Reference
Manual

for Windows and Mac OS X®

POSER® | 8

Easily Create 3D Character Art and Animation

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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

Contents

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 is the complete 3D figure design and animation solution. Artists and animators can create 3D scenes from a diverse collection of ready-to-use 3D human and animal models quickly and easily using Poser's intuitive interface. You can also realistically customize your figures and scenes by mapping facial photos to create realistic 3D portraits, growing and styling real spline-based hair, and creating dynamic cloth objects. With Poser, you can create stills and animations and can quickly output movies and images for use in Web, print, and video projects. You can also export posed figures as 3D objects to add life to scenes created in other 3D applications. 3D novices, digital artists, and hobbyists alike can use Poser to quickly create breathtaking results!

Poser is offered as the world's most complete, easy to use 3D character solution for artists, illustrators, animators and hobbyists. Poser's collection of powerful features shortcut the traditional complexities of working with 3D figures by combining an intuitive interface with a large library of ready to use content. Poser takes the mystery and challenge out of using 3D characters, allowing new users to start making art immediately. For experienced 3D users, Poser provides a sophisticated, fully featured character animation system, letting them incorporate 3D figure content into riveting 3D images and animation for both personal and professional projects.

Dramatic new Poser 8 features include an overhauled user interface that maximizes screen real estate while providing better workflow, a new search-enabled library that helps users find, organize and use their content easier, a dependant parameter tool that lets users teach objects in the scene to interact with each other in exciting new ways, cross body morph brushes that permit a user to smoothly sculpt a figure across every body part, new photorealistic rendering features that more accurately reproduce light and shadows, improved character rigging which enables better character bending. Lastly, Poser 8 has been optimized for better performance on multiple processor systems.

What's New in Poser

Poser includes the following new features:

Workflow Improvements

- *New User Interface*: The new user interface features an improved workflow and palettes that you can dock and float in any way you choose to maximize your workspace, workflow, and efficiency. The cleaner layout lets you focus on your workspace, not the interface, while preserving the elements that long-time Poser users are accustomed to.

Morphing

- ***Morphing Tool Enhancements***: The Morphing Tool now allows you to morph across multiple body parts, making it easier than ever to create master parameter-controlled full body morphs. Dial in a morph brush and paint morphs across body parts, then save the complete set of individual body part morphs as a single Full Body Morph channel in the figure's "Body" parameter.

Dependent Parameters

- ***Dependent Parameters Editor***: Create more complex interactions between objects and joints. It is now much easier to create advanced body controls such as a muscle bulge morph that moves when a limb bends. Use this powerful new feature for full body morphs, partial body morphs, advanced body controls, joint controlled morph targets, joint controlled deformers, and parameter-controlled scene assets.

Rigging

- ***Improved Rigging System***: The new rigging system allows for better bending of characters, and features a new capsule-shaped falloff zone that allows finer control in specifying how joints respond to rotation.

- ***Multiple Falloff Zones***: Joints can now use multiple falloff zones for even finer control of joint rotations. Falloff zones can be blended by multiplying or adding the values. This new system permits figure creators to rig problem areas such as hips and shoulders with more precision, and results in better bending figures.

Lighting

- ***Indirect Lighting***: Indirect lighting effects provide indirect lighting that bounces light from other objects in your scene. Reflected light and color from adjacent surfaces produces vivid, more photorealistic lighting in rendered images.

- ***Light Falloff and Attenuation***: Physically correct light attenuation for more realistic point and spot lights. Create scenes with point and spot light brightness that decreases over distance like real-world lights.

FireFly

- ***Tone Mapping and Exposure***: Tone mapping and exposure control offers more control for brightness, saturation, and post-render processing for more accurately rendered images.

- ***Normal Maps***: Normal mapping support now provided at

render time, allowing you to add more surface detail without requiring extra geometry or modeling.

Performance Optimizations

Poser 8 features several performance optimizations, including:

- Improved multi-processor support improves posing and rendering. Cloth simulations are now completed faster, and saves you time.

- Figure/Actor pre-lighting and picking is improved.

- Increased performance for opening and handling of complex scenes.

- Bending on multi-core/multi-processor hardware.

- Improved multi-processor support for better scalability when rendering multiple buckets.

Document Preview

- ***Improved OpenGL Preview***: Real-time scene preview now displays up to 8 user-selectable lights and their accumulated values, sorted by intensity. Mip Map support has been enabled for enhanced performance when previewing large textures. Together, these real-time preview engine enhancements let you view larger textures and offer more complete scene previewing when setting up lights.

Library and Content

- ***New Searchable Library System***: The Poser 8 library has evolved into a content management system that makes it easier to find what you're looking for, even in massive collections of content. The new library features the ability to perform keyword searches through all or one of your runtimes, add items to your favorites list, and keep track of when content was installed or modified.

- ***New Figures:*** Eight new fully-rigged, fully poseable photo-real human characters are only a mouse-click away, so you can start posing and animating in minutes. Features four pairs of male/female characters with European, African, Asian, and Hispanic features. The figures are fully compliant with the Face Room, Walk Designer, and Talk Designer.

- ***New Content***: 1 GB of all new content, including poses, props, hair sets, lights, and cameras so you can dive right into 3D scene building. A new art school-inspired 3D mannikin opens in each new scene, serving as a remarkable reference figure for artists.

- ***Wardrobe Wizard***: Allows you to fit existing clothing items onto new figures.

PoserPython

- ***wxPython Support***: The wxPython support provides more robust Python feature development, allowing for development of scripts that can run continuously. This will allow for more robust third-party support and add-on feature development.

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**.

- ***Poser Tutorial Manual***: This manual provides step-by-step tutorials to assist you in mastering different aspects of Poser, including the Face Room, Cloth Room, Hair Room, and more. This manual is available in PDF format by selecting **Help > Poser Tutorial Manual** and on your Poser DVD in the **Documentation** folder.

- ***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 or Vista

- 700 MHz Pentium class or compatible (1GHz or faster

recommended)

- 512 MB system RAM (1 GB or more recommended)

- OpenGL enabled graphics card or chipset recommended (recent NVIDIA GeForce and ATI Radeon preferred)

- 24-bit color display, 1024 x 768 resolution

- 2 GB free hard disk space (4 GB recommended)

- Internet connection required for Content Paradise..

- Windows® Internet Explorer 7 or later

- Adobe® Flash® Player 9 or later

- DVD-ROM drive (physical product only)

Macintosh

- Mac OS X 10.4 or 10.5

- 700 MHz G4 processor (Intel Core Duo or 1GHz G4 or faster recommended)

- 512 MB system RAM (1 GB or more recommended)

- OpenGL enabled graphics card or chipset recommended (recent NVIDIA GeForce and ATI Radeon preferred)

- 24-bit color display, 1024 x 768 resolution

- 2 GB free hard disk space (4 GB recommended)

- Internet connection required for Content Paradise.

- Adobe® Flash® Player 9 or later

- DVD-ROM drive (physical product only)

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 120 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!

