in that group. You can also create a group for your specific purposes using the **Group Editor** (see "Chapter 30: Modifying Figures & Props" on page 614 for more information about the **Group Editor**).

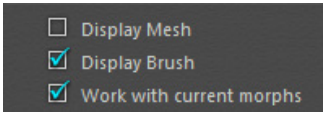
11. Enable or disable the following options to suit your requirements:

    - **Average normals:** Maintains more detail of the underlying surface when **Relative to Surface** is selected. It averages the normals of all the effected vertices, instead of moving each affected vertex along its own normal.
    - **Accumulate**: When **Accumulate** is enabled (checked), your change will continue to accumulate so long as you continue a single click-and-drag movement. This option allows you to make a greater degree of change with a single motion, but with less precision. When the **Accumulate** option is disabled (unchecked), each modification requires a separate click-and-drag operation. Use this setting for greater control over your modifications.
    - **Stroke**: When the **Stroke** option is enabled (checked), the **Morphing Tool** will implement your modifications along the trajectory of your mouse movement. This allows you to "paint" deformations onto the surface of the mesh as you move your mouse across it. When **Stroke** is disabled, your mouse movements will adjust the degree of the deformation, while the effect of the modification applies to the original impact region only.

12. Once you have configured the **Morphing Tool** to your specific needs via the **Create** tab, click and drag directly on the current actor to deform the mesh.

13. When you have completed your modifications, click the **Save Copy As** button to propagate your work to a new morph target.

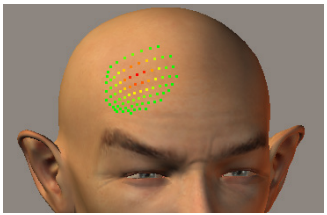
14. The **Create** tab also contains the following Display options:



Display options in the Create tab.

    - **Display Mesh**: The **Display Mesh** option will superimpose a visualization of the mesh over whatever display style you have currently selected. (See "Chapter 6: The Display Controls and Menu" on page 105 for more information on the various display styles.) This option can be very helpful in that it allows you to see how your deformations affect the surrounding polygons.
    - **Display Brush**: The **Display Brush** option displays a visual preview of the region you will be impacting

with your deformation. This preview uses different colors to indicate the degree to which each area of the impact region will be affected by your selected action. Specifically, red indicates the area most strongly affected, yellow indicates that an area is less strongly affected, and green areas are the least affected within the impact region. The **Display Brush** option is enabled by default. If you have elected to work on a single group rather than the entire figure, the brush will display only when it is over the group that is selected for editing.



The Morph Brush appears as multicolored vertices that represent strongest and weakest areas.

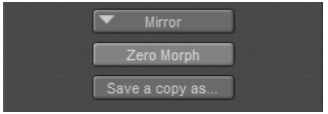
- **Work With Current Morphs**: When enabled, the **Work With Current Morphs** option allows you to visualize the current adjusted state of all other morph targets while you deform the mesh. This option is useful for creating a morph target that acts on top of another morph target.



This setting is useful for understanding how your new morph target will interact with other existing morph targets.

When disabled, the **Work With Current Morphs** option allows you to temporarily hide the effects of all other morph targets while working within the **Create** tab. Using this option allows you to work on the mesh geometry in its neutral state, without losing the settings of your other morph targets. If you leave the **Create** tab, those morph targets will automatically revert to their specified states.

You can use the following functions to save or reset your morph targets:



Additional Morphing Tool functions.

- **Mirror**: The **Mirror** button at the bottom of the **Create** tab brings up a pop-up menu offering six options of different axes and directions for creating symmetrical changes on the currently selected object, for example "-x to x" or "z to -z". Note that these axes refer to the local coordinate system of the currently selected object only, and are not related to the world space coordinates of your Poser scene. Selecting one of these options will mirror morph target changes from one half of the currently selected object to another half of the same object, as defined by the axis and direction you selected from the menu.



If the mesh topology of the actor across which you are attempting to mirror is not symmetrical, the mirror feature may not be able to successfully translate your morph target changes.

- **Zero Morph**: The **Zero Morph** button will reset the surface mesh to its undeformed state. Zero Morph will also clear any morphing tool changes (stored in the Custom Morph channel) that will generate at each body part and the figure level. If the Zero Morph button has been pushed, the channel will still exist but the morph data is removed.



This Custom Morph channel is used as a receptacle for morphing edits with the morphing tool. Save a Copy As is the best way to preserve that Custom Morph data for Full Body or individual body part morphs.



The Zero Morph button only applies to the effects of your new morph target; all other morph target states will remain unchanged. Be sure to save a copy of your modifications before clicking the Zero Morph button if you do not wish to lose your changes.

- **Save a Copy As**: Whenever you enter the **Create** tab, any modifications you make will automatically be placed into a "Custom Morph" morph target unless you follow steps 2 and 3 to create a new morph name or select an existing morph. The **Save a Copy As** button will allow you to save the current state of the Custom Morph target to a new, separate morph target. You can use **Save a Copy As** to save incremental modifications as you work with the mesh, or to propagate your final modifications to the figure for future use.

- Full Body Morphs created using the **Save a Copy As** and the **Custom Morph** functions are traditional Delta Add morphs with values that change linearly with the a master parameter value. You can edit them using the

dependent parameters editor, as mentioned in "Using Dependent Parameters" on page 666. The Save a Copy As morph saves a channel to each body part, and also adds a parameter dial to the Body that drives all of the individual body part channels.



The Custom Morph target is cumulative, in that any modifications you make will be made on top of the previous state of the morph target. Therefore, if you do not save your changes to a separate morph target using the **Save a Copy As** *button, they will become incorporated into any figure changes, and you may have difficulty recovering that previous state.*

Copying Morphs Between Figures

The F**igure > Copy Morphs From** and **Object > Copy Morphs From** commands allow you to copy morphs between figures and clothing. This feature works more accurately with items that are sparser in density (such as clothing) than with items that are more finely detailed (such as a face to face morph transfer).

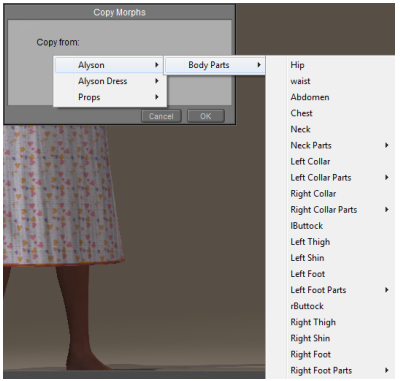
To copy all morphs from a character to the clothing:

1. Load the character and the clothing into your scene.
2. Click to select the clothing that will receive the morphs.
3. Choose **Figure > Copy Morphs From**. The Copy Morphs dialog appears.
4. Choose the character from which you want to copy the morphs and then click **OK** to continue.
5. Use the Select Objects dialog to check the morphs that you want to copy to the clothing.
6. Click **OK** to copy the morphs.

Similarly, the **Object > Copy Morphs From** command allows you to copy morphs between objects in several different ways:

Load the source and target objects into your scene (such as a character and the clothing).

7. Click to select the object that will receive the morphs (such as a body part on the clothing).
8. Choose **Object > Copy Morphs From**. The Copy Morphs dialog appears. It displays options to choose morphs from the character, from the clothing, or from a prop:



Choosing the morph source.

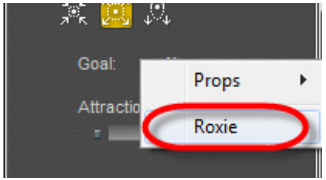
- To copy morphs from a body part on the character, expand the list that appears to the right of the character name, and choose the body part from which you want to copy the morphs.
- To copy morphs from another part on the clothing, expand the list that appears to the right of the current clothing item. Choose the body part from which you want to copy the morphs and then click **OK** to continue.
- To copy morphs from a prop (such as a magnet sphere or capsule), expand the list that appears to the right of the Props list, and select the item that you want to copy the morphs from. Then click **OK** to continue.

Using the Fitting Tools

The Create tab in the Morph Palette includes fitting tools that allow you to create fitting morphs for clothing. These tools do not take existing grouping into account and work on the entire object geometry.

To use the fitting tools in the Morph Palette, follow these basic steps:

1. Load the character and the clothing that you want to fit.
1. Translate and scale the clothing as needed to position the clothing around the figure as closely as possible.
2. Choose the **Tighten Fit** or **Loosen Fit** tool. Either of these tools allow you to select the Target figure to use. The Target will be the character that you want to fit the clothing to.



Choosing a Goal figure.

3. Create a new morph and assign a name to it.
4. Use the fitting tools to adjust the clothing as necessary. Adjust Brush Radius and Magnitude to increase or decrease the areas and amount of effect.

Tighten Fit

Tighten Fit makes the clothing tighter in the areas that you paint, moving it closer toward the shape of the Goal figure. Options are as follows:

- **Goal**: The figure that you're trying to fit to.
- **Attraction Points**: The maximum number of closest points on the target geometry that are taken into account when tightening.
- **Pokethrough Resistance:** The distance that determines how much the clothing resists pushing into the target figure

Loosen Fit

- **Loosen Fit**: Makes the clothing looser in the areas that you paint, moving it away from the shape of the underlying figure. Options are as follows:
  - **Goal**: The figure that you're trying to fit to.
  - **Attraction Points**: The maximum number of closest points on the target geometry that are taken into account when loosening.

Sag

- **Sag**: Use in cases where you need to add a draping effect, such as the underside of an arm. It will affect polygons on the lower side of the painted area, but not on the upper side. Options are as follows:
  - **Gravity**: Configurable gravity vector determines the direction towards which the clothing will sag

- **Falloff**: Slider determines how quickly vertices whose normals are very nearly orthogonal to the gravity vector are affected by the sag.

Creating Morphs in Other Applications

Creating Custom Morph Targets

You can create morph targets using your favorite 3D modeling application so long as that application can import and export Wavefront OBJ (*.OBJ) files. To do this:

1. Export the body part for which you wish to create the morph target as explained in "Exporting Files" on page 783.
2. Import the body part into your favorite 3D modeling application.
3. Edit the geometry, being careful to only move vertices. Do not add or remove vertices, or your morph target will not work.
4. Export the edited geometry from the 3D modeling application in the Wavefront OBJ (*.OBJ) format.
5. Load the morph target.

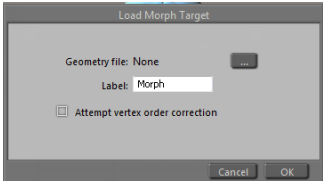
Adding Custom Morph Targets

Selecting **Object > Load Morph Target** allows you to load a morph target for your currently selected element.

You can add morph targets that you created using a third-party application and apply them to your figures and props. You can also add third-party morphs obtained from online sources such as Poser's **Content** room, which links you to several leading Poser content marketplaces. Please refer to "Chapter 8: The Content Room" on page 173 for more information on Poser's **Content** room.

To add a custom morph target:

1. Select the body part/prop to which you want to apply the morph and open its properties in the **Properties** palette.
2. Click **Load Morph Target** to open the **Load Morph Target** dialog.



Loading a Morph Target.

3. Enter the complete path and filename to your desired morph or use the **Locate** button to open a standard **Browse** dialog allowing you to locate the correct file. Your selected file must be in OBJ format, contain the same number of vertices as the original body part/prop, and must only contain the body part/prop being morphed.

4. Enter a name for the added file, then click **OK** to exit back to the **Parameters** palette. A new parameter dial appears with the name of the newly added morph.

In order for morph targets to work properly, they must have the same vertex order as the geometry mesh to which they are applied. Some applications have difficulty preserving the vertex order when editing or writing out morph targets. If you find that your imported morph targets behave unexpectedly, you may wish to check the **Attempt Vertex Order Correction** checkbox when loading them. This checkbox is located on the **Load Morph Target** dialog, which can be accessed by selecting **Object > Load Morph Target**, or clicking the **Load Morph Target** button on the **Properties** palette. Please note that significant changes to vertex order are not possible with automatic correction.

Combining Morphs in Poser

Poser provides a number of different ways that you can combine body morphs to create unique characters. For example, you can use the **Object > Spawn Morph Target** command to create a parameter dial for body parts and props that have been modified with deformers. The **Figure > Create Full Body Morph** command allows you to create a single master dial in the Body to drive morphs in several different body parts. Additionally, you can use Dependent Parameters to create master parameter dials that, in turn, create more realistic interactions between body parts and rotations.

Spawning Morph Targets

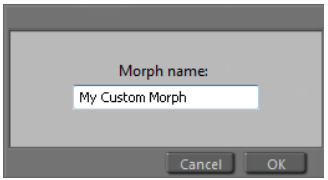
In addition to the **Create** tab on the **Morph Editor** palette, you can also create morph targets in Poser directly from the **Properties** palette. Selecting **Object > Spawn Morph Target** creates a morph target from deformed objects (body parts, props) in your scene. You will be asked to name your new morph

target, and a dial with your specified name will appear in the object's **Parameters** palette.

Shape an element using any combination of deformers you like to get the results you want. Shaping multiple elements on a body part includes all changes in the shape in the morph target.

1. Select the body part/prop's properties in the **Properties** palette, then select **Spawn Morph Target**. A dialog appears asking you to name your new target.

2. Enter your desired name and click **OK**. A parameter dial appears in the **Parameters** palette with the name of your new morph target. At this point, you can delete all deformers used to create the morph.



Assigning a name to a custom morph.

Numbers greater than 0 apply the morph to the selected element(s), and vice versa. A value of 1 means the morph target is fully applied, a value of -1 means the morph is completely inverted, and numbers greater than +/-1 create exaggerated effects. Using the **Bulging Bicep** example, a value of 1 applies the bulge fully, a value of -1 applies a full concavity (the reverse of the original morph), and so on.

Creating Full-Body Morphs

You can save multiple body parts and then save the entire pose as a full-figure morph target, also known as a Full-Body Morph (FBM). The new morph target encompasses all of the parameters for that pose, meaning that everything morphs at the same time.

Only morph channels combine into a full-body morph. Deformers are not automatically turned into morph targets for full-figure morphs, nor are scales, rotations, and translations.

When you create a full body morph, the master parameter dial in the BODY will be set to a value of 1, and the dependent parameter dials in each individual body actor will be set to 0, which is more in line with how full body morphs are typically set up manually.

To create a full-body morph target:

1. Create morph targets for as many body parts as you wish. Refer to this section for assistance if needed.

2. Morph each body part using the new **Parameter** dials as discussed in "Parameters Palette" on page 197. Set them to the values you want to appear in the full-body morph. For example, setting the **Bulging Bicep** value to 0.5 means that the full body morph, when set to 1, will morph that part of the figure as if you had applied the original morph with a value of 0.5.

3. Select the entire figure, then select **Figure > Create Full Body Morph**. Enter a name for your new morph in the **Set Name** dialog that appears.

When you select the figure's body again, a parameter dial with your new morph target will appear. This morph functions just like any other morph: Numbers greater than 0 apply the morph to the selected element(s), and vice versa. A value of 1 means the morph target is fully applied, a value of -1 means the morph is completely inverted, and numbers grater than +/-1 create exaggerated effects. Using the **Bulging Bicep** example, a value of 1 applies the bulge fully, a value of -1 applies a full concavity (the reverse of the original morph), and so forth.

Loading Full Body Morphs

You can use a third-party application to create a full body morph for a Poser figure, and then use the **Figure > Load Full Body Morph** command to apply the complete morph to your figure. The Load Full Body Morph command will then split the morphs across each individual body part and create a parameter dial in the Body actor to control all of the individual body part morphs.



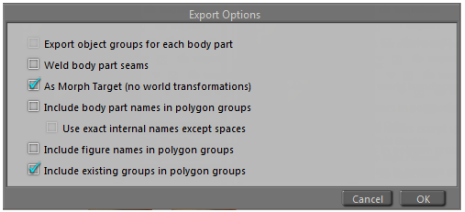
In order for the Load Full Body Morph command to work properly, the OBJ file must be grouped the same as the original figure. If the morphed figure does not contain groups, you will only see a parameter dial in the Body actor, and you will not see any change occur when you adjust the dial.

You can create your full body morph in a third-party application in one of two ways:

- You can import the unmodified OBJ file (usually found in the Geometries folder) into your modeling application. This is generally the preferred method, because you can then be assured that your OBJ file is not translated or modified in any way before you create your morph.

- Alternatively, you can load a figure into Poser from the library. Before you export the figure, turn off Inverse Kinematics and zero the figure, making sure that the hip and

Body actors are not translated or rotated in any way. When you choose the **File > Export > Wavefront OBJ** command, export the entire figure (do not omit any body parts). When the Export Options dialog appears, verify that **As Morph Target (No World Transformations)** and **Include Existing Groups in Polygon Groups** options are checked as shown in the following figure.

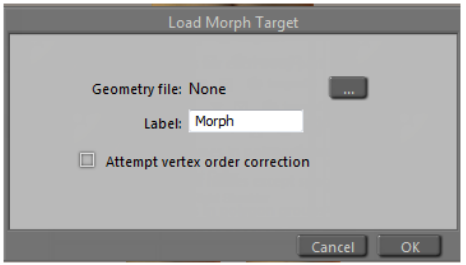


Export options for geometry files.

When creating your morph in your third-party application, make sure that you do not add or remove vertices or otherwise change the geometry in any way. You can only modify the shape of the original figure. When you export your geometry from your modeling application, you must also make sure that the grouping information is maintained.

To load the modified body shape into Poser, follow these steps:

1. Load the original figure from the library into your scene, and select it to make it active.
2. Choose **Figure > Load Full Body Morph**. The Load Morph Target dialog appears.



Loading a Morph Target.

3. Click the button to the right of the Geometry file section to locate the morphed OBJ file that you exported from your modeling application.
4. Enter a name for your morph in the Label field. This is the name that will be assigned to the parameter dials in the Body and individual body actors in the Parameters window.

5. Choose **OK** to complete the process. You should see morph dials in the body and under each individual body part.

6. Test the morph by adjusting the dial in the Body section of the Parameters palette.

- If the morph does not work, it may mean that the OBJ you imported did not contain groups. Check to see if a dial appears in any of the individual body parts. If they are absent, your OBJ file did not contain groups. Consult the documentation for your modeling program to determine how to export the groups with your OBJ file.

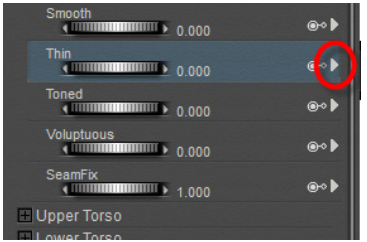
- If the morph works but it makes the figure "explode", repeat the process. This time, check the **Attempt Vertex Order Correction** option in the Load Morph Target dialog. This might resolve the problem.

Deleting Full and Partial Body Morphs

You can delete full or partial body morphs in the Parameters palette.

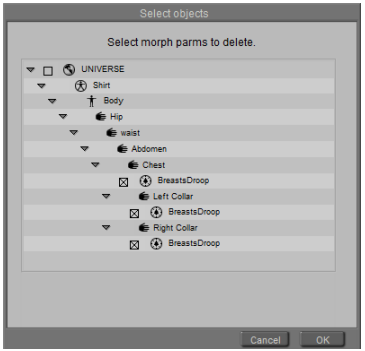
Find the parameter dial for the morph you want to delete. You can delete a morph by selecting a parameter from the BODY actor, or from any other body part actor.

Click the arrow that appears at the right side of the parameter dial to display the morph context menu, and choose **Delete** (if the BODY actor is selected) or **Delete Morph** (if a body part actor is selected).



Click the arrow to the right of the morph you want to delete, then choose Delete (or Delete Morph) from the menu.

The Select Objects dialog will open. A check mark will appear beside each body part from which the morph will be deleted. By default, all body parts in which the selected morph appears are checked. Uncheck any parts where you want the morph to remain. Poser will ask you to confirm the deletion before the full body morph is removed.



By default, all body actors that contain the morph are selected by default. Uncheck any actors where you want the morph to remain.

Using Dependent Parameters

You can change any existing parameter dial or create new master parameter dials that can be used to control any number of dependent (or slave) parameters. This powerful feature lets you link morphs, deformers, transformations, bulge parameters, or just about any element in the scene to create complex interactions that are all driven by a master parameter.

We'll examine how Ryan and Alyson use dependent parameters to control how several magnet deformers shape the forearm and bicep when you bend the forearm on Alyson.

Ryan and Alyson include several magnet deformers that help joints bend more realistically. The dependent parameters feature is used to link these deformers to various joints in the figure.

There are some magnet deformers that cause Alyson's forearm and bicep to bulge when you bend her forearm. In previous versions of Poser, you had to edit the figure's CR2 file in a text or CR2 editor to create a link between the forearm's bend rotation and the deformers (magnets or morphs) in the forearm and bicep. The dependent parameters feature permits the user to create these links without having to hand edit text in the CR2 file. In addition, it permits the user to create a curved link that can have varying driven values at any value of the master parameter. Conversely, the old hand-editing method only created linear links between the master and dependant parameters.

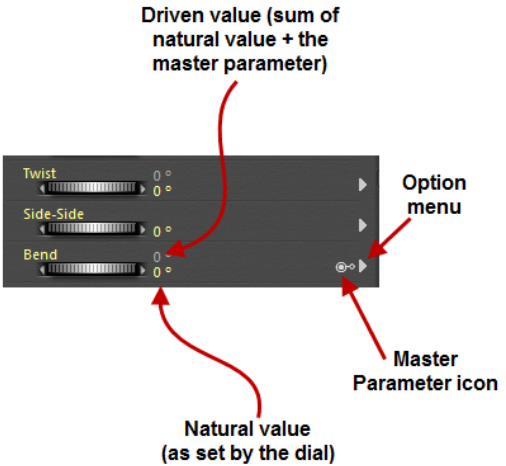


You can see all of the magnet deformers used in Alyson if you choose **Display > Deformers > Show All**. *You can choose* **Display > Deformers > Hide All** *to turn them back off after you've examined them.*

In this example, we start by loading Alyson into an empty scene and selecting the **Top** camera view. When you select Alyson's left

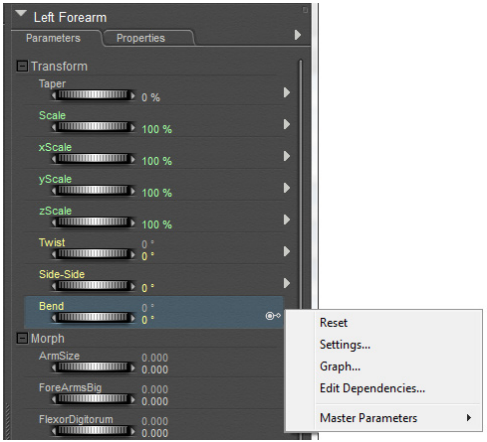
forearm, you'll notice the following features in the Parameters palette (shown in the following figure):

- A Master Parameter icon appears beside any parameter that serves as a Master Parameter. Click on this button to open the Dependent Parameters editor. This serves the same function as choosing the Edit Dependencies command from the Parameters Option Menu (as described next).
- When two values appear beside a parameter dial, one above the other, they indicate the following:
  - The lower number is the **natural value**, which is the value as set by the parameter dial itself.
  - The upper number is the **driven value**, which is the sum of the natural value setting **plus** any values set by its master parameter.



Dependent Parameter values and icons.

Select Alyson's **Left Forearm,** and click the Option Menu arrow at the right of the **Bend** parameter to display the menu shown in the following figure. Choose **Edit Dependencies** from the menu that appears. This opens the Dependent Parameters window.

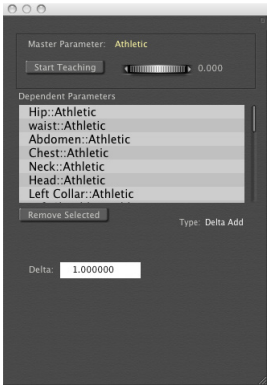


To open the Dependent Parameters window, choose Edit Dependencies for the parameter you want to edit.

The **Dependent Parameters** window displays the following settings and options:

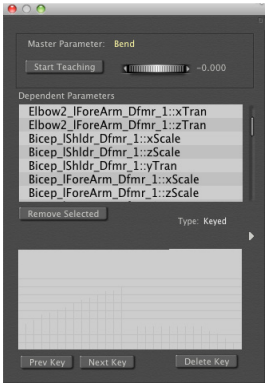
- **Master Parameter**: Lists the name of the Master Parameter dial that will control the dependent parameters.
- **Start Teaching**: Click this button to "record" the changes that you want to link to the currently selected dial and value.
- **Value slider and number**: Drag the slider left or right to increase or decrease the value. You can also click the value field and enter a number.
- **Dependent Parameters**: Provides a list of the other parameters in the figure that will be affected when you adjust the Master Parameter dial. For example, when you dial the **Bend** morph to -90 you want a change to occur in the Left Shoulder body part.
- **Remove Selected**: To remove dependent parameters, click to highlight one or more of the entries in the Dependent Parameters list, then click the **Remove Selected** button.
- **Type:** There are two types of Master Parameter dials:
  - **Keyed**: This master parameter type is the only type of dial that you can create in the Dependent Parameter palette. You can create linear links or curved links that have varying driven values at any value of the master parameter.
  - **Delta Add:** If you see this type listed, it means that the relationship between the master parameter dial and its dependent parameters were created externally (most often by content developers that created the

relationships while editing the figure's CR2 character file). A Delta Add type is also created when you use the Morphing Tool across body parts. Delta Add parameters are editable in the Dependent Parameters editor. When you add additional keys to a Delta master parameter, it remains a Delta master parameter.



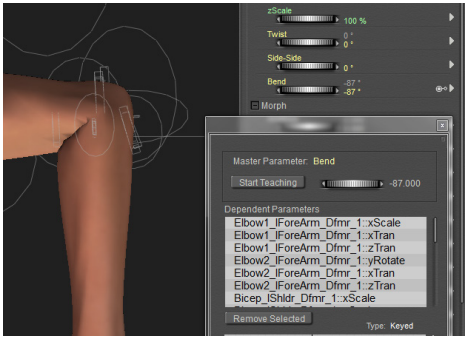
Delta Add dependent parameters.

When you look at the Bend parameter in Alyson's left forearm, you'll notice that there are a number of deformers linked to the parameter dial.



Keyed dependent parameters.

These deformers cause Alyson's forearm and bicep to bulge when you bend the forearm. If the deformers are displayed (**Display > Deformers > Show All**) you can observe how they respond when you adjust the Bend parameter on the left forearm. You can adjust the dial in the Parameters palette, or in the Dependent Parameters window.



Showing deformers for a figure.

The Dependent Parameter Editor Graph

The Graph in the Dependent Parameters window allows you to adjust how the parameter responds between keys. At a minimum you need two keys. But you can modify keys in the graph display as follows:

- Click on the graph display between two value keys and drag up or down to add a third value key.
- Drag the Master Parameter's value in the graph by clicking on the vertical line and moving it forward or backward.
- Click on any value key and drag it up or down to increase/decrease it's value.
- Click and drag in an open space of the graph to select multiple keys. You can move this selection to include other keys. Key navigation is controlled via the pop-up to the right of the graph.

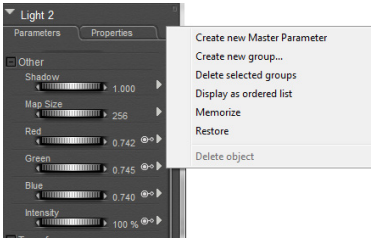
Creating Master Parameters

You can create a new Master Parameter dial from the Parameters option menu in the Parameters Palette. Master and Dependent Parameters aren't restricted for use in figures. For example, you can create a Brightness master parameter on the main light in your scene, and use it to raise or lower the brightness in all of the lights in your scene at the same time.

Using Poser's default three-light setup as an example, you would create a master parameter for Light 2 (the front off-white light) as the Master Parameter, as follows:

1. Select the actor that will serve as the master parameter. In this case, we want to add a new Master Parameter to Poser's default Light 2.

2. Click the Parameters Palette Options menu, and choose **Create New Master Parameter.**



Creating a new Master Parameter dial.

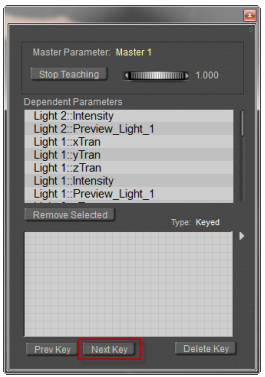
3. The Dependent Parameters Editor opens and displays a default name of Master(x), where (x) is a number. If it is the first Master Parameter that you are creating, it will be named Master 1.

4. You need to add two keys for each dependent parameter that you want to add. Since Light 2 is selected, we will adjust the brightness on that light first. First, click the **Start Teaching** button.

5. In the Dependent Parameters palette, set the Parameter dial to 1.000. This is the value we will use as the "Bright" setting for the Master 1 Parameter dial.

6. Now you adjust the brightness on all three lights in your scene. It doesn't matter which order you complete them in, but since we have Light 2 selected already we'll do that one first. Set the Intensity for Light 2 to 200% (or double the normal brightness).

7. Repeat Step 6 for Lights 1 and Lights 3, selecting them from the Actor Selector in the Parameters Palette. As you make these settings, you'll notice entries are automatically added to the Dependent Parameters palette.

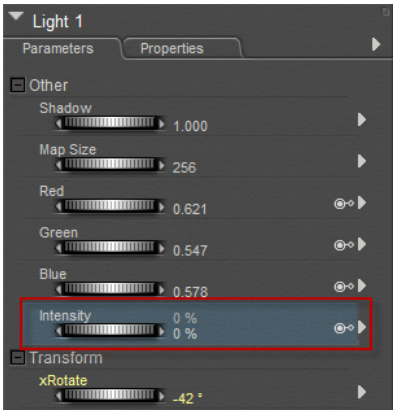


After the first key is created, click the Next Key button.

8. Click the **Next Key** button in the Dependent Parameters palette to create a key for the other end of the Master 1 parameter dial.

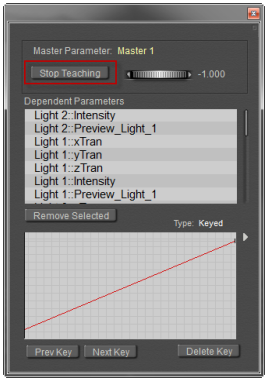
9. In the Dependent Parameters palette, set the Master 1 parameter to -1.00 (negative value). This is the setting that we will use to turn the lights off.

10. In the Properties palette, set the intensity of your current light to 0% (off). Then do the same for the other two lights.



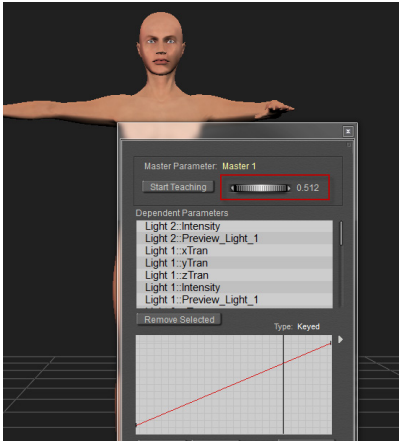
Set the intensities for the lights to 0%.

With all of your settings configured, click the **Stop Teaching** button in the Parameters Palette. You can also close the Dependent Parameters palette, if desired.



Click the Stop Teaching button when you complete the actions you want to perform.

To test the new master parameter dial, select Light 2 in the Parameters Palette, and adjust the Master 1 parameter dial. All three lights should be off when the dial is set to -1, on at their normal strength at 0, and at double brightness at 1.

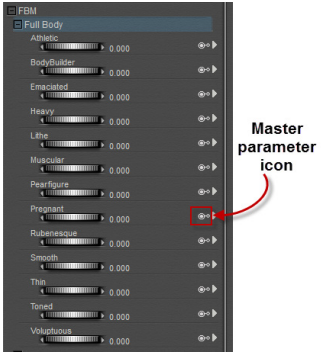


Test the new parameter dial to make sure it works as you expect.

Editing Master Parameters

The Dependent Parameters feature can be used to create or enhance Full Body Morphs. In this section, we'll describe how you can use the dependent parameters feature to enhance the Pregnant full body morph.

Create a new Poser scene and add Alyson to your scene. Select her **Body**, and expand the FBM morph section. Scroll down, if necessary, until you see the **Pregnant** morph. Click the Master Parameter icon to open the Dependent Parameter editor.

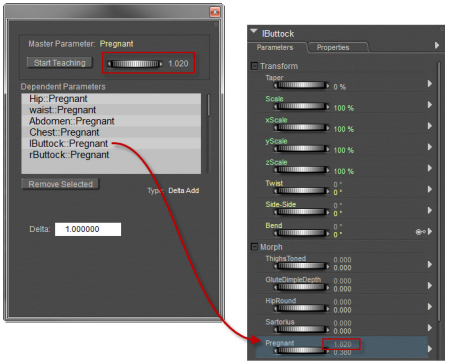


A master parameter icon.

You'll notice that a number of dependent parameters already appear in the Dependent Parameters editor. If you highlight one of the Dependent Parameters, the selected parameter appears in the Parameters palette. For example, when you select the **rButtock**: Pregnant entry in the Dependent Parameters list, the settings for the rButtock body part appear in the Parameters palette.

As mentioned earlier in "Using Dependent Parameters" on page 666, there are two numerical values listed to the right of each morph dial:

- The **natural value (lower)** designates the value that is currently set for the morph dial in the Parameters palette. In the example shown, the dial in the Parameters palette is set at 0%.
- The **driven value (upper)** designates the value as controlled by the master parameter. In this case, we are looking at a Master Parameter dial (Pregnant), so its Driven value in the Parameters palette is the same as that set in the Dependent Parameters window.



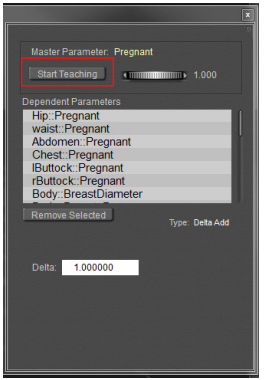
Morphs affected by dependent parameters have two values: natural and driven.

The Dependent Parameters list displays a list of the morphs that are adjusted by the Pregnant morph. The above figure shows that the Pregnant morph dial in Alyson's Body actor controls the Pregnant morph in the hip, waist, abdomen, chest, left buttock, and right buttock. If you are already familiar with previous versions of Poser, you might recognize this type of morph relationship as a "Full Body Morph." In earlier versions of Poser, you would have used the **Figure > Create Full Body Morph**

command to create a master parameter dial in the figure's Body part.

While the older method of creating Full Body Morphs is still available, the Dependent Parameters feature provides you with even more power. For example, you can link additional partial body morphs or full body morphs to the Pregnant dial so that there are even more changes to the shape of Alyson's pregnant body. To demonstrate, we are going to make the Pregnant morph even more natural looking, by adding additional changes to the breasts and hips. The Dependent Parameters feature makes this a very simple process.

Since Alyson is already in your scene, select **Body** as the current body part. Scroll down until you see the **Pregnant** full body morph, and dial in or enter a setting of 1 in the Dependent Parameters window.



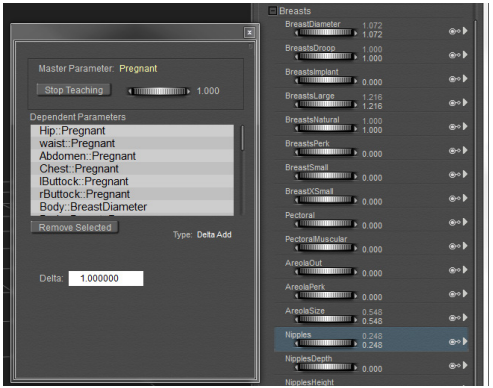
The Pregnant morph is set on several body parts. Click Start Teaching to further enhance the shape.

In the **Dependent Parameters** window, click the **Start Teaching** button. This instructs Poser to create a link between the Master Parameter and the values that you select until you tell Poser to stop teaching the joint parameters.

Now, we'll adjust some of the breast settings to make them look more like those of a pregnant woman. With Alyson's Body actor selected in the Parameters window, scroll down in the Parameters palette and expand the morphs under the **Breasts**

category. Then you can use the dials or enter values numerically. The following list shows the values that we set. Yours don't have to be exactly the same, feel free to experiment with other settings if you desire:

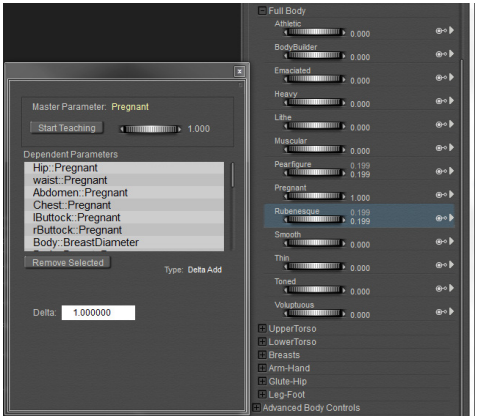
- **Breast Diameter**: 1.072
- **Breast Droop**: 1
- **Breasts Large**: 1.216
- **Breasts Natural**: 1
- **Areola Size**: .548
- **Nipples**: .248



Breast morphs are adjusted for a fuller appearance.

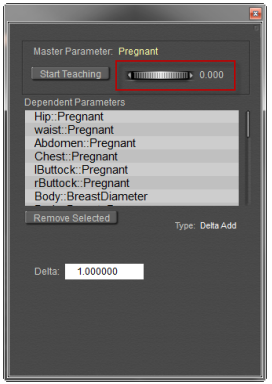
Notice now that the shape of the breasts looks more natural and realistic. Now we'll add a couple of other Full Body Morphs to the mix. We'll add a touch of the **Pear Figure** and **Rubenesque** to adjust the overall body shape just a bit. Scroll back up to the **Full Body** morphs section in the Parameters Palette, and adjust the following values:

- **PearFigure**: .199
- **Rubenesque**: .199



Other Full Body Morphs add additional shape to the Pregnant morph.

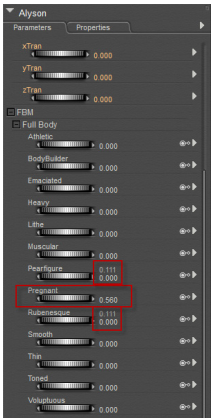
Now return to the Dependent Parameters window, and click **Stop Teaching**. The settings that you dialed in while teaching the joint should all appear in the Dependent Parameters list. When you adjust the dial in the Dependent Parameters window, you should see the differences in the Pregnant morph respond accordingly. Before you close the Dependent Parameters window, set the value to zero.



Set the value of the Master Parameter dial to zero before you close the window.

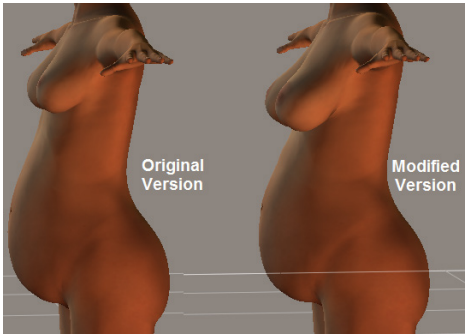
Now, go back to the Pregnant full body morph in the Parameters window. Adjust the value up and down to see how the new morph responds to the changes in the dial settings. Your new Pregnant morph should respond exactly as it did in the Dependent Parameters window. Notice how you also see the values of the PearFigure and Rubenesque dials change when you adjust the Pregnant morph. The values in the second column

reflect the settings that are inherited by the links that you created with the master parameter.



When you adjust the Pregnant morph dial, the dependent parameters adjust with it.

The following figure shows the original Pregnant morph on the left, and the new improved version on the right. As you can see, the enhancements have made the morph look more natural.



The original and modified Pregnant morph.

Before we move on to the next topic, there is one more thing to examine. The previous shot of the Parameters palette shows what happens to the PearFigure and Rubenesque morphs when you dial in the enhanced Pregnant morph. You'll see that when the Pregnant master parameter dial is set to .820, it drives the PearFigure and Rubenesque morphs to .163. But what happens if we want the woman to be more pear-shaped?

The solution is simple enough. You can adjust the **natural value** (the lower value) of the Pear Figure morph just as you can with any morph dial that is not affected by a master parameter. The following figure shows what happens when the natural value

dial for the Pear Figure morph is increased to .8. The driven value, which was previously set to .163 by the Pregnant morph, increases by your .8 setting as well, and the resulting shape of the figure changes accordingly.



You can still adjust the Natural value of a dependent parameter without affecting the Driven value.

To summarize, Dependent Parameters can be used to create master parameter dials that drive other parameters in a figure: morph dials, magnets, light settings, material settings, rotations, and more. As you experiment with this feature you'll realize how powerful and flexible it is.

Managing Morphed Figures

Saving Morph Targets

You can save morphed figures to the **Library** palette. Saved figures retain their custom parameter dials, meaning you can use them the next time you load that figure. To save a figure to the **Library** palette, please refer to "Adding Items to the Library" on page 162.

Poser saves morph targets to an external binary file format (.PMD), which contains only the morph targets for a particular figure or scene. This format allows for faster loading and greater flexibility, as the targets are no longer enmeshed with the rest of the data in the .PZ3 scene file. This storage method also requires less disk space, as all instances of the same figure reference the same .PMD file for morph target data. If you change the morph targets of one or more figures created from the Library and then save your scene, the morph target modifications will be saved in a single new .PMD file accompanying the scene file.

If you wish to save the modified morph targets for any one figure independently, you must select the **Use External Binary Morph Targets** option in the **General Preferences** palette (see "Setting Application Preferences" on page 32), and then add the modified figure back into the Library as a new figure. A new .PMD file will be created for that figure, containing the modified

morph targets. You can then reuse that figure in other scenes. Additionally, you can easily redistribute the morph targets independently of the specific figure, thereby affording you options for greater flexibility and efficiency.



It is the responsibility of the user to comply with the Smith Micro Software, Inc. End User License Agreement, as well as any third party License Agreements, before distributing Poser content. PMD morph data can be redistributed as long as they include morph delta information, and not geometry information.



Distribution of PMD morph data found in third-party content is subject to usage restrictions as outlined by the third-party content developers.

When you open and resave a Poser scene file (.PZ3) from a previous version, Poser will create a new external .PMD file containing the morph targets for that scene. If you wish to save morph targets for the figures in that scene independently, simply add those figures to the Library as described above, and then replace them in your scene. Poser will generate individual .PMD files for each of the figures.

Deleting Morph Targets

You can use the **Hierarchy Editor** palette to delete morphs, as explained in "Working with Hierarchy Branches" on page 699.

Chapter 31: Figure and Prop Editors

The Group Editor

Selecting the **Grouping** tool from the **Editing** tools display opens the **Group Editor** palette. The **Group Editor** lets you select and group individual polygons.