- ***StuffIt***: Expand over 25 compressed file formats in Mac and Windows. Create ZIP, StuffIt, and TAR archives. Compress photos up to 30% without any quality loss. Archive photos and files directly to FTP for backup.

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.

- ***Tutorials***: Selecting **Help > Poser Tutorial Manual** opens the ***Poser Tutorial 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.

- *To Learn More*: If you'd like to learn more about Smith Micro Software, visit us at http://www.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 523 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:

- *3D Commune*: http://www.3dcommune.com

- *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

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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 1: Welcome to Poser!

Chapter 2: Installing Poser

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BY CLICKING ON THE "I ACCEPT" BUTTON WHEN INSTALLING THE PROGRAM, YOU ACKNOWLEDGE THAT (1) YOU HAVE READ AND REVIEWED THIS AGREEMENT IN ITS ENTIRETY, (2) YOU AGREE TO BE BOUND BY THIS AGREEMENT, (3) THE INDIVIDUAL SO CLICKING HAS THE POWER, AUTHORITY AND LEGAL RIGHT TO ENTER INTO THIS AGREEMENT ON BEHALF OF YOU AND, (4) BY SO CLICKING, THIS AGREEMENT CONSTITUTES BINDING AND ENFORCEABLE OBLIGATIONS OF YOU.

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For technical support, please refer to Appendix A: Technical Support on page 523 of your Poser Reference Manual.

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:

Windows

Instructions for Windows Vista are given below.

1. Open your Poser DVD holder and insert the **Application** DVD into your DVD drive. The Poser installer will start automatically. If it does not, select **Computer**, right-click your DVD drive and select **Explore**, then double-click the **Setup.exe** icon in the window that appears. If you are asked to confirm whether or not to run the file, click **Run**.

2. The **Welcome** screen appears with additional information about the installation process. Be sure to read this information, then click **Next** to continue.

3. The Poser EULA appears. This is identical to the text contained above. Check the **I accept the agreement** option, then click **Next** to continue.

4. The Poser **Readme.txt** file displays in the **Information** window. 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. Click **Next** to continue.

5. The **Select Destination Location** screen appears. Select the path where you wish to install Poser. You can either accept the default selection, type a new path in the **Destination Directory** field, or use the **Browse** button to visually locate your desired installation folder. Click **Next** to continue.

6. Select your desired installation option and click **Next** to continue:

    ▪   Most users should choose the **Full Installation** option, which installs core content files, current Poser 8 content, and Legacy content.

    ▪   Selecting **Compact Installation** only installs critical Poser files and core content, and is useful if hard drive space is limited.

    ▪   Selecting **Custom Installation** allows you to select portions of the included Poser content to install along with the critical Poser files.

7. The **Select Content Location** screen appears. Select one of the following options and click **Next** to continue:

    ▪   **Shared Documents Directory**: Recommended for multi-user machines, or machines with Windows Vista installed and UAC enabled. This is the default choice.

- **Poser Directory**: Installs Poser content in a Runtime folder directly beneath your installation folder. This is the method used by older versions of Poser.

- **My Documents Directory**: Recommended for multi-user machines where content will not be accessed by multiple users.

- **Other Location**: Recommended when you want to install your content on a hard disk other than your primary disk (such as a secondary or external hard drive). If you checked this option and click **Next**, you will be asked to specify the custom content location. Enter a path to the desired folder, or click the **Browse** button to locate the folder you want to use.

8. The **Select Start Menu Folder** screen appears. You are asked to specify a Start Menu folder. The default choice is **Smith Micro\Poser 8**. To specify a different folder, enter a new name or click **Browse** to select an existing folder on your hard drive. Then click **Next** to continue.

9. If Setup detects a previous installation of Poser 8 installed in the same directory, you are asked if you want to remove, backup, or use existing preference files. Select the choice that you prefer. Then check or uncheck the option to create a Poser 8 desktop icon, and click **Next** to continue.

10. A summary of your selected installation options appears.

Review this information to ensure it matches your desired settings, then click **Install** to continue or **Back** to return.

11. At this point, the Poser files will be copied to your hard drive. After the files are installed, a screen presents the options to view the Readme file, visit Content Paradise, and open the Display Properties to check your OpenGL settings and update your video driver. Select the options you want to perform and click **Finish**.

Portions of Poser 8 require that Flash Player is installed on your system. Verify that Flash Player is present before using Poser 8.

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.

Macintosh

1. Open your Poser DVD holder and insert the **Application** DVD into your DVD-ROM drive. A DVD icon will appear on your desktop; double-click on this icon to open the Poser DVD window.

2. Double-click on the "Install Poser" icon.

3. 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.

4. The Poser 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.

5. The Poser EULA appears. This is identical to the text contained above. Click **Continue**. You are informed that you must agree to the terms of the license. Click **Agree** to continue.

6. The **Select Destination** screen appears. Select your desired installation folder (default is **Applications**). You can either accept the default selection or use the **Select Folder...** button to visually locate your desired installation folder. Once you have made your selection, click the **Continue** button.

7. Select your desired installation option. Most users should choose the **Easy Install** option. Selecting **Minimum Install** only installs critical Poser files and minimal new content, and is useful if hard drive space is limited. Selecting **Custom Install** allows you to select portions of the included Poser content to install along with the critical Poser files. If you need information about any of the Custom Install options, simply click on the [?] information button to the right of the option name. When you have selected an installation option, click the **Install** button to continue with the installation.

8. The setup program asks where you want to locate your Poser content Runtime directory.

   ▪ **Shared User Folder (/Users/Shared/)**: Optimal Runtime location for multi-user machines, or machines in access-restricted environments without sys admin privileges.

- **Documents folder (~/Documents)**: Recommended for multi-user machines where content will not be accessed by other users.

- **Poser folder**: Traditional installation method with Runtime in the application directory, which provides maximum backward compatibility.

- **Choose Other Location**: Recommended when you want to install your content on a hard disk other than your primary disk (such as a secondary or external hard drive) or when disk space is low on the boot volume. If you checked this option and click **Next**, you will be asked to specify the custom content location. Enter a path to the desired folder, or click the **Browse** button to locate the folder you want to use.

9. At this point, the Poser files will be copied to your hard drive. When the files have been copied, click **Quit** to exit the **Finish Up** screen.

Portions of Poser 8 require that Flash Player is installed on your system. Verify that Flash Player is present before using Poser 8.

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.

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

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 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:// my.smithmicro.com/register. 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 dropdown 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://my.smithmicro.com/ downloads 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://my.smithmicro.com/downloads 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 26 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.
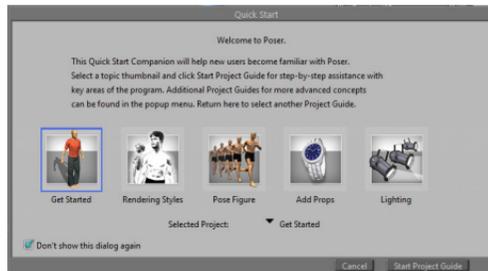
Figure 2.1

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.
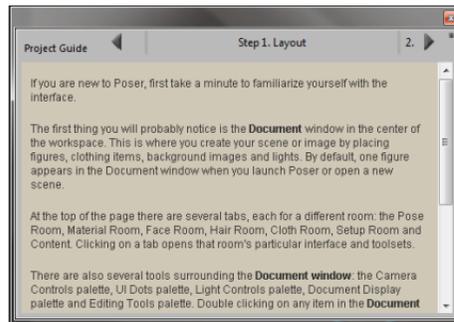
Figure 2.2

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 528.

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:
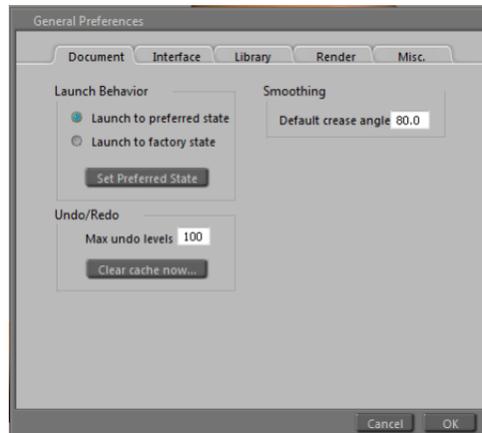
Figure 3.1

- *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 61 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

- *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 299 for more information on the Crease Angle setting.

- *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.

Interface Preferences

The **Interface Preferences** tab contains application-level settings for Poser's general user interface. The Interface Preference options are as follows:
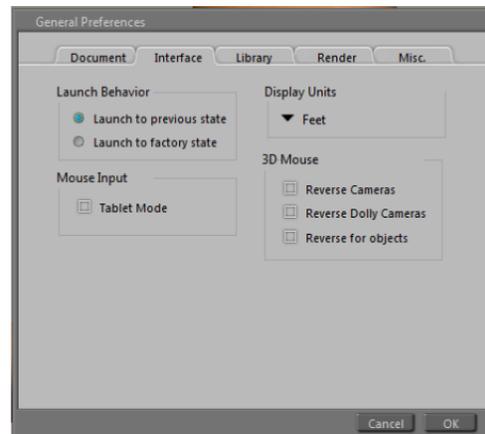
Figure 3.2

- *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.

- *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.

- *Mouse Input*: The **Tablet Mode** option decreases the sampling rate for greater accuracy when using a graphics tablet as the input device.

- *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.

Library Preferences

The **Library Preferences** tab contains setting that are specific to the **Poser Library**. The **Library Preference** options are as follows:
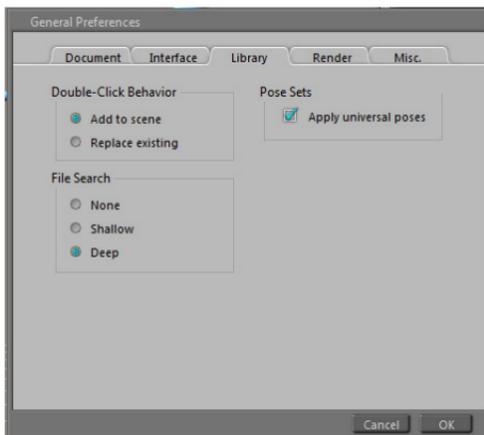
Figure 3.3

- *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 testing the accuracy of newly developed content.

  - *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.

  - *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.

- *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.

Render Preferences

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

follows:
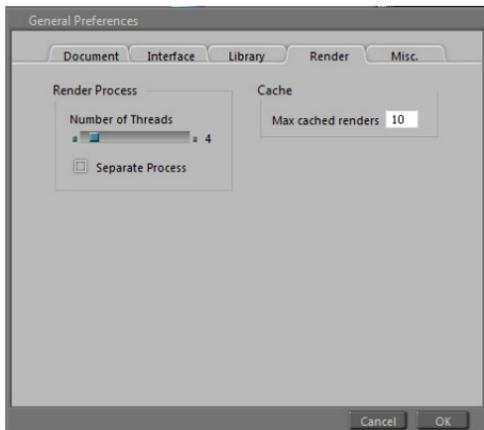
Figure 3.4

• ***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. Even if your system is a dual-processor or dual-core system, you may see increased benefit from setting the number of threads to four, rather than just two. 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 18: Using The FireFly Render Engine on page 285.

• ***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 18: Using The FireFly Render Engine on page 285.

> We recommend rendering your scene with as many threads as your system possesses CPU cores, which 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..

• ***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. Please see Render Comparison on page 76 for more information about the Render Compare feature.

Miscellaneous Preferences
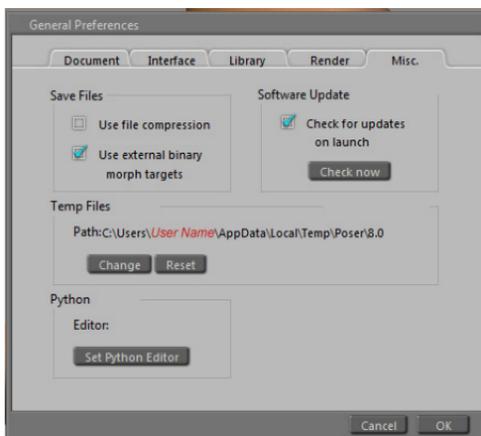
Figure 3.5

- *Save Files*: Poser offers the following options for file saving:

  - *Use File Compression*: Poser supports the use of compressed files, which can save significant amounts of space. To use compressed files, check the **Use file compression** checkbox. Clearing the checkbox disables compressed file support.

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

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 previous versions of Poser, please be sure to save them uncompressed. Poser supports file compression beginning with the Pro Pack add-on for Poser 4.

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 such as Stuffit 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 23 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.

> NOTE: 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.
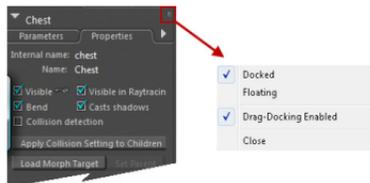
Figure 3.6

Moving, Repositioning, and Resizing Palettes

Various controls allow you to resize docked or floating palettes, or reposition them as necessary. For example:
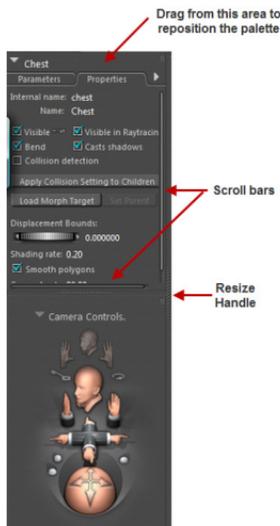
Figure 3.7

• 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 checkmark.

UI Memory Dots

You can save up to nine interface configurations using the **Memory** dots (described in Memory Dots on page 43). 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 26. 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 61 for more information on customizing the **Document** window and using the controls found there.