The Group Editor is very powerful and can permanently alter your figures if you overwrite changed figures into the Library. Be sure you understand how the grouping tool works before editing critical content. It's wise to practice on a simple object or prop to grasp the concepts first.



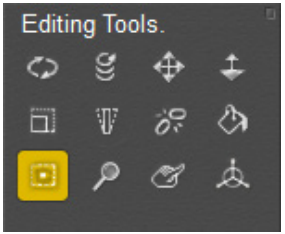
It helps to use Smooth Lined preview mode when using the Group Editor as polygons and vertices are clearly displayed.

The Group Editor is useful for various tasks within Poser such as:

- Creating material groups in the **Material** room. Please refer to "Chapter 14: The Material Room" on page 296 for information about the **Material** room.
- Creating hair groups in the **Hair** room. Please refer to "Chapter 26: The Hair Room" on page 533 for information about the **Hair** room.
- Creating cloth groups in the **Cloth** room. Please refer to "Chapter 27: The Cloth Room" on page 550 for information about the **Cloth** room.
- Creating body parts in the **Setup** room. Please refer to "Chapter 25: The Face Room" on page 518 for more information about the **Setup** room.
- Creating props. You can also create new props and deform and morph selected portions of an element. For example, you could use the Group Editor to select polygons around a character's eyes, nose, and forehead, and use those selected polygons to create a mask prop. See "Creating/Editing Groups" on page 689 for information on how to select polygons in the Group Editor.

Using the Group Editor

To create/edit a group, select the **Grouping** tool, which opens the **Group Editor** palette.



The Group Editor in the Editing Tools palette.

When this option is selected, all figures and objects in the Poser workspace turn gray. The **Group Editor** palette has the following sections and functions.

Creating and Deleting Groups

The top section of the group editor includes controls to navigate through, create, and delete groups from your current object.



The top section of the Group Editor.

- **Previous button (1):** Cycles backward through the currently existing groups.
- **Current Group pull-down menu (2)**: Use the **Current Group** pull-down menu to jump directly to your desired group.
- **Next button (3):** Cycles backward through the currently existing groups.
- **New Group button (4)**: Clicking the **New Group** button creates a new group with the currently selected polygons.
- **Delete Group button (5)**: Clicking the **Delete Group** button deletes the currently selected group.

Adding, Removing, and Modifying Polygons

The Selection section of the Group Editor contains three menus that allow you to add or remove polygons to the currently selected group.

- **Selection Mode (6):** Click the icon to display a menu that allows you to choose one of the following selection modes:
  - **Marquee:** Allows you to add to or remove from the currently selected group by drawing a rectangle around the polygons that you want to include or exclude.
  - **Draw:** Allows you to add or remove from the currently selected group by drawing over the polygons that you want to include or exclude
- **Select mode button (7)**: Click the **Select** button to enable polygon selection, and then click within the current object to add polygons to the current group.
- **Deselect mode button (8)**: Click the **Deselect** button to enable polygon deselection, and then click within the current object to remove polygons from the current group.



The Selection section of the Group Editor.

- **Add menu (9)**: Expand the **Add** menu to add polygons to the currently selected group, using one of four different modes:
  - **All**: Adds all polygons in the currently selected group.
  - **Group**: Allows you to add polygons by group name.
  - **Material**: Allows you to add polygons by material name.
  - **Mirror**: Allows you to mirror selected polygons along the X, Y, or Z axis to the opposite side of the model.

- **Remove menu (10)**: Expand the Remove menu to remove polygons from the currently selected group, using one of four different modes:
  - **All**: Removes all polygons in the currently selected group.
  - **Group**: Allows you to remove polygons by group name.
  - **Material**: Allows you to remove polygons by material name.
  - **Mirror**: Allows you to mirror deselected polygons along the X, Y, or Z axis to the opposite side of the model.
- **Modify menu (11)**: Expand the Modify menu to add or remove from the selection using one of the following methods:
  - **Invert**: Inverts the polygons that are assigned to the selected group, so that unselected polygons become selected, and selected polygons become unselected.
  - Grow: Expands the selection by one polygon around all its edges. You can also use the plus sign on your keyboard [+] to grow the selection.
  - **Shrink**: Reduces the selection by one polygon around all its edges. You can also use the minus sign on your keyboard [-] to shrink the selection.
  - **Grow (Edge Loop)**: After selecting two or more polygons in a loop, click the Grow button or use the right parenthesis shortcut **[ )]** to expand the selection by one along both ends of the same loop.
  - **Shrink (Edge Loop)**: Click the Shrink button or use the left parenthesis shortcut **[( ]** to shrink the selection by one along both ends of the same loop.
  - **Mirror**: Mirrors the selection on one side of the model to the other side, along the X, Y, or Z axis.

Showing and Hiding Faces and Objects



Display options in the Group Editor.

- **Hide Other Objects box (12)**: Checking the **Hide Other Objects** checkbox hides all objects in your scene other than the currently selected object, which can help if you have a

complex scene and only want to see the object being worked on.

- **Show Multigrouped Faces box (13)**: Checking the **Show multigrouped faces** checkbox displays all polygons that are assigned to more than one group. This can occur if you grouped your geometry in the 3D modeling application and accidentally assigned some polygons to more than one group.
- **Show Nongrouped Faces box (14)**: Checking the **Show nongrouped faces** box displays all polygons that do not belong to a group. If you leave the **Setup** room with one or more polygons that are not attached to a bone, they will be maintained on a prop attached to the figure and will be available for grouping again when you return to the **Setup** room.



The above commands are necessary for creating a figure using the geometry and bone structure. The following commands are useful and can be performed in the Setup room; however, they are not necessary for figure creation. They may, however, be necessary for rendering and finishing scenes using the newly created figure.

Geometry Functions



Geometry Functions in the Group Editor.

- **Create Prop button (14)**: Clicking the **Create Prop** button creates a new prop from the selected group or polygons. Enter a name for your new prop in the dialog that appears.
- **Spawn Props button (15)**: Clicking the **Spawn Prop** button creates props for all groups that have been created. Two examples of this might be to create a suit of form-fitting armor or the basis for clothing props.

- **Assign Material button (16)**: Clicking the **Assign Material** button creates a new material class for the selected polygon(s). A dialog box will appear asking you to name the new material class. A material class is a parameter that determines the polygons to which a material is applied. For example, if you are creating a figure with gloves on, you could select the polygons of both gloves as a material class. Later, you could use the **Material** command to assign a material, texture, bump maps, etc. to the gloves. You can think of material classes as groups that define areas where materials are applied.

- **Assign Smoothing ID button (17)**: Clicking the **Assign Smoothing ID** button allows you to delineate smoothing groups for the application of smooth shading across adjoining polygon edges. A dialog will appear asking you to assign a new or existing Smoothing ID to the current group. Enter a new ID in the field provided. For more information about smoothing groups, see "Smoothing Geometry" on page 422.

- **Create Perspective UVs button (18)**: Clicking the **Create Perspective UVs** button maps texture coordinates for a group. An example of using this command might be to map an imported background image of a face to a Poser group corresponding to the figure's face. The face's texture coordinates would map to the image.

- **Reverse Group Normals button (19)**: Clicking the **Reverse Group Normals** button reverses the normals of the selected group. This allows you to turn environment-type objects or other imports inside out for interactive rendering as desired.

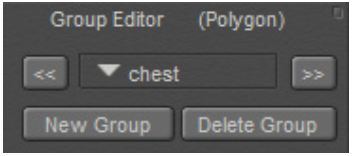
- **Auto Group button (20)**: See "The Auto Group Command" on page 687 below.

- **Weld Group button (21)**: See "The Weld Group Command" on page 688 below.

Polygon & Vertex Modes

The **Grouping** tool operates in polygon or vertex mode, depending upon which room you are in when you use the Group Editor:

- In polygon mode, you can add/remove your currently selected polygon(s) to the current polygon group. While in this mode, you can only create/edit/delete polygon groups. Polygon groups are accessible from the **Group Editor** palette using certain commands, such as **Add Group**. Polygon groups will appear in the popup menu (#4 in the following image).



The top section of the Group Editor.

- In vertex mode, you can add/remove your currently selected vertex/vertices to the current vertex group. Likewise, in vertex mode, you can only create/edit/delete vertex groups. Poser uses vertex groups for dynamic cloth objects in the **Cloth** room and for styling hair in the **Hair** room. For cloth, using vertices allows you to select the edges of a cloth object (such one side of a sheet hanging from a clothesline and blowing in the wind). This effect cannot be achieved using polygon grouping.

Poser automatically selects the correct mode depending on which room you are currently in. For example, in the **Pose** room, the **Grouping** tool only operates in polygon mode; in the **Cloth** room, it operates in vertex mode.

The Auto Group Command

When you are creating groups for a newly imported geometry (**Setup** room), you can save time and effort by clicking the **Auto Group** button near the bottom of the **Group Editor** palette. This option is particularly useful when you are creating custom Poser figures in the **Setup** room. If you choose to use the **Auto Group** feature, be sure to do so after creating, positioning, and naming the bone structure! This is because the **Auto Group** feature places polygons into groups based on their location in 3D space relative to the available bones. This can cause very unpredictable and disorganized results if the bone structure has not been properly created, positioned, and named.



If you use the Auto Group feature before you have created, positioned, and named the bone structure, it can result in unpredictable groups that will then require extensive time-consuming repair. The correct bone structure used by the Alyson and Ryan figures is shown in "Poser Figures Hierarchy" on page 695*. Other Poser figures use similar hierarchies, but may have less control in mouth, hand, and feet parts.*

The **Auto Group** feature is designed for one-time use when you first create a figure. You can use it as often as you wish; however, it completely regroups every polygon in the geometry or figure, which will cause the figure to lose all pre-existing group

assignments that match bone names. If you must use the **Auto Group** feature again after creating your figure, do it with care.

The **Auto Group** feature causes Poser to take a "best guess" when grouping polygons and bones. You may find that you need to fine-tune the automatically created groups by manually selecting polygons and moving them to different groups. Do this by selecting the target group and then selecting the polygon(s) you wish to move to the target group.



The Grouping tool automatically removes polygons from other named groups (including NO_BONE) and adds them to the selected target group in order to avoid having polygons assigned to more than one group at a time. Group Editor palette commands do not share this functionality.

The Weld Group Command

The **Weld Group** feature can be useful if, for example, you need to make alterations to your groups after you leave the **Setup** room or if you import a prop with groups that you want to change. In the **Setup** room, once your figure is created, Poser breaks the single geometry into pieces corresponding to the groups you created. If you reassign polygons to different groups, the original breaks remain, which can cause your figure to appear broken or disconnected at the point where the old group boundaries lie.

The best way to illustrate this is by using an example. Say you create a figure with, among others, groups for the head and neck. After leaving the **Setup** room, Poser breaks the single geometry into pieces whose edges correspond to the group boundaries you created. This is necessary in order to allow the figure to bend. Later, you decide to move the neck higher into the head by reassigning some of the polygons in the head group to the neck group. You can do this easily using the **Grouping** tool.

Poser creates a new break in the geometry at the new group boundary; however, the old break at the old group boundary still exists. This can cause your figure's neck to appear broken or discontinuous as you pose and render it. To solve this problem, you would:

1. Select the **Grouping** tool.
2. Select the neck group.
3. Click the **Weld Group** button.

The Weld Group function alters and combines the vertices on either side of the break so as to create a smooth bridge across the gap. A good way to think of this is to imagine sealing a crack. The filler compound joins the two surfaces, but does minutely alter the surface topography where the crack used to be. The Weld Group function works this way as well, modifying the geometry slightly in order to eliminate the break. This should be unnoticeable in most cases.

Creating/Editing Groups

To create a group, select the **Grouping** tool. You can then click individual polygons or click and drag to select multiple polygons. If you accidentally select one or more wrong polygons, you can deselect them by using the **Deselect** tool (see above) or pressing **[CTRL]** while clicking or dragging. If you are in the **Setup** room, polygons that have been removed from a group will automatically be added to a group called **NO_BONE** so that you can see which polygons are unassigned and correct the problems before leaving the **Setup** room.

To select polygons that are currently out of view, you can use the **Wireframe** display style, the camera trackball to change the view of your figure, and/or multiple viewpanes to bring the desired polygons into view.

Path names in Poser-related library files and scripts use a colon to separate the folders in the path (ie: Runtime:Libraries:character:myfolder:myproduct.cr2). Using a colon in figure or group names will cause potential problems when parsing PoserPython scripts, as anything after the colon is ignored. Use of a colon in an actor name (such as tail:1 or tail:9) is discouraged. Instead, name the item something like tail01 or tail09.

While working with the Grouping tool, pressing **[OPT]/[ALT]** *allows you to quickly access the camera trackball.*

While you are selecting polygons, it is possible that you will select some polygons that have previously been assigned to a different group, either by accident or by design. If this happens, the **Grouping** tool will remove the subject polygons from their previous group and assign them to the new group in order to ensure that no polygons belong to more than one group at a time.

The Group Editor palette commands do not share this functionality.

When you are creating groups for figures (**Setup** room), it is important to remember that joint bending only occurs between

an object and its parent. The bends do not progress to other children or above the parent in the hierarchy. Keep this in mind as you create your groups, and later when you fine-tune your joints.

The Group Editor palette appears whenever the Grouping tool is selected.

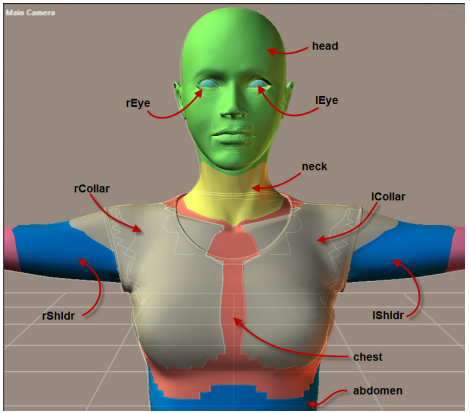
About Groups

This section describes how Poser differentiates between body part groups, material groups, and other group types on a figure or prop. This explanation is specific to Poser, however it will provide you with the background information you need in order to understand groups in general.

The following examples use the Alyson Casual figure (available in the **Figures** category). Add this figure to your scene by dragging from the Library to the document window, or by clicking the **Change Figure** or **Create New Figure** button at the bottom of the **Library** palette, as described in "Loading and Managing Items using the Library Icons" on page 135. When you display the figure in Outline display mode and hover your mouse over the various body parts, you'll see an outline of the group underneath the mouse. We have color-coded the groups for clarity in the following figure.

Please remember that each figure/prop is different, having different body parts, materials, hair, and cloth groups. Further, the groups themselves may be arranged in different orders. However, the concepts explained here are the same for each figure/prop.

Poser figures consist of named body parts that can be selected and articulated (or **posed**). Props normally consist of a single part that cannot be articulated, although poseable props do exist. The following graphic depicts an example of Poser body parts:



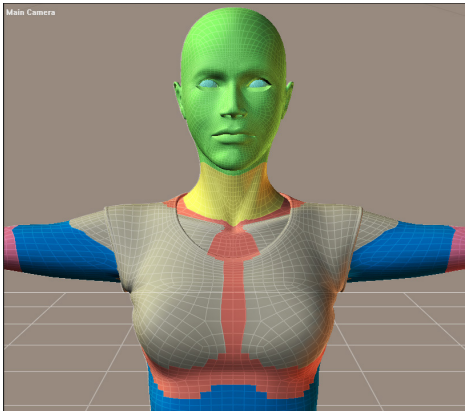
A figure is made up of poseable body parts, called groups.

The example displays several body parts: head, left eyeball, right eyeball, neck, chest, left collar, right collar., left shoulder, right shoulder, and abdomen Each of these body parts can be articulated (posed).

Each body part (or group) consists of one or more polygons.

As hinted above, there are several different types of polygon groups: body part groups, material groups, hair groups, and cloth groups for example. A polygon can belong to more than one type of group (such as a body part group and a material group, or a cloth group and a material group). A polygon can only be in **one group of each type** at a time. Thus, the following group combinations are possible:

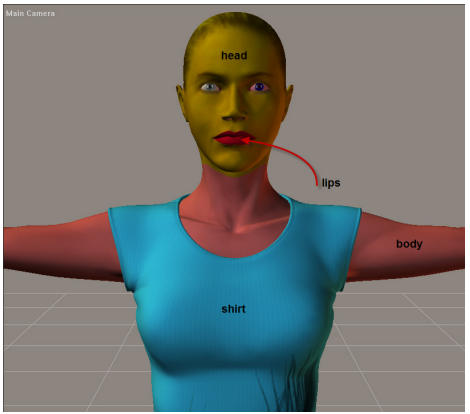
- One body part may have one material assigned to it. For example, the neck will probably have the “skin” material.
- Two or more body parts may use the same material. For example, the fingers may all use the “skin” material.
- One body part may use more than one material. For example, each eyeball may have separate materials for the eyeball, iris, and pupil.
- In addition to the above, a polygon may be part of a hair group and/or a cloth group.



Polygons in the figure are assigned to groups for posing.

Since body parts and materials are the most obvious forms of grouping, let's use them to illustrate grouping as a whole since the same concepts apply to hair and cloth groups as well. The graphic displays the material assignments for the above-displayed body parts.

You can see that the head, neck, and portions of the chest use the skin material. The chest and collars use the shirt material. The eyes use eyeball, pupil, and iris materials. The head uses several materials including skin, lips, and eyebrows.



Material assignments for various body parts.

The important things to remember are:

- Poser groups polygons by body part, material, hair, and cloth, and these groups are independent of each other.
- Each material in a figure/prop gets assigned a unique numbered ID, and that ID is in turn used by a polygon to

specify which material should be applied to that polygon. For example, the skin material may have ID 1, the shirt ID 2, etc. Each polygon in a figure/prop includes the ID number of the material assigned to that polygon. Changing a material itself will affect the appearance of all polygons that have the corresponding material ID. For example, if one made the skin green, then all polygons with the "skin" material ID would turn green regardless of the body part.

The following table depicts a partial list of the relationships between body parts and materials in the **Alyson Casual** figure:

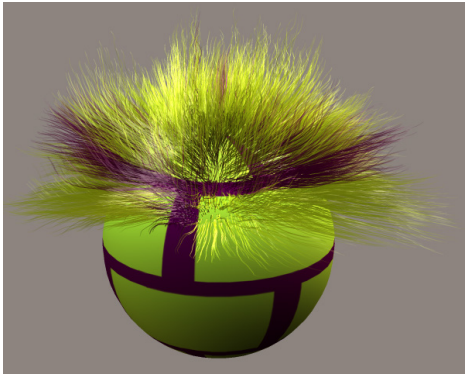
Body Part	Assigned Material(s)
Head	Head, Nostrils, Lips, EyeSockets, Lacrimals, InnerMouth, TearLine, EyelashesBottom, EyelashesTop, Teeth, Gums, Tongue
Eyeballs (left and right)	EyeballLeft, IrisLeft, PupilLeft, CorneaLeft, EyeballRight, IrisRight, PupilRight, CorneaRight
Neck	Body
Collars (left and right)	Body, Shirt
Chest	Body, Shirt

Again, the only relationship between the body parts, materials, hair, and cloth is that defined by the figure's creator. Poser does not mandate any such relationship.

Now that we have differentiated between body part and material groups and mentioned hair and cloth, let's describe hair and cloth groups in more detail:

Hair Groups

Hair groups are groups of polygons that can also belong to any body part, prop, and material group. Polygons that are part of hair groups can have real 3D hair grown on them. Please refer to "Chapter 26: The Hair Room" on page 533 for more information about the **Hair** room.



Hair groups are special grouping assignments that can grow strand-based hair.

Cloth Groups

Poser's **Cloth** room allows you to create realistic cloth that you can use for almost any purpose in your scene. Cloth groups are actually **vertex groups**, meaning that they are groups of vertices instead of polygons, however this makes little difference in the overall discussion. Vertices belonging to a cloth group cannot belong to a body part group.

Here is an example of a figure wearing dynamic cloth, which consists of props with named groups. See how the cloth realistically drapes and moves as the figure moves.

Please refer to "Chapter 27: The Cloth Room" on page 550 for more information about the **Cloth** room.



Cloth groups are used in dynamic clothing, which moves realistically when animated.

The Hierarchy Editor

The Hierarchy Editor shows every parent/child relationship and every scene element and their various parameters, from lights and cameras to morphs and deformers. You can also view the IK chain settings and external names of each item. The Hierarchy Editor also displays buttons that allow you to configure standard hierarchy, rotation order, IK chains, and new figure.

A scene's hierarchy describes the parent-child relationships of all objects in your scenes.



Please refer to "Poser File Types" on page 848 *for more information about hierarchies in general.*



Body parts or props that are physically located at a seam are generally contained in either a parent or child object. The scene's hierarchy also defines data like joint rotation orders and IK relationships.

A Poser document's hierarchy contains:

- The complete list of all objects in the scene's universe, including figures, props, body parts, lights, and cameras.
- Hierarchical connections (parent/child relationships) between scene objects.
- Parameters, including rotation, translation, morph targets, and Point At (see "Point At" on page 212).
- IK chains.

Poser Figures Hierarchy

In order to make a figure bendable, it needs to be attached to a skeleton that moves the polygons in the geometry. In order to attach the polygons (or "skin") to the bones, the polygons in the geometry must be named the same as the bones in the underlying skeleton.

To utilize as many of Poser's posing and morphing capabilities as possible, there are specific naming conventions that should be followed. Most human Poser figures follow a hierarchical structure that uses the hip actor as its root. Internal body part groups must always begin with a lower-case letter, with right and left body parts always beginning with a lower-case r (for right) or l (for left) to work with Poser's Symmetry commands properly.

The internal group names that are used by the Alyson and Ryan figures are shown below in their correct hierarchical structure. Alyson and Ryan have additional groups (shown in bold italics) which control the top and bottom teeth, several levels for the tongue, and an extra joint for each of the fingers and toes to allow for better bending. Other Poser figures may have more

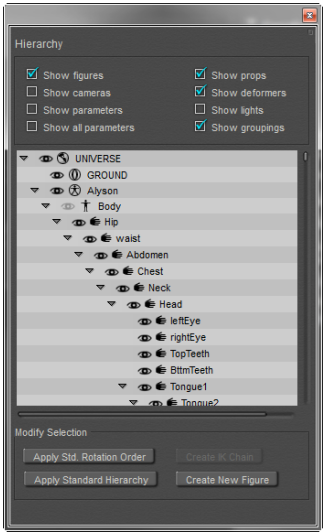
or less groups, but the basic arrangement of the bones will be similar to that shown below:

```
hip
  waist
     abdomen
        chest
           neck
              lEye
              rEye
              TopTeeth
              BttmTeeth
              Tongue1
                 Tongue2
                    Tongue3
                       Tongue4
                          Tongue5
                             Tongue6
  lCollar
     lBreast
        lShldr
           lForeArm
              lHand
                 lThumb1
                    lThumb2
                       lThumb3
                 lIndex0
                    lIndex1
                       lIndex2
                          lIndex3
                 lMid0
                    lMid1
                       lMid2
                          lMid3
                 lRing0
                    lRing1
                       lRing2
                          lRing3
                 lPinky0
                    lPinky1
                       lPinky2
                          lPinky3
rCollar
   rBreast
      rShldr
         rForeArm
            rHand
               rThumb1
                  rThumb2
                     rThumb3
               rIndex0
                  rIndex1
                     rIndex2
                        rIndex3
               rMid0
                  rMid1
                     rMid2
                        rMid3
               rRing0
                  rRing1
                     rRing2
                        rRing3
               rPinky0
                  rPinky1
                     rPinky2
                        rPinky3
lButtock
   lThigh
      lShin
         lFoot
            lToe
               lBigToe1
                  lBigToe2
               lIndexToe1
                  lIndexToe2
               lMidToe1
                  lMidToe2
               lRingToe1
                  lRingToe2
               lPinkyToe1
```

```
                    lPinkyToe2
rButtock
   rThigh
      rShin
         rFoot
            rToe
               rBigToe1
                  rBigToe2
               rIndexToe1
                  rIndexToe2
               rMidToe1
                  rMidToe2
               rRingToe1
                  rRingToe2
               rPinkyToe1
                  rPinkyToe2
```

Using the Hierarchy Editor

To display the Hierarchy Editor palette, select **Window > Hierarchy Editor**.



The Hierarchy Editor.

The **Hierarchy Editor** palette allows you to:

- Select scene elements. Selecting an element in the **Hierarchy Editor** palette selects that item in the **Document** window, **Current Actor** pull-down, and **Graph** palette.
- Access object properties. Double-clicking an object listing in the **Hierarchy Editor** palette opens the **Properties** palette for the selected item.
- Quickly hide or view scene elements.
- Rename or delete elements and parameters such as morph targets or Point At parameters. Use caution, as this is a very powerful and very permanent change.
- Set up or change parent-child relationships for props.
- Set up Inverse Kinematics (IK) chains.
- Change rotation orders for props or body parts.
- Create new figures. The addition of the graphical **Setup** room (see "Chapter 27: The Cloth Room" on page 550) eliminates the need to use the **Hierarchy Editor** palette to create figures.
- Expand or contract the hierarchy list to view parents and children or parents only.

Filtering the Display

You can filter what appears in the **Hierarchy Editor** palette by selecting your desired display options at the top of the palette. Checking a box enables the selected option, and clearing it disables that option. The options are as follows:

- **Show Figures**: Checking the **Show Figures** checkbox displays all figures in the current Poser document.
- **Show Cameras**: Checking the **Show Cameras** checkbox displays all cameras in the current Poser document.
- **Show Parameters**: Checking the **Show Parameters** checkbox displays all object parameters in the current Poser document.
- **Show All Parameters**: Checking the **Show All Parameters** checkbox displays all parameters in the current Poser document.
- **Show Props**: Checking the **Show Props** checkbox displays all props in the current Poser document.
- **Show Deformers**: Checking the **Show Deformers** checkbox displays all magnets, waves, morph targets, and force fields in the current Poser document (scene).

- **Show Lights**: Checking the **Show Lights** checkbox displays all lights in the current Poser document.
- **Show Groupings**: Checking the **Show Groupings** checkbox displays all of the constraint grouping and object grouping objects in the current Poser document, along with objects that are children of them.

Working with Hierarchy Branches

You can perform the following basic actions using the hierarchy listing:

- To expand a hierarchy branch, click the right-pointing arrow next to the branch you wish to expand.
- To collapse a hierarchy branch, click the downward-pointing arrow next to the branch you wish to collapse.
- To select an object, click its listing.
- To make an object visible or invisible, click the eye next to the desired icon. The eye appears bright white when an object is visible and gray when invisible.
- To view the **Properties** palette for an object, double-click the selected object's listing.
- To delete a figure, prop, or light from your scene, select the item to delete then press [DEL]. You cannot delete body parts, cameras, or the ground plane.
- To rename an object, click on its listing once to select it, and then a second time to open a text box. (Do not simply double-click on the listing, as this will open the **Properties** palette for that object.) Enter the object's new name in the text box.



Elements of the Hierarchy Editor.

Reordering Scene Elements

You can reorder scene elements including props and deformers. Reordering deformers can be useful, especially when you have a long hierarchy listing. You can also reorder morph targets and parameters such as rotation orders (this is the same as using the

Joint Editor palette). You can also reorder light, camera, and prop **Point At** parameters.

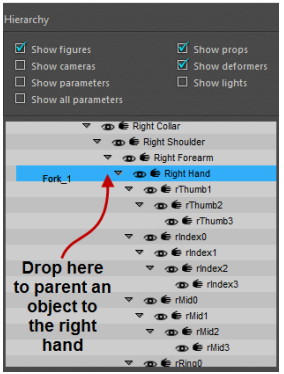


Be careful when changing rotation orders as this might cause unexpected behavior.

Establishing Hierarchal Relationships

This does the same thing as the **Set Parent** menu command (see "Changing a Parent" on page 231). To establish a hierarchical relationship using the Hierarchy Editor:

1. Load your desired prop(s) into the scene.
2. Open the **Hierarchy Editor** palette and find the prop.
3. Drag the child object on top of the root (parent) object. A green box highlights the target when the child object is on top of it.
4. Drop the object onto the highlighted object.



Dragging and Dropping to parent an object.

To reorder a child at the same hierarchical level:

1. Click the child object and drag to its new location. A white line appears just below the target location, indicating where the object will be placed once dropped.
2. Drop the object.

You can also create hierarchies spanning figures (such as a woman on horseback):

1. Select the child figure.
2. Drag the child figure onto the desired parent.
3. Drop the child.

You can also set up hierarchies between figures outside the **Hierarchy Editor** palette as follows:

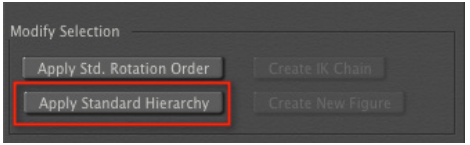
1. Use the pop-up to select the child figure.
2. Select **Figure > Set Figure Parent** (see "Set Figure Parent" on page 230) to open the **Set Parent** dialog.
3. Select the parent body/body part in the dialog and click **OK**.

Applying the Standard Hierarchy

If a figure's geometry was created using standard body group names for human/biped figures, you can use the Hierarchy Editor to automatically apply the Poser Standard Hierarchy to your figure, establishing parent-child relationships. Poser can apply the Standard Hierarchy to full or partial figures. Refer to "Chapter 31: Figure and Prop Editors" on page 681 for more information about groups and hierarchies and how to edit them.

To apply the Poser Standard Hierarchy to a figure:

1. Choose **Window** > **Hierarchy Editor**.
2. Select the **Universe**.
3. Click the Apply Standard Hierarchy button.



The Apply Standard Hierarchy button.



The Apply Standard Hierarchy button is not available unless the universe is selected.

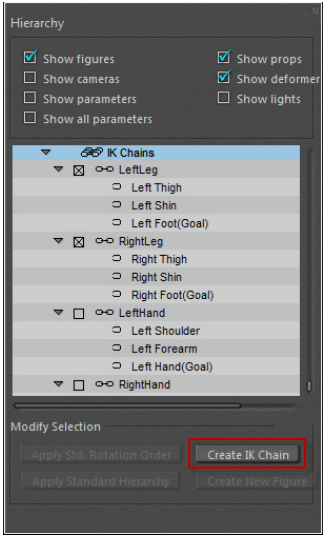
Creating IK Chains

To create an IK chain:

1. Scroll to the bottom of the hierarchy list using the scroll bar and click the **IK Chains** entry to enable the **Create IK Chain** button.
2. Enter a name for the chain you are creating in the dialog box that pops up and click **OK**. A blank IK chain appears in the list.

3. Plan each element in the IK chain from root to goal. For example, the IK chain for the right arm has the right hand as the goal.

4. From the hierarchy list, click and drag body part listings onto the new blank IK chain. They will be added to the IK chain in the order you drag them from root to goal. Proceed to add parts to the chain in the order of root to goal.



Creating an IK chain.

Be careful when creating IK chains as you could cause your figure to move in unexpected ways when the new IK chain is added.

Using IK

To enable IK for your figure, select **Figure > Use Inverse Kinematics** and select the chain you wish to enable. You will see the chains you created as well as the standard Poser chains (if you added chains to a standard Poser figure). A check mark appears next to each enabled IK chain. To disable IK, select **Figure > Use Inverse Kinematics** and select the chain you wish to disable. You can also open the Hierarchy Editor and check and uncheck the boxes next to each IK chain in the list to enable and disable IK.

Chapter 32: The Setup Room

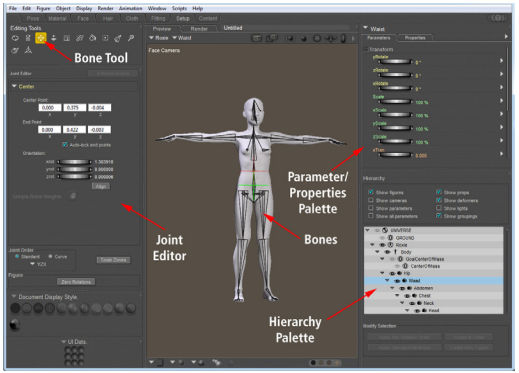
The **Setup** room is one of Poser's most powerful features. It allows you to modify existing props or figures, or even create your own for use with Poser.

The **Setup** room allows you to fully rig new figures by creating and setting up joints, hierarchy groups and IK chains. It allows you to create these elements in a graphical environment, rather than having to manually edit a configuration file in a text-based environment.

When the Setup room opens, it displays many of the controls that you will need to create poseable figures. Depending on the size of your workspace, you may see the Camera controls, Joint Editor, Editing tools, Parameters/Properties palette, or Hierarchy Editor in this room. Of particular importance is the Bone Tool, which allows you to graphically create a skeleton for your figures.



The number of palettes and options that you see in each room depends upon your screen resolution. At higher resolutions, the default work spaces display more palettes, while at lower resolutions you see fewer palettes.



The Setup Room.



The Setup room is an extremely powerful tool that can permanently modify your figures, including those originally included with Poser. Always save your figures to the Library palette to prevent inadvertently damaging one of your existing figures and to enable you to return to a previous figure setup if you choose to. This will also help you keep your figures organized and easy to find.



Avoid losing your work! Be sure to save your work frequently and possibly to different files in case you run into problems.

Creating Figures for Poser

Figures do not have to be anthropomorphic (human-shaped). A figure's mere appearance has no effect on how it functions within Poser. In reality, there are two things that determine how you can move and animate a figure:

- The figure's underlying **skeleton** (called a bone structure), which determines the hierarchy and location of joints.
- The manner in which the figure's polygons (the rough equivalent of skin and muscles) are **grouped** or attached to the bones.

Prior to the release of the Pro Pack add-in for Poser 4, figure creators pre-grouped OBJ models into specifically-named body parts, and then used a text-based method to convert them into poseable figures. While Poser still supports this method of figure creation, the graphical **Setup** room can eliminate 90% of your figure creation time. This room allows you to create/modify Poser figures in a completely graphical environment.

There are three ways to make figures for Poser:

- Using hierarchy files combined with an external model



Figure creators wishing to create Poser figures using the text-based method should refer to the "Appendix D: Creating and Converting Hierarchy Files" on page 871*, which covers the text-based figure creation method in detail.*

- Using the hierarchy palette (discussed in "About Groups" on page 690) to combine props together to form a figure.
- Importing a geometry and using the **Setup** room as discussed in this chapter.

About the Setup Room

The actual process of creating a poseable figure involves a greater number of detailed steps, each of which is discussed in this chapter. Briefly, the **Setup** room figure creation/modification process is as follows:

1. Use props that are included with Poser, or create the geometry for your new figure in your favorite 3D modeling application.
2. Import your geometry as a prop using the **File > Import** command. Once the geometry is complete, enter the **Setup** room.

3. Create and/or modify your figure's bone structure or skeleton. Like a real skeleton, your figure's skeleton is the underlying framework that determines where bends occur. You can import a skeleton from a similar figure or create your figure's skeleton from scratch.

4. Position the skeleton and joints to match your figure. This step is critical to ensure that your figure bends as accurately as possible.

5. "Put meat on the bones" by grouping the various portions of your figure and assigning bones to those groups.

6. Fine-tune the figure's joints, and then exit the **Setup** room to test your new figure and complete the figure creation/modification process.

7. Assign IK chains using the **Hierarchy Editor**, set favored IK angles and joint limits, and memorize this information.

8. Readjust your figure's joints if necessary, and then save your new figure to the **Library** palette.



Exiting the Setup room during the figure creation process may cause you to lose some recent changes. A warning will appear if exiting the Setup room will cause data loss.

The Setup Room Interface

The **Setup** room interface is designed to be similar to the **Pose** room interface and functionality, with a few minor changes:

- You cannot pose the figure you are creating while in the **Setup** room. Instead, the figure's bone structure (if any) appears in the **Document** window, allowing you to position and adjust each bone.

- While in the **Setup** room, loading a figure from the **Library** palette loads the selected figure's bone system and applies it to the current object. Geometry is altered when switching between the **Pose** and **Setup** rooms. While in the **Pose** room, each body part is treated as a separate geometry object. While in the **Setup** room, all of the body parts are combined into a single object for easier grouping and welding operations. Clicking the **Create New Figure** button in the **Library** palette loads the selected figure's bone structure for modification and use on the figure you are creating or modifying. You can also double-click the figure to load its bones.

The following sections explain the figure setup process in detail.

Setting Up an Original Figure

Step 1: Importing/Arranging Geometries

Begin the figure creation process by inserting the prop(s) you wish to assemble into a figure. Do this by adding props to your scene using the **Library** palette and/or by importing geometry objects (static mesh objects or props). If using more than one prop, be sure to arrange your props in their final positions before beginning the figure conversion process.



Please refer to "Importing Files" on page 777 for information on importing geometries into Poser.



In order to be rigged, you need to create your geometry properly and assign each body to a unique Material Group; otherwise the geometry won't be treated as a separate body part. Group names for the Alyson and Ryan figures are listed in "Poser Figures Hierarchy" on page 695.

Step 2: Loading and/or Creating Bone Structures

This section describes what bone structures are, what they do, and how to create/modify a bone structure for your imported geometry or figure.

About Bone Structures

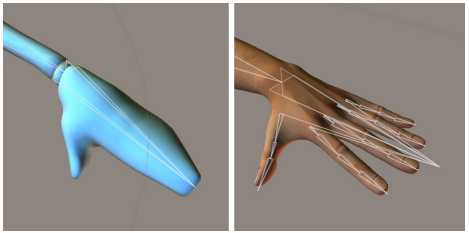
Each Poser figure includes hierarchy and joint information that together determine how the figure behaves when posed. The **Setup** room expresses this information as a bone structure or skeleton that is tailored to each figure. Skeletons are a critical part of your figures because they define where and how the figure bends, just as your own bones define how and where you bend. Skeletons provide the following information for each figure:

- **Defining the figure's hierarchy**: The skeleton defines the parent/child relationships in your figure. Please refer to "Poser File Types" on page 848 for information about hierarchies within Poser.
- **Locating joints**: Just as with your own skeleton, your figure will only bend at joints, which are the places where bone ends meet.

- **Limiting figure movement**: By now, you are keenly aware that each joint in your body has a limited range of motion under normal circumstances. For example, your elbow only bends in one direction and cannot flex beyond straightening your arm out, your wrist can move in any direction within a narrow cone, and so forth. You can define limits for each of your figure's joints. These limits can prevent you from creating unnatural looking poses, one part of the figure crossing through another part, etc.

- **Figure resolution**: The more bones your figure's skeleton has, the greater degree of flexibility (resolution) it will have. For example, the **Andy** figure allows you to bend the shoulder, elbow, and wrist, but not the palm or fingers. By contrast, the **Ryan** figure lets you adjust the precise position of each finger.

- This image shows **Andy's** left hand and underlying bone structure on the left, and **Ryan's** left hand and bone structure on the right. Note that **Andy** has only one bone to define his entire hand, while **Ryan** has a far more realistic bone structure complete with palm and fully articulated finger joints.



Bone structures of a simple hand and a more complex human hand.



Bones appear as light gray pyramids with the bases pointing towards their parents and the tips pointing towards the children. Selected bones appear red.

About Creating a Bone System

There are two basic scenarios for creating or editing a bone system:

- **Modifying an existing figure**: If you have a figure loaded when you enter the Setup room, the current figure's normal bone system will automatically be loaded, and the separate

body parts will be combined into a single object for easier manipulation while in the **Setup** room.

- **Creating a new figure**: You enter the **Setup** room with a geometry (prop) selected. You can then load a bone structure from an existing figure by selecting the desired figure in the **Library** palette and clicking the **Change Figure** button. Or, you can use the **Bone** tool to create a fully customized bone system. You can also combine these methods by loading a bone structure and using the **Bone** tool to make modifications. The **Bone** tool appears in the **Setup** room workspace with the other **Editing** tools.

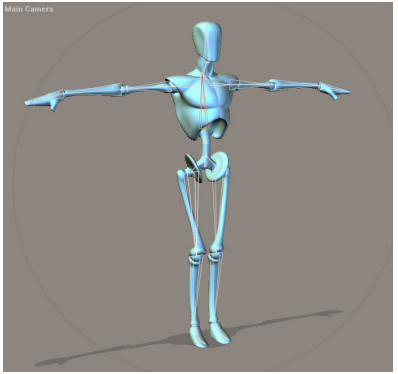


The Bone Tool.

The following sections discuss selecting a bone system for your geometry and using the Bone tool.

Selecting the Proper Structure

The quickest way to define a bone structure for your new figure is to load the bone structure of a figure that resembles your current object as closely as possible. For example, the simple geometry shown below does not require a high-resolution bone structure, since it does not have fingers or other detailed features. If you are creating an animal figure, you should probably load an animal figure's bone structure. The basic idea is to minimize the amount of work you have to do.

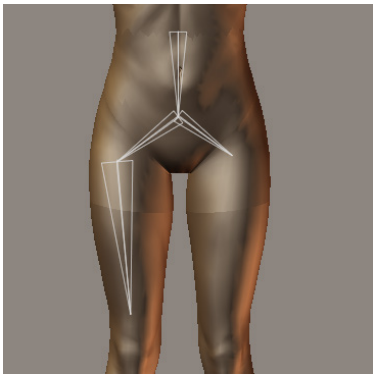


Selecting an appropriate bone structure.

In the above graphic, the positions of the bones match the corresponding portions of the geometry. If the skeleton does not match the figure, you can position the bones as discussed in "Positioning the Bones" on page 710.

Inserting & Deleting Bones

The **Bone** tool lets you create bones, either within a bone structure or from scratch. To create a bone, click at the point where you want the bone to begin (base) and drag to where you want the end (tip). You can fine-tune the bone's position and parameters later, so you do not need to worry too much about being perfect.



Adding bones to a figure.

New bones are created as children of the most recently selected or created bone. You can select a previously created bone (or any bone in the skeleton) and add new child bones by single-clicking the bone you wish to use as a parent and then clicking and dragging to create a new bone as described above.. The graphic shows a new bone inserted between the hip (parent) and thigh (child).

Bones can be selected as follows:

- In the Hierarchy or by clicking on the bone with the Bone tool selected
- Via the Actor selector in either the Properties palette or the Setup room Preview tab

To delete a bone, simply select it and press [**DEL**].

Positioning the Bones

Now that your bone structure is built to match your geometry, the next step is to align the bones with the geometry. Unless you have already built a bone structure for a figure and have simply tweaked the geometry slightly, the chances are that the default bone positions will not line up with the geometry, as shown in the graphic on the right. The figure on the left illustrates the effects of having a bone structure that is not positioned according to the geometry, while the figure on the right demonstrates proper figure behavior.



When bones are not positioned correctly, body parts can appear distorted.

You can position bones using any of three methods:

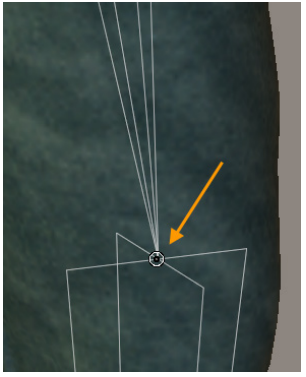
- Select one of the available **Editing** tools (**Rotate**, **Twist**, **Translate/Pull**, Translate **In/Out**, or **Scale**) and position the bones using the mouse.
- Use the **Joint Editor** palette to precisely position joints.
- Use the **Symmetry** control (see "Symmetry" on page 216) to position the bones on the opposite side of the figure.

You will probably use a combination of all three methods as you work to position the bones on your geometry. The following sections discuss each of the three methods in detail.

Positioning Bones With the Mouse

You can position bones with the mouse in one of two ways:

- Selecting the desired **Editing** tool followed by clicking in the middle of a bone uses the selected tool to modify the position of both the selected bone, all of its children, and all joint settings for both the current bone and all children (including falloff zones). Please refer to "Creating and Using Falloff Zones" on page 731 for an explanation of falloff zones. This Selecting, clicking and dragging into position is the preferred method.
- Clicking near the beginning or end of a selected bone allows you to translate just the selected endpoint regardless of the selected **Editing** tool. The mouse pointer changes to a bull's eye when you select a bone and place the pointer near the beginning or end of the selected bone, as shown.



Adjusting bone placement.

When editing bone endpoints, joint settings such as falloff zones are not adjusted. This method is good for making minor adjustments once the bones have been placed near their final positions. After you have properly aligned the skeleton to the geometry, you can adjust the falloff zones further. Please refer to "Creating and Using Falloff Zones" on page 731 for an explanation of the various types of falloff zones.

When positioning bones using the mouse, you should use one of the orthographic cameras (Left, Right, Top, Bottom, Front, Back) to ensure that you are only positioning them in one plane at a time. Alternatively, you can use the Document window's multiple pane view to position the bones in 3D space.

Positioning Bones With the Joint Editor Palette

- In addition to (or instead of) using the mouse to position bones, you can use the **Joint Editor** palette by selecting the bone you wish to edit. Please refer to "Chapter 33: Working with Joints, Weights, and Skinning" on page 719 for complete information on using the **Joint Editor** palette.

Positioning Bones Using Symmetry

Assuming your imported geometry is symmetrical, you can drastically reduce the amount of time it takes for you to position bones by positioning only those bones on half of the geometry and then using the **Symmetry** tool to automatically position the rest of the bones. Please refer to "Symmetry" on page 216 for information on using the **Symmetry** tool.



The Symmetry functions involving arms, legs, and the torso only work when the bones in those regions have been named and grouped so as to belong to the selected areas of the geometry. If you have loaded an existing bone structure for use with your current geometry, the bones will already be named for you.

When you select a symmetry function, a dialog box appears asking if you wish to copy the joint zone setup as well. Click **Yes** to apply the symmetry to the bone structure.

Step 3: Naming the Bones

The **Properties** palette allows you to modify the following settings:

- **Internal Name**: You can modify a bone's internal name while in the **Setup** room by entering your desired name in the **Internal Name** field. Poser uses internal names to find a group of polygons with a matching name. It is best to begin with an existing bone structure when creating figures so that you can start the process with a set of bones that already have standard internal names. You can, of course, create figures using custom internal and group names; however, this makes the process more difficult since you need to track the internal names and the portions of the skeleton and geometry they correspond to.



This is a critical point. The **only** *way to link a bone to a group of polygons is to have them share the same exact internal name. The only place to modify internal names within Poser is in the Setup room, and then, only in the Properties palette.*



If you want your figure to support many of Poser's features, you should respect the bone/body part internal naming conventions precisely. Group names for the Alyson and Ryan figures are listed in "Poser Figures Hierarchy" on page 695.

- **Name**: The **Name** field is where you input your desired external name, which you use for your own reference. You can use any name you wish. This can be helpful if, for example, you are working in different languages.



Any other displayed options do not affect bones and should be ignored.

Step 4: Attaching Bones to Geometry Parts

This is the part of the **Setup** room figure creation process where you associate (group) bones with portions of the geometry, giving your geometry the ability to bend and move. It is

important that you take great care during this step to ensure that your new figure will be able to bend and, just as importantly, bend correctly.

Your geometry consists of many polygons that together form its overall shape. At this point, Poser knows the skeleton, including its joints, parents, and children. It knows that moving one bone will affect its children and may affect the parent, and it knows how each joint should behave. However, Poser does not yet know which polygons need to move for any given movement of the skeleton. To enable your geometry to bend, you must combine logical subsets of the polygons that make up your geometry and group each subset with the appropriate bone.

Where you need to be careful is in being sure that the correct polygons are assigned to the correct bones, that is, the right arm should move when you move the right shoulder bone, and so forth. It is possible to assign any polygon to any bone. You could have polygons in the leg region grouped with a bone in the neck, for example. You could even have random polygons scattered around the geometry grouped with any bone in the skeleton. While you may wish to do this for experimental or artistic purposes, this manual will assume that you are trying to create a realistic figure from the geometry and skeleton.

Now that the skeleton is complete, it is appropriate to think of each bone as a body part. For each such body part, an identically named group of polygons on the geometry must exist. Each of the joints will cause the grouped polygons to bend where parent and child groups touch. Poser knows which polygons to bend by matching the internal name of the bone being moved with the internal name of a group of polygons.



If you are adjusting an existing figure in the Setup room, the necessary body groups will already exist and may already be properly set up.

To create groups, select the **Grouping** tool, which opens the **Group Editor** palette. The **Grouping** tool can select polygons to create a group. Then you can use the **Assign Material** button to assign a name for the body part for the selected polygons.

Requirements

As discussed in "Importing 3D Objects" on page 779, your imported geometry cannot have overlapping or duplicated polygons and, if you have created groups when you built the geometry, the polygons in the geometry cannot belong to more than one group at a time.

The **Setup** room allows you to create figures from a single geometry consisting of ungrouped polygons. This is the recommended method.

Grouping

There are a number of different ways that you can assign groups to your figures. For example, some assign groups in their

modeling application or with other utilities. You can, however, use Poser's Group Editor to create and assign groups to the polygons in your model. The Group Editor allows you to select polygons manually and then assign them to groups. If your figure does not already have groups assigned, you can also use the Auto Group feature to automatically generate groups based on the bone structure of the skeleton. For further information, refer to "The Group Editor" on page 681 for information about using the **Grouping** tool and the **Group Editor** palette.

Step 5: Assigning Rotation Orders

With your bones positioned and your groups created, you're almost finished. Your once-static geometry has come alive! You can perform this step when you are first creating and defining joints; however, it appears here in the figure creation process so that you can leave the **Setup** room to see how changes to the rotation order affect your figure's motion and appearance.

If your figure uses a standard T-position pose, and also is grouped similarly to the standard Poser figures, you can use the Hierarchy Editor to assign standard rotation orders to the joints in your figure. This can save time in setting up the joint rotations. You can learn more about configuring rotation orders manually in "Setting Joint Orders" on page 741.

To apply standard rotation to a figure:

1. Choose **Window** > **Hierarchy Editor** to display the Hierarchy Editor.
2. Select the **Universe**.
3. Click the **Apply Std Rotation Order** button to apply the standard rotation settings.

Step 6: Fine-Tuning Joints

At this point, you may want to go back and fine-tune some or all of your joints so as to make your figure behave exactly as you want it to. Do this using the **Bone** tool and/or **Joint Editor** palette as discussed in "Chapter 33: Working with Joints, Weights, and Skinning" on page 719. Use spherical or capsule-shaped falloff zones, or weight painting, to add more realism to the appearance of the joints as they rotate, bend, and twist.

Remember that joint bending only occurs between an object and its parent. The bends do not progress to other children or above the parent in the hierarchy. Be sure to keep this in mind as you tweak the joints. Also, if you have body parts which are symmetrical left to right, and are named using the convention of starting with "r" for right-side body parts and "l" for left-side body parts, you can automatically copy joint zones by using one of the symmetry commands as discussed in "Symmetry" on page 216. This can save time and effort when tweaking joints, and

ensures that one side of your figure will behave exactly like the other part.

Step 7: Testing Your Figure

This is the moment you have been working towards. At this point, return to the **Pose** room and put your new figure through its paces. You can use multiple view panes and the **Camera** controls to see your figure from all angles to ensure that it is performing as expected. If you need to make any adjustments, you can always return to the **Setup** room to further refine your figure. Congratulations: Your once-static geometry prop is now a moveable Poser figure!

Step 8: Assigning IK Chains

In order for you to be able to use IK on your new figure, you need to create at least one inverse kinematics chain using the **Hierarchy Editor**, as discussed in "About Groups" on page 690.



You created the parent/child hierarchies in your figure when you created and edited the bone structure. The Hierarchy Editor will perform all of its functions on your new figure.

Step 9: Inverse Kinematics

If you wish to add IK capabilities to your figure, you need to add IK chains as discussed in "Creating IK Chains" on page 701.

Step 10: Setting & Memorizing Favored IK Angles

Poser's inverse kinematics works based on the current rotations of a body part. Proper IK angles must be preset in the figure in order for IK to work predictably. The original joint rotation values help the IK logic know which way to bend some of the joints and will affect how the IK works as the figure moves. Setting and memorizing favored IK angles is therefore important.

Before memorizing the default positions for all of the body parts, you should bend the parts used in IK chains so that they favor their natural bending directions. For example, a standing person's thighs bend slightly forward and out from vertical, and her or his shins bend slightly back and in.

These positions can be tested by lowering the hip joint in the Y (up/down) direction while IK is turned on for the legs. While doing this, the knees should bend smoothly, and not buckle or swing widely to either side.

Then, to test the arms, enable IK on the arms and move the chest side to side (X trans). The arms and shoulders should bend

naturally. If they do not, add small amounts of rotation into the joint to correct the unnatural bending.

With IK off, return the hip to zero and the chest to zero. Preserve the rotations on the limbs. Make sure that they are symmetric from one side to the other. Then memorize figure to store the rotations.

To set favored IK angles:

1. Disable the affected IK chain(s).
2. Position each body part in the chain by slightly bending it in the direction it would bend under IK by a few degrees.
3. Save the angles by memorizing the body parts or the entire figure by selecting **Edit > Memorize > Element** or **Edit > Memorize > Figure**, respectively.
4. Enable the affected IK chain(s).

Please refer to "Inverse Kinematics (IK)" on page 177 for more information about Poser's Inverse Kinematics features.

Step 11: Setting Joint Limits

In the "real world", each of your body's joints has limits on its motion. For example, you cannot extend your arm at the elbow beyond the point where your arm is straight. Further, it is not possible for one of your body parts to "collide" or intrude on another part. You cannot simply put your hand through your chest.

Poser allows you to set limits for each joint to mimic these natural limits and help prevent you from creating unnatural poses. Additionally, you can create limits on the amount that a body part can be scaled and tapered, and you may have other options available depending on the body part in question.



It's good practice to set limits per parameter for your figures. The user can then choose to use or ignore your limits using the Figure pull-down menu by toggling the **Use Limits** *command on or off.*

To set limits for a body part, simply select the desired body part, then double-click any of the parameter dials in the **Parameters** palette to open an **Edit Parameter** dialog box, where you can set limits for the selected parameter. Please refer to "Editing Parameter Dials" on page 201 for information on setting parameter limits.

Step 12: Finalizing Your New Figure

At this point, you have created and fine-tuned a new Poser figure. From a technical standpoint, the figure creation process is complete. If you wish, you can add materials and textures, make additional adjustments, and do anything you need to do in order to consider the project complete.



You can also add morphs or use deformers that smooth areas like knee and elbow bends and link these morphs or deformers to the arm/leg bends as dependent parameters. For more information, see "Using Dependent Parameters" on page 666.

Step 13: Memorizing and Saving Your New Figure

You have hopefully been saving your figure throughout the creation process. Now that it is complete, be sure to memorize the figure by selecting **Edit > Memorize > Figure**. Also, be sure to save your figure in the **Library** palette. You can save your figure in an existing subcategory or create your own.

Deleting Interim Figures

If you have saved draft figures as recommended during the figure creation process, you may want to delete these draft figures to avoid wasting hard drive space. To delete an item, select it in the **Library** palette and click the **Delete from Library** icon (**-**) at the bottom of the palette.

Troubleshooting

When creating a new figure from an existing figure, there may be existing parameters that no longer function properly with the new geometry. For instance, morph targets that used to work on the old figure may do nothing if you change the geometry. You can delete these channels in the **Hierarchy Editor** by checking the **Show Parameters** box, selecting the parameters to delete, and pressing [DEL].

Chapter 33: Working with Joints, Weights, and Skinning

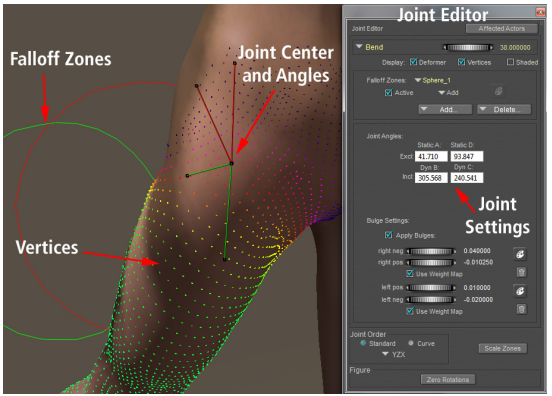
What are Joints?

A joint is location on a figure where two body parts meet at a point where they bend, twist, rotate, or bulge: for example, a human knee or an elbow is a joint. In Poser, these realistic figure movements are controlled by **joint settings**. These joint settings are applied through various options in the **Joint Editor**.

Poser's traditional joint system utilizes the following:

- Spherical falloff zones that use inner and outer spheres of influence to determine which vertices move when a joint is rotated, and the amount of movement the vertices move.
- Capsule-shaped falloff zones that work similarly to spherical zones, but which allow more flexibility in defining the shapes of the inner and outer zones of influence.

In addition to the traditional falloff zones, weight-mapped bending controls offer increased flexibility in how vertices respond to movement. By providing both traditional and weight-mapped methods, Poser offers a three-fold solution that allows you to use traditional falloff zones, weight maps, or a combination of both. You get the best of both worlds!



A joint shown in the Joint Editor.

Using the Joint Editor

Poser makes a figure "poseable" through the use of transformers and transformation zones that control the way a figure bends and twists. These transformers and their zones skew, rotate,

stretch, or scale polygons that fall within a transformation zone to produce the desired motion.

You can use the **Joint Editor** to manipulate joints and blend transformers directly, thereby modifying how a joint or bone works. The **Joint Editor** is used to accomplish the following:

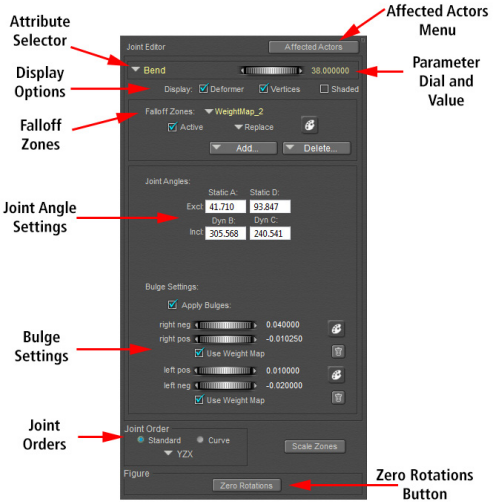
- Fine-tune the blending of existing figures to suit your needs.
- Create new types of effects in how the polygons in the current part respond to transformations.
- Customize joints and transformers when creating your own figures (such as using the Setup room, described in "Chapter 25: The Face Room" on page 518).

To open the palette, select **Window > Joint Editor**. This palette can be used in the Pose Room and in the Setup Room. When used in the Pose room, the **Joint Editor** allows you to adjust the currently selected joint. When used in the Setup room, the **Joint Editor** allows you to adjust the currently selected bone.

Parts of the Joint Editor

The **Joint Editor** displays the various components of the selected joint. For example, if you have the right shin selected, the **Joint Editor** will display the settings related to the knee (the point at which the right shin begins).

The **Joint Editor** displays the following options and controls, depending on the joint that you have selected:



The Joint Editor.

- **Affected Actors menu**: Use this menu to select additional body parts that you want to be affected by the parameter

that you are editing. For more information about affected actors, see "Adding Affected Actors" on page 743.

- **Attribute selector**: Use the Attribute selection menu to display and edit the settings for a specific attribute. For example, when you have the right shin selected, you can use the menu to choose one of the following attributes: Center, Twist, Side-Side, or Bend. In addition, there will be a couple of additional settings that relate to the body part that is immediately below the current part (its child). In the case of the right shin, the child attributes would relate to the right foot. In most cases, the attributes for the "child" part are left alone when editing the current joint.

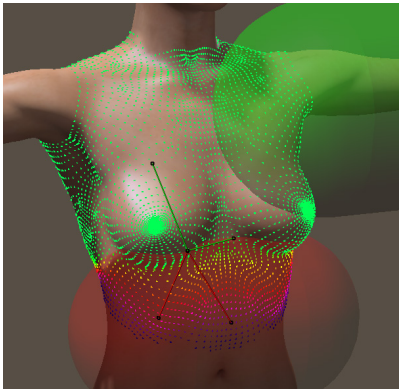
- **Parameter dial and value**: When you choose an attribute that has a Parameters dial associated with it, a dial will appear in the **Joint Editor**. You can use this dial to adjust the parameter through its minimum and maximum values to test how the current joint settings affect the mesh.

- **Display Options**. Allows you to show or hide various display options for the selected transform:

  - **Deformer**: When checked, will display the deformers (if any) that are associated with the selected joint.

  - **Verts**: Shows or hides the display of colored dots that give you a visual indication of how the vertices and polygons will be affected when you adjust the joint settings.

  - **Shaded**: Enables shaded display mode for sphere or capsule zones of influence. Inner mat spheres or capsules are shaded green, and outer mat spheres or capsules are shaded red.

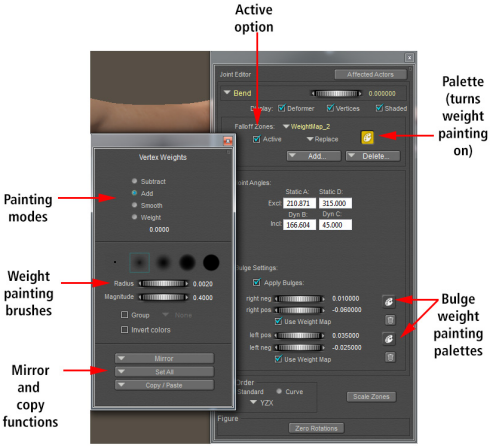


A chest joint with verts and shaded display.

- **Falloff Zones**: There are three types of falloff zones: Spherical Zone, Capsule Zone, and Weight Map. Each

of these will be described in "Creating and Using Falloff Zones" on page 731.

- **Joint Angles setting**: This section displays or edits the inclusion and exclusion angles, which determines which vertices and polygons are included or excluded in the current transform. Further information can be found in "Setting Joint Angles" on page 740.
- **Bulge Settings**: Allows you to add additional settings that specify how polygons bulge and flex while the joint is moved. See "Editing Bulge Settings" on page 741.
- **Joint Orders**: Allows you to set the order of the X, Y, and Z axes, and the types of rotation that they relate to. See "Setting Joint Orders" on page 741.
- **Scale Zones:** Click this button to create weight maps that smooth out the transitions between joints when the joints are scaled along a single axis. For more information, see "Smoothing Scale Zones" on page 755.
- **Zero Rotations button**: As you are working with all of the joints in your figure, you may have one or more rotations (bend, twist, side to side, and so on) set to values other than zero. Click this button to return all of the joint rotations back to their zero values, which returns the figure to its normal "default" position.



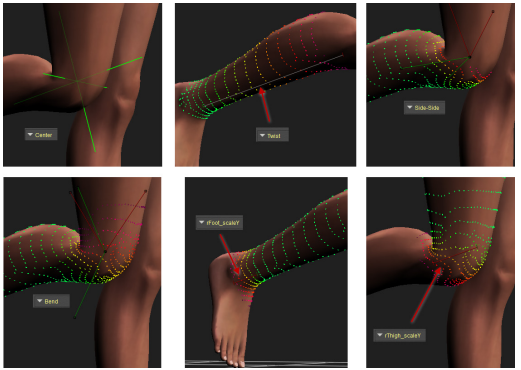
The Joint Editor: Weight Painting Controls.

How Joints are Displayed

When the **Joint Editor** is opened, there are several indicators that appear when a body part is selected. These indicators help you control how the joint works and responds when you pose the figure. Each of these indicators are described below.

Deformer Indicators

Depending on the type of attribute selected you will see a different type of indicators for the joint. The following figure shows the types of indicators that appear when **Center**, **Twist**, **Side-Side**, **Bend**, and neighboring joint indicators are selected. You can use the handles on these indicators to visually adjust the joint attributes, or you can use numerical fields in the **Joint Editor** to change them. Each of these attributes will be discussed in "Copying Joints from Another Figure" on page 725.



Joint Attribute Indicators.

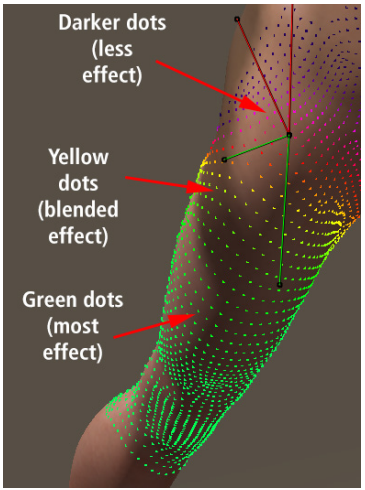
Joint Strength Indicators

The **Joint Editor** allows you to control joints and blend zones. Blend zones define how the area that transitions from one joint to another react when they bend, twist, or rotate. As you work in the **Joint Editor**, you will notice that the selected body part is covered with different colored dots. The color of these dots represent where a joint parameter or falloff zone has the most amount of effect.

In the figure shown below, a figure's right shin is selected as the current body part, and the Bend parameter is the parameter that is being edited. The joint is placed at the right knee. Notice the multi-colored dots which show how the joint affects the selected body part:

- Bright green dots appear where the joint or zone has the greatest effect. In other words, when you bend the right shin, the entire area that is covered with green dots will be affected by the bend.
- Red dots appear where little or no effect occurs. In other words, when you bend the right shin, the right thigh (which is above the shin) will not be affected.
- Yellow dots appear where there is a blend between the moving part (the shin) and the stationary part (the thigh). In other words, when the right shin is bent, the polygons that

are highlighted with yellow dots will stretch or squash or skew to make the transition as smooth as possible.



The strength of a joint is represented with green, yellow, and red dots.

Editing Joint Parameters

To edit a joint's parameters:

1. Select the desired joint in the Pose Room.
2. Choose **Window > Joint Editor** to open the **Joint Editor**.
3. Use the Selection menu to choose the attribute that you want to edit. Each joint will have several parameters and will include some of the following: **Center**, **Twist**, **Bend**, **Side to Side**, **Front to Back**, or **Up and Down**. These attributes are further described in "Copying Joints from Another Figure" on page 725.
4. Use the **Falloff Zones** section to add additional deformers that can affect the selected attribute. If no deformers exist, click the **Add** button to add one or more. You can add one of three types of transformers: **Spherical**, **Capsule**, or **Weight Map**. These will be described further in "Creating and Using Falloff Zones" on page 731.
5. The section beneath the **Falloff Zones** section shows numerical values for the currently selected joint attribute. You can either change these values manually, or by making adjustments to the deformers in the document window. For example, if you are displaying the **Twist** attribute, you can enter values for **Twist Start** and **Twist End** in the **Joint Editor**, or you can click and drag the ends of the **Twist** indicator in the document window to make adjustments visually.

6. If the joint attribute allows, optionally enter **Bulge Settings** that make the selected body part bulge more realistically when the parameter is adjusted. These are discussed in "Editing Bulge Settings" on page 741.

7. Set the **Joint Order** as described in "Setting Joint Orders" on page 741.

8. When you are finished setting all of the joints, you can use the **Zero Figure** button to return the character to its default position, and then save the figure to your library.

Copying Joints from Another Figure

If you are creating a character that has similar size and proportion to another figure, you can copy joint settings from one figure to another. In most cases, this is only necessary when you are developing an original figure, and have made changes in the rigging of one version of the model (a low resolution version, for example) and want to apply the same changes to another version of the model (a high resolution version).

1. Load two figures into the scene :

    - The **source figure** (ie: the figure you want to copy joints from), such as a low-resolution human character.
    - The **target figure** (the figure that you want to copy joints to, such as a high-resolution version of the same human character.

2. Select the target figure.

3. Choose **Figure > Copy Joint Zones From**. The **Copy Joint Zones** dialog appears.

4. Choose the figure from which you want to copy the zones (the source figure), and then click OK. The joint zone settings will be applied to the target figure.

Joint Attribute Types

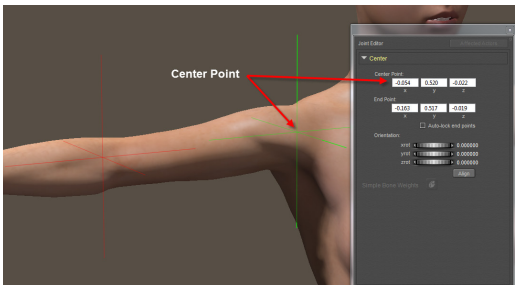
Each joint in a figure's bone structure has some or all of the following attributes. The attributes available for each joint depend on the currently selected joint. You can think of the **Joint Editor** palette as working with body parts or bones, since the end result is the same. For the sake of discussion, it is appropriate to think of the **Joint Editor** palette as acting on body parts when in the Pose room and bones within the Setup room.

This section explains how to adjust each available joint parameter. Note that not all parameters will be applicable to every joint. Only those parameters applicable to the selected joint will appear in the **joint editor**.

Center

The **Center** attribute sets the center of rotation for the selected bone. It is available for all bones, body parts, and props.

Hold your arm out with the palm up, bend it at the elbow, and notice that the center of the rotation is about halfway between your inner and outer elbow. Notice how your skin contracts above the center of rotation and expands beneath it. Imagine if the center of rotation was in a different location and how that would affect the appearance of your arm as you bend it. Move some other joints and imagine the changes that might occur if you shifted those centers. The **Center** attribute controls this aspect of joint motion.



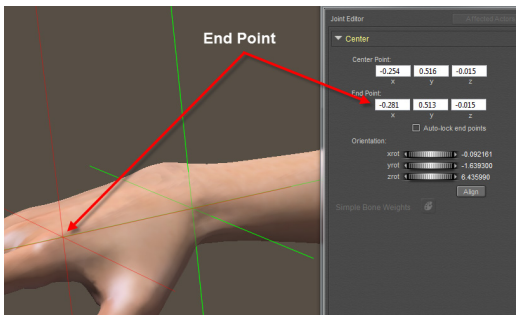
Center attribute and settings.

The following options are available when adjusting the Center joint parameter:

- **Center Point**: The Center Point attribute defines the XYZ position of the joint (center of the body part). 0,0,0 is located in the center of the bone structure on the floor.
- **End Point**: The End Point attribute is discussed in "End Points", which follows.
- **Orientation**: The Orientation attribute defines the XYZ rotation of the joint and its axis. Click and drag the dials to set a value. Pressing and holding [OPT]/[ALT] while clicking a dial resets its value to 0.
- **Align**: Clicking the Align button aligns the joint with its underlying body part or group, and will automatically adjust the values in the Orientation fields (above). This option can be useful once you have created groups and attached the bones to the geometry. Prior to that point in the process, however, there is nothing to align the joint to.
- **Joint Order:** See "Setting Joint Orders" on page 741.
- **Zero Figure**: See "Parts of the Joint Editor" on page 720.

End Points

If a joint has a single child joint, the endpoint will always be the origin of the child. If there are multiple children (as in a hand) the endpoint can be set manually. This feature is used for some of the interaction tools, such as the Rotate tool for orientation from the origin. If there is no child joint (as with the head, typically) the endpoint is also editable.



End Point attributes.

Twist

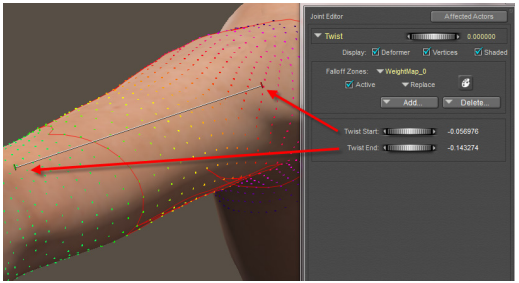
The **Twist** attribute changes the location of the twist deformer for the selected bone.

There is no Twist attribute for the hip bone or its equivalent, since the hip is the parent for the entire figure and twisting the hip twists the entire figure in unison.

When IK is enabled, child bones rotate when the parent is twisted. Twisting the hip normally moves the entire body since the hip is usually the parent for the entire figure, meaning that the hip does not have this parameter.

Hold your arm out with the palm down, and twist it so your palm is facing up. Notice how most of your arm does not change, except for a region in your upper arm where the skin and muscles twist as you move. Imagine if the twisting began and/or ended in a different location. The Twist attribute controls this aspect of joint motion.

By default, the Twist axis runs lengthwise down the center of each body part. For example, the arm twist axis is X, while legs twist along the Y axis. When this parameter is selected, a line with two handles appears on the figure. The red handle represents the starting point of the twist transformation area, and the green handle represents the end. Dragging these handles increases or decreases the Twist area.



Twist attribute and indicators.

The Twist parameter has the following settings and options:

- **Display Options**: See "Parts of the Joint Editor" on page 720.
- **Falloff Zones**: See "Creating and Using Falloff Zones" on page 731.
- **Twist Start** and **Twist End**: Define the beginning and ending points of a bone's twist area. Enter your desired values in the appropriate boxes, or drag the red handle of the indicator to adjust the Start value, and the green handle of the indicator to adjust the End value.

You can make twist areas larger than the selected bone, which can make a twisting motion appear more natural. In many cases, the bone's parent should be included in the twist zone.

You can use the Editing tools to adjust the Twist parameter. This parameter exists in three dimensions, meaning you can rotate the figure to see the joint from any angle. You may, however, want to leave the figure in its default position and use the orthographic cameras (Top, Bottom, Left, Right, Front, Back) to constrain movement to two axes, possibly avoiding much confusion.

- **Joint Order**: See "Setting Joint Orders" on page 741.
- **Zero Figure**: See "Parts of the Joint Editor" on page 720.

Side-Side, Bend, Front-Back, and Up-Down

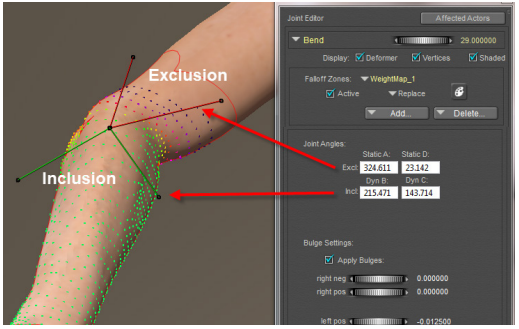
The joint settings for **Side-Side, Bend**, **Front-Back**, and **Up-Down** are very similar. The main difference between them is the axis on which they rotate:

- The **Bend** attribute controls the angles of the Bend transformers, and defines how bulges are created. To

illustrate this, bend and flex various joints (such as your elbow or knee). You'll notice limits of your flexibility, and how the skin and muscles bulge as you move. The Bend attribute lets you control how this occurs in your figure.

- The **Side-Side**, **Front-Back**, and **Up-Down** attributes control the angles of their respective transformers and also define how bulges are created. These attributes are suited for omnidirectional joints such as your wrists, shoulders, hips, ankles, etc. The various parameters are shown in the following table.

Attribute	Body Part(s)
Bend	All but Hip, Collars, and Shoulders
Side-Side	Head, Neck, Chest, Abdomen, Waist, L & R Buttocks, L & R Thigh, L & R Shin, L & R Foot, L & R Toe, Toe1 parts, Toe2 parts, L & R Forearm, L & R Hand, L & R Thumb2, L & R finger parts (other than thumb)
Front-Back	L & R Collar, L & R Shoulder
Up-Down	L & R Collar, L & R Shoulder



Bend attribute settings.

The following settings appear in the **Joint Editor** for **Bend**, **Side-Side**, **Front-Back**, and **Up-Down** parameters. Each of these three parameters is functionally identical when editing these joint attributes in the **Joint Editor** palette. The settings in the **Joint Editor** allow you to change their angles and transformers. Poser can also create bulges that emulate muscle movement.

- **Display Options**: See "Parts of the Joint Editor" on page 720.
- **Falloff Zones**: See "Creating and Using Falloff Zones" on page 731.
- **Joint Angles**: Defines the polygons that are included or excluded from the Bend parameter. You can either use the Inclusion and Exclusion handles to adjust these values visually, or enter values in the Joint Angles fields. The area between the two red handles define the polygons that are excluded and will remain stationery. The area between the green handles defines the polygons that will move completely. The area in between a green handle and a red handle will "deform." For more information, see "Setting Joint Angles" on page 740.



You can use the Editing tools to adjust the Bend, Side-Side, Front-Back, and Up-Down parameters. These parameters exist in three dimensions, meaning you can rotate the figure to see the joint from any angle. You may, however, want to leave the figure in its default position and use the orthographic cameras (Top, Bottom, Left, Right, Front, Back) to constrain movement to two axes, possibly avoiding much confusion.

- **Bulge Settings**: See "Editing Bulge Settings" on page 741.
- **Joint Order**: See "Setting Joint Orders" on page 741.
- **Zero Figure**: See "Parts of the Joint Editor" on page 720.

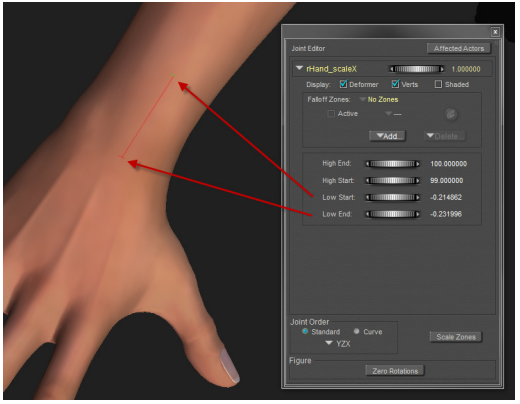
Scaling

Each body part has parameters allowing you to scale the parent and child body parts. These settings are similar to the **Twist** parameters and follow the **Twist** axis of the child or parent body part. For example, Ryan's Right Collar body part has scaling controls for the chest (parent) along the Y axis and the Right Shoulder (child) along the X axis.

The **High End/Start** and **Low Start/End** parameters define a blending area. For example, when scaling the head, you may

also want to scale the top of the neck to achieve a smooth fit. When setting these parameters, only one setting (high or low) is relevant. The unused parameter pair gets automatically set to some unrealistic number (such as 99,000 or 100,000), thus indicating that it is not relevant to the area you're working on. **Do not edit these out-of-limit settings.**

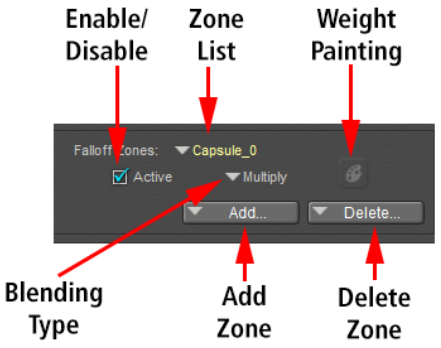
Each blending zone's end is represented in red, with its beginning in green. Effects can be either uniform or can use spherical falloff zones, discussed below.



Scaling attributes.

Creating and Using Falloff Zones

Falloff Zones are Poser's fundamental method of creating smooth bending figures by blending between two bones or body parts. You can use falloff zones on any type of rotation (such as **Bend**, **Side-Side**, **Front-Back**, or **Up-Down**). A Falloff Zone section appears in the **Joint Editor** where it is appropriate to use falloff zones on a joint. When a joint property can utilize Falloff Zones, the **Joint Editor** displays a Falloff Zones area that appears as shown in the following figure.



Falloff Zone settings.

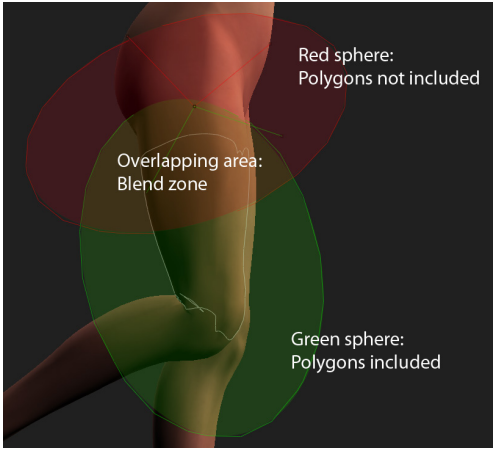
There are three types of falloff zones: **Spherical**, **Capsule**, and **Weight Map** (the latter being editable only in Poser Pro 2012 and later), described in the sections that follow. Multiple Falloff Zones can be combined, regardless of type. You can blend multiple falloff zones together in a single joint. The type of blending can be set as **Multiply**, **Add**, or **Replace** in the **Joint Editor**. You can learn more about blending in "Blending Multiple Falloff Zones" on page 736.

Spherical Falloff Zones

When you use a spherical falloff zone, two spheres, a green inner sphere and a red outer sphere, represent the falloff zones.

The green sphere defines the area that is 100% affected by the transformation (motion), and the red sphere defines the limit of the transformer's effect. The area between the spheres is the blending area, and the transformer's effect gradually decreases from 100% at the boundary of the inner sphere to 0% at the boundary of the outer sphere.

In the figure shown below, the zones of the innerMat and outerMat spheres have been colored in for demonstration purposes. When vertices are displayed you can see how the positioning of the spheres affect the strength of the deformations in various areas.

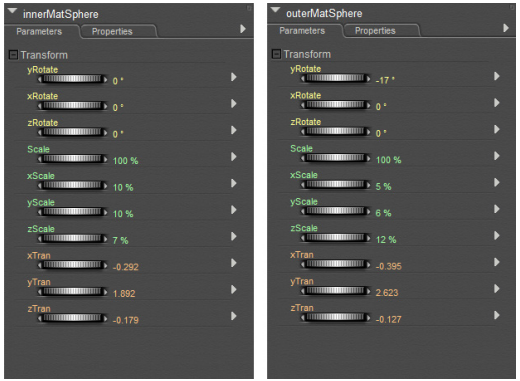


Spherical falloff zones.

You can edit spherical falloff zones just as you would any bone or body part using the Editing tools.

- Click the green sphere to edit the affected area. The **Parameters/Properties** palette displays its properties as the **innerMatSphere**, where you can make adjustments to its size, position and rotation.

- Click the red sphere to edit the unaffected area. The **Parameters/Properties** palette displays its properties as the **outerMatSphere**, and you can make adjustments to its size, position and rotation.



Spherical Falloff Zone parameters in the Parameters Palette.

The following properties can be edited for the inner and outer MatSpheres of a spherical falloff zone:

- **Rotation**: To change the rotation of the inner or outerMatSphere, change the yRotate, xRotate, or zRotate values to change the rotation along the y, x, or z axis (respectively).

- **Scale**: Use the Scale setting to uniformly adjust the scale along the x, y, and z axes. To change an axis as needed to create an ellipse, adjust the xScale, yScale, or zScale setting appropriately.

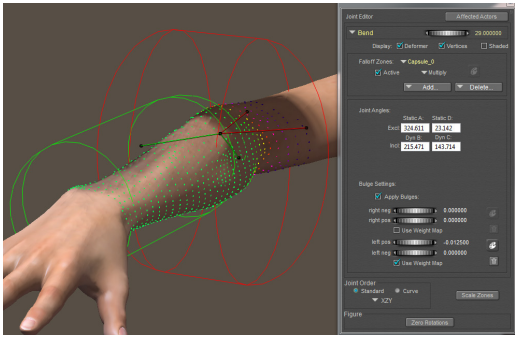
- **Translation**: To move the sphere, adjust the xTran, yTran, or zTran setting appropriately.



You can also use the Direct Manipulation Tool to adjust the rotation, scale, or translation of the falloff zone. For more information about this tool, see "Direct Manipulation" on page 191.

Capsule Falloff Zones

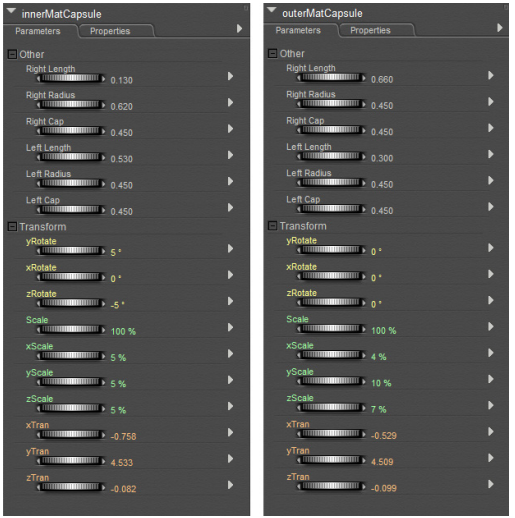
Capsule falloff zones provide a great deal more flexibility in controlling the shape of the zones of influence. The green and red capsules work similarly to the spherical falloff zones mentioned in the previous section. The green capsule defines the area that is 100% affected by the transformation, and the red capsule defines the limit of the transformation's effect. The area in between the capsules defines the blending area.



Capsule Falloff Zone with Verts turned on.

If you choose to create a capsule zone, there are six unique parameters in the Parameters Palette to change the shape and size of capsules and how they affect the current joint. You will also see the Translate, Rotate, and Scale parameters which work similar to those described for the Spherical falloff zones.

- Click the green capsule to edit the affected area. The **Parameters/Properties** palette displays its properties as the **innerMatCapsule**.
- Click the red capsule to edit the unaffected area. The **Parameters/Properties** palette displays its properties as the **outerMatCapsule**.

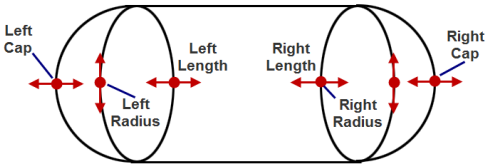


innerMatCapsule and outerMatCapsule parameters.