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 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:

Figure 4.1

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 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:

Figure 4.2

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:

Figure 4.3

Please refer to 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**:
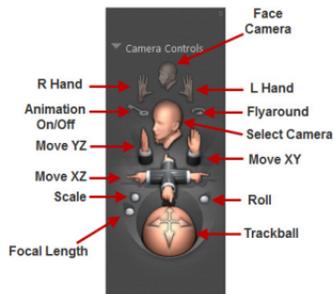
Figure 4.4

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.

A subset of these **Camera** controls appears in the upper-right corner of the **Document** window. Please refer to Chapter 11: Cameras on page 170 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.

Figure 4.5

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:

Figure 4.6

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 129 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 61 for more information about the **Document** window.

Figure 4.7

Please refer to Chapter 6: The Display Controls and Menu on page 77 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:

Figure 4.9

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:

Figure 4.8

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 138) 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 135, 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. See

- 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 89 for more information about the **Library** palette.

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 120 for more information about the **Content** room.

Figure 4.10

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 117.

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 118

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.

Figure 4.11

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.

Figure 4.12

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 150.

• *Camera Dots*: **Camera** dots are described in further detail in Camera Dots on page 185

• *UI Dots*: **UI** dots are described in further detail in Setting Up Your Workspace on page 32.

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 to the right:
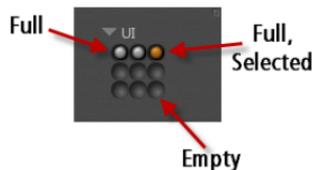
Figure 4.13

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:

Figure 4.14

Please refer to Using the Animation Controls on page 314 to learn more about the **Animation** controls, and to Chapter 21: Animating with Poser on page 311 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.

Figure 4.15

- • *Animation Palette*: Selecting **Window > Animation Palette** opens the **Animation** palette. Please refer to Using the Animation Palette on page 317 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 322 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 89 for more information about the **Library** palette.

- *Hierarchy Editor*: Selecting **Window > Hierarchy Editor** opens the **Hierarchy Editor** palette. Please refer to The Hierarchy Editor on page 493 for more information about the **Hierarchy Editor** palette.

- *Joint Editor*: Selecting **Window > Joint Editor** opens the **Joint Editor** palette. Please refer to The Joint Editor on page 500 for more information about the **Joint Editor** palette.

- *Sketch Designer*: Selecting **Window > Sketch Designer** opens the **Sketch Designer** window. Please refer to Chapter 19: The Sketch Designer on page 304 for 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 336 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 344.

- *Python Scripts*: Selecting **Window > Python Scripts** opens the **Python Scripts** palette. Please refer to The Python Scripts Palette on page 520 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 24.

- *Project Guide*: Choose **Window > Project Guide** to open the **Project Guide**, described in Project Guide on page 24.

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

✓	Camera Controls	Shift+Ctrl+R
✓	Preview Styles	Shift+Ctrl+U
✓	Editing Tools	Shift+Ctrl+T
✓	Light Controls	Shift+Ctrl+I
✓	Memory Dots	Shift+Ctrl+M
✓	Parameter Dials	Shift+Ctrl+N
✓	Animation Controls	Shift+Ctrl+P
	Room Tools	▸
✓	Tool Titles	Ctrl+-
	Document Window Size...	
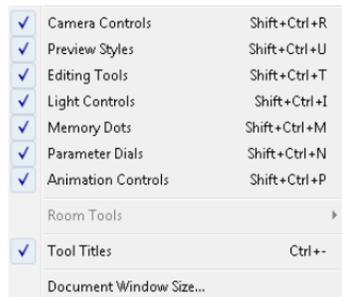
Figure 4.16

- *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 170 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 77 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 129 for more information about the **Editing** tools.

- *Light Controls*: Selecting **Window > Light Controls** toggles the **Light** controls display on and off. A checkmark next to this option indicates that the controls are currently displayed, and vice versa. Please refer to Chapter 12: Lighting on page 186 for more information about the **Light** controls.

- *Memory Dots*: Selecting **Window > Memory Dots** toggles the **Memory** dots display on and off. A checkmark next to this option indicates that the controls are currently displayed, and vice versa. Please refer to Memory Dots on

page 43 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 checkmark next to this option indicates that the **Parameters/Properties** palette is currently displayed, and vice versa. Please refer to Parameters Palette on page 138 for more information about the **Parameters** palette., and to Properties on page 135 for more information about the Properties palette.

- *Animation Controls*: Selecting **Window > Animation Controls** toggles the **Animation** controls display on and off. A checkmark next to this option indicates that the controls are currently displayed, and vice versa. Please refer to Using the Animation Controls on page 314 for more information about the **Animation** controls.

- *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 13: The Material Room on page 204 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 23: The Face Room on page 358.

- **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 24: The Hair Room on page 372.

- **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 25: The Cloth Room on page 386.

- **Tool Titles**: Selecting **Window > Tool Titles** toggles display of the titles appearing above the enabled tools on and off. A checkmark next to this option indicates that the titles are currently displayed, and vice versa.

- **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 61 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.

- **Quick Start**: Selecting **Window > Quick Start** opens the **Quick Start** dialog, from which you can select an interactive Project.

- **Project Guide**: Selecting **Window > Project Guide** opens the **Project Guide** palette with the most recently selected interactive Project displayed.

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 Setting Application Preferences on page 26

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.

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 Setup Room on page 428.

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.

Figure 4.17: Proper Fit Figure 2: Improper Fit

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 186 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 186 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 31 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 5/6 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 299 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:
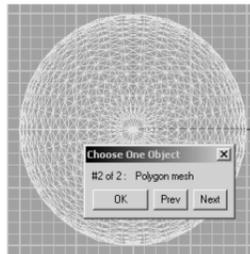
Figure 4.18

- 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):
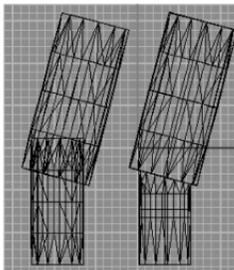
Figure 4.19

- 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.
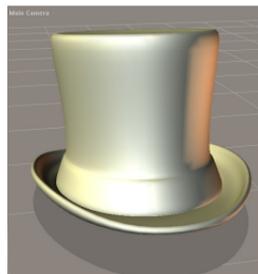
Figure 4.20

Imported geometries are treated as static props. You can add props to the **Library** palette as described in Maintaining Your Library Palette on page 113 and/or can convert props into poseable Poser figures using either the graphical **Setup** room (see Chapter 27: The Setup Room on page 428 for instructions on using the **Setup** room) or the legacy text-based method (refer to the electronic Poser 3 Advanced Tips & Tricks manual, available in the **Documentation** folder on your Poser CD in the **Documentation** folder).

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 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.

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 19: The Sketch Designer on page 304). 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 Chapter 22: Rendering Animations on page 351 for more information about the **Make Movie** dialog, and to Flash Options on page 355 for information about setting Flash export options.

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.

Convert Hier File

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 525 for more information about Poser files and their functions.

Hierarchy files are used when creating custom figures using the text-based method (see Chapter 27: The Setup Room on page 428). 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. If you do wish to create custom Poser figures using this older method, please refer to the Poser 3 Advanced Tips & Tricks Manual. This document is in PDF format and is saved in the **Documentation** folder on your Poser CD.

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 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 the selected element to the Clipboard. You can copy and paste elements and poses. For example, here's a figure whose Abdomen pose has been copied to its arm:
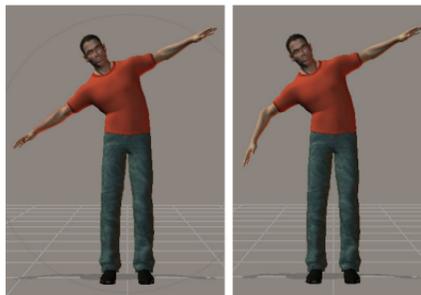
Figure 4.21 Before (left); After (right)

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. This 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:

Your options are:

- *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 4: The Pose Room

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 281 for detailed configuration parameters for the Preview tab's preview display window. The **Preview** tab contains the following controls:
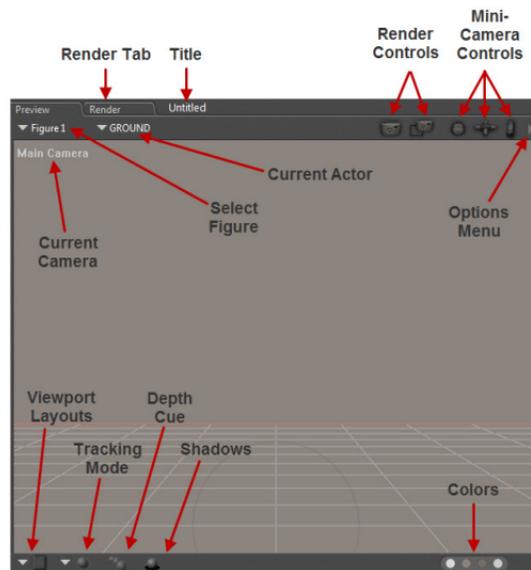
Figure 5.1

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:
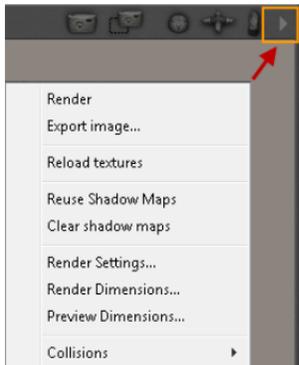
Figure 5.2

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 276. The render results will appear in the **Render** tab of the **Document** window.

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**..

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 17: The Render Settings Dialog on page 280 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 74 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 81). 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. 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 81). Clearing a checkbox disables the specified option. Note that these options are disabled (as shown below) when the **Document** window is docked.
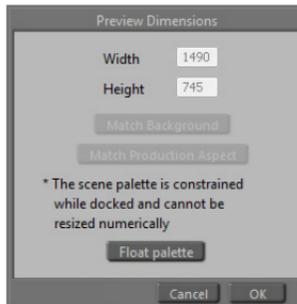
Figure 5.3

The **Document** window size is saved in the same manner as described in Single/Multiple-View Panes on page 69.

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. 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.
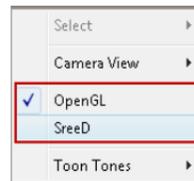
Figure 5.4

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.
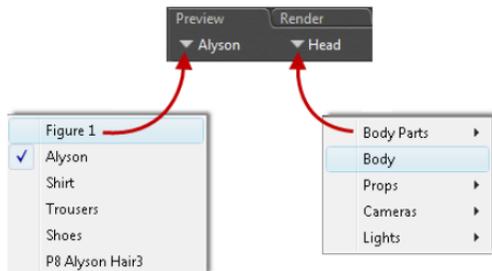
Figure 5.5

- *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 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.

- *Body*: Selecting **Current Actor>Body** selects the entire body and all body parts of 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 170 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 186 for information about Poser lights.

Preview Tab Context Menu

Right-clicking (Windows) or Apple key-clicking (Mac) within a scene preview tab will open up the **Context** pop-up menu. This menu includes the following options:
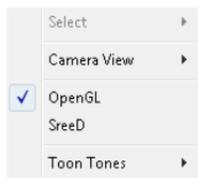
Figure 5.6

- *Select*: Choosing the **Select** option opens a pop-up menu that lists all the actors that are directly underneath the current position of the mouse pointer, following along the z-axis relative to the screen. You can use this menu to select a specific actor (i.e., one of the finger segments) without having to interrupt your workflow to either change your camera view in the **Document** window, or select the actor from the **Current Actor** menu or **Parameters/Properties** palette.

- *Camera View*: The **Camera View** option provides a list of available cameras for your scene. Click on a particular camera in the list to make that camera view for the current pane.

- *OpenGL/SreeD*: Please see OpenGL Hardware Acceleration on page 65 for an explanation of the OpenGL hardware rendering versus SreeD software rendering options.

- *Toon Tones*: The **Toon Tones** menu offers the choice of five different cartoon shading styles, for use within the

scene preview area. 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.

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.
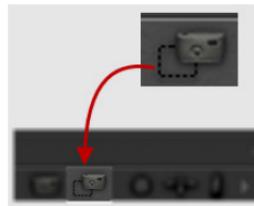
Figure 5.7

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 276. The render results will appear in the **Render** tab of the **Document** window.
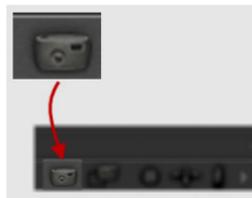
Figure 5.8

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:

• *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 170 for detailed

information about the **Camera** controls.

Figure 5.9

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:
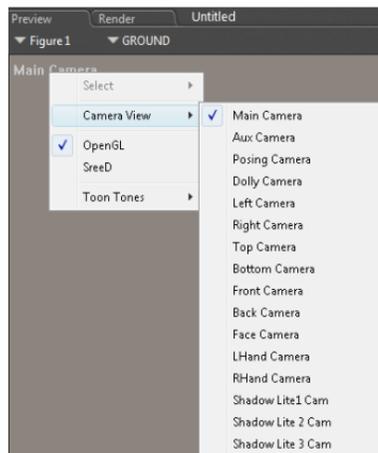
Figure 5.10

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.
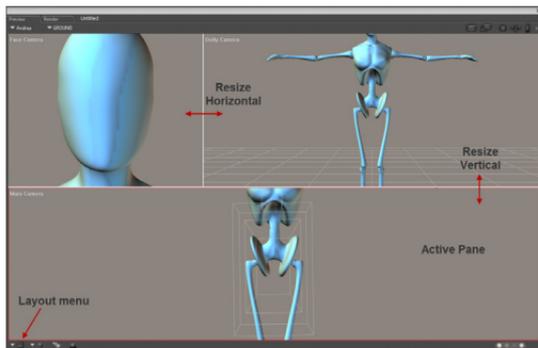
Figure 5.11

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

You can also save up to nine pane/camera layouts using the **UI Memory** dots (see).

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.

Depth Cueing and Shadows

The two buttons to the right of the **Tracking Mode** menu along the bottom left of the **Preview** tab control depth cueing and shadows, respectively:

- **Depth Cueing**: 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.