With the inner or outer MatCapsule selected, you will see the following parameters in the Parameters palette:

- **Right Length**: Sets the length of the right half of the cylinder portion of the capsule.
- **Right Radius**: Sets the radius of the right end of the cylinder portion of the capsule.
- **Right Cap**: Sets the length of the cap at the right end of the capsule. Increases or decreases the distance from the Right Length.
- **Left Length**: Sets the length of the left half of the cylinder portion of the capsule.
- **Left Radius**: Sets the radius of the left end of the cylinder portion of the capsule.
- **Left Cap**: Sets the length of the cap at the left end of the capsule. Increases or decreases the distance from the Left Length.

The following diagram shows the parts of the capsule:



A diagram of a capsule falloff zone.

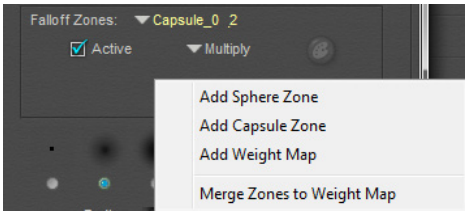
Working with Falloff Zones

The sections that follow describe other ways that you can work with falloff zones.

You learned how to create a weight map in the section "Weight Maps" on page 746. If you want to create a spherical or capsule falloff zone, the steps are similar. Follow these steps:

1. Select the joint that you want to work on.
2. Open the **Joint Editor**, and select the appropriate rotation (**Side-Side**, **Front-Back**, **Up-Down**, or other).
3. In the Falloff Zones section, click the + (plus) sign to create a new falloff zone. Choose one of the following options:

- **Add Sphere Zone**: Choose this option to create a spherical falloff zone.
- **Add Capsule Zone**: Choose this option to create a capsule-shaped falloff zone.



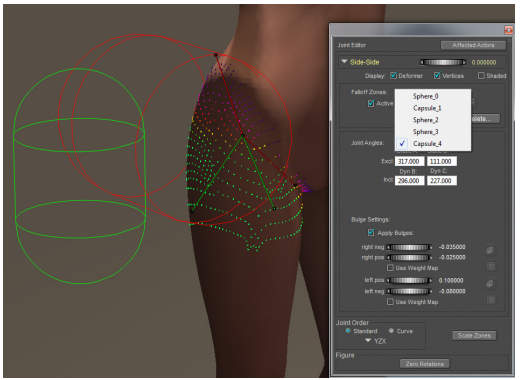
Adding a Falloff zone.

4. Use the Editing Tools or the parameter dials to adjust the scale, rotation, and translation of the inner and outer MatSpheres (see "Spherical Falloff Zones" on page 732) or MatCapsules (see "Capsule Falloff Zones" on page 733).
5. Repeat steps 1-4 to add additional falloff zones if desired.

Blending Multiple Falloff Zones

In addition to offering three types of falloff zones, you can also use more than one falloff zone for a joint. The **Joint Editor** provides a drop-down menu that lists the falloff zones that have been created for each joint. You can add one or more spherical, capsule, or weight map falloff zones to any joint.

For an example of using multiple falloff zones, open the Library and select the Figure category. From the People folder, add Alyson or Ryan (version 1) into your scene. In the **Joint Editor**, select the Side-Side property of the right or left Buttock. Click the Down arrow to display the list of zones for the currently selected joint. When you expand the list of falloff zones, you'll see several as shown below.

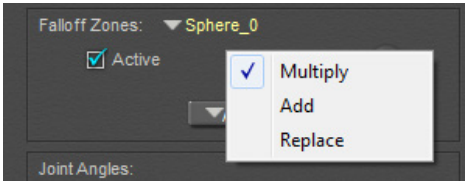


Blending falloff zones.

The CR2 will display a list of zones that affect each joint. Figures that use multiple falloff zones or capsule zones will not be compatible with older versions of Poser. To create a figure that is backwards compatible with earlier versions of Poser, use only a single Spherical Zone on the joints that use falloff zones.

To change the blending method for a falloff zone, follow these steps:

1. Select the joint that you want to modify.
2. Expand the Falloff Zones selection menu, and select the sphere or capsule falloff zone that you want to change.
3. Select **Multiply**, **Add**, or **Replace** from the blend mode selection menu.

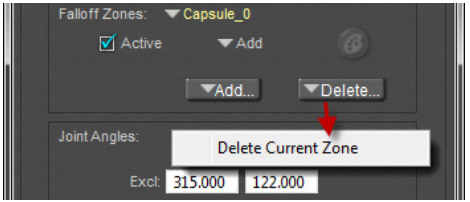


Choosing a blending type.

Deleting a Falloff Zone

To delete a falloff zone, follow these steps:

1. Select the joint that you want to modify.
2. Expand the Falloff Zones selection menu, and select the falloff zone that you want to delete.
3. Click the **Delete** button in the Falloff Zones area of the **Joint Editor** and choose **Delete Current Zone** from the menu that appears.



Deleting a falloff zone.

Enabling or Disabling a Falloff Zone

When a joint rotation uses multiple falloff zones, you can enable or disable the influence of a specific falloff zone to determine how that particular falloff zone affects the joint rotation. This

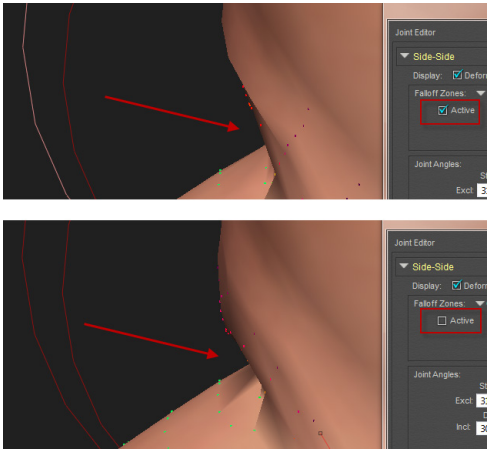
can help you make adjustments to the areas that are affected by the selected falloff zone.

To enable or disable a falloff zone:

1. Select the joint that you want to examine, and rotate the joint as necessary to determine the effects of the falloff zones.

2. Expand the Falloff Zones selection menu, and select the desired falloff zone.

3. Check the **Active** checkbox to enable the falloff zone, or uncheck to disable it.



Falloff zone enabled (top) and disabled (bottom).

Changing Falloff Zone Display Mode

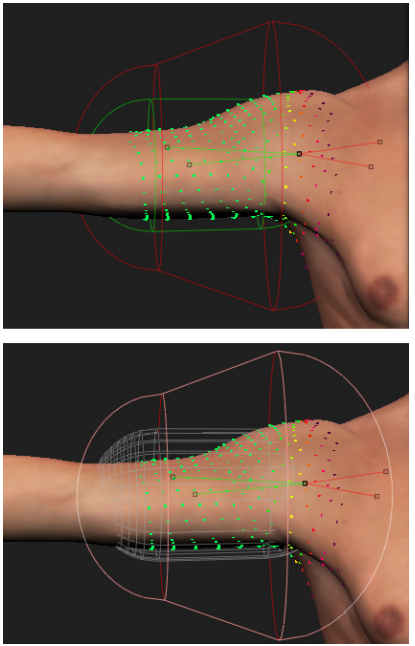
The default display mode for spherical and capsule falloff zones is **Outline** mode. However, you can display falloff zones in any available mode. To change how a falloff zone is displayed:

1. Select the falloff zone that you want to change.

2. Select **Display > Element Style**.

3. Select your desired display mode. For example, **Wireframe** mode allows you to see the spheres' areas of effect while still being able to see the underlying bones/geometry. Wireframe modes are recommended, as solid shaded modes will make it difficult to pick underlying Fall Zone geometries.

The following figure shows a capsule zone displayed in its default display mode (top), and with the innerMat capsule changed to Wireframe display style (bottom).



An innerMat Capsule shown in default (top) and Wireframe display style (bottom).

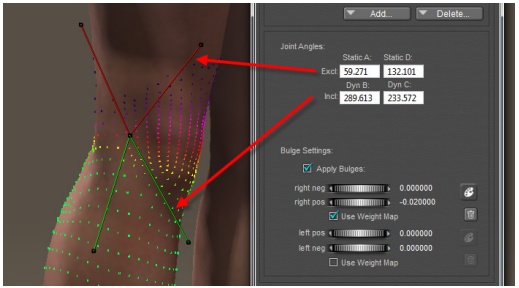
Setting Joint Angles

If you move any part of your body (for example bending your elbow), you will note that the skin on your upper and lower arms remains still except for the region near your elbow. Around your elbow, skin stretches or contracts depending on its location and the direction of motion. Slightly removed from the actual motion area, your skin and muscles move to adjust to the motion and preserve a smooth transition. The area between the inclusion and exclusion angles is called the blend zone, where Poser stretches, bends, and shrinks polygons to achieve a smooth transition between figure elements. This is the same as when you flex your leg and the skin in the area of your hip contracts or stretches as needed to accommodate the move.

Poser accomplishes similar movement transitions with inclusion and exclusion angles. The **Bend**, **Side-Side**, **Front-Back**, and **Up-Down** parameters allow you to define the inclusion and exclusion angles for the selected joint. The **Inclusion** and **Exclusion** angles control which polygons move as a result of a joint bending and how the body parts on either side of the joint blend to accommodate the move.

- The inclusion angle defines which polygons are affected by moving the selected joint. Using the previous example of bending your arm at the elbow, your entire arm below your elbow moves. The inclusion angle appears as two green lines that form an angle. In the Joint Editor, the **Dynamic B** and **Dynamic C** angles determine the inclusion angle.

- By contrast, the exclusion angle defines those polygons not affected by moving the current joint. Notice that your upper arm does not move if you simply bend your elbow. The exclusion angle appears as two red lines that form an angle. In the Joint Editor, the **Static A** and **Static D** values determine the exclusion angle.



Joint inclusion and exclusion angle settings..

The above graphic shows the exclusion angle above the knee, the inclusion angle below, and the blend area in the vicinity of the joint itself. To edit inclusion and exclusion angles:

1. Move the cursor to an end point of the inclusion or exclusion angles until the cursor changes to a target symbol.

2. Drag the angle. It is recommended that you use Full Tracking mode to view the effects of your changes as you drag. You can also enter your desired values in the text boxes.



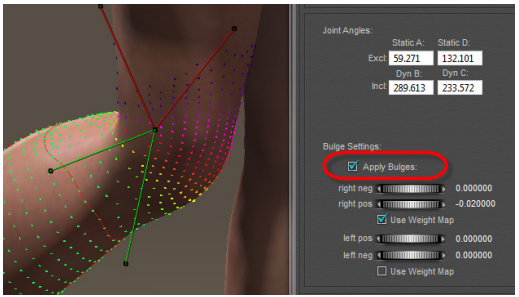
You can use the Editing tools to adjust this parameter. This parameter exists in three dimensions, meaning you can rotate the figure to see the joint from any angle. You may, however, want to leave the figure in its default position and use the orthographic cameras (Top, Bottom, Left, Right, Front, Back) to constrain movement to two axes, possibly avoiding much confusion.

Editing Bulge Settings

Checking the **Apply Bulge** checkbox causes the polygons to flex and bulge as the joint moves, emulating the muscle bulging when real bodies move. If the box is checked, the polygons in the blend zone will be stretched or pinched to create bulges or wrinkles. **Left** and **Right** refers to the skeleton's right and left. The positive dials control how much bulging out will occur when the joint moves, and the negative dials control the amount of wrinkling and pinching.



You can use Poser's weight painting features to make bulges more realistic. See "Painting Bulge Maps" on page 754.



Applying bulges.

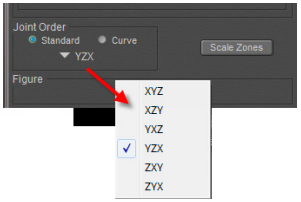
Setting Joint Orders

The **Joint Editor** palette includes the Joint Order pull-down menu that defines the joint's axes of rotation. The joint order is expressed as three letters corresponding to the X, Y, and Z axes.

Using the Front camera position, the X axis runs from left to right, the Y axis runs from bottom to top, and the Z axis runs from the back to the front. This is called a right-handed coordinate system.

It is important to determine the best rotation order for each joint. This is an important part of getting your figure to move exactly how you want it to. When you create new bones with the bone tool, Poser takes its best guess at determining the best rotation order for the bone.

You can select rotation orders by bringing up the **Joint Editor** palette and selecting the desired order from the Joint Order pull-down menu.



Setting joint rotation order.

If you change joint order, you will probably need to readjust the joint zones on the currently selected bone.

Each joint consists of three separate joint primitives, one twist and two joints. You determine the joint rotation order as follows:

- The twist primitive is always placed first in the joint order.
- Because of ordered rotation problems, it is then best to place the rotation axis through which the joint is most likely to move last in the order.
- The remaining rotation axis is placed in the middle.

For an example, consider the shin of a figure:

- A shin is vertical and twists about the Y-axis. This Y axis is placed first in the rotation order for the shin.
- When the shin bends, it is most likely to bend around the X-axis. This axis is placed last in the rotation order.
- The remaining axis is the Z axis, which is placed in the middle. Thus, the best rotation joint order for the shin is YZX.



This may seem a little confusing at first. A good way to visualize the correct rotation order is to picture the figure facing directly towards the front of the Poser workspace. For each possible motion of a given joint imagine a line running through the center of the joint. For example, the shin twists along a line running straight up and down and rotates along a line running from left to right. The vertical line corresponds to the Y axis, and the left-to-right line corresponds to the X axis. It is now easy to determine the proper joint order of YZX based on this visualization and the requirements outlined above.

You can also use curve bends instead of the normal twist/joint/joint bends. When you set up a joint using curves, the joint will have one twist and one curve primitive. The curve primitive will automatically bend the body part as if that part were part of a curved chain of objects. This feature is very handy for body parts such as tails or antennae.

Adding Affected Actors

By default, a falloff zone only affects the body part that it is directly associated with. You can add additional body parts or objects in your scene with the Affected Actors button that appears at the upper right corner of the **Joint Editor**. For example, affected actors can be very useful when applied to a character that has wings that would affect the shoulder, but also the chest and the abdomen.

Affected actors allow bends to occur beyond the range of the current body part. For example, if you have the character's right shoulder selected, you could click the **Affected Actors** button and add the right forearm to the parts that are affected by the currently selected zones or weight map.

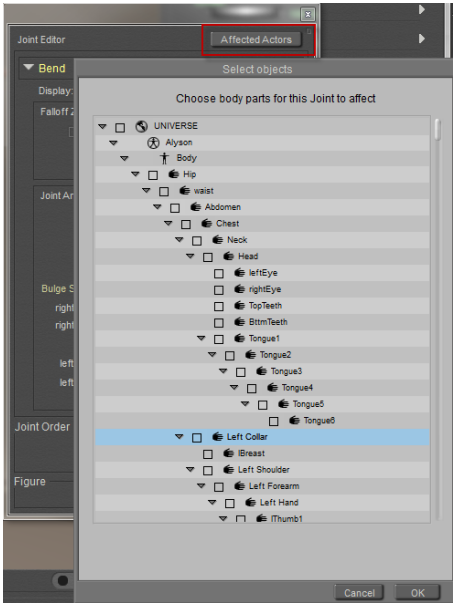


If a joint's falloff cones or spherical/capsule falloff zones enclose vertices of a figure that is not a part of the current actor or its parent, you should set that part as an affected actor **before** *you use* **Merge Zones to Weight Map to** *convert the falloff regions to a new weight map. This will apply appropriate weighting to all of the affected vertices and will match the influence of the falloff regions involved.*



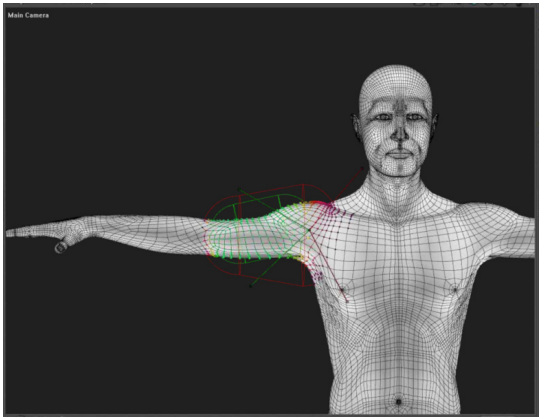
When you modify an existing weight map, and you add one or more actors for the current joint to affect via Affected Actors, any new vertices added to the weight map must be weighted manually.

To add additional parts, click the **Affected Actors** button to open the **Select Objects** dialog. Check any additional body parts or objects that you want to be affected by the falloff zone.



Adding Affected Actors.

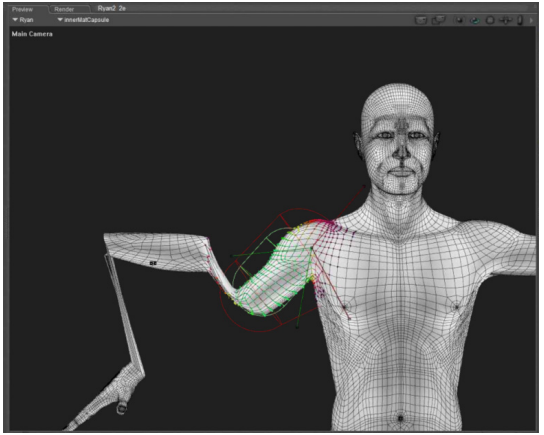
After you add a body part as an affected actor, you'll want to modify the falloff zones so that they also include the vertices in the affected actor. To illustrate why, observe in the following figure how the falloff zones originally look for the right shoulder:



Original falloff zones for the shoulder.

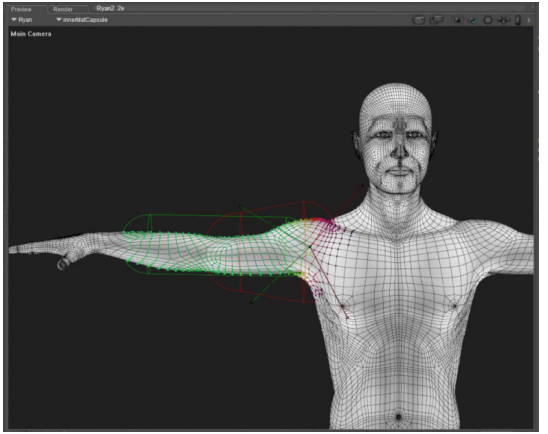
In the following figure, the right forearm has been added as an affected actor to the right shoulder. When the shoulder is bent, you see that the vertices in the right forearm are not affected. This is because they are not yet included in the falloff zone for

the shoulder. The hand and fingers rotate as they normally would, because they are not set up as affected actors to the shoulder:



The right forearm is added as an affected actor to the shoulder, but falloff zones have not yet been adjusted.

The falloff zones for the right shoulder are then adjusted to encompass all of the vertices in the right forearm, as shown below. Make sure that the zones are adjusted in all camera views.



Adjust the falloff zones of the selected actor (the right shoulder) to add the vertices of the affected actor (the right forearm).

Copying and Saving Joint Settings

To copy joint settings from one side of your figure to the other, use symmetry as described in "Symmetry" on page 216. This

saves time for figure creators by allowing them to rig only one side and then duplicate the zone settings to the opposite side.

To save your **Joint Editor** palette settings, you must either save your scene or save the affected figure to the Library palette. Please refer to "Saving a Scene" on page 67 for information on saving Poser scenes, and to "Chapter 7: The Poser Library" on page 122 for information on working with the Library palette.

Weight Maps

Weight maps allow you to paint varying strengths on vertices to control how they respond to a joint rotation. You can either create an entirely new weight map, or combine existing deformers into a new weight map that completely replaces the spherical or capsule falloff zones.

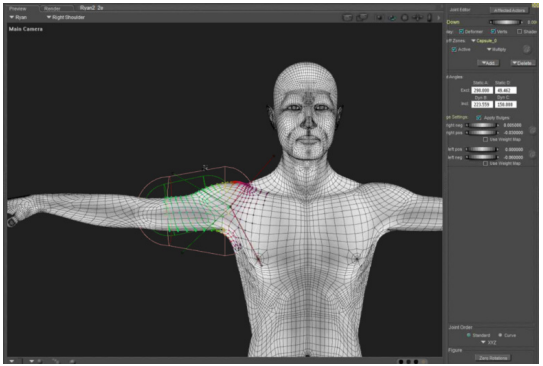


When you choose to merge existing falloff zones into a Weight Map, existing falloff zones will remain, but will be ineffective unless or until the blending mode of the weight map is changed from **Replace** *to* **Add** *or* **Multiply**.

If you are going to be rigging a character from scratch, the easiest workflow is to rig it first the "old fashioned" way ... by using spherical and capsule falloff zones as described in the previous sections in this chapter. After you get that done, you can collapse the falloff zones down into weight maps.

The recommended workflow is as follows:

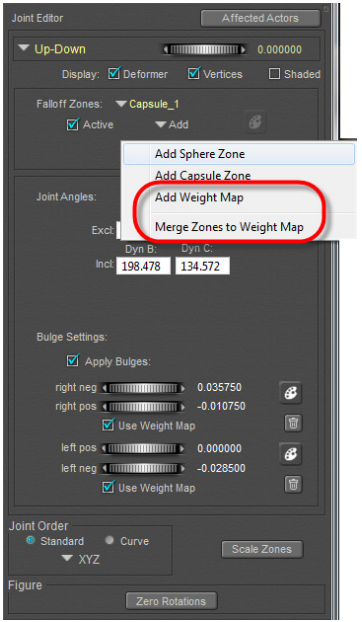
- Set up your spherical and capsule falloff zones in the joint, and test them to make sure they move the joint as expected. See "Creating and Using Falloff Zones" on page 731.
- Add affected actors in areas where the rotation of a joint could extend to more than one body part, and adjust the falloff zones to include the affected actors. See "Adding Affected Actors" on page 743.
- Collapse the falloff zones into a weight map. See "Adding a Weight Map" on page 747.
- Refine the weight map further with weight map painting. See "Painting Weights" on page 750.



A shoulder joint showing its falloff zones.

Adding a Weight Map

After you finish setting up the spherical or capsule falloff zones, you can collapse them down into a Weight Map for the selected joint. When you click the **Add** button, you will see two options for Weight Maps:



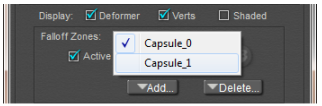
There are two options for creating weight maps.

- **Add Weight Map:** Choose this option to add a new weight map in addition to any existing falloff zones that may already appear for the selected body part. It will work similarly to any other falloff zone.

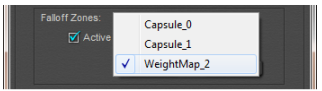
- **Merge Zones to Weight Map**: Choose this option to merge existing falloff zones, including joint angles, into a new weight map. This is probably the most useful way to begin with your weight map. You will see a new weight map in the Zones list, but the original falloff zones will still appear in the list as well. The blend type for the weight map will be set to **Replace**.



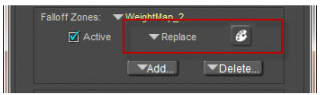
You don't have to have spherical or capsule falloff zones to create a weight map. You can just create one by selecting a body part, and then choosing **Merge Zones to Weight Map**. *This will create a new weight map based on the existing inclusion and exclusion angles set for the body part. Then you can begin painting the weight map as needed.*



Two existing zones



Weight map added



Weight map Replace mode, and paintbrush enabled

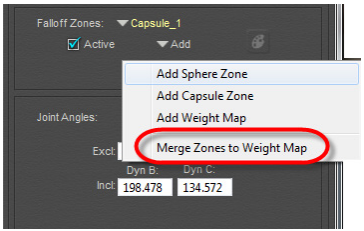
Merging existing zones into a weight map.

Falloff zones are processed in the order in which they appear in the Falloff Zones list. Therefore, if you have a Spherical falloff zone at the top, a Capsule Zone second, and a Weight Map third, the Capsule zone will override the effect of the Spherical zone. Then the Weight Map, if set to **Replace**, *will combine the effect of both the Spherical and Capsule weight maps, making the first two falloff zones ineffective. In addition the weight map will also replace the Joint Angle settings, making them ineffective as well. The joint angles will still be visible as a visual guide only.*

In practice, you can configure a weight map to work with existing falloff zones by setting the blend mode to **Add** *or* **Replace**. *However, there is no advantage to doing so. Falloff zones that have been collapsed down into weight maps work equally as well as the falloff zones that were initially used to create them.*

If the previous falloff zones utilized bulge settings, they will still be active and you will still be able to adjust them in the **Joint Editor**.

In the Joint Editor, click the **Add** button, and choose **Merge Zones to Weight Map**. The weight map will be set to **Replace**, which will make the spherical and capsule falloff zones ineffective.



Merging existing zones into a weight map.

Deleting Weight Maps

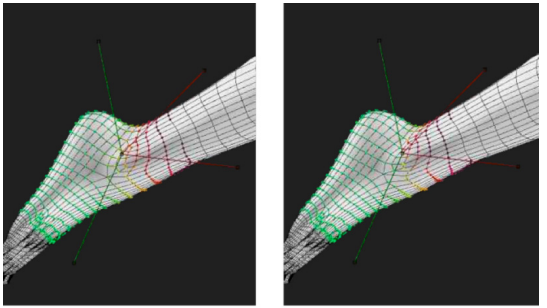
If you don't like the way that the joint is bending after you create a weight map, you can go back and delete the weight maps if you have to. For example, you might learn that in some views the center point of the joint is not set correctly, or the inclusion and exclusion angles aren't working as well as they should and you need to make an adjustment.

When you delete a weight map that was created from existing falloff zones, the original zones will work as they were originally designed to work. You can go back and adjust the falloff zones as

needed, and then create a new weight map that incorporates the new changes.

Activating and Deactivating Weight Maps

The weight map is always active, unless you manually deactivate it. If you want to see how the weight map differs from the falloff zones from which it was created, just uncheck the Active option in the joint editor. The example shown below shows how a weight map smooths the vertices around the ankle when the foot is bent downward.



You can Activate or Deactivate a weight map to observe how it affects a rotated joint.

Painting Weights

After you collapse your weight maps down, you can start to paint. Click the Paint palette icon in the Joint Editor to display the painting controls. As you paint, the changes reflect changes to the actual edge flow and surface normals in the model, and not relative to the screen.

After you create a Weight Map, the Weight Painting tool is enabled in the **Joint Editor**.

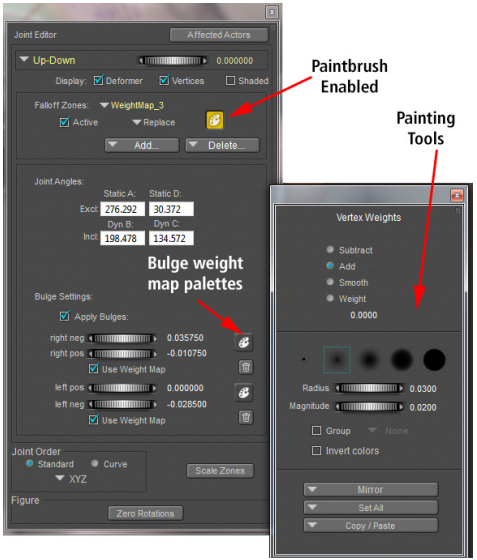
When weight painting, consider the following general workflow:

- Make sure that the Active option is checked before you start painting. With this option off, the brushes will have no effect.
- Start with a smoothing brush, and start with a magnitude setting of 1 for larger areas, and lower the setting for smaller areas. Smooth the vertices in the joint, but be careful not to oversmooth.
- Watch your brush size. Use lower settings for tight areas, such as those between toes or fingers.
- After you smooth out the vertices, choose the Add or Subtract mode. Add will increase the weighted effect on the vertices, while Subtract will decrease the weighted effect. Darker colors (darker purple) are the least weighted

vertices, and solid green are most weighted. Colors in between have varied weights.

To paint weights:

1. Click the paintbrush icon to enable the painting tools. The **Joint Editor** shows the brush controls.



Paintbrush tools.

2. Select a brush type from the available choices.

3. The first brush is a hard brush with a very small radius, suitable for working with targeted vertices.

   - The other brushes provide varying levels of hardness around the edges. The default brush has a softer edge which provides the most effect in the center and then gradually falls off to little or no effect on the outer edges. The last brush has no falloff at all, and applies strength evenly across the width of the brush. There are five brushes in the section.
   -  The fourth brush will give you the best results, as it has a very slight feathering to the edge. If you use brushes that are more feathered you may throw off the weight balance.

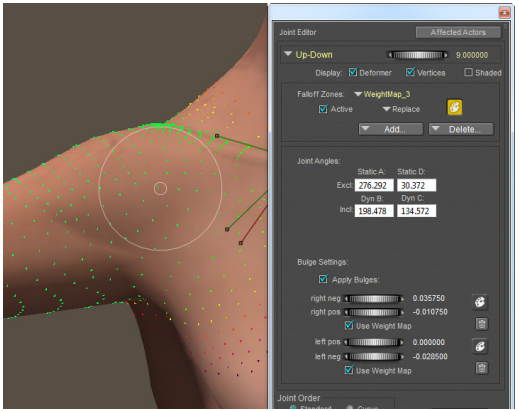
4. A wireframe preview of the brush appears in the Document window. You can toggle this preview on or off by checking or unchecking the **Display Brush** option in the **Joint Editor**.

   - The inner ring of the preview shows the area that will have the most effect.
   - The outer ring of the preview shows the overall width of the brush. You can use the Radius setting in the **Joint Editor** to increase or decrease the brush width.

5. Adjust the **Magnitude** setting in the **Joint Editor** to increase or decrease the strength of the brush. Decrease the setting to produce less of a change while you paint, and increase the setting to produce more of a change.

    *When you have the paintbrush set to Add or Subtract mode, pay attention to the Magnitude setting of the brush. Setting this too high (such as 1) will affect the vertices more than you want them to. It is recommended that you start with a low magnitude (around .007). Then slowly go back and forth over the areas you want to change.*

6. Use the Parameter dial in the **Joint Editor** palette to pose the body part in something other than the default position (at or near one of the limits is a good place to start).



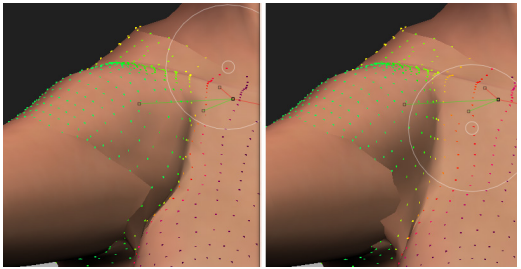
Pose your body part while you paint across vertices to add, remove, or smooth the amount of effect on the vertices.

7. Choose a method for painting. As you paint, observe how the changes affect the body part in that pose. The shape of the mesh will respond to the brush as you make changes:

   - **Add** will increase the effect of the polygons you paint, moving the painted vertices more toward the "green" (fully effected) color. This adds more effect to the areas painted.
   - **Remove** will decrease the effect of the polygons you paint, moving the painted vertices more toward the red (little to no effect) color. This removes the effect from the areas painted
   - **Smooth** will blend the sharp contrasts between polygons that are affected least against those affected the most.
   - **Weight:** The Weight brush allows you to paint weight vertices while targeting a specific weight value. Click the Eyedropper to select a vertex. The weight of that vertex will appear in the text field and will be used as a target. When you paint with the **Add** brush, it will increase the weight values that are below the target setting until the target threshold is met. When you paint with the **Subtract** brush, it will decrease weight values that are above the setting until the target threshold is met.



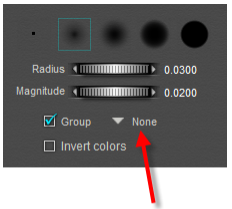
The Smooth mode is extremely helpful. You can work at higher magnitudes, and it is beneficial to begin your weight painting with a smoothing brush to smooth out the mesh.



Vertices move as you paint them.

8. As you are painting, use the Parameter dial to test various positions of the joint to make sure that the weight painting produces desirable results. Continue to adjust the weights until you are satisfied with the results as the joint is exercised through its limits.

9. If you want to limit your weight painting to one group, check the **Group** option below the **Radius** and **Magnitude** sliders. Then select the group that you want to paint from the drop-down menu.

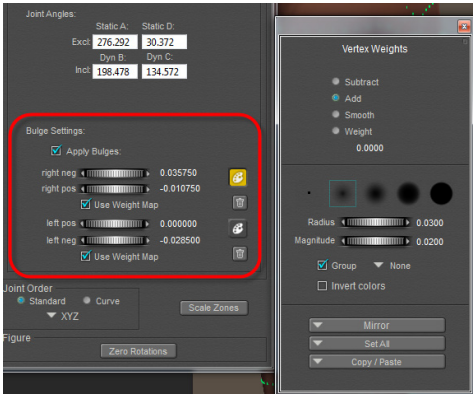


10. You can confine weight painting to a selected group.

11. Click the Paintbrush icon to turn weight painting off. You will return to the normal **Joint Editor** palette.

Painting Bulge Maps

You'll notice that there are also paint palette icons near the right and left bulges. For certain body parts, you'll have to paint both to get the correct feel for how bulges affect the joints.



Bulge map weight painting controls.

As you work with a joint, you may need to switch between the weight map on the joint, and the weight map on its bulges.

If your weight painting gets to a point where the joint weight map starts to look unnatural, try adding or removing from the bulge weight map. Then, if the bulge weight map starts to look unnatural, return to the joint weight map. Switch back and forth between them until the joint looks natural when it is rotated.

- When working on bulge weights, the brush affects the weight map a little bit differently. A setting of .01 on a bulge map has a similar effect to a setting of .001 on a weight map. Use a setting of .01 on a bulge map for a nice, smooth workflow.

- Bulge settings must be set to a value other than 0 in order to use a bulge map. For any bulges that you want to use (Right Neg, Right Pos, Left Pos, or Left Neg), set to a value less than or greater than 0. The Right Neg and Right Pos share the same map, and the Left Neg and Left Pos share the same map.

- Be sure to rotate the dial to its positive and negative positions, and check the bulge weights in both. For example, if you use a bulge on the right collar when the Up/Down dial is at a positive setting, make sure that the joint still looks realistic when the dial is at a negative value.

Smoothing Scale Zones

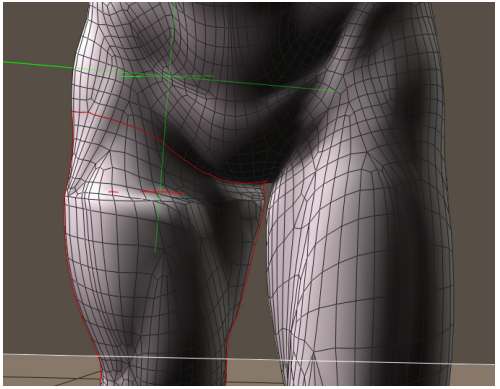
Scale zones should be part of your character or conforming clothing development. The **Scale Zones** button, located in the lower portion of the Joint Editor Window, helps content creators improve the appearance of joint transitions when a body part is scaled along one or more axes. For proper operation when scaling weight mapped figures along a single axis, it is necessary

to check the scale zones on each scaling axis (X, Y, and Z as they apply) for each adjacent body part.

For example, let's say you have an adult male figure (here James, a G2 legacy figure, is being used as an example). You want to change him into a dwarf character. which means that you'll want to substantially change the proportions of his thighs and shins.

Users of legacy figures know that body parts can only be scaled "so far" before they begin to crumble where they join adjacent body parts. For an example, compare this figure's "normal" thigh (his left thigh) to the right thigh, which is scaled to 65%. You'll notice that the thigh is bunching in the locations where it joins the hip and the shin.

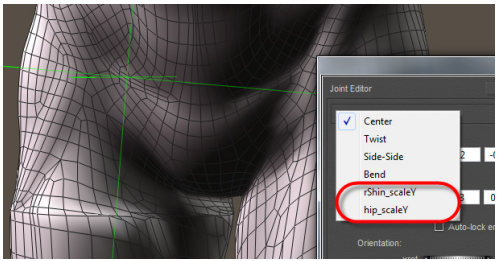
The Scale Zones button in the joint editor allows you to set scaling zones that improves performance when characters and conforming clothing are scaled. You can then add weight maps to the blending areas to smooth the transitions when a body part is scaled.



Joint seams can bunch together when a body part is scaled along a single axis.

Using the same legacy figure as an example, the right thigh has been scaled along the Y axis. When you open the Joint Editor, you'll see the normal center and rotation parameters (Twist, Side-Side, and Bend). But you'll also notice scaling zones for the adjacent body parts ... one named rShin_ScaleY and another named hip_scaleY. The names of these scaling zones might vary from figure to figure, but they will always be preceded by the

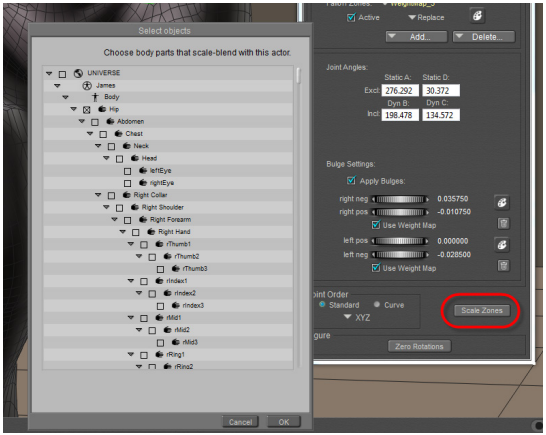
name an adjacent body part plus an underscore. These are the joint parameters that relate to the Scale Zones feature.



Joint seams can bunch together when a body part is scaled along a single axis.

The **Scale Zones** button at the bottom of the joint editor allows you to add or remove scaling zones to the currently selected body part. At a minimum, adjacent body parts should be selected. But if it is possible that the scaling can "spill over" into other body parts, you can add them as scaling zones as well.

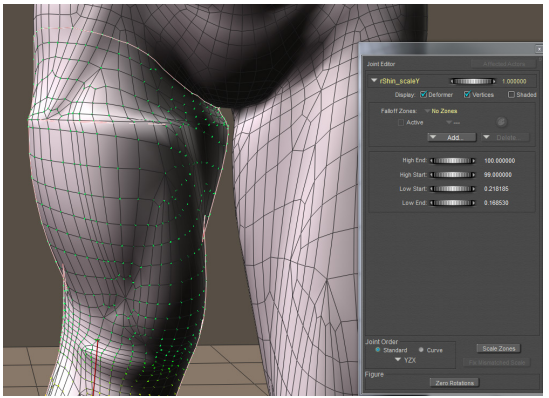
To assign the scaling zones, click the **Scale Zones** button. The Select Objects dialog prompts you to choose body parts that will scale blend with the currently selected actor (the right thigh, in this case). Check any parts that you want to assign, making sure that the adjacent actors (the hip and shin) are included.



Click the Scale Zones button to select body parts to blend when the current part is scaled.

To smooth a scaling zone, scale the body part (the right thigh in this example) to the desired scale. Try to anticipate the maximum range that you would like the scaling to work. For example, it's unlikely that you will want to scale a thigh to any less than 65% as shown in our example.

After you scale the part, open the menu in the Joint Editor to select the first scaling zone that you want to work on. In the following figure, the rShin_scaleY joint parameter is selected. This is the scaling zone, as it was named for that particular joint.

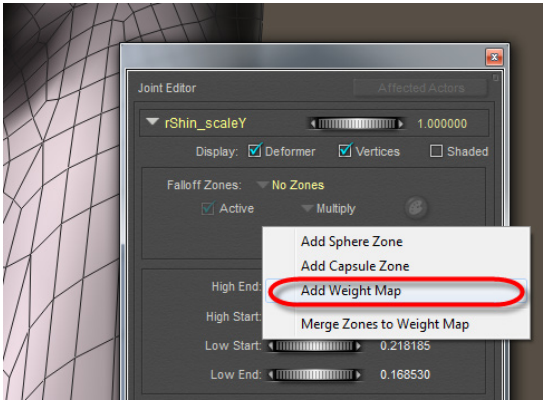


Click the Scale Zones button to select body parts to blend when the current part is scaled.

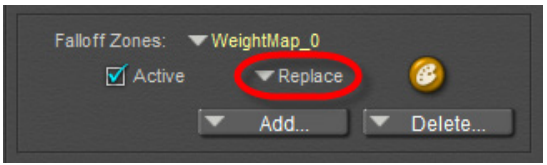
When you select the scale zone, you may see No Zones in the Falloff Zones area (which will be the case when you are weight mapping a new or legacy figure that has not previously been weight mapped). If a weight map does not exist, you'll need to create one for the scale zone. Simply use the menu in the Falloff Zones area of the Editor to choose **Add Weight Map**. Then make sure that the mode of the new weight map is set to **Replace**.

Scale zone maps have to be created for each body part that is connected to the currently selected actor. For example, if you have the right thigh of a figure selected, you'll need to create scale zone maps for the hip and the shin. Of you have a chest selected, you'll need to create scale zone maps for the right and left collar, and for waist or abdomen (depending on the group name that is adjacent to the chest).

When you copy weight maps from a character to conforming clothing, the scale zones should already be set up for you, but you will need to check the scale zones of each body part in the clothing to make sure they work as expected. Before you edit the scale zone weight maps on conforming clothing, select the BODY actor of the conforming clothing, and make sure that **Include Scales when Conforming** *is checked in the Properties palette. Sometimes the easiest way to start a scale zone weight map is to collapse existing zones (spherical and capsule zones, if they exist) into a weight map and then start to smooth them with the weight painting tools.*

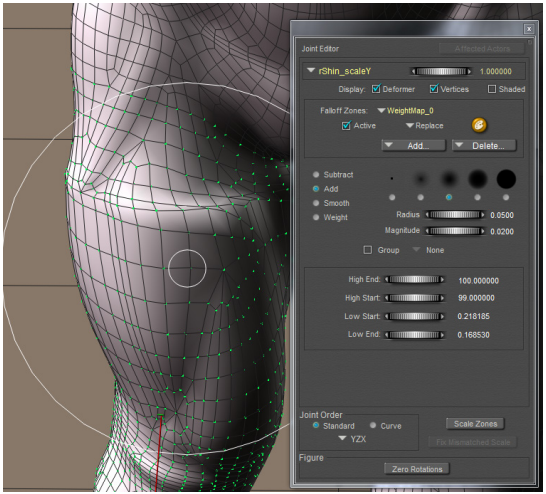


Add a weight map to the scale zone if needed.



Make sure the weight map is set to **Replace**.

With the appropriate scale zone weight map selected, you can begin to use the Weight Painting tools to smooth out the scale zone. The process is similar to that mentioned in "Painting Weights" on page 750.