Figure 5.12

- **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. Clicking the **Shadows** button toggles drop shadows on and off for your scene. These shadows are not shadows in the traditional sense, meaning that they do not depend on the scene lighting. They are generic shadows intended solely to aid you in creating your scene.

Depth cueing and shadows do not affect your rendered output.

Figure 5.13

located along the lower-right corner of the **Preview** tab allow you to control the following colors, respectively:

Figure 5.14

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
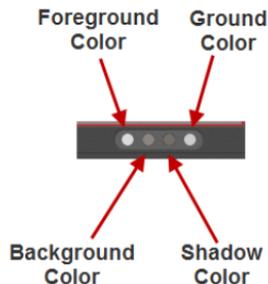
• **Foreground**: Clicking the **Foreground** button opens the Poser Color Picker and displays an eyedropper icon. Pressing **[OPT]/[ALT]** while clicking this button opens your operating system's standard Color Picker. Position this dropper over the color you wish to select and click it. If you use 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 77).

Figure 5.15

- *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 15: Material Room Nodes on page 232.

- *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:
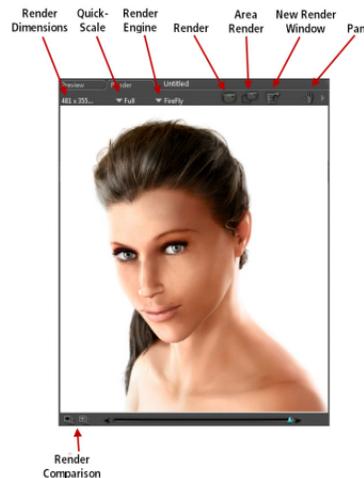
Figure 5.16

Render Dimensions

The main render window size is displayed in the upper left corner of the **Render** tab. Clicking this display brings up the R**ender Dimensions** dialog, which contains the following settings:
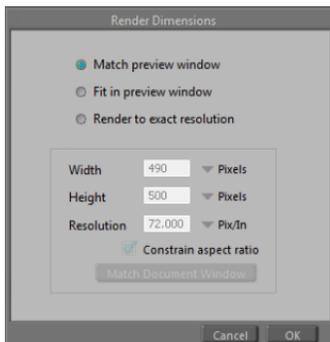
Figure 5.17

- *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.
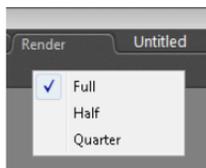
Figure 5.18

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 17: The Render Settings Dialog on page 280 for a description of this window).
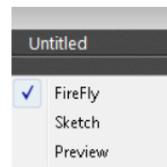
Figure 5.19

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 67 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

Clicking the 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.

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 26 for more information about the **General Preferences** dialog.)

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. By default, the **Display** controls appears with **Document** selected, as follows:

- When the Figure Display Style controls are displayed, there is an additional option **Use Document Style**. This sets the currently selected figure to the same display style that you have selected for the entire document.

- When the Element Display Style controls are displayed, there is an additional option **Use Figure Style**. This sets the currently selected element to the same display style as the figure to which it is a part.

Figure 6.1

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:
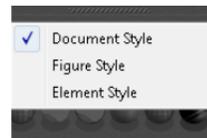
Figure 6.2

- *Document Style*: Selecting the **Document Style** option accesses the **Document Display** controls. Changing this selection affects how all scene elements (figures and props) are displayed.

- *Figure Style*: 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.

- *Element Style*: Selecting the **Element Style** option accesses the **Element Display** control, which causes only the currently selected element (body part or prop part) to

display in the selected style without affecting the other scene elements.

To select a different display style, click the desired button. From left to right, these buttons are:

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

Figure 6.3

- **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.

Figure 6.4

- **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.

Figure 6.5

- **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.

Figure 6.6

- **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.

Figure 6.7

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

Figure 6.8

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

Figure 6.9

- **Cartoon**: displays the figure/element using a simulated hand-drawn style, as shown to the right. See Cartoon Tones on page 88 for more information about this shading style. Poser offers improved Cartoon display effects in conjunction with the OpenGL hardware acceleration option (see OpenGL

Figure 6.10

- **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 88 for more information.

Figure 6.11

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

Figure 6.12

- **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.

Figure 6.13

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

Figure 6.14

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 284.

The Display Menu Commands

As the name implies, the **Display** menu controls how items appear in your Poser workspace, specifically within 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. You can also select between **Image Output Size** and **Movie Output Size**, for your production frame display. The size of the production frame is determined by the aspect ratio resulting from the output width and height. See Render Dimensions on page 74and Chapter 22: Rendering Animations on page 351 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.

Figure 6.15

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 and Shadows on page 71 for
more information about depth cueing.

Tracking

Selecting **Display > Tracking** allows you to set your desired
tracking mode. Please refer to Tracking Mode on page 70 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.

Ground Shadows

Selecting **Display > Ground Shadows** displays or hides ground shadows, as shown

Please refer to Depth Cueing and Shadows on page 71 for more information about ground shadows.
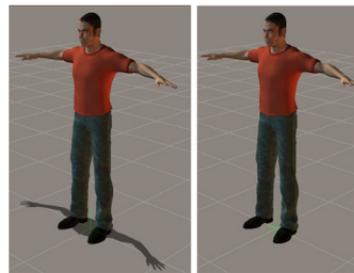
Figure 6.16

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 127 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.

Figure 6.17

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 72 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 51) 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 50 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:

Figure 6.18

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.

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:

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.

Figure 6.19

Chapter 6: The Display Controls and Menu

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.
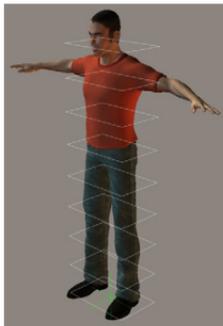
Figure 6.20

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.
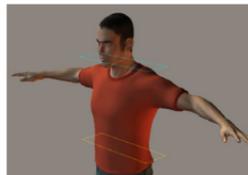
Figure 6.21

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.
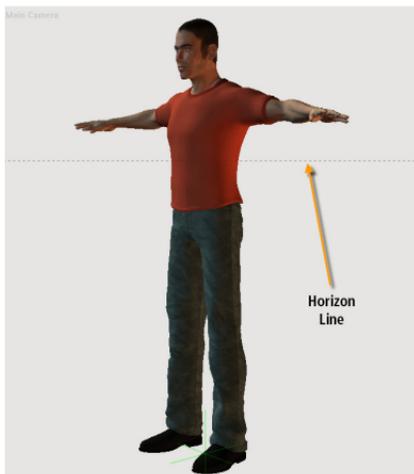
Figure 6.22

Figure 6.23

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.
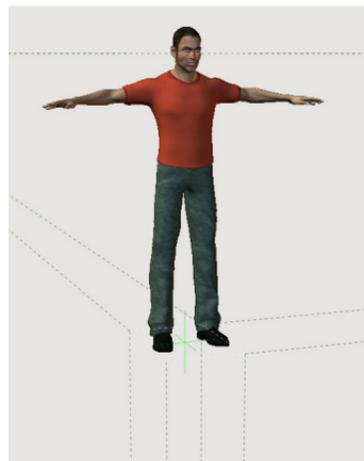
Focus Distance Guide

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

Chapter 6: The Display Controls and Menu

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 65 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.