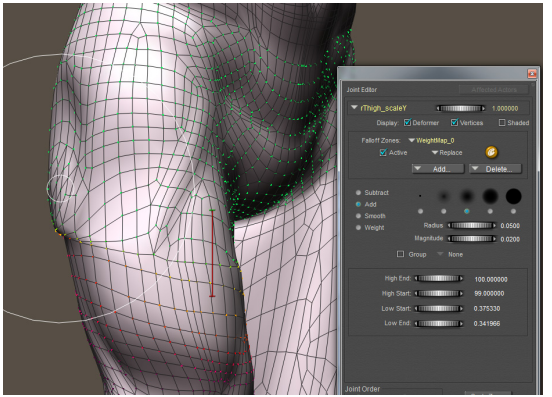


Use the weight painting tools to improve the appearance of the smooth zone (here, in progress)

As you smooth out the current body part, you might notice that there are areas near the adjacent body part that you can't get as smooth as you like. This is probably because it falls in an area that is affected by both body parts. For example, as you work toward the top of the thigh, you might see that you can't smooth it out all the way. In that case, you'll want to check the smoothing zones in the hip, and make sure that you have the correct smoothing zone selected (rThigh_ScaleY). Add a Replace weight map to it if necessary, and then use the weight painting tools to smooth out that area.



You will need to cross over to the adjacent body part and work on its corresponding scale zone. Select that part and verify that it has a corresponding weight map before you paint it. When you paint close to the seam lines, be careful not to overblend because it might create a ridge at the seam. Go back and forth between the two areas until you get an acceptable blend.



Adjacent body parts may also affect a scale zone. Here, the scale zone for the hip also affects the right thigh and should be smoothed.

To summarize:

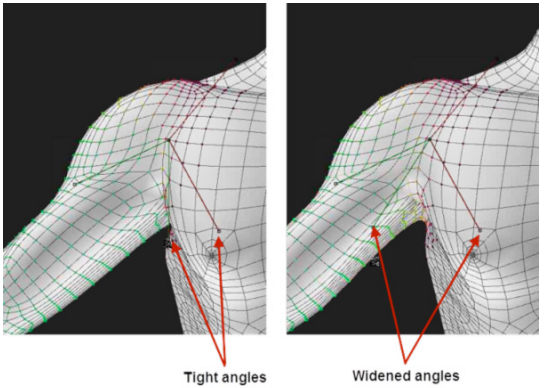
- Scale zones should be checked for each body part in the figure that you are rigging.
- To determine the scale zones that you need to adjust, click to select a body part, and then look for joints that begin with the name of the currently selected body part, followed by

an underscore and a scale zone name (example: rThigh_ ScaleY, or rThigh_smooY)

- If there are existing sphere or capsule zones associated with the scale zone, collapse them into a weight map set to Replace. If no zone exists, create a new weight map set to Replace.
- Go back and forth between the currently selected body parts and the adjacent body parts when you smooth out the scale zone weight maps. Take care not to oversmooth, as it can create a crease at the joint.

Weight Painting Tips

- There may be times when you need to pull one vertice at a time. For this, set the radius of the brush very small.
- There are times that the area between an inclusion and an exclusion angle is very narrow when a joint is rotated to its maximum limit. It is very difficult to get into that area with the weight painting tool to smooth it out. The trick is to widen the distance between the inclusion and exclusion angle so that the body part "plateaus." Then you can use the Weight Painting tool to shape the body part appropriately.



Adjust inclusion angles when weight painting a joint in its maximum limits.

- Another thing that will help as you use the weight painting tools is to select your camera, and then go into the Parameters palette. Set the Hither setting to 0. This will allow you to zoom in as close as you have to without making the object "disappear" in the camera view.
- The Frame Selected and Orbit Selected controls will also be helpful when weight painting. Click to select the joint you

are working on, and then click the Frame Selected control to frame the camera around the selected body part. Then turn Orbit Selected so that the camera will orbit around that part.

Fixing Mismatched Scales

If you are working with a character that makes heavy use of scaling zones, you may sometimes encounter situations where there appears to be something wrong with the scaling in one or more body parts. For example, scaling the chest and could cause the shoulders to scale so that they cause a faulty joint between the shoulders and collars.

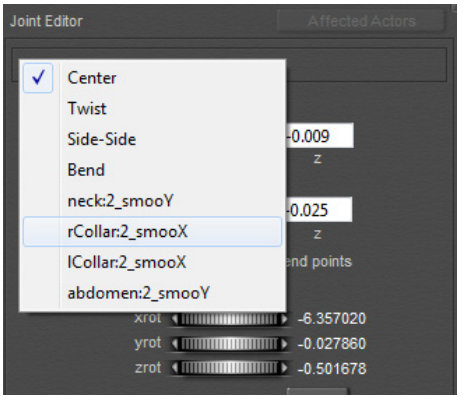
This can be due to a scaling mismatch, and it can be corrected with the **Fix Mixmatched Scale Zones** button at the bottom of the Joint Editor.



When you fix mismatched scaling zones, the order that you select the body parts and smoothing zones is important. The following example shows how you can correct the scaling zones of the right and left shoulders in relation to the chest.

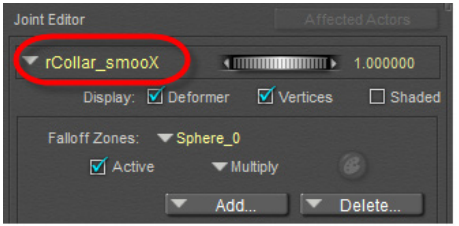
To fix mismatched scale zones in the shoulders, for example:

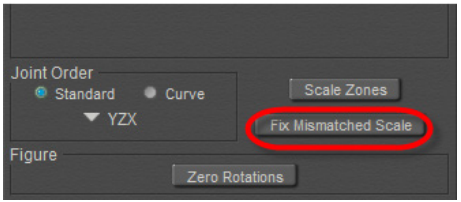
- Open the Joint Editor.
- Click to select the character's chest.
- From the parameter list at the top left of the Joint Editor, choose the smoothing zone that you want to fix (such as the **right collar** zone as shown in the following figure).



Choose the first smoothing zone that you want to fix.

- The **Fix Mismatched Scale Zones** button at the bottom of the Joint Editor palette will be enabled if there is a problem with the scaling zones. Click the button to correct the problem in the selected smoothing zone.





If enabled, click the **Fix Mismatched Scale** *button.*

- Now, click on the figure to select the opposite body part (the **left collar i**n the figure).
- Go to the menu at the upper left corner of the Joint Editor again, and select the smoothing zone for the **Chest**.
- Click the F**ix Mismatched Scale Zones** button at the bottom of the Joint Editor palette to correct the smoothing zone between the left collar and the chest.

Transferring Zones and Weight Maps to Clothing

In earlier versions of Poser, content developers used information from the CR2 of an existing figure as a start point for their clothing. If an existing character has only spherical or falloff zones this method can still be used.

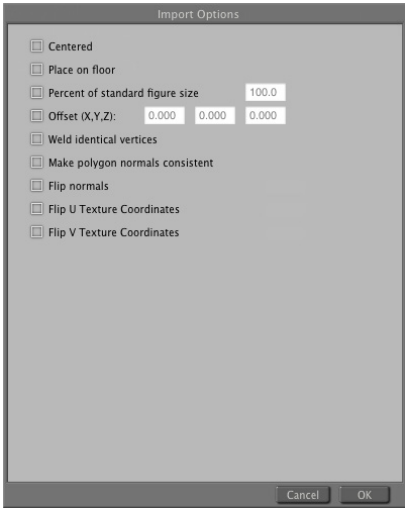
However, when weight maps are used to determine how a joint bends (either solely, or in addition to falloff zones), the weight map information is baked into the figure's geometry. Weight maps are based off of vertices and index arrays that usually will not have a geometry counterpart in the clothing.

The Setup Room allows you to apply the rigging of a character to a grouped or ungrouped clothing OBJ. In the process, it will also transfer any spherical or capsule falloff zones. It will also analyze the vertices and index arrays in the character, and use that information to generate similar weight maps for the clothing geometry.

The steps to do this are fairly simple:

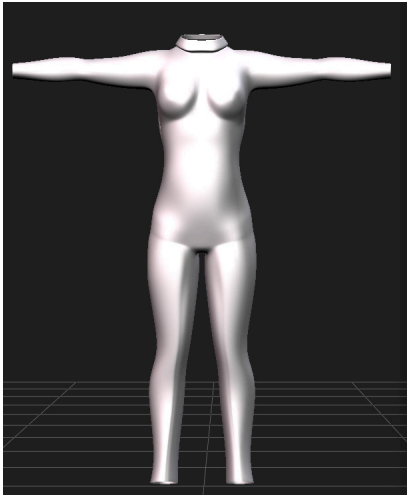
1. Choose **File > Import > Wavefront OBJ**. Select the clothing object that you want to rig. This object can be pre-grouped in your modeling application, or it can be ungrouped.

2. The Import Options dialog appears. In most cases, clothing is modeled around a character that is in its default position, and exported at or converted to the proper scale for Poser. If this is the case, you should uncheck all of the import options as shown below. Then press **OK** to continue.



Uncheck all options in the Import Options dialog if your model is scaled and positioned properly.

3. A dialog prompts you to locate the OBJ file that you want to import. After you select the object, click Open. The OBJ file will appear in your scene.



An imported clothing OBJ.

4. With the object selected as the current item, click the Setup room tab to enter the Setup room.

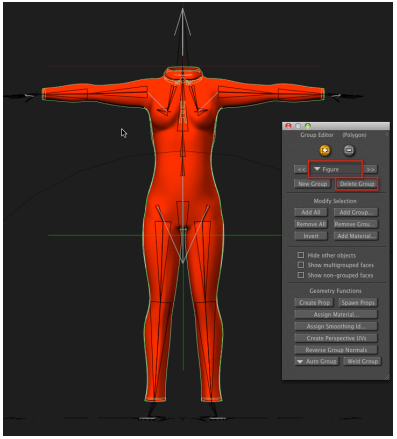
5. Open the Poser library, and click the Figures category. Locate the library folder that contains the original figure for which your clothing was designed. In the case of the example shown here, the **Figures > Poser Pro 2014 Content > People > Alyson** folder is selected, since the suit is made for Alyson.

6. Drag and drop the thumbnail for the original figure from the Library to the OBJ file in the Setup Room. A dialog asks you if you want to automatically group the setup geometry based on the groups of the new skeleton.

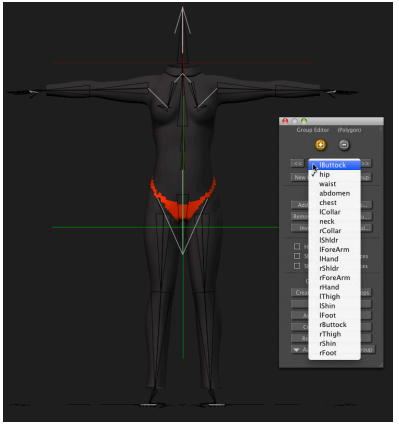
   - Choose **No** if your clothing geometry has already been grouped.
   - Choose **Yes** if your clothing geometry does not already have groups, or if you want to regroup the object. Poser will create the groups for you automatically.

7. The skeleton is applied to the OBJ in the Setup room. You can then open the Group Editor to examine the groups in the OBJ and edit as necessary.

While examining the groups in the Setup Room, you may notice one or more groups that have all polygons assigned to them. For example, when you apply the Alyson skeleton to a clothing object, two groups (one named Figure, and the other named 1) have all polygons assigned to them. Select each of these groups in the Group Editor, and then click the Delete Group button to delete them.



Delete groups that have all polygons assigned to them.



Review each group that has been created and edit polygons assigned to them if necessary.

8. After you inspect all of the groups and have edited them to your satisfaction, you can return to the Pose Room. You should now have a poseable figure.



After applying the skeleton and joints to your figure, you should test the rotations of the joints in your clothing to make sure that falloff zones are adjusted for proper bending of the clothing. If you see polygons that do not bend properly, or which fly away from the figure when your character is posed, it is likely that you will need to adjust joint parameters such as falloff zones or inclusion/exclusion angles. The more the shape of the clothing deviates from the default body shape (for example, like puffy sleeves, or baggy/loose/flowing clothing), the more necessary it will be to adjust spherical or capsule falloff zones.

9. Before conforming the clothing to your figure, or before saving the clothing to your library, choose **Figure > Zero Figure** to zero all joint rotations. Also use the **Edit > Memorize > Figure** command to memorize the conforming clothing. You may also want to assign a new name for the object in the Properties palette.

Skinning Methods

The **Figure > Skinning Method** commands determine how Poser treats a character mesh in regards to grouping:

- Choose **Figure > Skinning Method > Poser Traditional** if you want to display or create a figure that uses Poser's traditional model of breaking the mesh into individual body parts.
- Choose **Figure > Skinning Method > Poser Unimesh** if you want your model to be used with subdivision surfaces (see "Working with Subdivision Surfaces" on page 769). Poser Unimeshes can still be posed manually or with preset poses that are saved to the Library. The mesh is unified, but body part groups are still recognized in Poser.



The Poser 2 Male (roughly 2500 polygons) converted to Poser Unimesh and subdivided to level 2.

- Choose **Figure > Skinning Method > Simple Bones Single Skin - Interoperable ...** if you want to work on or create a figure that has a single skin mesh, but in which the Poser grouping is removed. Figure setup is very simple in this mode. You can specify joint origins and one vertex weight map. After you convert the model to Simple Bones Single Skin, test each joint and use the Simple Bone Weights painting mode to correct any problem areas.



Traditionally-rigged Poser figures use a mesh that is broken into body parts, and has spherical or capsule-shaped zones of influence and weight maps. To export these types of figures to COLLADA, you should switch to Simple Bones Single Skin first. That way, you can preview how the figure bends in other applications. If you are not satisfied, you can touch up the weights at that point.



Alyson converted to Simple Bones Single Skin.

- Choose **Figure > Skinning Method > Regenerate Simple Bone Weights** if you want to start over with a new simple bones single skin mesh.

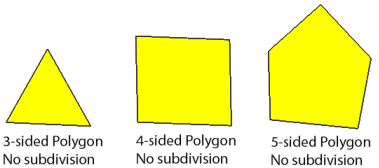
Working with Subdivision Surfaces

Subdivision is a process that refines the appearance of a mesh during preview or rendering. It is typically used to smooth the appearance of a low-resolution mesh to make it appear as though it has been created with a higher number of polygons. In this section you'll learn how subdivision works, what to consider before you create or use models that will be subdivided, and how to use subdivision surfaces in Poser.

How Subdivision Works

Subdivision can be applied to polygons that are made of 3 or more sides. Most content developers keep all or most of the polygons in their model to four sided polygons for optimum results in subdivision.

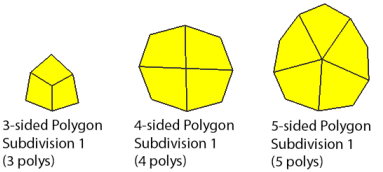
To explain how subdivision works, let's start with a picture of three polygons: one with 3 sides, one with 4 sides, and one with 5 sides. With no subdivision, you see the polygons exactly how they have been created.



3, 4, and 5-sided polygons with no subdivision.

When you set the subdivision level to 1, subdivision smooths the model and gives the appearance as though it is made of more polygons. What basically happens is that a vertex is placed in the center of each polygon, and then that vertex connects at the center of each of the edges in the original polygon: Notice the following in the image that appears below:

- The 3-sided polygon now looks like three four-sided polygons.
- The 4-sided polygon now looks like four four-sided polygons.
- The 5-sided polygon now looks like five four-sided polygons.

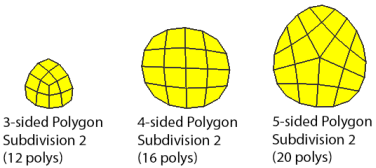


3, 4, and 5-sided polygons with subdivision setting of 1.

If you increase the level of subdivision one more time (to a setting of 2), another vertex is placed in the center of each polygon that was created at level 1. Because a level 1 subdivision created all four-sided polygons, what this will result in is that your model will appear to have four times the number of polygons as the preceding level.

- Your original 3-sided polygon now looks like it has 12 polygons.
- Your original 4-sided polygon now looks like it has 16 polygons.
- Your original 5-sided polygon now looks like it has 20 polygons.

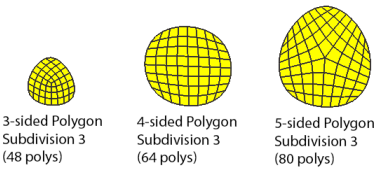
You'll also notice that at a subdivision level of two, the outer edges of the polygon appear much smoother and rounder. This is most noticeable in the four-sided polygon. Where it originally appeared as a rectangular shape, it is now more like a circle.



3, 4, and 5-sided polygons with subdivision setting of 2.

Finding the Optimum Setting

As you continue to increase the subdivision levels, you will get to the point where you won't really notice much of a change in the appearance of the polygons. Depending on the edge loops in the model, this most often happens between a subdivision level of 2 or 3. To illustrate this, compare the figure below with the preceding example. You won't notice a lot of difference in the shape of the outer edge of the polygon. The only thing that you notice now is that it appears as though there are four times the number of polygons. Your 3, 4, and 5-sided polygons now look like 48, 60, and 80 polygons (respectively), but the appearance hasn't changed much along the outer edge.

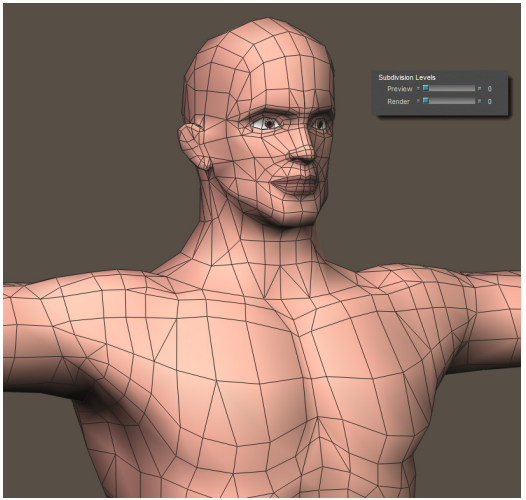


3, 4, and 5-sided polygons with subdivision setting of 3.

What this means, is at some point it won't make a lot of difference in your preview or final render to increase the subdivision beyond an optimum point. To do so will only increase the load on your system resources as you increase the number of subdivision levels beyond what you actually need.

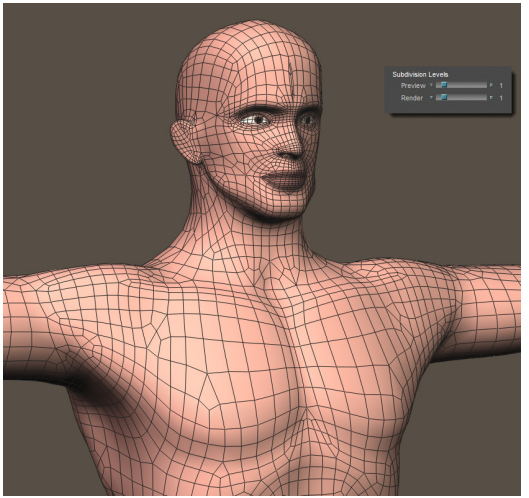
Now that you've seen how subdivision affects a single polygon, consider the effects on a figure such as the Poser 2 male, which consists of 2572 polygons. You can find this figure in the **Character > People > Poser Originals > Poser 2 Lo Library** category.

The Poser 2 Male is made of polygons that have 3 or more sides: With no subdivision, it appears as shown in the following figure. Pay attention to the crown of the head, which appears to have some hard edges.



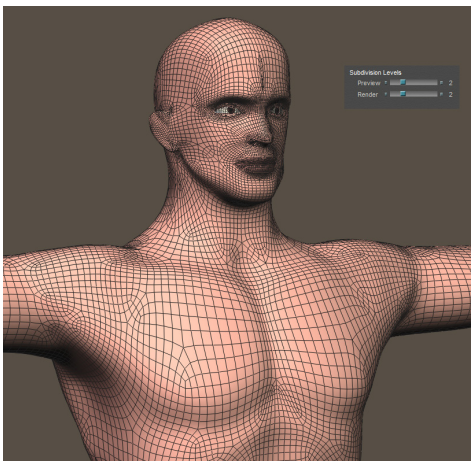
Poser 2 Male with no subdivision.

When you set the subdivision level to 1, you'll notice that the hard edges are softened somewhat. The hard edges at the crown of the head are much improved, but still don't appear quite as smooth as you would like. You'll also notice that the chest muscles retain their shape because the edge flow in that area follows the shape of the muscular detail. The facial features are less angular, giving a softer appearance to the eyes, nose, mouth, and ears. With one level of subdivision, you'll get the equivalent of a model that has about 10,000 polygons.



Poser 2 Male with subdivision setting of 1.

Increasing the subdivision level to 2 (about 40,000 polygons) doesn't seem to change the appearance of the chest and arms very much; however, you'll notice that the crown of the head appears very smooth now. However, the facial features might be softened a bit too much at this level. The primary reason for this is because there isn't enough edge flow in those areas to retain the detail in those areas, because the model wasn't built with subdivision in mind.



Poser 2 Male with subdivision setting of 2.

As you can see from the preceding examples, content creators should pay attention to areas that will require more detail. A 20,000 polygon figure can easily contain enough edge loops to make a subdivision setting of 1 sufficient enough to produce sufficient detail and a great render, as long as it's modeled with subdivision in mind. To maintain detail, edge loops have to be placed near areas where you want creases, sharp transitions, and folds to appear, otherwise the subdivision will smooth those details away.

Subdividing Figures in Poser

To turn subdivision surfaces on for Poser figures:

1. Load the desired figure or prop into Poser.
2. If you are subdividing a poseable figure, choose **Figure > Skinning Method > Poser Unimesh**. This will combine the model into one mesh.
3. Select the **BODY** actor of the figure.
4. Switch to the Properties tab, where you will see two settings in the Subdivision Levels section:
    - **Preview**: Indicates the subdivision level that will be used in the Preview render (the document window or the Raytrace Preview).

- **Render**: Indicates the subdivision level that will be used in the final render.



When you initially turn subdivision surfaces on, both the Preview and Render values are initially set to zero (no subdivision).

Adjust the **Preview** *setting first. If the* **Preview** *setting is increased higher than the* **Render** *setting, the* **Render** *setting will automatically increase to match the Preview setting.*

5. After you reach the desired **Render** subdivision level, you can reduce the Preview setting as needed to improve performance while composing your scene.



If you turn body parts off, subdivision will be recomputed accordingly.



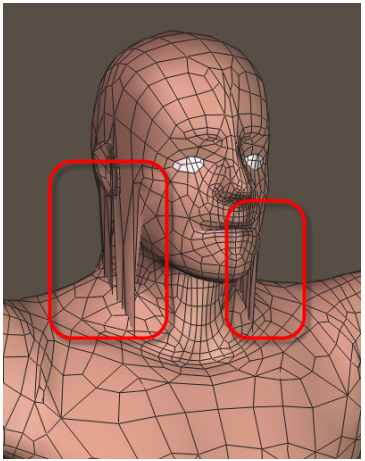
If you have a body part that is not subdividing properly, you can set a different subdivision level for that part. Select the body part that you want to change, and set a different subdivision level in the Properties palette. Note that you may see creases at the seams when your model uses different subdivision levels. Additionally, you will not be able to smooth across body parts that have different subdivision levels.



Increasing the subdivision levels on cloth simulated objects can reduce shading artifacts.

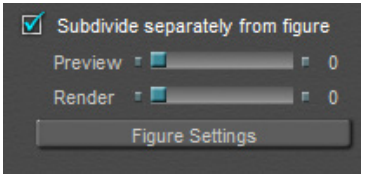
Modeling Considerations

When using subdivision surfaces, your model must be clean. There is a lot of content in the Poser world that was not modeled with subdivision surfaces in mind, and you won't always get the results you expect. For example, you might see polygons that appear to stretch away as shown in the following figure, which shows the Poser 1 male with a subdivision setting of 1. This is often due to vertices that are at or close to the same position in 3D space.



Poser 1 Male with subdivision setting of 1.

In the case of the Poser 1 male, there isn't a workaround for this issue. However, in some cases you can select the body part that is causing the issue. Then go into the Properties palette, and check the **Subdivide separately from figure** option. Set the subdivision setting to zero for that body part. Note, however, that the seam will be more visible where one body part is subdivided to different level than an adjacent body part.



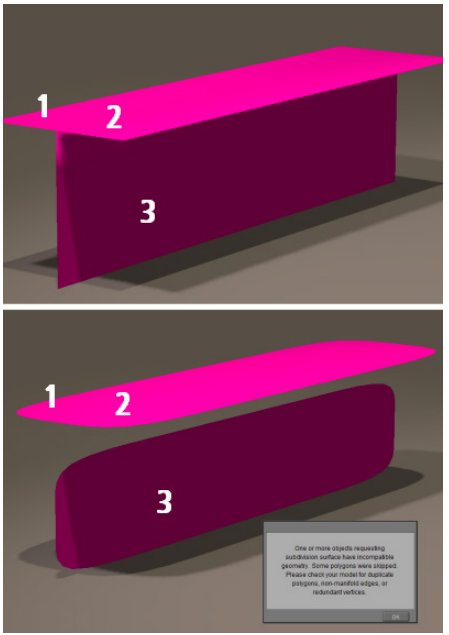
Body parts can also be subdivided individually.

The following conditions will cause subdivision to work improperly, and Poser will notify you when it will be unable to subdivide the model at all.

- Edges that are shared by more than two polygons.
- Vertices that show up twice in one polygon.
- Duplicate polygons that share the same space.

To illustrate what happens when more than two polygons share an edge, the following figure shows an object that is made up of three sections of polygons. Sections 1 and 2 appear along the top of the "T" shape, and are welded along the center length. The third section is perpendicular to sections 1 and 2, and also joins them at the center. Thus, each edge along the middle of the T shares three connecting polygons.

The top section of the following figure shows what this T-shape looks like before subdivision surfaces are activated.



Three sections of polygons sharing the same edge.

The bottom section of the figure shows what happens to these polygons after subdivision surfaces are applied. Poser gives a warning when geometry contains problematic areas. As you can see, the top two sections remain joined together; but the third section, which was connected to the top of the T before subdivision, now appears to be separated from them. You will need to modify the model in areas where three or more polygons share a common edge.

Chapter 34: Using Poser with Other Applications

Poser allows you to import and export various types of content such as background images, movies, and 3D objects. This allows you to use third-party applications to create textures, background scenes, and clothing that you can use to enhance your scenes.

Importing Files

Selecting **File > Import** allows you to bring both Poser and non-Poser files into your scenes. These could be images, movies, or props (which you can convert into Poser figures as described in "Chapter 27: The Cloth Room" on page 550.

Importing Movies

To import movies, select **File > Import > AVI Footage** (Windows) or **File > Import > QuickTime** (Macintosh). You can use imported movies to add background action to your Poser animations. For example, you could have a scene with two Poser characters sitting on a train with an imported movie showing the scenery rolling past as if the train was in motion.

If your imported movie's size or aspect ratio (width/height) is different than your current **Document** window settings, you will be informed that the background width and height are different, and will be asked if you want to change the window to match the background.

Selecting **Yes** resizes your **Document** window to fit the imported movie. It is recommended that you only use this option while the Document window is docked.

- Selecting **No** "stretches" the **Document** window to accommodate the movie. You may see areas of the **Document** window not covered by the imported movie.
- Changing the aspect ratio of imported movies can introduce unwanted artifacts and distortions into your scene when rendered. Smith Micro Software therefore recommend resizing your **Document** window or importing correctly sized animations.



Aspect ratio of imported movies can be retained or adjusted to fit the size of the window.

Imported movies will begin at the first frame of your Poser animation. If your animation is longer than the movie, the movie will remain in the background paused at its last frame. If your animation is shorter than the movie, you will see Frames 1-X of the imported movie, where x is the number of frames in your Poser animation.

When importing movies, you should try to light your scene in a manner consistent with the background so as to blend them together. Please see "Chapter 12: Lighting" on page 261 for information about lights in Poser.

Importing Background Pictures

You can also import static images as backgrounds. For example, if you are creating a scene with Poser characters in a room with a window, you could use a background image to simulate the view from the window. Selecting **File > Import > Background Picture** opens a standard **Open** dialog, allowing you to select your image's format and location. As with movie imports, you are asked if you wish to resize your **Document** window to match the imported image, and the results are the same as described above. Changing the aspect ratio of imported images can introduce unwanted artifacts into your scene when rendered and can result in blank areas on the sides of the **Document** window (see above). We therefore recommend resizing your **Document** window or importing correctly sized images. Poser supports importing background images in a wide variety of formats. The following is only a partial list of those formats supported: SGI, BMP, DDS, EXR, GIF, HDR, JPG, PCD, PNG, PSD, TGA, TIFF and WBMP.

When importing images, we recommend that you import them while the document window is in its docked state. You should try to light your scene in a manner consistent with the background so as to blend them together. Please see "Chapter 12: Lighting" on page 261 for information about lights in Poser.

Importing Poser Documents or Props

Selecting **File > Import > Poser Document/Prop** loads either an entire Poser scene or a Poser prop into your scene. This can be useful for inserting props that are not part of your **Library** palette's **Props** category. Imported scenes/props become part of your current scene complete with animations, morphs, poses, etc. This option opens a standard dialog box allowing you to browse for the desired file. Use the **Files of type** pull-down menu to select one of the following types of Poser files:

- **Poser document files (*.PZ3 and *.PZZ)**: This option imports Poser 3.0 and later scenes, both uncompressed and compressed.
- **Poser Prop Files (*.PP2 and *.PPZ)**: This option imports uncompressed or compressed Poser prop files.



See "Miscellaneous Preferences" on page 40 for more information about compressed file support within Poser.

Importing 3D Objects

Poser allows you to import geometries in the following formats:

- **3D Studio Max** (**File > Import > 3D Studio**)
- **DXF** (**File > Import > DXF**)
- **Wavefront OBJ** (**File > Import > Wavefront OBJ**)
- **LightWave LWO files** (**File > Import > LightWave...**)
- **COLLADA**

Most 3D modeling applications support exporting to at least one of the above formats. Some formats, such as Wavefront OBJ, allow you to save geometries as either polygons or NURBS surfaces. Poser will only accept geometries saved as polygons.

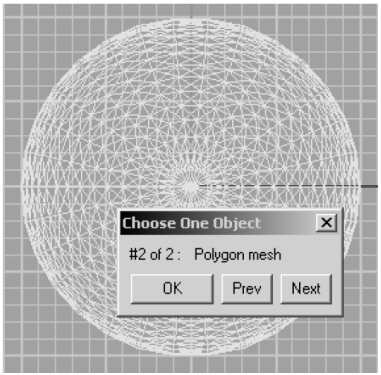
Poser will import smoothing groups in Wavefront OBJ format, as defined in the source file. (If no smoothing groups are specified in the source file, none will be imported.) Please refer to "Smoothing Geometry" on page 422 for more information about smoothing groups. Note that while Poser does not support the 3ds Max style of defining smoothing groups, Poser does take into account the vertex normals when determining creases. As a result, OBJ files exported from 3ds Max will usually appear as expected, despite the fact that the 3ds Max smoothing groups are not read.

Tips & Tricks

When using your favorite 3D modeling application for creating new geometries for conversion into Poser figures/props, it is

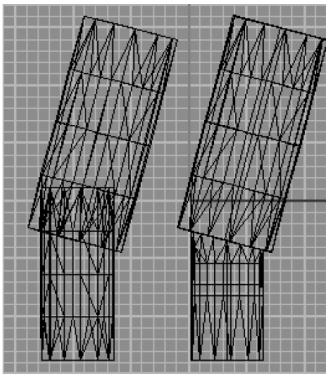
a good idea to follow these guidelines in order to speed up the figure creation process and provide a better end result:

- Make sure that you do not have duplicate or overlapping polygons. Duplicate polygons occur when you have two identical parts of the geometry occupying the same location, for example if you accidentally paste an item twice. The following graphic depicts an instance of duplicated polygons within a 3D modeling application.



Two spheres that overlap each other.

- Eliminate overlapping polygons, which can occur if pieces of the geometry are embedded within each other. The following graphic shows an example of overlapping polygons on the left (the smaller pipe embedded within the larger one), and the correct way to create the geometry on the right (without overlapping polygons).



Remove overlapping polygons.

- Poser allows you to import geometries as a single file with groups within the file, as separate files, or as a single file with no groups. We recommend that you create your

geometries as single files with no groups, since Poser includes powerful grouping tools and since some geometry formats (such as Wavefront OBJ) allow you to assign polygons to more than one group at a time. Importing geometries with polygons assigned to more than one group will cause Poser to duplicate those polygons, resulting in additional unwanted figure parts.

Use the following procedure to import geometries into Poser:

1. Begin the process by creating a polygonal mesh object in your favorite 3D modeling application. Once you have finished, import it into Poser by selecting **File > Import > format**, where **format** is the format you wish to import (such as OBJ). A Standard **Open** dialog appears, allowing you to select your desired filename and path.

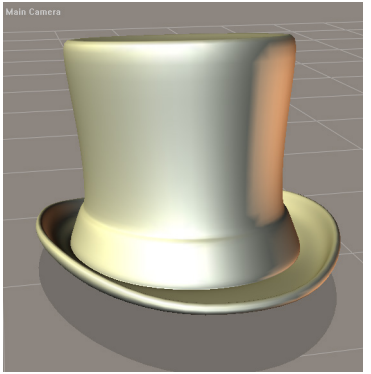
2. Once you have selected the desired geometry, the **Prop Import Options** dialog appears. It contains the following options:

   - **Centered**: Checking the **Centered** checkbox positions the imported geometry in the center of the Poser workspace.
   - **Place on floor**: When enabled, the **Place on Floor** option places the bottom of the prop at "ground level" on the floor of the workspace.
   - **Percent of standard figure size**: The **Percent of standard figure size** option scales the geometry relative to the height of a standard Poser figure. For example, setting the scale to 50% imports the geometry at 50% of the height of a standard Poser figure. The rest of the geometry scales to maintain the correct proportions relative to the selected height. When importing DXF geometries, Poser considers one DXF unit as being equal to the height of a standard Poser figure, or about six feet.
   - **Offset**: Entering numeric values in one or more of the **Offset** fields positions the geometry at the selected position within the Poser workspace.
   - **Weld identical vertices**: When enabled, the **Weld identical vertices** option unites identical vertices within the geometry.
   - **Make polygon normals consistent**: If the geometry file contains vertex normals, checking the **Make polygon normals consistent** checkbox makes the polygon normals consistent with the vertex normals.
   - **Flip normals**: The **Flip Normals** option reverses all of the geometry's normals.
   - **Flip U Texture Coordinates**: The **Flip U Texture Coordinates** option reverses the geometry's U texture coordinates.

- **Flip V Texture Coordinates**: The **Flip V Texture Coordinates** option reverses the geometry's V texture coordinates.

  Once you have finished selecting your desired options, click the **OK** button.

3. The geometry file imports into Poser. The amount of time required to import a geometry file depends on factors such as the size of the file, number of polygons or groups, speed of your computer, etc. A progress indicator tracks the import process. When the process is complete, the imported geometry appears in your Poser **Document** window.



An object after it is imported into your scene.

Imported geometries are treated as static props. You can add props to the **Library** palette as described in "Maintaining Your Library Palette" on page 161 and/or can convert props into poseable Poser figures using either the graphical **Setup** room (see "Chapter 27: The Cloth Room" on page 550 for instructions on using the **Setup** room) or the legacy text-based method (refer to "Global vs. Local Coordinates" on page 862).

Exporting Files

In addition to supporting a wide range of import formats, Poser supports many formats for export, allowing you to use your Poser output with your favorite 2D and 3D applications.

Exporting Images

To export an image, select **File > Export > Image**. A standard **Save As** dialog appears, allowing you to specify your desired filename and save location. In addition, you may be able to select various image-specific attributes (such as quality for JPG exports).



If you want Poser to write an alpha channel to preserve transparency in your exported image, you should export to either the PNG, TIFF, or PSD formats. An alpha channel causes the foreground to be transparent wherever it is empty, in order to allow the background to show through. This feature is essential for compositing in image editing applications.

Exporting an image saves a snapshot of your current scene as seen in the active tab of your **Document** window. Therefore, if you are in the **Preview** tab of the **Document** window, your exported image will be a snapshot of the scene exactly as it appears in the **Preview** tab. If you are in the **Render** tab, your exported image will be the rendered image that is currently selected in the **Main Render** menu at the bottom left of the **Document** window.

Exporting BVH Motion Files

To export a BVH motion capture file:

1. Select the figure you wish to export.
2. Select **File > Export > BVH Motion**.
3. Select **Scale Automatically**. If the exported file looks incorrect, re-export it and disable automatic scaling.
4. A standard **Save** dialog appears, allowing you to specify your desired filename and save location.

Exporting Painter Scripts

Clicking the **Export Painter Script** button in the **Sketch Designer** exports the current **Sketch Designer** settings to Corel Painter (see "Chapter 20: The Sketch Designer" on page 440). This has been tested to work with Painter 6 and previous versions, and is not supported for later versions though it may work with them.

Exporting 3D Objects

Poser allows you to export 3D objects in RIB, 3DS, DXF, OBJ, VRML, LWO, OBJ, and COLLADA formats by selecting **File > Export > format**, where format is one of the supported export formats. To export to a 3D format:

1. Select **File > Export > format**.
2. In the dialog that appears, check the appropriate radio button to export either a still (at the current frame of your animation) or an animation. If you select to export an animation, enter the frame starting and ending numbers in the appropriate text boxes and click **OK**.
3. Select the actor(s) you want to export in the following dialog and click **OK**.
4. A standard **Save As** dialog appears, allowing you to select your desired filename and path.



If you are trying to create a full-body morph target, do not select **File > Export > Wavefront OBJ**. *Instead, select* **Figure > Create Full Body Morph**.

Exporting Flash (SWF) Files

Flash is a popular 2D format most commonly used for animating Web content. You can export your Poser file to the Flash format (.SWF file) from the **Make Movie** dialog, and then use the Flash application to modify the file. Flash presentations are normally viewed directly within Web browsers using the Adobe Flash plug-in.

Please refer to "Keyframe Controls" on page 452 for more information about the **Make Movie** dialog, and to for information about setting Flash export options.

High Dynamic Range Image (HDRI) Export

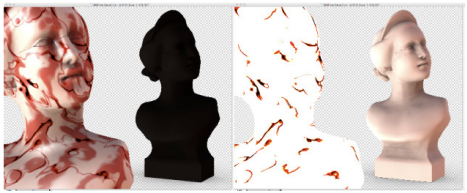
With Poser Pro you can render and export files that are optimized for HDRI output. Files can be exported as Radiance files or OpenEXR files. HDRI optimized files accurately represent the wide range of exposure found in real scenes, including the details, shadows, and high-contrast lighting.

To optimize images for HDRI export, from the **Main Menu** select **Render > Render Settings** and enable the **HDRI Optimized Output** check box. To Export an HDRI file, from the **Main Menu** select **File > Export.** To make a movie optimized for HDRI output, from the **Main Menu**, select **Render > Render Settings > Movie Settings**, select **Image Files** from the **Format** pull-down menu.

When you save the file(s), you will be given the option to save as Radiance (.HDR) or OpenEXR (.EXR).

While more precise, files optimized for HDRI output can lead to perceived loss of anti-aliasing and banding in very subtle gradients. Optimizing for HDRI output omits dithering that would otherwise be applied to eliminate banding.

Optimizing images for HDRI output provides maximum flexibility in post-production, performing color correction or adjusting exposure without having to re-render the image.



Same HDR image at varying exposures in Adobe Photoshop CS.

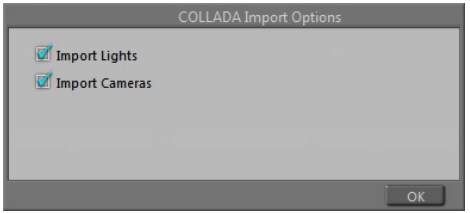
COLLADA Import/Export

Poser Pro offers data exchange with the industry-standard COLLADA format. Gain maximum flexibility by transporting Poser content to applications such as Softimage XSI or NVIDIA FX Composer without having to rely on hosting plug-ins.

Importing COLLADA Files

Importing COLLADA files allows you to import geometry with standard surface materials, cameras and lights. COLLADA import in Poser Pro does not currently support Cg shaders, morph targets, bones or animation.

To import a COLLADA file, from the **Main Menu** select **File > Import > COLLADA\RWY**. Enable the appropriate import options and click **OK**.



COLLADA Import Options dialog.

- **Import Lights**: With this option enabled, Poser Pro will add lights stored in the COLLADA file to the current scene. For

more information about lights, see "Chapter 12: Lighting" on page 261.

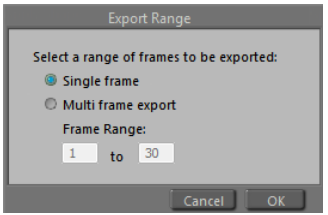
- **Import Cameras**: With this option enabled, Poser Pro will add cameras stored in the COLLADA file to the current scene. For more information about cameras, see "Chapter 11: Cameras" on page 242.

Exporting COLLADA Files

COLLADA offers increased flexibility by allowing to export a more comprehensive representation of your Poser scene. For example, as a game designer, you might want to import your scene exported from Poser Pro as COLLADA file into 3ds Max or Softimage. You can work on your scene in those applications, and then transfer it to your game engine with COLLADA. Your scene remains editable at any position in the pipeline. COLLADA is a feature-rich format that can store various aspects of your scene, thereby preserving a maximum of information upon export. Provided that the application you are exporting for supports those features, you can choose to transfer data such as static figures, props, baked morph targets, cameras, and lights.

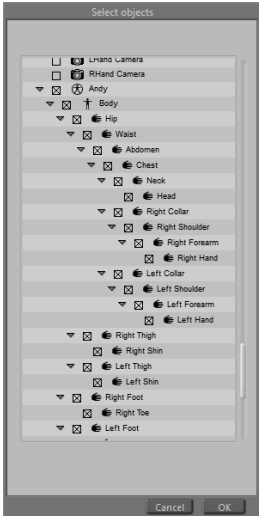
To Export a COLLADA file:

1. From the **Main Menu** select **File > Export > COLLADA|RWY** (.DAE). The **Export Range** dialog appears.
2. If you want to export only the current frame, choose Single Frame. To export multiple frames in an animation, choose Multi frame export, and then enter the range of frames to be exported.



Export Range dialog.

3. Click **OK** to continue. The Select Objects dialog appears, with the items in your scene selected for you. Check or uncheck items as desired to export.



Choose the objects to export from your scene.

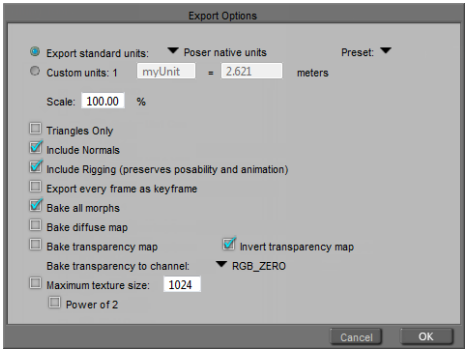
4. Click **OK** to continue. The Export Options dialog appears. Enable the appropriate Export Options and click **OK**. These options include:

- **Export Standard Units vs. Custom Units:** Select one of the standard Poser units. If none of the standard units meet your needs, then you can define your own measurement in meters.
- **Scale:** This allows the adjustment of the scale of a scene upon export. Adjust the scale if you want to adjust the size of the scene.
- **Triangles only:** Forces triangulation of polygons upon export.
- **Include normals:** Allows you to specify whether polygon normals are exported explicitly. Discarding the normals will require the target application to recompute them. Toggling this option may help resolve shading issues.
- **Include rigging (preserves posability and animation):** Figures are exported as poseable and animatable objects.
- **Export every frame as keyframe**: When checked, will export an animation keyframe for every frame in the selected range. When unchecked, exports already existing keyframes only. This can help increase accuracy in a complex setup (e.g. conforming clothing) or if the importing application has difficulties interpolating between keyframes.

- **Bake all Morphs:** COLLADA files with a lot of morphs can be large and resource consuming. **Bake Morphs** allows the export of morph targets so you get the essence of the morphs without the file size and resource expense. You will not be able to animate those morph targets any more, which sacrifices some flexibility. However, you'll receive the same end result if you are only interested in the particular shape variation that was present in your scene upon export.
- **Bake Diffuse Map:** Blend diffuse texture with diffuse color. If you enable this option Poser Pro will write a new texture map that is shader baked into a texture map.
- **Bake Transparency Map:** Enable this option when your target application expects transparency information in the alpha channel of the diffuse texture rather than as a separate transparency map. You will be allowed to designate a channel name, and choose whether or not you want to invert the transparency map (turn black to white and vice versa).
- **Bake Transparency to Channel**: Choose this option if you want Poser Pro to create a texture map that has transparency information baked into it.
- **Invert Transparency Map**: Choose this option to output a "negative" transparency map. For example, in Poser black areas indicate transparent areas and white areas indicate opaque areas in the transparency map. An inverted transparency map would be the opposite (black is opaque and white is transparent).
- **Maximum Texture Size:** Textures in Poser content are often very large. Some applications experience difficulties upon importing COLLADA files with large textures. Maximum Texture Size allows you to automatically reduce texture size upon export, thereby maximizing compatibility. Your original textures remain untouched.
- **Power of 2:** You can increase compatibility further by enabling the **Power of 2** option. This option will automatically resize your textures to the nearest width and height that is a power of two. For example, a texture that is 1100x600 pixels large would be exported at a size of 1024x512. Once again the original texture remains unaffected.



When exporting to 3d software that supports COLLADA, you can export using Poser's default skinning method, or a single mesh with weight maps. For more information on these options, see "Skinning Methods" on page 767.



Export Options dialog.

Using Poser with ZBrush and GoZ

Poser Pro 2012 SR3 or later *and* **an updated ZBrush 4** *or later are required for GoZ compatibility.*

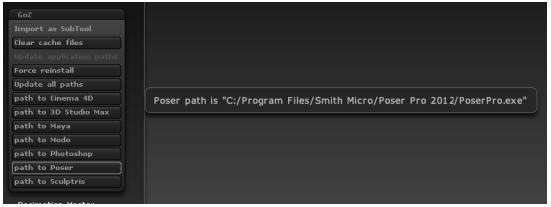
Users of ZBrush 4 can use GoZ to export a complete figure mesh, or a selected actor or body part into GoZ. Then use ZBrush's powerful tools to create your morphs and reimport them back into Poser. The GoZ plugin makes morph creation - including reverse deformation joint controlled morphs -- easy, and painless.

Setting Your Poser Path in ZBrush

When you install Poser Pro, the required GoZ files are installed in your ZBrush installation folder. You'll find the GoZ interface files in the following ZBrush-related folders:

- Poser Pro (Windows) will place the interface files in C:\Users\Public\Pixologic\GoZApps\Poser.
- Poser Pro (Macintosh) will place the interface files in Users:Shared:Pixologic:GoZApps:Poser

Once the files are installed you will need to start ZBrush to make sure that you have the path set to Poser. To do this, choose the **Preferences > GoZ** command, and hover over the Path to Poser button. If your path is set, it will appear on the screen as shown below.

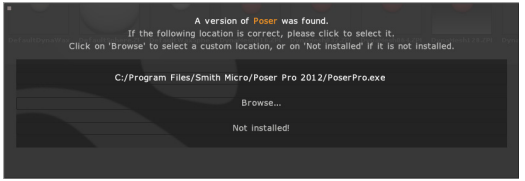


Make sure that your path to Poser is set in ZBrush GoZ Preferences.

If you hover over the Path to Poser button in ZBrush and get a message that reads **Poser application was not found**, then you will need to set it up manually. To do this, click on the **Path to Poser** button. This will initiate a search for your Poser application.

If Poser is installed to the default installation path, ZBrush should find the application after a brief time. A screen will display the path (or paths, if you have multiple versions of Poser installed).

If one or more paths to Poser are reported in the dialog, click to select the path that you want to use as the default. This will set the preference.



After searching for your path, it will appear in a dialog if one or more versions of Poser are found on your system.

- If you instead get a message that states that no version of Poser was found (which may be possible if you installed Poser to a non-standard path), then you will have to locate it manually. Click the **Browse** button to navigate to the folder that contains the PoserPro.exe file.
- Clicking the **Not Installed** button will remove the preference that was previously set, and cause the GoZ link to Poser to not work properly. If ZBrush does report your path to Poser properly, make sure that you click the line that displays the correct path to exit the dialog properly.

Using GoZ to Create Morphs and Texture Maps

The GoZ plugin for Poser allows you to create full body morphs, partial body morphs, and joint-controlled morphs with ease. In addition, you can also add additional detail to a model with normal or displacement maps. The following sections describe how to initiate the steps to send your models to and from ZBrush with the GoZ plugin.



When using the **Figure > Export Figure to GoZ** *or* **Object > Export Object to GoZ** *commands, it is important to remember that they apply to a single round-trip session between the scene you exported the object from, and the ZBrush document that you sent it to. You cannot send a figure or object to ZBrush from one Poser project, and then send it back to another Poser project.*

Exporting Objects to ZBrush

When you use the GoZ plugin as a bridge between Poser and ZBrush, you are presented with a couple of choices in how you want the polygon grouping to work. These options are to assist in making it easier to show and hide polygons in ZBrush while you are editing your object. ZBrush allows you to show or hide polygon groups by pressing CTRL+SHIFT+Click (Windows) or COMMAND+SHIFT+Click (Mac). When you click on an area of the mesh in ZBrush, this key sequence will cycle between “Select only this polygon group”, “Select everything but this polygon group” and “Show all polygon groups.”

When you choose to export a character or actor to ZBrush, you are presented with the following options:

- **Export Posed**: This option is not checked by default. When unchecked, Poser will zero a figure pose before it exports the figure to Poser. When checked, the figure will be export to ZBrush in its posed position, which is desirable for creating joint-controlled morphs. For additional information, see “Creating Joint-Controlled Morphs with GoZ” on page 797.

- **Material**: When you choose this option, the polygon order of the object that is exported to ZBrush will be grouped by Material. This will allow you to show or hide polygons in ZBrush based on their material assignments. For example, if you export a head, you will be able to hide the face texture while you work on morphs or textures for the parts inside the head (teeth, tongue, etc).

- **Body Part**: When you choose this option, the polygon order of the object that is exported to ZBrush will be grouped by body part. This will allow you to show or hide polygons in ZBrush based on body part. For example, you can hide all

parts except the head if you are working on face morphs, allowing you to frame only the head in the ZBrush window.

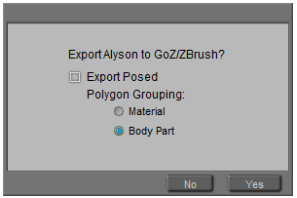
Creating Full Body Morphs with GoZ

The **Figure > Export Figure Mesh to GoZ** command allows you to export a complete figure from Poser into ZBrush. When you export a complete figure through GoZ and then return it back to Poser using the GoZ plugin for ZBrush, a full body morph dial will automatically be created for you when the morph is sent back to Poser. In addition, corresponding dials will only appear on the body parts that were directly affected by the morph (in other words, there will be no need to delete redundant morph dials from unaffected body parts).

To create a full body morph using GoZ:

1. Load the figure that you want to morph into your Poser scene, and select it as the current figure.

2. Choose **Figure > Export Figure Mesh to GoZ**. A dialog displays some options for the export.

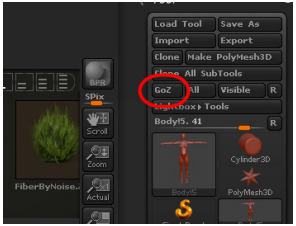


GoZ options dialog.

3. In the **Polygon Grouping** section, you have two choices for how you can group polygons when you export them to ZBrush. The method that you choose determines how you will be able to show and hide parts within ZBrush (either by material, or by body part) and are primarily for ease of editing in that application. For more information, see "Exporting Objects to ZBrush" on page 791.

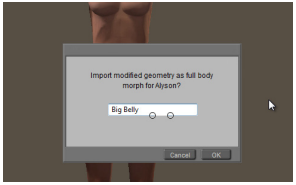
4. Click **Yes** to continue. Your model will open in ZBrush as a subtool. Drag the tool onto the scene and create your morph as you normally do.

5. After your morph is complete, click the **GoZ** button in the Tool palette (in the upper right section of your screen by default) to send the OBJ file back to Poser.



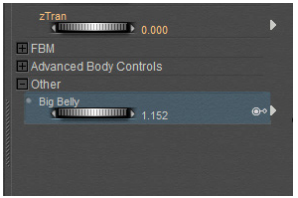
Press the GoZ button to send the morphed mesh back to Poser.

6. When you return to Poser, a dialog asks if you want to import the modified geometry as a full body morph. Enter a name for the new morph and press OK to continue.



Enter a name for the new full body morph in Poser.

7. Initially, the dial will be set to zero. To test the morph, choose the BODY actor, and dial your morph to test it. You'll also notice that a corresponding dial will only appear in the individual body actors that were affected by the morph.



Test the dial in the BODY actor to make sure it works.

Creating Normal and Displacement Maps with GoZ

If you want to use ZBrush to create Normal or Displacement maps, the process is similar to that discussed in the previous sections. Normal and displacement map creation involves subdividing the mesh in ZBrush before painting, and then comparing that higher resolution mesh to the original resolution when your maps are generated. Please reference your ZBrush documentation for more detail in how to create normal and displacement maps.

As long as you are working on a content item that has everything on a single texture, the import and export between Poser and GoZ should work the same as discussed under the morph creation sections. You select the item you want to export, use GoZ to transfer the OBJ to ZBrush, make your changes in ZBrush, and then click the GoZ button to bring it back into Poser.

However, it is important to note that most Poser characters use multiple texture maps with overlapping UV sets. A workaround for multi-map characters is to choose **Material** polygon grouping when you export from Poser.

Once in ZBrush, you can hide the groups that do not belong to a particular UV set. Hold down the CTRL and SHIFT key while you left-click a material group. Then you can generate a map from the remaining groups. ZBrush will pretend that the hidden groups don't even exist when it creates your map.

After you have the desired material groups displayed, you will need to export the maps from within ZBrush, rather than exporting them back into Poser with the GoZ command.

Morphing Multiple Items

There are times when you need to have a piece of clothing over a character to make sure that the morphs you create will properly fit a character. You can use the GoZ plugin to export one item at a time.

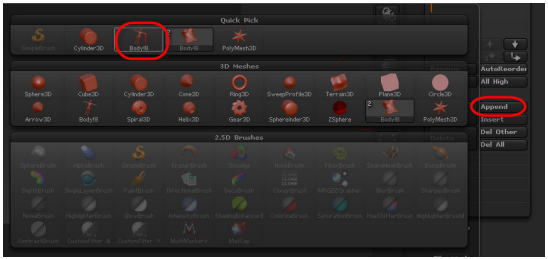
For example, select the figure in the first GoZ session and export it into GoZ using the **Figure > Export Figure Mesh to GoZ** command, and Body Part polygon grouping. Drag the figure into your ZBrush document.

Then go back to Poser and export a clothing item (like pants), using the same steps (**Export Figure Mesh to GoZ**, with **Body Part** polygon grouping.) Initially it will appear in the document window by itself.

Go back to Poser and use the **Figure > Export Figure Mesh to GoZ** to export a third item if desired, using the same steps as you did with the previous clothing item.

Now you have three Poser OBJ files in ZBrush - the character, and two pieces of clothing. Each appears as a separate tool. The last item that you loaded appears in the scene.

Expand the **Subtool** palette in ZBrush, and press the **Append** button. Click to select the figure mesh in the selection area. It will load into the same document as a subtool. Repeat this process for the second (or additional) clothing items.



Click the Append button in the Subtool palette to append an object into your current window.

When you need to morph the clothing item, select the piece of clothing from the Subtool palette.



Select the clothing item that you want to morph from the Subtool palette.

To return the morphed items back to Poser, select the item you want to return from the Subtool palette, and press the GoZ button. The item will update in Poser and you will be prompted to enter a name for the new morph.

Return back to ZBrush and select the next item from the Subtool palette. Again, press the GoZ button to import that item back into Poser and assign the morph name.

Creating Individual Actor Morphs with GoZ

Sometimes you only need to morph an individual body part. For example, if you want to create a morph that changes the shape of a character's nose, you only need to export the head. The steps to do this are similar to those discussed previously in "Creating Full Body Morphs with GoZ" on page 792, except that you initiate the GoZ command from the Object menu instead of the Figure menu.

To create a morph for a single body part, follow these steps:

1. Load the figure that you want to morph into your Poser scene, and select it as the current figure.

2. Click to select the body part that you want to export (for example, the Head).

3. Choose **Object > Export Object to GoZ**. A dialog displays some options for the export.



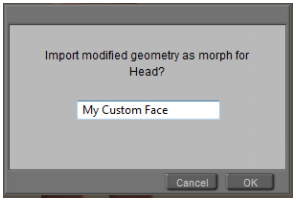
GoZ options dialog.

4. In the **Polygon Grouping** section, you have two choices for how you can group polygons when you export them to ZBrush. The method that you choose determines how you will be able to show and hide parts within ZBrush (either by material, or by body part) and are primarily for ease of editing in that application. For more information, see "Exporting Objects to ZBrush" on page 791.

5. Click **Yes** to continue. Your body part will open in ZBrush as a tool. Drag the tool onto the scene and create your morph as you normally do.

6. After your morph is complete, click the **GoZ** button in the Tool palette (in the upper right section of your screen by default) to send the OBJ file back to Poser.

7. When you return to Poser, a dialog asks if you want to import the modified body part. Enter a name for the new morph and press OK to continue.



Enter a name for the new body part morph in Poser.

8. Initially, the dial will be set to zero. To test the morph, choose the actor that you morphed, and dial the morph to test it.

When you use the **Object > Export Object Mesh to GoZ** *command to create morphs, a corresponding Full Body Morph dial will not be created in the BODY actor.*

Creating Joint-Controlled Morphs with GoZ

Joint controlled morphs, in the past, have been difficult to create for Poser, because all morphs had to be loaded when a figure was in its default T-Pose. Eventually, third party Python scripts allowed you to load a "reverse deformation" morph that would track the difference between a posed object, and a "corrected" version of that posed object.

Basically, "reverse deformation" allows you to export a figure in a posed position. Then you can morph out any distortion in the body or piece of clothing, and when you reload that morph back into Poser it only keeps track of the differences between the posed version and the corrected version. This allows you to create morphs that improve the appearance of a joint when it is rotated, and is useful for use in legacy figures that do not utilize weight mapping for improved joint bending.

To create a Joint Controlled Morph (JCM) use the following steps:

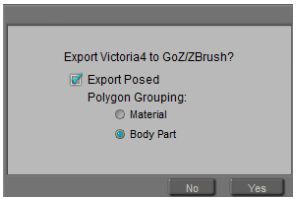
1. Load the figure that you want to morph into your Poser scene, and select it as the current figure.

2. Pose the figure in the pose that you want to correct. For example, if you want to fix an underarm bulge that appears when an arm is raised, then pose the arm in the raised position.

3. Do one of the following:

- If your joint controlled morph will span more than one body part, choose **Figure > Export Figure Mesh to GoZ**
- If your joint controlled morph will affect only one body part, choose **Object > Export Object Mesh to GoZ**.

A dialog displays some options for the export.



GoZ options dialog.

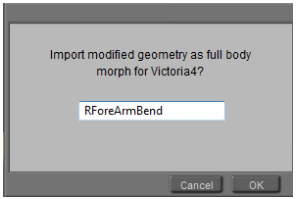
4. Check the **Export Posed** option, so that Poser exports your object in its posed state.

5. In the **Polygon Grouping** section, you have two choices for how you can group polygons when you export them to ZBrush. The method that you choose determines how you will be able to show and hide parts within ZBrush (either by material, or by body part) and are primarily for ease of editing in that application. For more information, see "Exporting Objects to ZBrush" on page 791.

6. Click **Yes** to continue. Your body part will open in ZBrush as a subtool. Drag the tool onto the scene and create your morph as you normally do.

7. Use the tools in ZBrush to create a morph that improves the appearance of the rotation; or, to add muscle definition such as a muscle bulge when an arm is bent. After your morph is complete, click the **GoZ** button in the Tool palette (in the upper right section of your screen by default) to send the OBJ file back to Poser.

8. When you return to Poser, a dialog asks if you want to import the modified geometry. If you used the **Figure > Export Figure Mesh to GoZ** it will ask if you want to create a full body morph. If you used the **Object > Export Object Mesh to GoZ** it will ask if you want to create a morph for the body part you exported. Enter a name for the new morph and press OK to continue.



Enter a name for the new joint controlled morph in Poser.

9. Initially, the dial will be set to zero. To test the morph, choose the BODY actor, and dial your morph to test it. You'll also notice that a corresponding dial will only appear in the individual body actors that were affected by the morph.

10. Use the Dependent Parameters editor to link the rotation of the arm to the dial setting on the morph. For example, if you created a morph that creates a bulge in the shoulder when the forearm is bent, use the Dependent Parameters Editor to activate the morph when the forearm is bent to the angle that you created the morph at, and when the forearm is in its default position (bent to zero degrees), set your new morph to zero. When you create your dependencies, make sure you dial your morph in the BODY actor, and not in each individual body part.

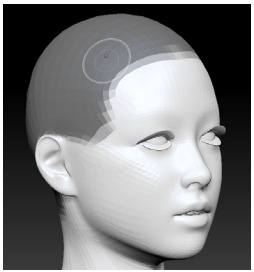
Importing Hair from GoZ

1. Load a character into your Poser scene, and select the figure.

1. Choose **Figure > Export Figure Mesh to GoZ** as discussed in "Exporting Objects to ZBrush" on page 791. Your figure will load into ZBrush as a tool.

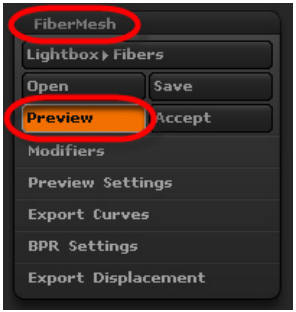
2. Drag the figure into the ZBrush document and switch to Edit mode. Use the Move, Scale, and Rotate tools to zoom in to the head. Optionally, select a white material for the head.

3. The Standard brush will be selected by default. Press the CTRL/CMD key while you paint a mask on the head to specify where the hair will be grown.



In ZBrush, mask the polygons where you want the hair to grow.

4. Select the Fibermesh panel from the right side of the interface, and turn Preview on.

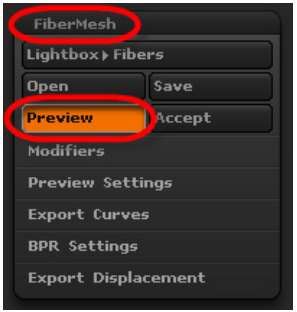


Turn on Fibermesh preview.

5. Expand the Modifiers tab and adjust the settings as instructed in your ZBrush user manual. After the settings are to your liking, click **Preview** again as necessary, and then click **Accept** to create a new subtool from the mesh fibers.

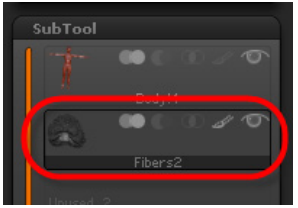


You may be asked if you want to use Fast Preview mode for faster interaction.



Click Accept to turn the fibermesh into a subtool.

6. Switch to the Subtools palette, and select the Fibermesh as the current subtool. Use the ZBrush styling tools to style the hair as instructed in your ZBrush user manual.



Select the Fibermesh subtool to style the hair.

7. After the hair is styled to your liking, make sure that you have the Fibermesh subtool selected, as shown in the previous figure. Then click the GoZ button to export the Fibermesh hair back into Poser.



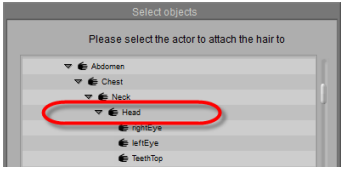
Styled hair as shown in ZBrush.



Click the GoZ button to send the hair back to Poser.

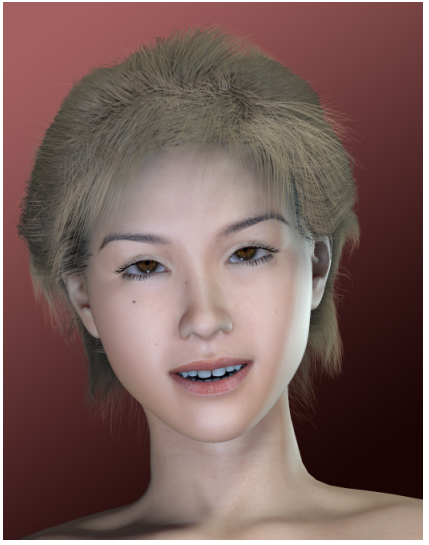
8. Poser will ask if you want to import the Fiber geometry as a hair prop. Choose OK to continue.

9. The Select Objects dialog appears, so that you can select the actor to attach the hair to. Choose the characters Head actor and click OK. The fibermesh hair appears in your scene.



Choose the character's Head as the parent to the fibermesh hair.

After the hair appears in your scene, you can select the hair and open the Material Room to change the hair colors. Note that you will not be able to restyle the hair in the Hair Room.



Fibermesh hair rendered in Poser.

Importing/Exporting a GoZ File

If ZBrush is not available on your current machine, you can use the **File > Import > ZBrush** and **File > Export > ZBrush** commands to work with Poser figures/objects on another machine that does have it available. This command will import or export a ZBrush binary object format file. When you use this command to export a ZBrush binary object, Poser will prompt you to select a folder and assign a file name to the object you save. The object will be saved with a .GoZ extension.

PoserFusion Hosting Plug-ins

Poser Pro includes 3ds Max, CINEMA 4D and Maya plug-ins, letting you open and host Poser Pro files within these applications. Modeling articulated poseable figures is a difficult and time-consuming task. PoserFusion allows you to load one of dozens of ready-made figures and select from a wide variety of clothing and preset poses, allowing you to get high-quality results in a short amount of time.

Hosting vs. Importing

PoserFusion plug-ins allow you to host Poser files directly within 3ds Max, CINEMA 4D, LightWave 3D and Maya. Importing or exporting translates data from one format to another.

PoserFusion plug-ins serve as a liaison between the host application and the Poser files, actually opening Poser files and accessing their contents directly in the host application. This allows you to take advantage of Poser Pro's speed and ease of use and combines Poser files with the host applications' powerful modeling, rendering, and animation tools. Poser files hosted within supported applications retain all of their data including materials, articulation, textures, walks, etc. Figures and props are treated as primitives and are manipulated within the host application as you would any other object. You may, however, need to open the Poser file within Poser Pro depending on the edits you wish to perform.

PoserFusion for 3ds Max

When you open a Poser file within 3ds Max, the selected file retains all of the data created within Poser Pro, including the geometries of the figures and props, materials, and keyframe data. 3ds Max treats hosted Poser figures/props as 3ds Max geometry primitives, meaning that you can perform any action to the Poser figure that you can perform on any other geometry primitive such as translations, rotations, modifiers, mesh edits, etc. In addition, the Create and Modify panels allow you additional control over hosted Poser files.

Installing PoserFusion for 3ds Max

The installer automatically installs the 3ds Max plug-in, which will be available to you as soon as you launch 3ds Max.

Loading A Poser File

To select a Poser file to open and host within 3ds Max:

1. Select the Create panel.
2. Click the **Geometries** button.
3. Select **Poser Objects** in the pull-down menu.
4. Click the **Scene *.PZ3** button in the Object Type rollout.
5. The Scene Creation rollout will automatically be open at this point. Click the **Load File (…)** button to open a dialog allowing you to navigate to the folder containing the desired file. The words 'No File Loaded' appear to the left of the **Load File** button if you have not yet loaded a Poser file. Click the **Load File (…)** button to open a dialog allowing you to navigate to the folder containing the Poser file you wish to load. The name of the object instance appears in the Name and Color rollout after you have created the objects in the scene via clicking and dragging or keyboard entry.

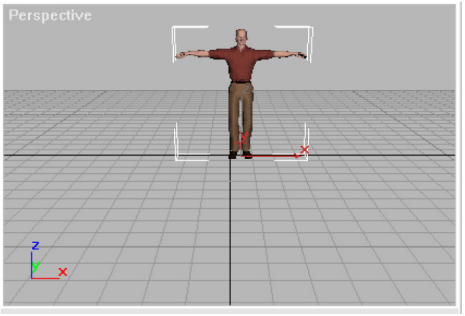
Once a Poser file is loaded, the **Keyboard Entry, Scene Options,** and **Info** rollouts will appear.

Creating Instances

Once you have selected the Poser file, 3ds Max creates the Poser Universe object. To work with figures and props, you must create at least one instance of the figure(s) and/or prop(s) within your 3ds Max scene. An easy way to understand this concept is to think of the Poser file as a template from which to create new figures/props. There are two ways to do this:

1. Click, drag, then release the left mouse button. Large files may take a moment to appear after you click. Drag slowly and wait for the figure/prop(s) to appear before releasing the mouse button.
2. Use the Keyboard Entry rollout to specify a position and scale, and then click the **Create** button.

The newly created Poser Universe, scene, and figure/prop primitives appear in the 3ds Max view panes.



A Poser scene imported into 3ds Max.

Working with Poser Files in 3ds Max

The following general rules apply when hosting Poser files within 3ds Max:

- You can host files with multiple figures. You can also load one or more Poser files. 3ds Max places loaded Poser files into its hierarchy as follows:
  - Geometry primitives are created for each figure and each prop in the Poser file.
  - When you create an instance of a Poser file, 3ds Max will create a Poser Scene object, which is the parent object for all figures and props from the Poser file.
  - 3ds Max creates a Poser Universe dummy object when you load the first Poser file. This object is the parent object for all Poser Scene objects.
  - The **Create** and **Modify** panels will display different rollouts depending on the type of Poser object selected:

    Poser figure/prop: Scene File, Scene Options, Info

    Poser Scene: Scene File, Scene Options, Info

    Poser Universe: Info
- You can modify any type of Poser object as if it were a 3ds Max object; for example, figures and props can be edited just like any other type of 3ds Max geometry primitive.

The Create Panel

The **Create** panel contains the following rollouts:

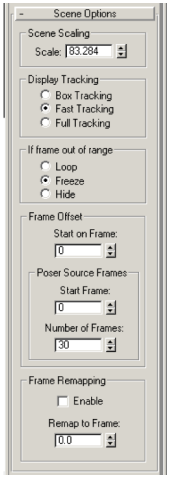
- **Object Type:** Standard 3ds Max rollout
- **Name + Color:** Standard 3ds Max rollout
- **Scene Creation:** Please refer to "Loading A Poser File" on page 804.

- **Keyboard Entry:** Please refer to "Creating Instances" on page 804.

The **Create** panel also contains the following additional rollouts:

The Scene Options Rollout

Scene Options gives you the following options:



3ds Max Scene Options.

- **Scene Scaling:** Enter a value in the **Scale** field or use the up and down arrows to specify the desired scale for all of the objects in the current scene. The scale value is expressed as the percentage of the original scale set when the file was created in Poser Pro. To scale individual figures and props, use the 3ds Max Scale. When clicking and dragging to create a Poser object, the scale value will change to reflect the size of the scene that you are creating as you drag.

- **Display Tracking:** Check the desired radio button to specify **Box Tracking** (all objects in the current Poser file appear as bounding boxes for all figures/props at all times), **Fast Tracking** (all objects in the current Poser file displayed in full while static and as bounding boxes for all figures/props when moving), or **Full Tracking** (all objects in the current Poser file are displayed in full at all times).

- **Frame Offset/Frame Remapping:** Please refer to the section, Animating Poser Objects in for information on controlling Poser animations within 3ds Max.

The Info Rollout

The **Info** rollout appears as follows:



PoserFusion for 3ds Max screen.

In addition to displaying the PoserFusion plug-in version number, the Info rollout contains three buttons. Clicking the **Smith Micro Graphics** button opens your Web browser and takes you to the Smith Micro Graphics Web page. Clicking the User Guide... button opens the electronic (PDF) version of this document. Clicking the About... button opens a window displaying more information about Smith Micro Graphics and the PoserFusion plug-in.

The Modify Panel

The **Modify** Panel contains the following rollouts:

- **Modifiers:** standard 3ds Max rollout
- **Modifier Stack:** standard 3ds Max rollout
- **Scene File**: Please refer to "The Scene File Rollout" on page 807.
- **Scene Options**: Please refer to "The Scene Options Rollout" on page 806.
- **Info**: Please refer to "The Info Rollout" on page 806.

The Scene File Rollout

The **Scene File** rollout appears in the **Modify** panel in addition to the **Scene Options** and **Info** rollouts:



The Scene File rollout.

The **Scene File** rollout displays the Poser scene file that the currently selected figure/prop or Poser Scene object is associated with:

- **Reload File:** Clicking the **Reload File…** button refreshes the data from the Poser file that is associated with the Poser Scene instance. This function reloads the associated Poser file keyframe data. Thus, if you articulate the figure in Poser, you can access your changes without losing any other modifications you may have made on top of your objects in 3ds Max. If the original Poser file has had figures/props added or removed, you will need to recreate the scene via the **Scene Creation** rollout on the **Create** Panel.
- **File Information:** Clicking the **File Info…** button displays information about the current file, including the full path, Poser Pro application path, and other useful information.

Animating Poser Objects in 3ds Max

You can control how any animation of your Poser objects relates to your current 3ds Max animation by using the Scene Options rollout in either the **Create** or **Modify** panel.

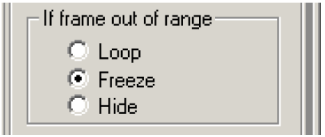
Frame Ranges

An out of range condition exists when the 3ds Max animation has frames occurring before the Poser animation's start frame and/or ends after the Poser animation's end frame. The end frame is defined as

End Frame=Start Frame+(Num Frames – 1)

For example, if Start Frame=10 and Num Frames=15, then End Frame=24.

If frame out of range radio buttons allow you to specify how to handle out-of-range situations.



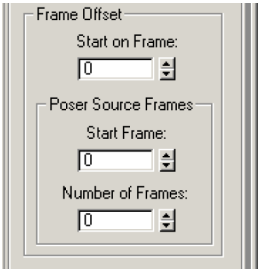
Animating Poser objects in 3ds Max.

Enable the appropriate radio button to make your selection:

- **Loop:** Checking the **Loop** radio button causes the Poser animation to repeat as many times as necessary to fill all of the 3ds Max animation frames. This can include a partial animation cycle. For example, if the Poser animation is 30 frames long and the 3ds Max animation is 45, the Poser animation will loop 1.5 times to take up all 45 frames.
- **Freeze:** Enabling the **Freeze** radio button causes the Poser animation to not play before its starting frame and/or after its ending frame.
- **Hide:** Enabling the **Hide** radio button causes the Poser animation to be invisible before its starting frame and/or after its ending frame.

Offsetting Frames

You can insert your Poser animation at any desired point in the 3ds Max animation using the **Frame Offset** controls in the **Scene Options** rollout.



Offset options in 3ds Max.

You have three offset options:

- **Start on Frame:** Enter the 3ds Max animation frame where you wish your Poser animation to begin by either entering a valid frame number in the **Start on Frame** field or using the up and down arrows.
- **Poser Source Frames:** You are not limited to simply running your entire Poser animation within 3ds Max.

- **Start Frame:** Enter the number of the frame in the Poser file where you wish to begin the Poser animation in the **Start Frame** field or use the up and down arrows.

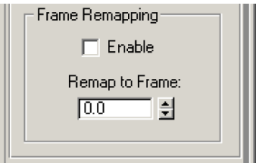
- **Number of Frames:** Enter the number of frames in the Poser file after the start frame that you wish to use in the **Number of Frames** field or use the up and down arrows.

For example, you have a 100-frame 3ds Max animation and wish to open a 30-frame Poser animation. You could specify the Poser animation will begin at frame 45 of the 3ds Max frame. You could also specify that you wish to start the Poser animation from the 10th frame of the Poser file and that you wish to use the 15 frames that follow. This scenario would cause the following to occur:

3ds Max animation	Poser animation
Frames 0-44	As specified in the Out of Range options.
Frame 45	Frame 10
Frame 46	Frame 11
Frame 59	Frame 24
Frames 61-100	As specified in the Out of Range options.

Remapping Frames

You are not limited to simply specifying frame offsets. By enabling **Frame Remapping,** you have full control over the sense of time that the Poser scene experiences for shortening, extending, accelerating and decelerating the Poser animation. This provides extended control over an existing keyframed animation in Poser Pro, without having to go back and adjust it in Poser Pro.



Frame remapping in 3ds Max.

Check the **Enable** box to enable **Frame Remapping**. Enabling this option disables the **Frame Offset** and **If frame out-of-range** options. Once remapping is enabled, you can select any frame of the 3ds Max animation and map any frame of the Poser animation to that frame. This feature is extremely powerful since it allows you to literally reshape your Poser animation. You can speed it up or slow it down, run it backward, or even skip randomly through the animation.

To remap frames, move to the desired 3ds Max frame using the time slider or other 3ds Max tool, turn on the Animate function, and enter a valid Poser animation frame number in the **Remap to Frame** field or use the up and down arrows.

Once you have remapped frames, you can use 3ds Max's Track View window to obtain full control over how the map will behave. Click the **Open Track View** icon to open the **Track View** window. Then expand the **Object** node under the Poser Scene object. Select **Remap to Frame** and use the standard 3ds Max keyframing techniques to remap the Poser scene's sense of time.

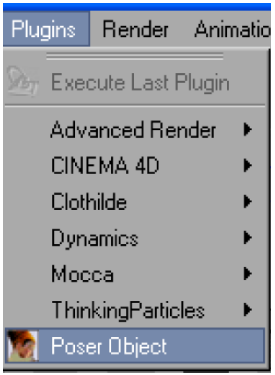
Poser Materials in 3ds Max

You can control your Poser objects' materials as you would any other material in 3ds Max by clicking the **Open Materials Editor** icon ( ) to open the **Materials Editor.** Next, select the **Pick Material from Object** tool and click within the desired Poser figure/prop to load its materials into the 3ds Max **Materials Editor.**

PoserFusion for Cinema 4D

To host a Poser file in CINEMA 4D:

1. Go to the **Plug-ins** pull-down menu and select **Poser Object**.



PoserFusion for Cinema 4D.

2. **Scene Creation:** After creating a Poser object, the properties of the object will show up in the **Attribute Manager.** Click the **[…]** button located under the **Object** properties to load the Poser scene.

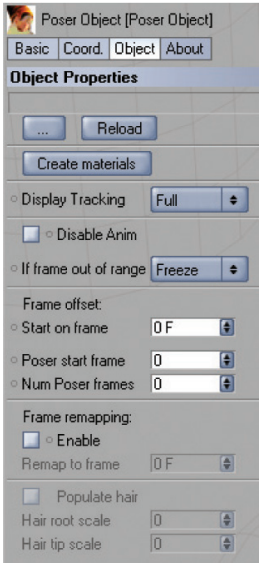
3. **Material Creation:** Once the file has loaded, click the **Create materials** button to create materials which approximate the materials from Poser.

4. Once your Poser file is hosted in CINEMA 4D, a link is maintained to the Poser file on disk. Make sure you keep a copy of the Poser file in the same location on the disk in order to re-load the CINEMA 4D files that contain hosted Poser files.

5. In addition, you can re-load different versions of the same Poser file if you want to update your animation and poses.

Poser Object Properties

PoserFusion includes a number of options that affect the creation of textures and lights. Below is a detailed listing of the options and their uses.



Poser Object Properties.

Poser File Attributes

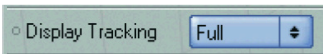
The first attributes for **Poser Objects** are the Poser file options.

- **File Browse:** Choose the Poser scene file you wish to import using the **Browse [...]** button. Click the **Browse** button. (Then navigate to your Poser file using the file dialog and click **Open**.

- **Reload File:** Clicking the **Reload File** button reloads the specified Poser file into CINEMA 4D and refreshes all existing instances of that file. This button allows you to work in CINEMA 4D and Poser Pro simultaneously. You can quickly and easily import any changes you make to the Poser file. Just save your Poser file over your previous version, and click the **Reload File** button. You do not have to quit Poser Pro or CINEMA 4D.

Display Tracking

Each Poser object may be set to a display tracking mode. These modes control how the geometry is displayed during playback of animation, and scrubbing in the frame bar.



Display Tracking options.

- **Box:** An object that is set to **Box Tracking** always appears as one or more boxes in CINEMA 4D's view pane. This is a very quick way to get a general idea of the movement within your scene without the overhead of a complete geometry calculation.

- **Full:** An object that is set to Full Tracking displays its full geometry and materials even during playback or frame scrubbing. This mode provides the most accurate display, but can also be slower.

Disable Animation

When **Disable Anim** is enabled, the Poser file will stay at a single frame. Animation from inside the Poser file will be ignored and will not play back. During a render, the Poser file will stay static (not moving) through the entire render.

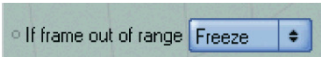


Disabling Animation.

If Frame out of Range

When you have animation in a Poser file, there is a start and end frame for the animation within the Poser file. Your animation inside CINEMA 4D may be longer than the animation from Poser Pro. **The Frame Out of Range** options are used to determine what happens with the Poser file when the frame in

CINEMA 4D is outside of the animation range from your Poser file.

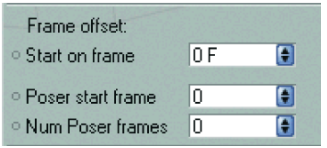


Options if a frame is out of range.

- **Loop:** The Poser animation will loop as many times as necessary to fill all of the CINEMA 4D animation frames. This can include a partial loop. For example, if the Poser Pro animation is 30 frames long and the CINEMA 4D animation is 45 frames long, the Poser Pro animation will loop 1.5 times to take up all 45 frames.
- **Freeze:** The Poser animation will freeze before its start frame and after its end frame. When viewing a frame after the end of the Poser animation, the Poser animation will be frozen in the same position as the last frame. When viewing a frame before the beginning of the Poser animation, the Poser animation will be frozen in the same position as the first frame.
- **Hide:** When hide is selected, the Poser items will only be visible when your CINEMA 4D frame is inside the Poser animation range. If your CINEMA 4D frame goes before or after the frame range of your Poser file, the Poser items will become invisible.

Frame Offset Attributes

Using these options, you can insert your Poser animation at any desired point in the CINEMA 4D animation. For example, if you have a walk cycle that starts at frame 1 in Poser, you can use these options to make the character start walking at frame 100 inside CINEMA 4D.



Frame offset attributes.

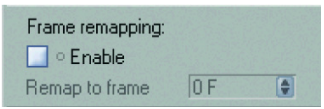
- **Start on Frame:** This parameter allows you to enter the CINEMA 4D animation frame where you wish your Poser animation to begin. If you enter a frame number like 125, then your Poser animation will start to play at frame 125. Until frame 125, the **Frame Out of Range** options will be used to determine if there is movement before the start frame.

- **Poser Start Frame:** This indicates the first frame of animation that you wish to use from the Poser file. Animation in the Poser file before this frame will not appear in the CINEMA 4D scene.

- **Num Poser frames:** This is the numbers of frames after your Start Frame that you would like to use. If you choose to only use 15 frames, then you will only see 15 frames from your Poser animation inside of CINEMA 4D.

Frame Remapping Attributes

You are not limited to simply specifying frame offsets. By enabling **Frame Remapping,** you have full control over playback of your Poser animation within CINEMA 4D.



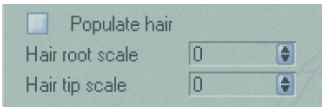
Frame remapping attributes.

- **Enable:** Check the Enable box to enable frame remapping. Enabling this option disables frame offsets and out-of-range options. Once remapping is enabled, you can modify the playback of the Poser animation by animating the **Remap to Frame** parameter. This feature is extremely powerful since it allows you to literally reshape your Poser animation. You can speed up your Poser animation or slow it down, run it backward, or even skip randomly through the animation.

- **Remap to Frame:** To remap frames, simply animate the **Remap to Frame** parameter. Your Poser scene will move to whichever frame number is specified in this parameter. For example, to play your Poser file backwards, you would animate this parameter from a higher number frame, to a lower number frame.

Hair Attributes

PoserFusion has the ability to preview and render strand-based Poser hair in CINEMA 4D.



Hair attributes.

- For speed purposes, only the guide hairs are visible by default. In order to view and render a full hair simulation, turn on the Populate hair option.

- **Hair root scale:** This is the scale of the hair geometry at the root of the hair (close to the scalp). This can be raised if the hair looks too sparse close to the scalp. Try to make this value as small as possible for quickest rendering results.
- **Hair tip scale:** This is the scale of the hair geometry at the end of the hair. This can be raised if the hair looks too sparse at the tips. Try to make this value as small as possible for quickest rendering results.

PoserFusion for Maya

To host a Poser file in Maya, select **File > Import.** In the File Dialog, select **Poser (*.*)** as the file type and choose the Poser file you want to host inside Maya.

Make sure you keep a copy of the Poser file in the same location on the disk in order to re-load the Maya files that contain hosted Poser files so you can re-load different versions of the same Poser file if you want to update your animation and poses. Instructions on updating versions of your Poser file are located in the section describing the Shelf Buttons .