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 nine 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 113] 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 120.

Figure 7.1 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.
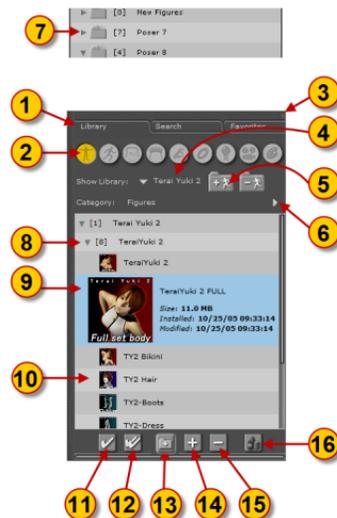
Figure 7.1

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 nine

library categories. From left to right, they are *Figures*, *Poses*, *Faces*, *Hair*, *Hands*, *Props*, *Lights*, *Cameras*, and *Materials*.

3. *Library Menu*: Click the Docking Control icon in the upper-right corner to select commands that dock, undock, close, or enable/disable dragging.

4. *Library Selection*: Click to display all runtime folders, or a selected runtime folder in the library contents window.

5. *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.

> 👆 A **Remove Library (-)** icon appears to the right of the **Add Library** icon when you select a Library that you added yourself through the **Add Library** command. See Removing Libraries on page 93 for details.

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

7. *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.

8. *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.

9. *Selected item*: The currently selected item is highlighted, and displayed with a larger icon. File details appear at the left of the icon that indicate file size, date installed, and date modified.

10. *Content preview*: If a content item is not selected, a smaller preview icon appears beside the name of the file. Click once to select the item to view its details.

11. *Single checkmark* (sometimes referred to as the *Apply to Scene* button): Click the single checkmark icon to replace the item that is currently selected in your scene with the item that is highlighted in the library.

12. *Double Checkmark* (sometimes referred to as the *Add to Scene* button): Click the double-checkmark icon to add the currently selected item to your scene.

> 👆 For a detailed explanation of the Single and Double checkmark buttons in the various Library categories, see Loading and Managing Items using the Library Icons on page 94

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.

Displaying the Library Palette

If the Library Palette is not open, select **Window > Libraries**. You can then dock or float the library palette, and position it wherever you like (including on a second monitor) . For further instructions on arranging palettes, refer to Docking and Floating Palettes on page 32.

You can drag either side of the Library palette across your screen to the desired width. While the palette is in its floating state, you can resize it like any other window.

Accessing Different Content Libraries

Poser contains two Libraries: **Runtime** (contains the content that shipped with your copy of Poser) and **Download** (a default folder for added third-party content). Additional library content will be found if you elect to install the Legacy content during installation.

> 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 switch Libraries, 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.

Figure 7.2

Adding Libraries

As mentioned earlier, Poser creates **Runtime** and **Download** libraries during installation, dependent upon which content you elect to install during installation (Poser Content and/or Legacy content). 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.

To add a Library:

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.

Figure 7.3

3. Select a folder on any of your local or mapped network drives within which to build a new Library. Clicking **OK** creates the new Library and adds subfolders for each **Library** palette category (Figures, Props, etc.) under your selected folder. You may then populate this new Library at will.
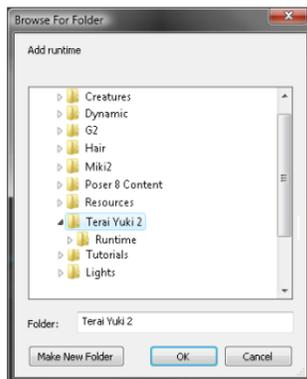
Figure 7.4

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.

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 the Library that you want to delete.

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.

Figure 7.5

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:
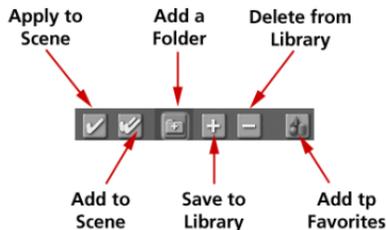
Figure 7.6

- *Single checkmark*: Clicking the **Apply to Scene** (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.

- *Double checkmark*: The **Add to Scene** (double check) 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.

- • *Add a Folder*: Click the **Add a Folder** (+) button to create a folder beneath the currently selected Library folder.

- • *Save to Library*: Clicking the **Save 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.

Figure 7.7

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 65), then press [DEL].

About Library Palette Categories

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

- 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.
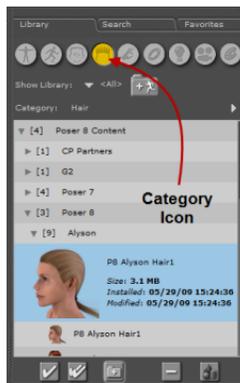
Figure 7.8

- 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 8 Content > Poser 8 > Alyson** to list all of the available hair objects in that folder.
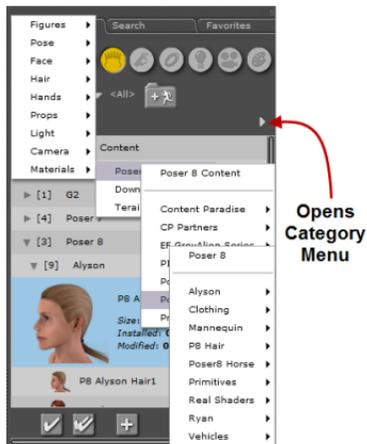
Figure 7.9

The **Library** palette categories are described in further detail below in About Library Palette Categories on page 96. Please refer to

Loading and Managing Items using the Library Icons on page 94 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**, and **Materials**. Please refer to Poser File Types on page 526 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 25: The Cloth Room on page 386.
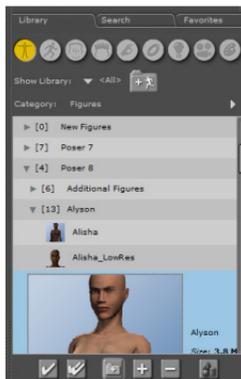
Figure 7.10

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:

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

4. If you are replacing a figure, the **Keep Modified Geometries** 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.

   - *Keep props attached to figure*: Check this option if you have attached props to the figure and want to attach them to the figure that is replacing it.

   - *Keep deformers attached to figure*: 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.
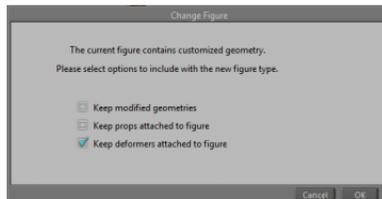
Figure 7.11

5. After you make your selections, click **OK** to continue. The **Change Figure** dialog appears:

6. 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.

7. Click **OK** to proceed to the next step or **Cancel** to abort.

Adding Conforming Clothing

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.