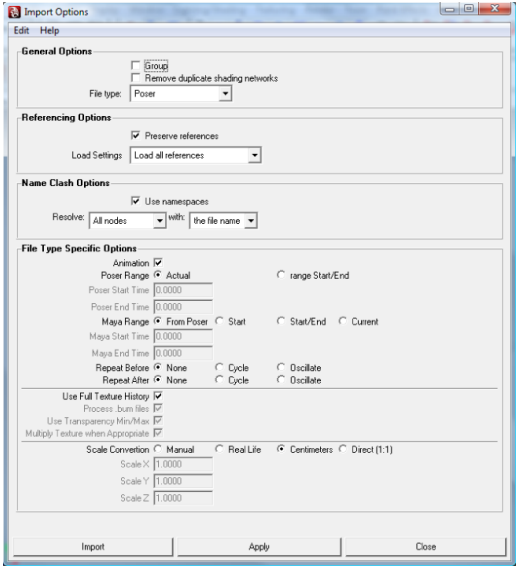
Import Options

PoserFusion includes a number of options for hosting your Poser file. To select the options for importing your file, from the **Main Menu**, select **File Menu > Import Options.** Select the Import Options that are appropriate and click **Apply.**

Below is a description of the options available.

Animation Controls

You can play back and view Poser animations from inside Maya when you use PoserFusion. One animation curve controls the frame you will see from the Poser file. This animation curve animates the frame attribute on the mpzFile node.



Import options.

Animation

Enabling the animation checkbox automatically sets up an animation that matches the range you specify for the Poser file. You can add animation later by animating the frame attribute on the mpzFile node.



Animation checkbox.

Poser Range

This specifies the range of animation from the Poser file that will playback in Maya. You can use the actual frame range from your Poser file, or specify the first and last frame from the Poser file that will play back in Maya. This can be modified later by adjusting the animation curves.



Poser range (for animation).

Maya Range

This specifies **Start** and **End** frame in Maya during which animation will play back. The first frame specified in the Poser Range will start at the first frame specified in the Maya Range. The last frame specified in the Poser Range will occur in Maya at the last frame specified in the Maya Range. There are a few options for choosing the Animation Range in Maya.

- **From Poser:** Uses the animation range from the Poser file.
- **Start:** Specify the start frame in Maya, and the length of the range will automatically be imported from Poser.
- **Start/End:** Set a start and end frame in Maya. The length of the Poser Animation, as specified by the Poser Range will be compressed to fit in this range. This can be modified later by adjusting the animation curves.



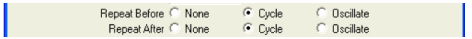
Maya Range.

Repeat Before/After

The Poser animation will play back outside of the specified Maya Range, based on the type of repeat option which is set.

These options set the pre-infinity and post-infinity type on the animation curves. This can be modified later by adjusting the pre-infinity, and post-infinity options for the animation curves in the graph editor.

- **None:** No animation will playback out of the specified Maya Range.
- **Cycle:** Animation will repeat outside the Maya Range specified. The animation will play forward from the start again each time.
- **Oscillate:** Animation will repeat outside the Maya Range specified.



Repeat options.

Texture Options

- **Use Full Texture History:** PoserFusion can maintain a full texture history back to the original Poser file. When using this option, any changes in color or texture maps assigned to the Poser shaders will update the next time the file is re-loaded in Maya. This option is disabled by default for better compatibility with external renderers such as Mental Ray.

- **Process .bum Files:** .bum is a special file format that historically was used in Poser for bump maps. When you enable **Process** .bum files, Maya can read, and understand .bum files. This option is enabled by default. Disable this option for compatibility with Mental Ray, and other external renderers.

- **Use Transparency Min/Max:** Poser has a special function that allows a drop off in transparency based on surface angle to camera. This option emulates this behavior with Maya shader nodes. This option is enabled by default for highest compatibility with Poser shaders. Disable this option off if you are having trouble painting on shader transparency textures.

- **Multiply Texture when Appropriate:** Poser shaders multiply the texture color by the shader color. When this option is enabled, shaders created in Maya will have a multiply node inserted to emulate this behavior. This option is enabled by default for the highest compatibility with Poser shaders. This option can interfere with some Maya features like painting on textures, therefore disable the option if you experience trouble.



Texture options.

Scale Conversions

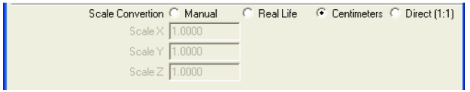
The Poser world has a scale that goes from 0 to 1. In order to make it easier for Maya users, we have implemented an automatic scale conversion with 4 settings.

- **Real Life:** This is the setting to use if you are working in life-size scale within Maya. All geometry gets scaled up by 243.84

- **Centimeters As Feet:** A number of Maya users start with the default units (centimeters) and use them as feet instead. This setting works very well with this workflow. All geometry gets scaled up by 8.0.

- **Direct**: No scale conversion occurs; the geometry is the same scale as in Poser.

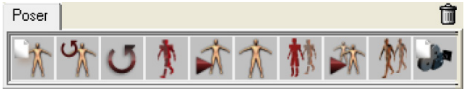
- **Manual:** This mode lets the user set the Scale X, Scale Y, and Scale Z to any numeric value.



Scale conversions.

The PoserFusion Shelf

The Shelf included with PoserFusion adds a number of commands which work with Poser. These include commands to help reload files, and switch between Bounding Box, and Full Geometry.



The Poser Fusion shelf.

File Update Buttons



File Update buttons.

The first 3 icons are used for reloading and updating Poser files from within Maya without having to re-load the file Poser files are set up in Maya using Construction History. This means when you reload a Poser file, all texture assignments and modifications made in your Maya file remain the same. The only difference is that you'll now be referencing the new poses/animation from the updated file. Here is a description of the specific functions, and what they do.

File Reload Browser (selected)

Use the **File Reload Browser** to select a different version of a file from disk. The file should contain the same Poser characters as the file you already have loaded, but can contain different poses/animations. To use this function, select any character from the file you want to reload, and click on the shelf button.



File Reload Browser.

File Reload (selected)

Use the **File Reload** to reload the current Poser file from disk. The file should contain the same Poser characters as the file you already have loaded, but can contain different poses/animations. One example of using this would be if someone had modified the poses or animation in the original Poser file, and you wanted to see the updated changes in Maya. To use this function, select any character from the file you want to reload, and click on the shelf button.



File Reload (Selected).

File Reload (all)

This command is the same as the **File Reload (selected),** and will reload all Poser files in the scene, regardless of what is selected. To use this function, click on the **Shelf Button**.



File Reload (All).

Playback Buttons



Playback buttons.

Bounding Box (selected)

This button makes the currently selected Poser character display as bounding boxes.



Bounding Box.

Bounding Box Playback (selected)

This button makes the currently selected Poser character display as bounding box during playback for quick interaction.



Bounding Box (Playback).

Full Geometry (selected)

Use this button to make the full geometry display for all Poser characters.



Full Geometry.

Bounding Box (all)

Use this button to make the currently selected Poser character display as bounding boxes.



Bounding Box.

Bounding Box Playback (all)

Make all Poser characters display as a bounding boxes during playback.



Bounding Box Playback.

Full Geometry (all)

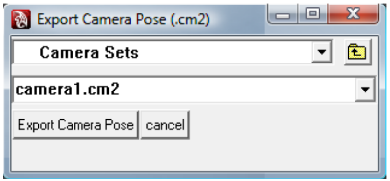
Use this button to make the full geometry display for all Poser characters.



Full Geometry.

Camera Export Buttons

This button will export a camera pose from Maya to Poser. This feature makes it easy to line up a pose between Poser and Maya. To use this feature, first select a character you want to use as a scale reference, and then select the camera node you wish to export. The **Export Camera** window will then appear. Enter a name for the new camera pose. This name must end in .CM2. The exported camera pose will show up with the camera sets in Poser.



Exporting a camera pose.

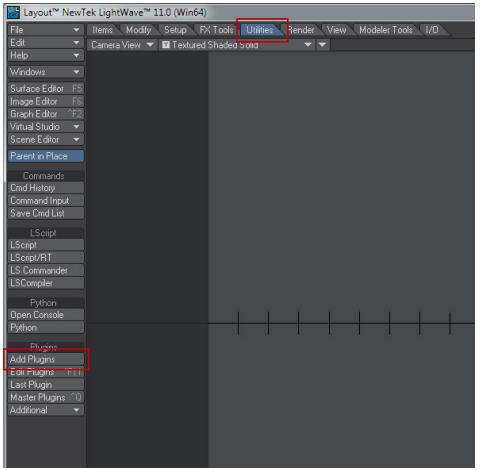
PoserFusion for LightWave

Double-click the **InstallPoserFusionForLightWave.exe** or **InstallPoserFusionForLightWavex64.exe** icon to run the respective 32-bit or 64-bit plug-in installer.

This section expands upon the LightWave installation instructions contained within the Poser Pro Introduction Guide by including instructions for LightWave. The following instructions should be followed after running the installation application on your Poser Pro CD.

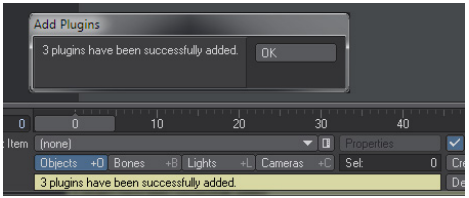
Adding PoserFusion to LightWave

Launch LightWave and click the Utilities tab. Then choose **Plug-ins > Add Plug-ins** as shown below.



Adding Poser Fusion to LightWave.

In the dialog box that appears, navigate to the **PzrForLW** folder within your LightWave plug-in folder, select the file **PzrForLW.p** and click **OK**. The following confirmation window should appear.



Confirmation window for adding the plug-ins.

Exit and re-launch LightWave. PoserFusion for LightWave is now ready for use.

Using PoserFusion for LightWave

When you open a Poser file within LightWave, the selected file retains all of the data created within Poser including the geometries of the figures and props, materials, and keyframe data. LightWave treats hosted Poser figures/props as LightWave object primitives. This means that you can perform any action to the Poser figure that you can perform on any other LightWave object primitive such as scale, translate, or rotate. For example, if you host a Poser file containing a figure that was created with a walk-in-place animation, you can key a simple path that the entire figure follows; however, you can only perform direct articulation operations on the figure in Poser. If you wish to

modify the Poser animation, you need to modify the Poser file within Poser, save your changes, and re-load the figure into LightWave.



The Bounding Box Threshold and Dynamic Update settings can affect what you see during playback. If you see a bounding box with no articulating figure details when playing a keyframed animation, please check and adjust your Display Option settings as follows:

- Select the desired figure/prop, then select Extras > Statistics and note the number of polygons comprising the selected item.
- Be sure to press [ENTER] before closing the Display Options dialog box to save your changes.

You should now see the figure/prop within the bounding box when scrubbing the frame handle or doing a keyframe playback.

Loading Poser Figures

There are two ways to load Poser files into LightWave depending on whether you are opening the given Poser file for the first or subsequent times.

Loading a Poser File – First Time

To load a Poser file into LightWave for the first time:

1. In LightWave Layout, choose **File > Load > Load Scene**.
1. In the **Load Scene** dialog box, select **All Files** in the **Files of Type** pull-down menu. Then locate and open your desired Poser (*.PZ3 or *.PZZ) file.



The first time you use PoserFusion for LightWave you will be prompted to enter your name and PoserFusion for LightWave serial number. Click OK to continue with the import after you provide the information. You will be prompted to enter the path to the Poser application before you proceed with the import. The Poser Pro EXE (Windows) or APP (Mac) file is located in the Poser installation directory.

2. PoserFusion prompts you to choose some options for your geometry:
    - **Convert to triangular mesh**: Choose this option if you want to convert all polygons to triangles.
    - **Leave mesh as general polygons**: This is the default selection, which is recommended for most cases.

3. Your figure(s) and/or prop(s) from the Poser file appear in the LightWave window.

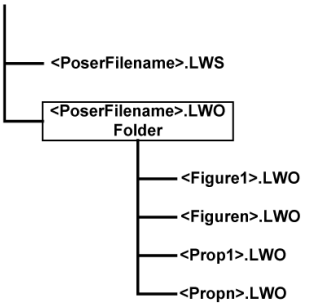


The Poser scene imported into LightWave.

You can now use LightWave's tools to view any animations contained within the hosted Poser scene, and you can modify the figure(s) as described in "Working with Poser Figures and Props in LightWave" on page 827.

Loading a Poser File – Subsequent Times

When you open a Poser scene for the first time with PoserFusion for LightWave, PoserFusion automatically creates the following file structure in the same folder that contained the original Poser scene.



Subsequent imports are numbered in sequential order.

When loading the same file for the second or subsequent time, you do not need to select All Files and load the Poser file. Instead, simply open the appropriate LightWave *.LWS file.

The <PoserFilename > .LWS file is the LightWave scene file, where <PoserFilename > is the name of the Poser file. This

scene file contains a reference to the original Poser file, meaning that you can perform many changes to the Poser file such as articulation, animation, etc. and the LWS file will load the current version of the Poser scene file. The exceptions to this are where you have changed a figure or prop's geometry or added/deleted a figure/prop from the Poser file. IN this case, you should reload the original Poser file.

In addition to the *.LWS file, LightWave creates a sub-folder with the name <PoserFilename > .LWO. This folder contains one *.LWO (LightWave geometry) file for each figure and prop within the Poser file. The file names will reflect the names of each figure and prop within the Poser file.

*You may not be able to load a Poser file that has the same name as an *.LWS file previously created by PoserFusion for LightWave while that *.LWS file is loaded in LightWave. This is because PoserFusion cannot overwrite the *.LWS and *.LWO files while they are open in LightWave. This is normal behavior.*

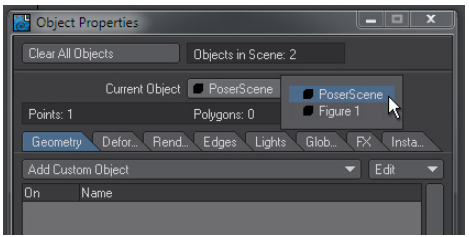
Working with Poser Figures and Props in LightWave

This section covers important topics to keep in mind when working with Poser files in LightWave.

Hierarchies

For each loaded Poser file, LightWave creates a <PoserScene > null object, which will be named according to the name of the loaded Poser file. If you load multiple instances of the same Poser file (see following section), the null objects created will be named <PoserScene > (1) through <PoserScene > (n), with n being the number of instances of the same file.

The PoserScene null object is the parent of all of the child objects <Figure > 1 through <Figure > n and/or <Prop > 1 through <Prop > n, where <Figure > and <Prop > are the names of the figures and props within the Poser file and n is the particular instance of each figure/prop (see below).



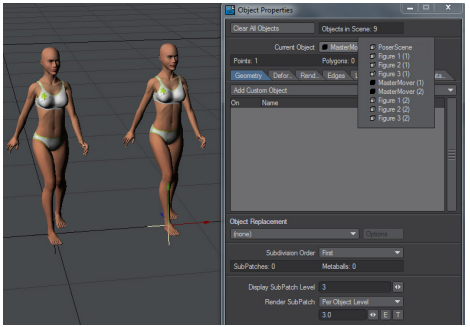
Object properties.

The PoserScene null object is the default selected item. To make changes to a specific child (figure or prop), you must select the desired figure/prop.

You can only access the Poser panel within LightWave if you have an individual figure or prop selected.

Creating Multiple Instances

You can create multiple instances of Poser figures or props either by cloning the desired figure or prop using standard LightWave functionality or by reloading the appropriate Poser file. Cloning is generally preferable since it uses less RAM and hard drive space. Creating a new instance of a PoserScene null object will create a new PoserScene null object with the name <PoserScene > (n+1), where n+1 is the number of the new instance. Creating a new instance of a figure or prop will create a new object with the name <Figure/Prop > (n+1).



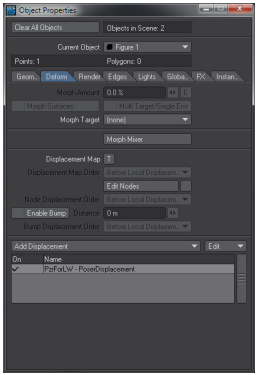
Creating a new object.

Cloning a null object with no child objects selected creates a new instance of the null object but does not recursively clone child objects. To clone a parent object and its child objects, you must select the child objects before cloning the null object. Please refer to your LightWave documentation for more information on hierarchies and cloning.

Accessing Poser Functionality Within LightWave

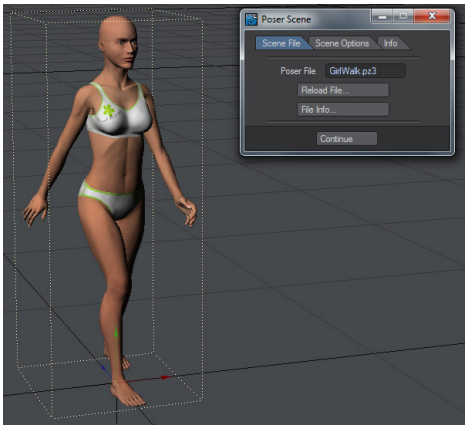
You must have a Poser figure or prop selected in order to access the Poser interface within LightWave. To access Poser functionality in LightWave:

1. Select the Poser figure/prop.
2. Click the Item Properties button on the bottom of the Layout window or press [p] (lowercase) to open the **Object Properties** window.



Object properties.

3. Select the **Deform** tab.
4. Double-click **PzrForLW - PoserDisplacement** in the displacement plug-in list to open the **Poser Scene** window.



The Poser Scene window.

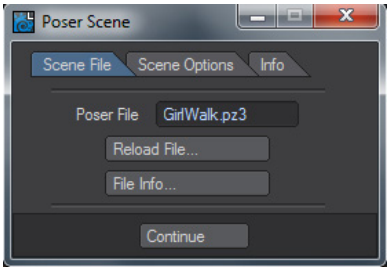
The Poser Scene Panel

The Poser Scene panel is where you access Poser functionality within LightWave. This window contains three tabs, which are

discussed in the following sections. To close the Poser Scene window, click the Continue button at the bottom of each tab.

The Scene File Panel

The Scene File panel displays the Poser scene file that the currently selected figure/prop or Poser Scene null object is associated with.



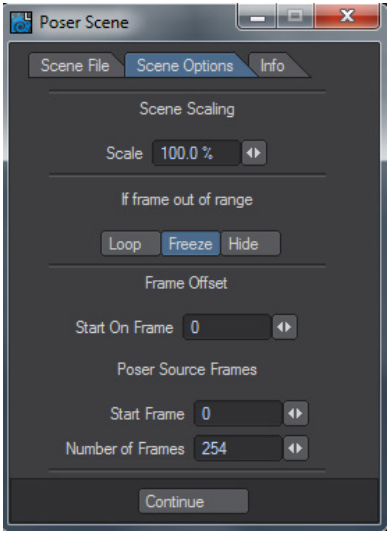
Scene File options.

The following functions are available:

- **Reload File**: Clicking the Reload File... button refreshes the Poser file associated with the currently selected PoserScene object. This function reloads the associated Poser file keyframe data from the Poser file. Thus, if you articulate the figure in Poser, you can access your changes without losing any other modifications you may have made on top of your objects in LightWave.
- **File Information**: Clicking the File Info... button displays information about the current file, including the full path, Poser application path, and other useful information.

The Scene Options Panel

The Scene Options panel is where you control your hosted Poser scene.



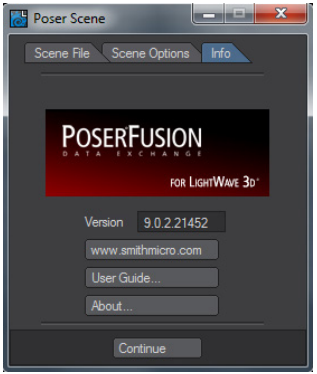
Scene options.

The Scene Options rollout gives you the following options:

- **Scale**: Enter a value in the Scale field or use the mini slider to specify the desired scale for all of the objects in the current scene. The scale value is expressed as the percentage of the original scale set when the file was created in Poser.
- **Frame out of range/Frame Offset**: Please refer to "Animating Poser Objects in LightWave" on page 832 for information on controlling Poser animations within LightWave.

The Info Panel

The Info panel displays the PoserFusion version number and allows you to access information about Smith Micro and Poser Pro.



The Info panel.

The Info rollout contains three buttons:

- Clicking the **www.smithmicro.com** button opens your Web browser and takes you to the Smith Micro home page.
- Clicking the **User Guide...** button opens the electronic (PDF) Poser Pro User Guide.
- Clicking the **About...** button opens a window displaying more information about PoserFusion.

Animating Poser Objects in LightWave

You can control how any animation of your Poser objects relates to your current LightWave animation by using the Scene Options rollout in either the Create or Modify panel.

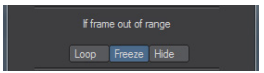
Frame Ranges

An out of range condition exists when the LightWave animation has frames occurring before the Poser animation's start frame and/or ends after the Poser animation's end frame. The end frame is defined as

```
End Frame=Start Frame+(Num Frames - 1)
```

For example, if Start Frame=10 and Num Frames=15, then End Frame=24.

The **If frame out of range** boxes allow you to specify how to handle out-of-range situations.



Frame ranges.

Select the appropriate box to make your selection:

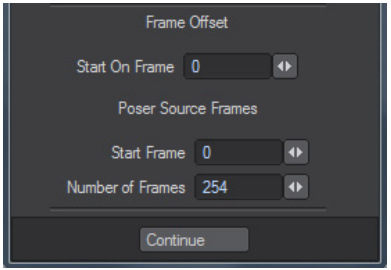
- **Loop**: Selecting the Loop box causes the Poser animation to repeat as many times as necessary to fill all of the 3D Studio

Max animation frames. This can include a partial animation cycle. For example, if the Poser animation is 30 frames long and the LightWave animation is 45, the Poser animation will loop 1.5 times to take up all 45 frames.

- **Freeze**: Selecting the Freeze box causes the Poser animation to not play before its starting frame and/or after its ending frame.
- **Hide**: Selecting the Hide box causes the Poser animation to be invisible before its starting frame and/or after its ending frame.

Offsetting Frames

You can insert your Poser animation at any desired point in the LightWave animation using the Frame Offset function in the Scene Options tab.



Offsetting frames.

You have three offset options:

- **Start on Frame**: Enter the LightWave animation frame where you wish your Poser animation to begin by either entering a valid frame number in the Start on Frame field or using the mini slider.
- **Poser Source Frames**: You are not limited to simply running your entire Poser animation within LightWave.
  - **Start Frame**: Enter the number of the frame in the Poser file where you wish to begin the Poser animation in the Start Frame field or use the mini slider.

- **Number of Frames**: Enter the number of frames in the Poser file after the start frame that you wish to use in the Number of Frames field or use the mini slider.

For example, say you have a 100-frame LightWave animation and wish to open a 30-frame Poser animation. You could specify the Poser animation will begin at frame 45 of the LightWave animation. You could also specify that you wish to start the Poser animation from the 10th frame of the Poser file and that you wish to use the 15 frames that follow. This scenario would cause the following to occur:

LightWave animation	Poser animation
Frames 0-44	As specified in the Out of Range options.
Frame 45	Frame 10
Frame 46	Frame 11
Frame 59	Frame 24
Frames 61-100	As specified in the Out of Range options.

Poser Materials in LightWave

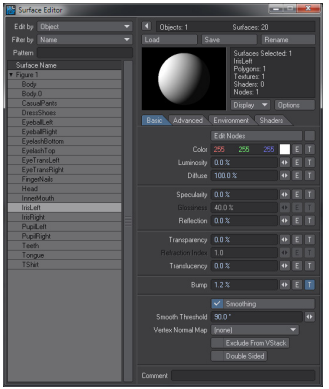
This section discusses using Poser materials within LightWave.

Accessing Poser Materials

In LightWave, click the Surface Editor button on the left side of the LightWave window, or press F5. You can do this with any tab selected.

Material Hierarchies

LightWave supports hierarchical materials, meaning that each object in a scene will have its own list of materials.



Material Hierarchies.

Texture Maps

LightWave supports the use of UV mapping.

You can view and modify any texture map by opening LightWave's Texture Editor window as described in your LightWave documentation. Poser's Texture, Bump, Reflection, and Transparency texture maps will load into LightWave.

> *NOTE: LightWave allows you to create UV data and/or modify it by adding and/or repositioning UVs. This feature gives you complete control over how textures are applied to your figures and props. While Poser uses UV mapping, users were previously limited to using the UV data supplied by the geometry's creator. Using Poser Pro and LightWave (or any other application that supports UV creation and modification), you can manipulate your figure or prop's UV data to have textures behave exactly how you want them to.*

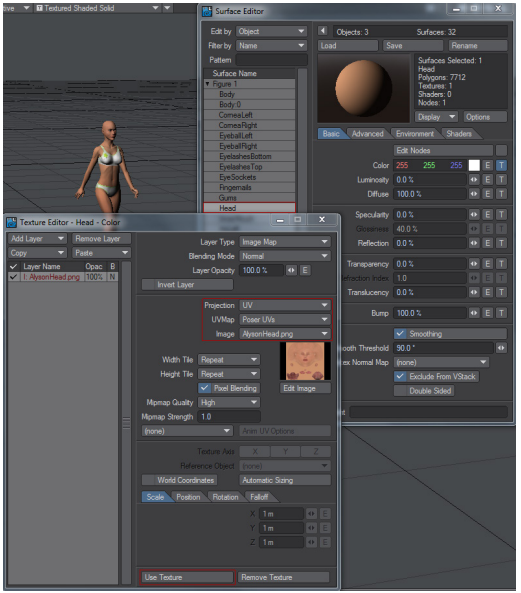
By default, the Poser texture map loads into the Color channel in LightWave's Surface Editor. The Poser UV data is available for any map you apply in LightWave on any channel that supports maps by setting the Projection Type to UV in LightWave's Texture Editor, and the selected UV Map to Poser UVs. This is true for all Poser texture maps (Texture, Bump, Reflection, Transparency).

The Poser UV map is loaded once and is used in every LightWave Texture Mapping channel where you specify it as described in the previous paragraph. If you want the texture image map to be applied to a surface parameter, you can open the Texture Editor and apply the Poser UV maps to the specific parameter.

The following example describes the steps required.

1. Launch Poser Pro. Select and save the default Simon scene as a Poser file.
2. Launch LightWave.
3. Load the Poser file you just created by selecting **File > Load > Load Scene** and choosing **All Files** from the **Files of Type** drop-down list. Open the .PZ3 file that you created in Step 1.
4. If prompted, locate the scene textures by selecting **All Files**. Locate the textures in your default Runtime folder.
5. After the scene opens in LightWave, open the Surface Editor.
6. Select a Surface name (such as Head, shown in the following figure).
7. Open the **Color** (or other channel) Texture Editor. Set **Projection** to **UV**, **UV Map** to **Poser UVs** and specify the

image file to use as the texture. Click **Use Textures**. The Poser UV map is now applied to your figure.



Configuring texture maps.

Part 8: PoserPython

Chapter 35: About PoserPython

This section explains a few Python basics and lists each of the customized PoserPython methods, including explaining functionality and providing syntax and use examples. It provides a certain level of background and behind-the-scenes explanations that will put the PoserPython types and methods involved into context.

Note that this chapter assumes that you have at least a basic level of understanding about the Python scripting language. While it does explain a few basic Python concepts in order to add clarity and context, this chapter is not intended to teach you Python. There are numerous excellent sources of information for learning Python, many of which are available for free. Please refer to "Other Important Resources" on page 10 for a listing of some recommended Python resources.

Python (named after Monty Python's Flying Circus) is a high-level, interpreted, object-oriented scripting language first developed in 1989 by Mr. Guido van Rossum and first released as free software in 1991 after extensive testing. It is an extremely powerful and easy-to-learn language that runs on virtually all platforms and that can be extensively customized and modified to run with other applications (such as Poser) and programming languages. Because it is free software, Python is freely usable and can be distributed free of charge. Python's inclusion of a number of high-level data types as well as dynamic typing makes it easy for users to get their job done without the implementation hassle common to lower-level languages.

PoserPython is a customized implementation of the Python interpreter that includes many commands not found in the standard Python releases. This customization integrates Python with Poser and provides you with an extensive list of easy-to-use commands that can greatly reduce the time you spend performing repetitive tasks in Poser.

One of PoserPython's best features is that you do not need to be a programmer to begin enjoying its benefits. Poser includes a number of useful sample scripts that can be executed by clicking a button. You never have to see a line of code, and none of your friends will ever label you as a programmer! That said, another of PoserPython's best features is that you can "get under the hood" to write scripts that will do just about anything. PoserPython gives you virtually full control over your Poser documents including figures, props, lights, cameras, scenes, etc. and their building blocks and parameters. As you can see, PoserPython benefits both novice and expert alike!

PoserPython also includes the Numerical Python extension, which loads automatically when Poser starts up. Many geometry methods use this extension for fast manipulation of vertex, set,

and polygon information. Please refer to http://www.python.org/topics/scicomp/numpy.html for more information.

Why Python?

Adding support for a scripting language to Poser gives users unprecedented power and flexibility to automate and customize their Poser experience and liberate creativity and productivity. The combination of simplicity, power, extensibility, and free distribution rights is making Python an increasingly popular programming language and has made it the obvious choice for integration with Poser. The PoserPython additions provide advanced Poser users with virtually infinite control and flexibility: A few lines of Python code can quickly automate processes that might take hours if done manually. And, with Poser's internal structures exposed in the Python environment, you can write importers or exporters that interact with obscure or proprietary data formats. Because Python runs entirely within Poser, the only external application you'll need for creating Python scripts is your favorite text editor.

A Word of Warning

Unlimited control is a double-edged sword. On one hand, users have direct access to their creations and underlying data. On the other hand, it is impossible to anticipate every conceivable PoserPython script. Because of the inherent power that scripting provides, it is possible to accidentally or intentionally destroy data, possibly beyond Poser itself. We at Smith Micro Software have made every attempt to provide "safe" methods for manipulating Poser internals, and in most cases a Python mistake simply means that the interpreter throws an exception and halts the script execution. Nevertheless, Python is an entire programming language designed with far more than Poser in mind. It is a powerful tool and, like all tools, should be used with care. If you are not familiar with Python basics, we strongly recommend that you obtain training and begin your Python experience slowly and carefully so as to enjoy a smooth and trouble free learning curve.

PoserPython Types & Methods Listing

PoserPython consists of hundreds of custom methods, and Smith Micro Software is continually updating the list of available methods. Please refer to the PoserPython Methods Manual, which contains an organized listing of each PoserPython method available in Poser. It is included in PDF format on your Poser CD and is also accessible from within Poser by selecting **Help > PoserPython Manual**.

Chapter 36: Basic PoserPython Concepts

This section describes some of PoserPython's basic concepts in order to provide context.

How Python Integrates with Poser

There are two basic types of programming languages:

- **Compiled**: A special program called a compiler reads the code written by the programmer, translates it into a form directly readable by a computer, and creates an executable program that can run on its own on any supported computer platform. Languages such as C++ fit into this category.

- **Interpreted**: Interpreted programming languages require a special program called an interpreter to run the code written by the programmer. The interpreter reads the commands found in the code and executes them from beginning to end without translating the original code. The drawback to interpreted languages is that they must use the interpreter, and the code can never run as a standalone program. The advantage, however, is that a programmer can change the code and see the results very quickly without having to wait for the code to compile. Additions, edits, and deletions become fast and simple.

PoserPython consists of a standard Python interpreter that has been extended to recognize and execute commands that are not included with the standard Python language. PoserPython scripts written using the customized commands will only work with the Poser ProPack or subsequent versions (5 and on). You can, however, pass data back and forth between Poser and other Python scripts, programming languages, and applications.

The standard Poser application contains volumes of data about each item (figure, scene, light, camera, prop, etc.) found within a given scene. You control these parameters via the mouse and interface elements such as menus, buttons, dials, etc. However, you cannot directly manipulate the data itself. This helps make Poser easy to use, but does create limitations. For example, you have no way to automate repetitive tasks or record a complex series of actions for further use. PoserPython circumvents these limitations.

PoserPython exposes much of the raw Poser data. Using Python scripts, you can extract data from Poser, manipulate it, and pass it back into Poser. Essentially, you can program Poser to do what you want, and you are no longer confined to the Poser interface and Poser's built-in functionality.

Basic Python Structure

Python is an object-oriented language. An object is a virtual entity combining structured data and the methods in which

the data can be manipulated. A method is a procedure for manipulating data, and an argument defines how the method is carried out. A simplistic but effective analogy is that of basic grammar: An object can be equated with a noun, a method with a verb, and an argument with an adjective or adverb. For example, consider the following:

```
car = Factory.Produce(vehicleXL)
```

In this case, the variable car is the result of the object factory being acted upon by the method produce as modified by the argument vehicleXL (the make and model). To put it in lay terms, the car's existence and everything about the car depends on the factory being told to produce a car of a specified make and model. Consider how the value of the variable car can differ based on the following examples:

```
car = Mechanic.Repair(car, transmission)
car = Junkyard.Salvage(vehicleXL)
car = CarThief.Steal()
```

In the first example the car argument is passed in, modified by the Mechanic's Repair method, and returned as a working car. The last example contains no argument. In this case, the car thief may not take external input to decide which car to steal. Again, the object defines a structured set of data, the method is what the object does, and any arguments describe how the method is performed.

car may contain either data or a reference or link to data. Please refer to one of the many Python resources (such as those listed in "Other Important Resources" on page 10) for an in-depth discussion of mutable vs. immutable types. The data can be virtually anything including letters, numbers, files, etc. As you begin to think of data in terms of objects and manipulating objects, you will find it far easier and faster to write Python scripts.

Sample Python Script

This section provides a brief example of how a Python script might look. For this example, let's say that you have an open Poser scene consisting of a figure with its left forearm already selected. The forearm is called an actor. An actor is any element of a Poser scene (body part, prop, etc.) and this manual uses the two terms interchangeably. Let's say you want to set the x scale to 88 percent.

```
scene = Poser.Scene()
actor = Scene.CurrentActor()
parm = actor.ParameterByCode(Poser.ParmCodeXSCALE)
parm.SetValue(88)
```

Let's look at the above script in detail.

The script begins by obtaining a variable called `scene`, which is a reference to the current Poser scene. That scene contains numerous actors. Recall that the left forearm is already selected, so all the script needs to do is request the scene's current actor to define the variable actor. Next, the variable parm consists of a reference to the left forearm's specified parameter, in this case the parameter XSCALE. A parameter code (`ParmCode`)

designates an easy to remember word to signify the desired parameter. Lastly, the value of the parameter to which `parm` refers is reset to 88, which will cause the left forearm to shrink to 88% of its normal size along the X-axis.

Writing Python Scripts

Write your Python scripts using your favorite text editor. Alternatively, you can use one of the graphical Python interfaces such as Tkinter for Windows to write your scripts.

Folder Syntax

Python, among other languages, designates certain special characters as symbols beginning with a Windows-style backslash. Two common examples are `\t` ([TAB]) and \n (new line). Thus, in Windows, the notation

```
C:\folder\test.txt
```

is interpreted by Python as

```
C:[TAB]folder[TAB]text.txt or C:
        folder      test.txt
```

To work around this issue, you should use a double backslash (\\) to signify folders. The above example would then become:

```
C:\\folder\\test.txt
```

This would be properly interpreted to mean a specific file path.

Alternatively, you can use Macintosh format, which uses colons to signify folders as follows:

```
:folder:test.txt
```

Running Your Script

You can run your script directly or via the Poser **Scripts** menu or palette, all of which are described in the following chapter.

For Further Information

The preceding information was a very brief glimpse into Python and the PoserPython extensions. If you do not currently know Python, you may want to read and learn more. With the power and flexibility this interface offers, developing Python expertise would be well worth it.

To view the Poser Python Methods Manual, choose **Help > PoserPython Manual** from the menu commands.

Chapter 37: Running PoserPython Scripts

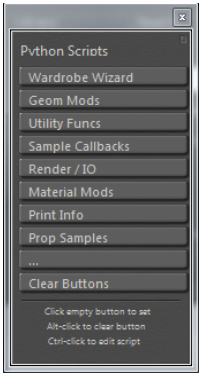
Poser includes a simple graphical user interface that allows you to execute Python scripts by pressing a button. You can customize the **Python Scripts** palette and, in addition, you can run Python scripts directly.

The Scripts Menu

The **Scripts** menu provides a hierarchical list of PoserPython scripts available for use within Poser. When you first launch Poser, this menu will list all of the PoserPython scripts that were included with your Poser installation. You have the option of placing additional Python scripts into the **:Runtime:Python:PoserScripts: ScriptsMenu** directory within your Poser installation; all scripts placed into this folder will be accessible within Poser from the Scripts menu.

The Python Scripts Palette

Launch the **Python Scripts** palette within Poser by selecting **Window > Python Scripts**.



Python Scripts palette.

Clicking some of the buttons will display a submenu of buttons within the Python Scripts palette. This is just one example of how Python scripts can be used to customize Poser. You can write scripts that will open button menus and submenus. If you are curious, you can open one of the existing submenu scripts to see how this is done.

Using the Script Buttons

To run a script, simply press the desired button and the script will execute automatically.

Assigning Buttons Within the Console

Unassigned buttons do not have a label. An ellipsis (...) appears in unassigned buttons to mark their availability. To assign a script to a button, simply press the mouse on the button and locate the desired script (.py file) using the standard operating system file picker. Once you have located the desired script, select it and press **Open**.

Editing Scripts Within the Console

You can edit scripts assigned to a Poser **Python Scripts** palette button by pressing and holding **[CTRL]** while clicking the button assigned to the script you wish to edit. This opens the script within your operating system's default text editor for easy modification. Save your changes as appropriate for the editor you are using. You may also select your own editor via the **General Preferences** dialog, which can be obtained by choosing **Edit > General Preferences** as described in "Setting Application Preferences" on page 32.

Unassigning/Reassigning Buttons Within the Console

To reassign a button to a different Python script, you must first delete its current assignment and then assign the new script to it. Do this by pressing and holding **[OPT]/[ALT]** while clicking the button you wish to unassign. If you wish to assign the newly freed up button to a different script, do so as outlined above.

Running Python Scripts Directly

The Poser **Python Scripts** palette keeps your frequently used scripts close by for easy use. However, you can run any script you wish by selecting **File > Run Python Script** to open the standard operating system navigation dialog. Locate the script you wish to run by browsing your folders and directories, then press **Open** to run the script.

Alternately, you can access your script directly from the Poser **Scripts** menu.

Appendices

Appendix A: Technical Support

We've worked hard to ensure that Poser's powerful features are both easy to use and available to users running a wide variety of computers. However, there may be times when you need technical support. Smith Micro Software is pleased to offer free technical support to registered users of our products. To receive technical support, please visit our Web site at http://my.smithmicro.com/support and browse through our extensive product FAQs.

Please use the following checklist before contacting Technical Support:

- **Poser Reference Manual**: This Reference Manual answers most Poser questions. Before contacting Technical Support, please read the pertinent section(s) of this manual thoroughly.
- **FAQ**: Please visit the product FAQs at the above-listed URL.
- **Third-party forums**: If your question is more artistic than technical, check out some of the great online Poser forums where artists come together. Please see "Third-Party Forums" on page 9 for links to a few online forums.

Still don't see your question answered? Please contact Technical Support by clicking the link to http://support.smithmicro.com and completing our online support form. When contacting Technical Support, please fill out the form as completely as possible and include as much information as possible. This will help us resolve your issue faster. Once the form is complete, a Technical Support representative will contact you directly as soon as possible. Support requests are answered via e-mail in the order they are received. Online support is free to all registered Poser users. Poser users are strongly encouraged to register at http://store.smithmicro.com/productregistration.aspx after installing the application.

Telephone support is also free to registered users. Before using telephone support, please check the resources listed above. Phone support is intended to solve critical technical issues. We are unable to answer project-based questions. Our Technical Support phone number is listed on our website at http://smithmicro.com/contact. Telephone support hours are 10 am to 4 PM (U.S. Pacific time). If you call during other hours, or if a representative is not able to answer your call immediately, you will be asked to leave a message, and we will return your call as soon as possible (generally within two business days). When calling, please be in front of your computer with Poser running.

In order to receive support, we require the following information:

- Your name

- E-mail address
- Telephone number (including international dialing information, if applicable)
- Your current operating system
- Your computer specifications (CPU, RAM, hard drive, video card, etc.)
- Poser serial number
- Detailed description of the problem

This information will help us isolate and resolve your issue. We require this information in order to provide support services and are unable to respond to incomplete requests in a timely fashion.

For international support, please contact your local distributor. Smith Micro Software maintains a list of our international distributors at http://my.smithmicro.com/store/intlpartners.html.



Smith Micro Software reserves the right to alter our technical support policies at any time without advance notice.

Appendix B: Poser File Structure



Please refer to the Poser end user license agreement (eula) in part 1 of this manual for information regarding the legal uses of the Poser file formats and structures.

This Appendix describes some basics about the Poser file system.

About Poser Files

Some advanced Poser users obtain added control over their work by editing the source files directly instead of, or in addition to, using the Poser application. This manual provides a detailed description of the Poser file formats, including syntax, layout, and commands/ parameters contained within each file type.

Poser uses separate files for each character, prop, light, and camera, as well as other files for particular character details (face, hands, etc.). These files typically reside in Poser's Runtime folder. The Poser installer automatically creates folders and inserts files into their correct locations. While each type of Poser file has a separate extension and purpose, each of the file types discussed in this manual (with the exception of OBJ and non-native Poser formats) follows the same general format and uses one or more subsets of the overall Poser command/parameter structure.

A Word of Warning

Editing files directly can give you ultimate control over your Poser creations and help provide spectacular results. However, editing files directly could cause problems up to and including crashing the Poser application file, corrupting your edited file, and causing data loss.

Smith Micro Software provides this information as an aid to advanced Poser users for reference purposes only. Direct editing of Poser files is specifically not recommended and is not supported. Please do not contact Smith Micro Software tech support regarding file-editing problems. Any work you do within Poser files is done solely at your own risk. You are on your own.

This appendix provides some guidance with regard to valid values and error handling, however it is impossible to cover the nearly infinite ways in which you may edit files and how those edits may affect the Poser application or data.

Editing Files

You can edit all native Poser files using a plain text editor such as Notepad (Windows) or Simpletext (Macintosh). In addition, some users have created helpful applications to aid you in editing Poser data. Please refer to the online 3D community at large for help locating and reviewing these third-party applications.

Poser files contain formalized descriptions and instructions written in a code that Poser can read. As with any computer program, each element of a Poser file must be in the correct format, using valid values, and located in the correct portion of the file. Poser files can be large and complex, and it is not advisable to modify them unless you have a good idea how to go about it.

All native Poser files follow a similar structure, however each file type has a separate filename extension and library location (discussed below). The simplest Poser files control props, lights, and cameras, while the most complex (CR2 and PZ3) describe Poser characters and scenes, respectively.

It should rarely be necessary to modify native Poser files outside of Poser, with the notable exception of CR2 files. When editing any Poser files, be sure to back up the original file and work on a copy. This will prevent data loss if something goes wrong. You may also wish to save iterations of files as you work, allowing you to easily revert to a previous state without losing all of your work.

Poser File Types

There are several native file types associated with Poser:

- **Prop**: This file type contains information about a prop including source geometry, materials, texture and other maps, etc. Prop files have the extension PP2. Magnet files are prop files with a pre-positioned magnet as the prop. Props are often supplied as PP2 files with embedded OBJ information. They may also include texture and bump map files.
- **Camera**: Camera files contain camera information including location, direction, focal length, etc. They have the extension CM2.
- **Light**: These files contain information on lights, including type, position, color, and other attributes. Light files have the extension LT2.
- **Hair**: Hair files contain information on hair props and are similar to prop files. This file type has the extension HR2. Hair files may have the geometry embedded within them (as opposed to in a separate OBJ file).
- **Face**: Face files contain information required to articulate and/or deform a face to the desired expression and have the extension FC2.

- **Hands**: Like face files, hand files contain information required to articulate hands into the desired positions or gestures. Hand files have the extension HD2.
- **Pose**: Pose files contain information required to articulate an entire figure into the desired position, which can include face and hand information. Pose files have the extension PZ2.
- **Character**: A character file contains all information required for a Poser character including reference geometry, Joint Editor palette morph targets, materials, default pose, etc. These files have the extension CR2.
- **Scene**: This file type is what is created when you create a Poser scene and select File > Save within the Poser animation. This file type contains all of the information found in the above-mention files plus details on movie, background, rendering, animation set, lights, cameras, figures, and other information. Poser scene files have the extension PZ3. They are similar in structure to CR2 files.
- **Material Collections**: A Material Collection is a fully integrated file format, which stores groups of materials from a single figure for access through the Library palette. Material Collection files have the extension MC6/MCZ.
- **External Binary Morph Targets**: Poser saves morph targets to an external binary file format, which contains only the morph targets for a particular figure or scene. These files have the extension PMD.

File Hierarchy

For purely conceptual purposes, it is useful to think of various Poser file formats as falling into a loose hierarchy, with some files containing subsets of information stored within other file types. Also, while each Poser file type contains information unique to that format, several file types are virtually identical in structure. For example, hand and face information is part of a pose, which along with hair forms part of a character, which combined with other information is part of a scene.

File Families

It is also useful to think of Poser files in terms of the types of information they contain. For conceptual purposes only, you can think of Poser files as being grouped into the following families:

- Face, Hands, Pose
- Hair, Prop
- Camera, Light
- Character

- Pose

Poser Default File Locations

In the list below, note that the following list provides the default locations of the Poser file types. If you are downloading any Poser files, be sure to place them in their correct locations. File placement is most critical for files that belong in the Runtime: Geometries folder. Library files have more flexibility. In the following list, an expression in parentheses means that the subdirectory or name depends upon the figure. You may create your own subfolders and relocate files within the Libraries subfolder. In this case, file locations will be reflected in Poser's **Library** palette. You may place graphic (texture, bump, etc.) files wherever you like, since Poser allows you to specify their locations. The following list gives all file locations relative to the Poser: Runtime folder:

- **OBJ (figure geometry)**: Geometries\(figure name)
- **RSR (small file, Windows-only thumbnail graphic)**: libraries\character\ (category)\(character name)
- **RSR (large file, both Mac and Windows – Binary OBJ)**: Same location as associated geometry file
- **PZ3 (Poser scene)**: any (user-selected location)
- **CM2 (Camera)**: libraries\camera\Camera Sets
- **CR2 (Character)**: libraries\character\(category)\(character name)
- **FC2 (Face)**: libraries\faces\(category)
- **HR2 (Hair)**: libraries\hair\(category)
- **HD2 (Hand)**: libraries\hand\(category)
- **LT2 (Light)**: libraries\light\Light Sets
- **PZ2 (Pose)**: libraries\pose\(category)
- **PP2 (Prop)**: libraries\props\(category)
- **MT5 (Shader)**: libraries\material\(category)
- **TIF, BMP, BUM, JPG (textures, bump maps, etc.)**: textures\ (category)\(subcategory). You may store additional images in any folder you wish.
- **PZS (Web links)**: Web links\(category)
- **MC6/MCZ (Material Collections)**: libraries\material\ (category)
- **PMD (Morph Targets)**: PMD files are binary morph target files that are a redistributable means to deliver morph

targets. If you have **Use External Binary Morph Targets** enabled in the Misc tab of the General Preferences dialog, PMD files are created next to a CR2 (when a figure is added to the **Library**), next to a PP2 (when a prop is added), or next to a PZ3 (when a scene file with morph targets was created in an earlier version of Poser, or when the morph set of figures and/or props has been changed since they were added to the scene).



Users who download characters or other Poser files may need to manually place some or all of the files in their correct locations. Please use the above list to ensure correct file placement.

Poser Pro stores files containing preference information in the user's home directory. This preference information includes Memory dots, Library preferences, Poser UI preferences, and the Poser.ini/Poser Prefs file. These preference files are stored in the following locations:

```
    Windows: %AppData%\Poser Pro\10\

    Windows XP example: C:\Documents and
Settings\<PoserUser>\Application Data\Poser Pro\10\

    Windows Vista & 7 example: C:\Users\<PoserUser>\
AppData\Roaming\Poser Pro\10\

    Mac OS X: ~/Library/Application Support/Poser Pro/10/

    Mac OS X example: /Users/<PoserUser>/Library/
Application Support/Poser Pro/10/
```

Poser Downloaded File Locations

By default, Poser places downloaded content (obtained using the **Content** room) in the **Download** library. Please refer to "Chapter 7: The Poser Library" on page 122 for more information about Poser libraries.

Other Poser File Types

Some users may encounter PHI and PCF files. Previous versions of Poser used PHI to perform functions that are now carried out in the hierarchy editor/**Setup** room (Pro Pack & later). PHI files were directly contained within OBJ files, and were located with the OBJ file. PCF files are used by an application called Objaction Mover and are beyond the scope of this document.

Commonly Used Poser Objects

Morph targets and characters are commonly used and traded/sold by and among users and third-party vendors. This section provides a brief explanation of each.

Morph Targets

Morph targets are supplied as OBJ files that you import into Poser for application to part of a figure. The figure's CR2 file

controls morph targets, and a dial appears for each morph target when an applicable body part is selected. For example, a head morph target dial will appear when you select the figure's head. This Reference Manual defines and discusses OBJ morph targets in "Creating Morphs in Other Applications" on page 660.

Characters & Clothing

Characters can be modifications of meshes that come with Poser or can include entirely new OBJ meshes (models). Characters based on pre-existing meshes typically come as CR2, texture, and bump files. Also, each piece of conforming clothing uses CR2 files to make it poseable, making clothing downloads similar to characters; thus, the download is similar to that of a character.

Basic File Syntax

As you will see by examining this document, each Poser file type uses the same general syntax.

Tabs

Tabs within Poser files are mostly insignificant, however they serve to show file structure, such as:

```
section 1
     child 1
        grandchild
          grandchild n
     child n
section n
```

Brackets & File Sections

Each Poser file opens and closes with brackets ({}), as does each section within a Poser file. Major file sections describe the file version, location and name of the underlying OBJ file (if any), and file properties. One of the major file sections (Channels) contains position, size, texture, morph target, and other properties. Poser automatically modifies values and adds entries as needed.

As described above, brackets denote the beginning and end of file sections. A left bracket begins each section, while a right bracket ends a section:

```
{begins
} ends
```

For example,

```
{
section A
}
```

Nested Brackets

As implied above, one can nest file sections using brackets to denote each section and subsection, as follows:

```
{
section A
  {
```

```
  section B
  }
}
```

Parameters

Parameters and other items within a section do not need brackets. For example:

```
{
section A
  parameter 1
  parameter n
  {
  section B
command 1
     parameter 1
     parameter n
  command 2
     parameter 1
     parameter n
  }
}
```

Comments

You can insert comments into Poser files, as follows:

```
{
number 4.01
This text is a comment added to the CR2 file.
}
```

Poser & OBJ Files

The Geometries folder contains several dozen subfolders with names corresponding to Poser figures. Each of these subfolders contains OBJ files, each of which is a mesh object, e.g. a set of polygons arranged so as to form the desired shape. These polygons are placed into different groups that define important subdivisions within the mesh (such as body parts, also known as actors). In order to work with Poser, these groups must have specific names, such as hip, abdomen, etc. Poser groups do not require such specific naming conventions; figures created using the **Setup** room could have groups named, for example, **Bone_1**.

The OBJ file itself does not contain enough information to allow Poser to produce all of the mesh object's properties, hence the presence of CR2 and other files that provide supplemental information. Poser files can contain embedded information that would normally reside within the OBJ file. This is why many prop downloads do not include an OBJ file.

Some native Poser files normally refer to an underlying OBJ geometry file, which is also in text format. Native Poser files describe parameters controllable within Poser, such as size, position, textures, etc. One OBJ file can have more than one Poser file pointing to it. This happens, for example, if a modified prop, character, etc. is saved to the Library under a different name and/or location.

Character (CR2) files contain Poser-specific details such as size, position, pose, textures, proportions, etc. and also control the dials that change the figure. Normally, one CR2 file governs a single figure. By combining the OBJ mesh information with the CR2 details, Poser can create customized poseable figures.

Some Poser files (pose, face, hands, etc.) work by modifying the CR2 itself. Poses, faces, and hands are already described within the CR2, however applying the data contained in one of these files changes the corresponding values within the CR2 file itself. These applied CR2 changes are then saved to the Poser scene (PZ3) file. If the user saves the modified character in the Library, the modified information gets written to a new CR2 file.

PZ3 files are similar enough to CR2 files to allow changing a PZ3 extension for a given scene file to CR2, thereby creating a new character complete with its associated props, hair, etc.

Dependent Parameters

With Poser you can set up meta-level parameters, called dependent parameters, which allow you to modify other parameters and morph targets with a single parameter dial. An example of this type of dependent parameter would be a full range of belly types, with the following values along the dependent parameter dial:



The Dependent Parameters editor can help you do this and more. Refer to "Using Dependent Parameters" on page 666 *for additional information about this feature.*

- -1.0 underweight belly
- -0.5 sixpack belly
- 0.0 regular belly mesh
- 0.5 slightly protruding belly
- 1.0 large protruding belly
- 2.0 hanging beer belly

This range of belly types would incorporate various morph targets and parameter values at each of the key points along the dependent parameter dial. Thus, dependent parameters are far more powerful in the scope of modifications they can encompass than a single morph target or parameter dial.

The following sample code illustrates how to set up a dependent parameter. This code is an example of a targetGeom channel in a CR2 file. The resulting dependent parameter will appear as a morph target parameter dial named "bump3".

```
targetGeom bump3
{
name bump3
```

```
initValue 0
hidden 0
forceLimits 1
min -100000
max 100000
trackingScale 0.02
keys
{
static 0
k 0 0
}
interpStyleLocked 0
numbDeltas 261
useBinaryMorph 1
blendType 0
valueOpKey
Figure 1
bone_1:1
Custom_Morph
beginValueKeys
valueKey 0.5 0
valueKey 0.75 1
valueKey 1 0
endValueKeys
}
```

The end of this sample defines some interesting interactions with regards to the "bump3" dependent parameter. The "valueOpKey" keyword identifies a section that defines that this parameter can be driven by the Custom_Morph dial on the **bone_1** actor of the specified figure. The "ValueKeys" section defines how exactly the "bump3" dependent parameter will be affected:

- If Custom_Morph equals 0.5, the value of bump3 will increase by 0.
- Once Custom_Morph reaches 0.75, the value of bump3 will increase by 1.
- By the time Custom_Morph equals 1, the value of bump3 will increase by 0 again.
- Values in between these points are determined by spline interpolation.

In the next example, we are looking at the rotateX parameter of an actor (in this case **bone_2:1**, which is not apparent from the code sample below). The resulting dependent parameter dial is called "xRotate".

```
rotateX xRotate
{
name xrot
 initValue 0
 hidden 0
 forceLimits 0
 min -100000
 max 100000
 trackingScale 1
 keys
{
static 0
 k 0 0
}
interpStyleLocked 0
valueOpKey
 Figure 1
 bone_1:1
 Custom_Morph
 beginValueKeys
 valueKey 0.25 0
 valueKey 0.75 45
```

```
    valueKey 1 0
    valueKey 1.25 -45
    valueKey 1.5 0
    endValueKeys
  }
```

As in the previous example, the "valueOpKey" section defines that the Custom_Morph parameter dial on **bone_1:1** of the specified figure can take control of this parameter. The "valueKey" value pairs add rotation in degrees of xRotate to certain values of the Custom_Morph parameter.

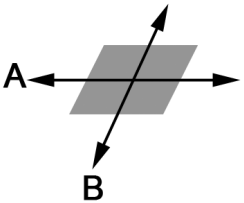
Appendix C: 3D Basics

This part describes basic 3D concepts. The following discussion centers on Poser, however most of these concepts apply to all 3D applications. Novice 3D artists should read the entire chapter to gain valuable "behind the scenes" insight that will help in learning and using Poser. Veteran 3D users can use this chapter as a handy reference or refresher.

About 3D Space

Let's begin by defining the three dimensions:

- **Zero dimension:** A point is an example of a zero-dimensional object. It defines a point in space but has no length, height, or width.
- **First dimension**: A one-dimensional object is a single line. It has length but no height or depth.
- **Second dimension**: A two-dimensional object has any two of the following three dimensions:
  - Length
  - Height
  - Depth



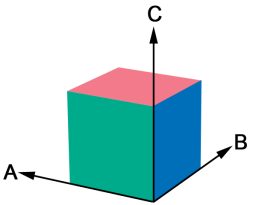
A two-dimensional object.

Pick any one of the three dimensions and call it A. Now pick either of the remaining two dimensions and call it B. In the graphic, the arrows represent the two dimensions and the rectangle represents a two-dimensional object. You will immediately notice that all two-dimensional objects are perfectly flat, like the surface of a sheet of paper. Two-dimensional objects are called **planes**.

- **Third dimension**: Three-dimensional objects use all three of the dimensions (length, height, and depth).

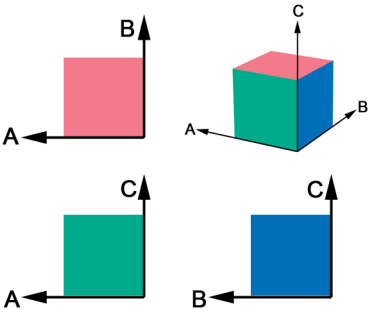
As you can see from the graphic, the cube is a three-dimensional object. It has length, height, and depth. That's pretty simple, right? Here's the hard part: You create 3D data using two-dimensional tools. Your computer screen is a two-dimensional object and your mouse can move in two dimensions; it can

report left-right and front-back motion but cannot report how far above or below the desk it is. Furthermore, your output will always be two-dimensional. Look at the above graphic: It does not have depth. It does, however, represent three dimensions using a simple optical illusion called **perspective**, which is defined as the tendency of objects to appear progressively smaller the farther away they are until they disappear on the horizon at a location called the **vanishing point**. You can see this by standing at the corner of a long building and noticing how the roof line appears to get closer to the ground the farther away you look. Given these limitations, you ask, how can one create 3D information?



A three-dimensional object.

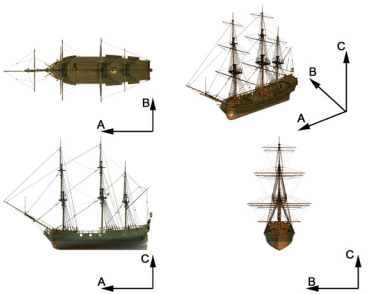
The short answer is that all 3D applications, Poser included, create a "virtual" 3D space. Look at the above graphic again. We can view and manipulate the cube in three dimensions by separating them into separate workspaces called **views**. One view will displays the A and B dimensions, the second will displays the A and C dimensions, and the third will displays the B and C dimensions. You can also have a fourth view that displays all three dimensions. This graphic shows how the four views might look in a 3D application such as Poser.



Four views of the same object.

Let's look at the same graphic again, only this time let's substitute a simple boat for the cube to better illustrate the concept. One of the benefits of this system is that it becomes possible to precisely control your 3D model. For example, you can determine the length of the boat using the AB or AC view, the width using the AB or BC view, and the height using the

AC or BC view. Which view you use depends on what you are trying to accomplish. For example, to create the stern, you would probably use the BC view, and would probably use the AB view to create the overall shape.



Four views of a more complicated object.

In these examples, the A, B, and C dimensions are collectively called **axes**. Taken individually, each dimension is called an **axis**. So far, we have used each axis to describe one of the three dimensions without caring about which axis describes which dimension. The A dimension could describe any of the three dimensions with B describing either one of the remaining two dimensions and so forth. We did this to illustrate the most basic theory behind 3D applications such as Poser. Let's expand on that.

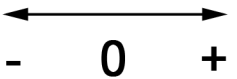
It should be obvious that the AB, AC, and BC views lack perspective. Two-dimensional views without perspective are called **orthographic** views. Each three-dimensional object has six orthographic views: Top, Bottom, Left, Right, Front, and Rear. Pick up any object you like and look at it from all angles; you will see that this always holds true. So, while the boat example above shows the Top (AB), Left (AC), and Rear (BC) views, it could just as easily show any three of the six possible views. This is important because, like the boat, not all three-dimensional objects are symmetrical.

Now that you understand this fundamental concept, let's learn how it's used in the real world. To recap, the three dimensions are width, length, and height or depth, each dimension is represented by an axis, and we can view each pair of axes in two ways to generate a total of six possible views. So far so good, except for one small problem: If everyone used an arbitrary system of axes to define the three dimensions, then it would be difficult to pass data back and forth. In the above example, we are using the AB as the Left view. Someone else could just as easily define AB as any of the six available views. You can see the chaos that could ensue. To prevent this, both 2D and 3D objects conform to a standard system of axes called the **Cartesian coordinate system**. The term **Cartesian** is used in honor of the French mathematician and philosopher Rene Descartes

(1596–1650), who was one of the first to employ such coordinate systems.

Cartesian Coordinates

Before getting too far into Cartesian coordinates, let's pause for a quick math review: If you arranged all of the numbers from negative infinity to positive infinity along a line, the number 0 would be in the center of that line. Negative numbers would be on the left side of 0 with –1 being the closest to 0, and positive numbers would be on the right side of 0 with +1 being the closest to 0.



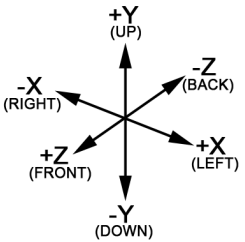
The number 0 is in the center of an infinite amount of numbers.

Negative numbers being on the left (or front) works for horizontal lines or axes. For vertical lines, negative numbers are beneath 0 with positive numbers above 0. This stands to reason, since negative numbers are literally less than 0. When dealing with coordinate systems, we assume that each dimension is infinite, with zero representing the dimension's center or **origin**.

The Cartesian coordinate system goes one step further by defining three axes, called X, Y, and Z. In our previous examples, we deliberately used the arbitrary letters A, B, and C to illustrate the concept of axes and avoided using the actual letters because we wanted to familiarize you with the general idea of axes and dimensions before focusing on how they are actually used. In the Cartesian coordinate system, the axes correspond to dimensions as follows:

- **X**: Width
- **Y**: Height
- **Z**: Depth

Let's combine the origin with the Cartesian axes as follows. As you can see, the Cartesian coordinate system uses three axes to represent each of the three dimensions: X, Y and Z. The positive X axis points to the right, the positive Y axis points up, and the positive Z axis points towards the front of the scene. The center of the 3D space is a single point, which is the midpoint (**origin**) of the three axes. Thus, the 3D space extends to infinity in both negative and positive directions along all three dimensions. You can see the origin in any of the Poser views.



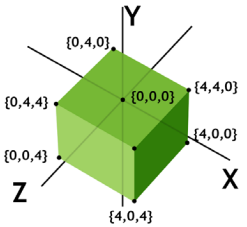
Directions extend along three dimensions, represented as X, Y, and Z.

Now that we have a standard system for defining 3D space and objects within that space, we can use coordinates to define the object's shape. Remember that coordinates are always listed in XYZ order. Coordinates themselves are defined as the distance from the origin along each of the three axes. For example, the coordinate {1,1,1} signifies a point that is 1 unit to the right of the X origin, 1 unit above the Y origin, and 1 unit behind the Z origin.



The format of listing the X, Y, and Z coordinates within braces and separated by commas is the standard shorthand used with the Cartesian coordinate system.

Remember the box we used in the previous 3D example? We can use Cartesian coordinates to define its corners. What if we move the box over somewhat? The graphics on the right show how that might affect the coordinates. As you can see, Cartesian coordinates serve to define an object's shape, size, and location in 3D space.

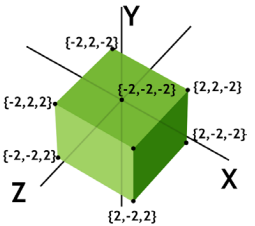


Point coordinates.

Planes

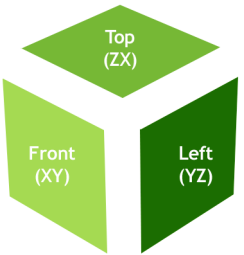
As we discussed earlier, 3D applications must depict and manipulate 3D data using a series of 2D views and tools. You already know that 2D objects are planar because they exist on a mathematically defined plane. A plane is a formula defining the relationship between two dimensions, such as XZ. Combining these two facts with what we just learned about the Cartesian

coordinate system and a quick glance at our monitor, we find that 3D applications like Poser use three views aligned with coordinate planes to help you locate points in 3D space.



Planes in 3D space.

You can change the Poser **Document** window to show several cameras, including the orthogonal views (Left, Right, Front, Back, Top, Bottom) and perspective views (Main, Auxiliary, Face, Hand, Posing). Please refer to the "Chapter 5: The Document Window" on page 72, for a description of the Poser **Document** window. The graphic shows a quick rendition of three orthogonal views:



Three orthagonal views.

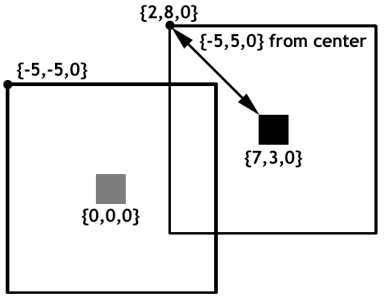
Global vs. Local Coordinates

There is one last wrinkle to the Cartesian coordinate system. To explain this wrinkle, let's use the example of a motorcycle rider leaning into a turn. What just happened? For the sake of argument, let's assume that the headlight is 30 inches above the ground when the motorcycle is upright. If the rider leans the motorcycle 45 degrees to the left, then headlight will now be 21.2 inches to the left of center and 21.2 inches off the ground.

*For anyone into trigonometry, we find the new location by multiplying the original location by the sin and cosine of the angle. In this case, sin(45) = cos(45) =.707, and.707*30= approximately 21.2.*

Thus, the headlight's coordinates will have changed from {0, 30,0} to {21.2, 0, 21.2}. However, nothing has changed about the motorcycle itself. The headlight is still in the exact same position **relative** to the rest of the machine. To demonstrate this, let's create a second 3D space using the motorcycle's center of gravity (balance point) as the origin. Let's further say that the headlight is 12 inches above and 30 inches in front of the center of gravity. This means that the headlight's relative coordinates are {0, 12, -30}, and these relative coordinates do not change because the headlight does not move relative to the center of gravity. But what do we mean by **relative**?

Has the motorcycle leaned 45 degrees to the left, or has the world leaned 45 degrees to the right? To an observer standing on the ground, the motorcycle has leaned over 45 degrees. To the rider, s/he is still on top of the motorcycle and it is the world that has leaned over 45 degrees. Further, the rider maintains her or his relationship to the motorcycle, meaning (for example) that her or his head is still 30 inches behind and 32 inches above the headlight. Thus, while the motorcycle's **world coordinates** have changed, its **object** (or **local**) **coordinates** have remained the same.



World coordinates vs. local coordinates.

If this seems a bit complex, bear with us as we use a far simpler example. Each object in Poser has its own object coordinate system. When an object is first created, its center and orientation are the same as the world's. As described above, this changes when the object moves. The world's center and orientation are still the same, but the object's center and orientation may have changed. Look at the square in the graphic. Say the upper-left corner is located at {-5,5,0}. When the object is first created, that point is the same in local and global coordinates because the object's center is at {0,0,0}. If we move the object +7 along the X axis and +3 along the Y axis, the upper-left corner would now be at {2,8,0} in global coordinates but would remain at {-5,5,0}

in local coordinates, that is, relative to the object's center. In other words, any point can be specified relative to its object's local coordinate system (**object space**) or relative to the global coordinate system (**world space** or **global coordinates**) shared by all objects.

Transformation

So far, you have learned about 3D objects, the Cartesian coordinate system, and the difference between object space and world space. Let's move on and learn how we can use XYZ values to define an object's **transformation** in addition to its size, shape, and position.

An object's **transformation** describes an object's position (**translation**), orientation (**rotation**), and size (**scale**) in 3D space. When an object is first created, its transformation is set to align with the global coordinates. Its position is set to {0,0,0}, its orientation is set to {0,0,0}, and its size is set to {1,1,1}. An object's transformation values are almost certain to change as you work with the object.

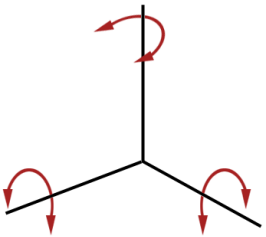
Translation

An object's **translation** describes its position in 3D space relative to its center and is measured in defined grid units. Let's take another look at the box we used in an earlier example.

As you can see, the box's center is the same as the origin ({0,0,0}). What happens if you want to move the box? You can move each one of the points, delete the existing box and draw a new one in its new location, or simply translate the box. For example, setting a Translate value of {2,2,2} would move box's lower left corner to {0,0,0} since (-2)+2=0. Again, the Translate value refers to the location of the center of the object relative to world space.

Rotation

An object's **rotation** value refers to its orientation in 3D space measured in degrees. As you probably know, any actual object will revolve around its center of gravity (balance point). Objects in Poser have no mass and no center of gravity, so you can set the object's center wherever you like and the object will rotate around that point.



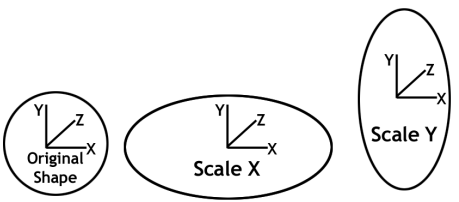
Three axes of rotation.

Let's think back to the motorcycle example. If you model a motorcycle and decide you wish to lean it 45 degrees, nothing is stopping you from performing trigonometric calculations to determine the new location of each part. Remember that each part of the motorcycle will move in at least two dimensions as the whole machine rotates. In this case, since the motorcycle is rotating about the Z axis, you could simply enter a rotation value of {0,0,45}. The trigonometric calculations will still need to be performed, however Poser will get stuck with the job instead of you.

Scale

An object's **scale** value refers to its size in relation to itself and is measured in percent. In this case, a value of 1 corresponds to 100%. Take the example of a circle. As with all other Poser objects, it is initially created with a scale value of {1,1,1}, meaning that it is 100% of its original size in all three dimensions.

Now that your perfect circle is in place, you realize you need to double its height on the Y axis. Simply enter a scale value of {1,2,1} and the circle will turn into an ellipse that is twice as long on the Y axis as it is wide. To stretch it on the X axis, you would enter {2,1,1}.



Scaling axes.

To compute every point on a model, multiply the original coordinates by the X, Y, and Z components. With this in mind, it becomes easy to see how different values can change the size of your object. For example, entering a scale value of {2,2,2} would

double the circle's size. Poser allows you to set each scaling factor independently in order to obtain squashing and stretching effects. This is called **differential scaling**.

Now that you've learned about 3D objects, Cartesian coordinates, object space vs. world space, and object transformations, let's go ahead and learn more about 3D objects themselves.

Vertices

A point is a zero-dimensional (0D) object in 3D space. It has a set of coordinates to define its location but has no length, width, or height. It is nothing more than a location in Cartesian space. However, we can connect points to create edges or polylines. An edge is part of a polygon between two vertices, and a polyline connects two vertices together that are not part of a polygon. At its root, 3D modeling consists of nothing more than connecting a series of vertices together to create 3D objects.

A group of vertices used to define a 3D object is called a point cloud. Each point in a cloud is usually called a vertex and is used to define one of the corners of a polygon. Points used to define a spline (see below) are called control points. We'll define these terms a little later.

Splines

Splines are lines that are defined by multiple **control points**. The following graphic shows three basic types of splines. The simplest type of spline consists of a set of control points connected by straight lines, called a **linear spline** (shown on the near right). The other two splines are curved. You can curve a spline by adjusting its **basis**, or method used to compute the spline. Splines can be divided into **interpolating** and **approximating**.



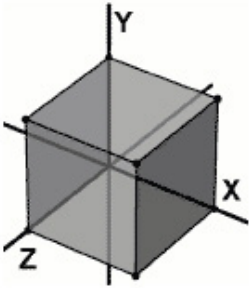
Splines can be linear or curved and are controlled with control points.

An interpolating spline will always touch the points that define it. In the above graphic, the two splines on the left are interpolating. This gives them a more drastic skin-like bend than approximating splines. Approximating splines, such as the right-most example in the above graphic, have a softer curve because

they don't necessarily touch the points that define them. Either type of spline requires three or more control points in order to show any curvature. Poser uses interpolating splines for such things as the **Walk Designer** and the **Animation** palette.

Polygons

Polygons are multiple-sided surfaces that use vertices to define their corners and edges to define their limits. Most 3D applications use **triangles** (3-sided polygons) and/or **rectangles** (4-sided polygons). Groups of polygons form a **polygonal mesh**, which alone or with other meshes defines a **mesh object**. Let's reexamine the box example we used above: In this example, the point cloud consists of eight vertices. These eight vertices are connected by 12 edges, which define six rectangular polygons. Had we used triangles, the eight vertices would be connected by 18 edges, which would define 12 polygons.



Polygons.

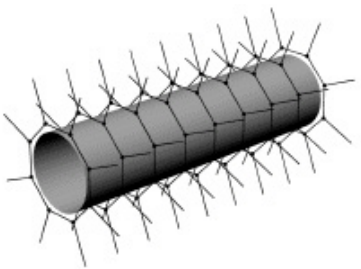
The Poser Workspace

The Poser **workspace** is the virtual 3D world in which you build your scenes. This world contains an origin and the three axes.

The Document window acts as the viewfinder for the currently selected camera. By looking through this viewfinder, you can see the workspace. Please refer to the "Chapter 5: The Document Window" on page 72 for more information about the Document window.

Normals

A surface **normal** is a line (**vector**) that points perpendicular to (away from) the surface it originates from. Since models have more than one surface, knowing which way the normals are facing can help you understand how a particular function will affect a model. This is important when rendering a model or for calculating other operations such as a **collision** (determining if two objects are residing in the same 3D space). If a model's normals are inverted, certain routines may behave erratically or your model may render incorrectly. Poser allows you to control the direction of the normals and automatically performs these calculations for you.



Surface normals.

Camera

The **Camera** is a default object. This means that it always exists and cannot be deleted. However, the camera is an object like any other and can be moved and animated. Additionally, you can apply many different settings to the camera including its **position**, **angle**, **perspective**, and **focal length**. These are standard photography terms. Object animation rules apply to the camera.

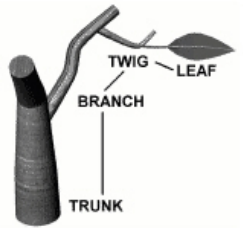
Lights

A light source is a special kind of primitive. When Poser launches, it places three default lights in your scene. You can add, edit and remove lights in your scene and can also control and animate many settings such as color, intensity, position, shaders (gels), etc.

Hierarchy

Poser objects are often grouped in a **hierarchy** in order to facilitate manipulation. The original object is known as a **parent**, and each object linked to it is known as a **child**. The graphic shows an example of a simple hierarchy. In this example, the trunk is the parent. The branch is a child of the trunk, the twig is a child of the branch, and the leaf is a child of the twig. Selecting

and moving the trunk will also move the branch, twig, and leaf. Moving the branch does not affect the trunk but moves the twig and leaf, and moving the twig moves the leaf without affecting the branch or trunk. Selecting the leaf only moves the leaf.



An example of hierarchy.

Let's try another example: Bend your arm at the shoulder. Notice that your shoulder rotation moves your upper arm, lower arm, wrist, hand, and fingers. In this case, your upper arm is a child of your shoulder and so forth. Now try bending a finger. Your hand, wrist, arm, and shoulder do not move.

Animation

Poser lets you animate virtually everything in your scene including objects, lights, materials (which can have a shader tree containing one or more nodes), and the camera. Each scene item has different settings (**parameters**) that can also be animated. For example, you can animate an object's scale, rotation, translation, and shape, or a light's color, position, and intensity (Poser calculates shadows). You can animate any component of an object's material. Plus, you can animate the camera's position and rotation. Creating animations involves making changes to these parameters over time and assigning these changes to **keyframes**.

Keyframing

Animations are made up of individual images known as **frames**. An animation is created when a series of frames that vary slightly from one frame to the next are displayed one after another over time.

Keyframing is the core of computer animation and involves the following general process: First, a starting frame is created on a timeline and all parameters for each object in a scene are assigned to that frame. Next, an ending frame is created later on the timeline and all changes to any parameters are assigned to this frame. Poser then compares the parameters assigned to the starting and ending frames and calculates all of the intermediate frames that occur between the starting and ending frames. This calculation is called **interpolation**.

For example, if you tell Poser that an object is large and red at Frame #1 then small and blue at Frame #10, then Frames 1 and 10 become the **keyframes**. Poser then calculates the intermediate values for all of the frames in between the keyframes. Thus, as the animation moves from Frame 1 to Frame 10, the large red ball will gradually shrink and turn blue with each passing frame until it reaches the values you set for it at Frame 10. Keyframing and interpolation allow you to create complex animations with a minimum amount of work.

Appendix D: Creating and Converting Hierarchy Files

The Hierarchy file describes how the groups in a figure are arranged. It outlines the parent-child relationships between groups. Once created it can be imported into Poser where it is converted to create a new figure file in the **New Figures** library.

The hierarchy file specifies four important things:

- The geometry (.OBJ) file to use.
- The hierarchical connections (parent-child relationships) of the body parts.
- The desired rotation order of each body part.
- A specification of each Inverse Kinematics chain to be included in the figure.

Hierarchy files can be created in any text editor that can save documents in a text-only format.

The following is an example hierarchy file: It represents the full hierarchy for a horse -- including curve channels for the tails.

objFile:Runtime:Geometries:horseHi:horseHiP3.obj

```
1 hip zxy
  2 abdomen zyx
     3 chest zyx
        4 lShldr yzx
           5 lUpArm yzx
              6 lForeArm yzx
                 7 lWrist yzx
                    8 lHand yxz
        4 rShldr yzx
           5 rUpArm yzx
              6 rForeArm yzx
                 7 rWrist yzx
                    8 rHand yxz
        4 lowNeck zyx
           5 upNeck zyx
              6 head yzx
  2  lThigh yzx
     3 lLeg yzx
        4 lShin yzx
           5 lAnkle yzx
              6 lFoot yxz
  2 rThigh yzx
     3 rLeg yzx
        4 rShin yzx
           5 rAnkle yzx
              6 rFoot yxz
  2 tail1 zyx curve
     3 tail2 zyx curve
        4 tail3 zyx curve
           5 tail4 zyx curve
  ikChain LeftLeg lThigh lLeg lShin lAnkle
ikChain  RightLeg rThigh rLeg rShin rAnkle
ikChain  LeftHand lShldr lUpArm lForeArm lWrist lHand
ikChain  RightHand rShldr rUpArm rForeArm rWrist rHand
  There are more samples in the Tutorials > Figure Creation
folder that is included with your Poser installation.
```

Hierarchy File Explained

The following section explains the various parts of the Hierarchy file.

Hierarchy File Header

The first line of the hierarchy file contains the "OBJ File" command which specifies the location of the OBJ file associated with the new figure.

```
objFile:Runtime:Geometries:horseHi:horseTex.obj
```

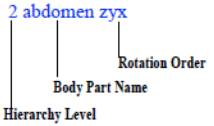
The file location should be defined using a Macintosh format file specification (i.e. using colons). The file location is specified relative to the Poser application folder.

When the hierarchy file is converted, the text of the OBJ file is read into Poser where a geometry resource is created and linked to the OBJ file. This process results in a new figure file.

From then on, when Poser uses this figure file, the geometry resource is used to defined the figure hierarchy relationships rather than the text stored in the OBJ file. Reading from the geometry resource is dramatically faster.

Hierarchy File Body

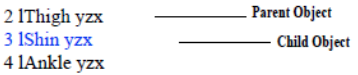
The bulk of the hierarchy file contains lines similar to the one shown below:



A typical Hierarchy file line.

The first part of the line indicates Hierarchy level, or the parent-child relationship, of the body part. In this case, the abdomen body part is a child of the body part of the part on the next level up. Hierarchy levels are numbered in depending order, so the next level up from this part is 1.

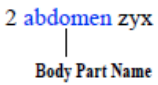
In the example below, the lShin object is located on the 3rd level of the hierarchy. The closest level 2 line above would be the lThigh, so the lShin is a child of the lThigh.



Parent-child relationships indicated in the Hierarchy file.

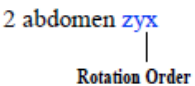
The indenting of the lines is not processed but is helpful visually to denote the hierarchy levels.

The second part of the line specifies the name of the body part. In the example the part is called abdomen. This name must match the group name in the OBJ file.



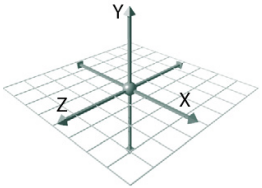
The body part name in a Hierarchy file line.

The 3-character string at the end of the line represents the rotation (or gimbal) order of the body part. A rotation order defined as "zxy" means that a Z axis rotation occurs first, followed by the X, then Y axis rotations.



The rotation order in a Hierarchy file line.

Poser uses the following XY and Z axis orientations:



The X, Y, and Z planes that make up 3D space.

Assigning a rotation order is a three step process:

- Always place the "twist" axis first. This axis should be placed lengthwise through the object. If the object, like a leg, is built down the Y-axis, specify the Y first since that is the axis along which the leg would twist.
- Of the two remaining rotations, place the one most likely to become 90 degrees last. This helps reduce rotation lock problems that occur when the middle rotation approaches 90 degrees.
- Place the remaining rotation channel second.
- Some objects are built non-aligned to the major axes. In this case, you are able to "align" the coordinate system of the body part later, while adjusting the joint parameters. For

the hierarchy file, pick the rotation order that seems closest to what would be desired. When you align the part later, the twist axis you choose becomes aligned down the length of the body part.

Linking Body Parts Stored in Separate OBJ Files

If each body part were stored in a separate file, rather than all body parts being groups in a single file, you would specify the full path name for the file at the end of each line. This path is relative to the Poser folder.

Here is an example of three links using this method:

```
1 link1 yzx:Runtime:Geometries:examples:l1.obj
  2 link2 yzx:Runtime:Geometries:examples:l2.obj
     3 link3 yzx:Runtime:Geometries:examples:l3.obj
Using Curved Transformations
```

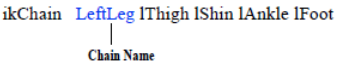
The Curved flag tells Poser that this link should use curve transformations. This is a method of bending designed for the tails of the animal figures in Poser. Here is an example used in the Horse figure:

```
   2 tail1 zyx curve
      3 tail2 zyx curve
         4 tail3 zyx curve
            5 tail4 zyx curve
Inverse Kinematic Chains
```

The last commands in the hierarchy file specify the links that compose the individual inverse kinematic chains. Inverse Kinematic chains are defined in the following format:

```
      ikChain chainName firstLink nextLink nextLink...
endGoal
```

In the example above the ikChain is defines as follows:



An ikChain line in a Hierarchy file.

The name of an ikChain cannot contain spaces.

Converting Hierarchy Files

Selecting **File > Convert Hier File** opens a standard **Open** dialog box prompting to you locate and open a Poser 3 Hierarchy file (*.phi). If this file contains no errors, this function creates a Poser Figure (*.CR2) file. Please refer to "About Poser Files" on page 847 for more information about Poser files and their functions.

Hierarchy files are used when creating custom figures using the text-based method (see "Global vs. Local Coordinates" on page 862). Since the introduction of the graphical **Setup** room,

this older method, while still supported, is far longer and more tedious as it forces you to do everything manually while in a text-based environment. Once the Hierarchy file is completed in the text editor, you can import it into Poser by converting it into a geometry resource (called a CR2 file). This geometry resource is then used by Poser, in conjunction with OBJ 3D data to create a new figure file with rotation order, and Inverse Kinematic relationships as defined by the hierarchy text file.



On Windows, the resource is a separate file ending is RSR. On a Macintosh, the resource is stored with the OBJ file. If you need to edit the resource on a Mac, use a resource editor to remove the text from the OBJ file, or create a new text file by copying and pasting from the old one.

If you make changes to the hierarchy file and then convert it again, the conversion won't re-create the geometry resource if it already exists in the OBJ file. So, if you are trying to make geometry changes, you need to either delete the resource, or start with a new blank text file that contains only the text portion of the OBJ file.

To convert a Hierarchy file:

1. Choose **File menu > Convert Hier File**. The **Open** dialog appears.
2. Locate the Hierarchy file you created in the text editor and click Open.
3. If there are no errors, a Poser Figure library file is created.
4. The hierarchy conversion may take several minutes if there is a large geometry file.
5. The figure file that gets created references the geometry file whenever used. Its location should be established and not moved later or the figure file cannot find the geometry.
6. If the location is changed you need to edit the figure file with a text editor to designate the new location (specified relative to the Poser application in Mac format).

Verifying Hierarchy Files

Once you begin adjusting the joints you are not able to regenerate the figure file a second time and have all your joint changes in place. Make sure that all Parent-Child relationships are correct before editing joint parameters. You can make geometry corrections later, but you cannot change the hierarchy without creating different joints from scratch again.

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