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, Poser 8, and G2 Figure clothing prepared by Smith Micro), conforming clothing will use a PP2 or PPZ extension.

To add conforming clothing to your scene:

Figure 7.12

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 65) . 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.
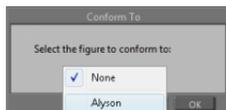
Figure 7.13

Sometimes 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 136). 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 458).

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 25: The Cloth Room on page 386.

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.

Figure 7.14

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 checkmark) button to apply the pose to the selected figure when the pose was created specifically for that figure.

    ▪   Click the **Apply Universal Pose** (double checkmark)

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.

Figure 7.15

👆 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 that have the G2 rigging (as found in Poser 7 or Poser Pro) and Poser 8 figures.

👆 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

Advanced Poser users have created Material Poses (or MAT files for short) which are an alternative to the materials and material collections that you can find in the Poser Material library (see The Materials Category on page 110). Third-party Poser users invented MAT files, which are an advanced feature that has not been created or tested by Smith Micro Software.

MAT poses are used to apply different material sets to Poser content and are typically used with content or texture sets that are made by third-party content creators. 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 8.

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.
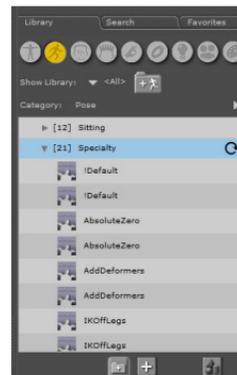
Figure 7.16

• 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 331.
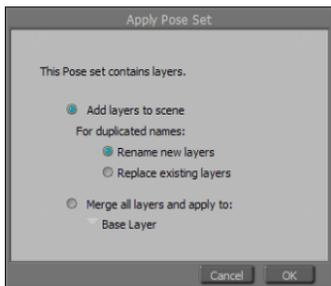
Figure 7.17

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 28: Modifying Figures & Props on page 443 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.

Figure 7.18

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 on page 99.

•   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 on page 99.

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 checkmark or double checkmark (which adds another conforming hair figure).
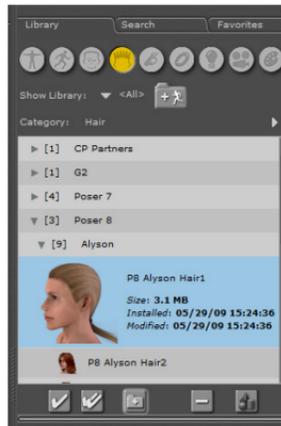
Figure 7.19

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.

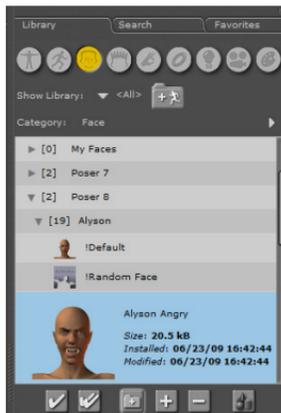*Figure 7.20*

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.
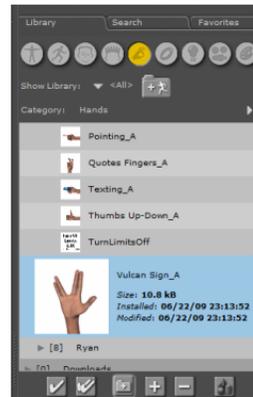
Figure 7.21

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 25: The Cloth Room on page 386

Figure 7.22

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 checkmark) 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.

Figure 7.23

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 167 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 186 for a description of Poser lights.
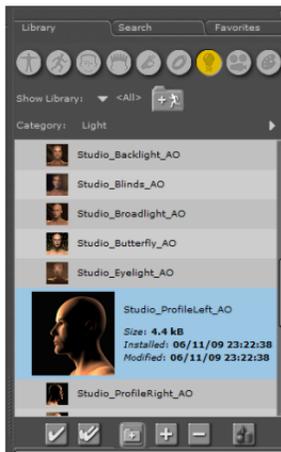
Figure 7.24
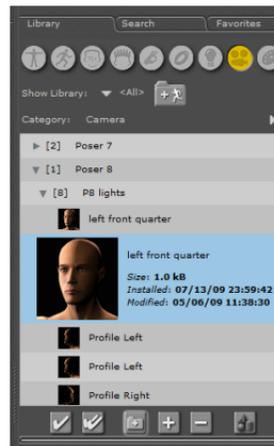
Figure 7.25

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 170 for information about Poser cameras.

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.
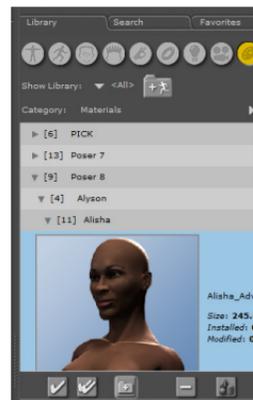
Figure 7.26

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 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.

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 Add 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.
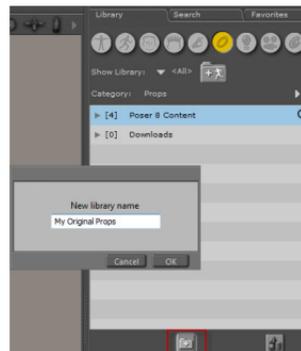
Figure 7.27

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**. 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.
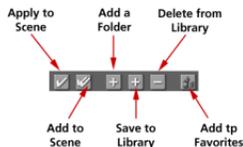
Figure 7.28

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.
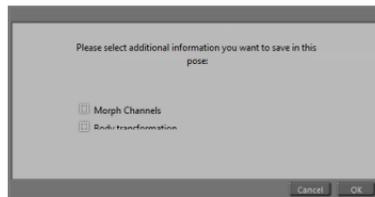
Figure 7.29

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.
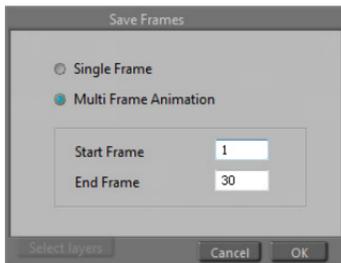
Figure 7.30

7. 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:
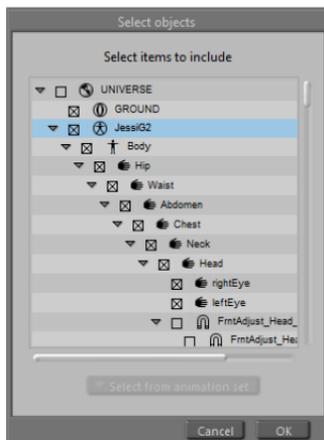
Figure 7.31

The list of actors appears hierarchically, just as it does in the **Hierarchy Editor** window (see The Hierarchy Editor on page 493). 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 525 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 120 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).
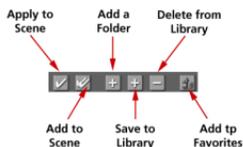
Figure 7.32

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.

Searching the Library

The new Search tab in the library allows you to perform a keyword search in all of your content libraries, or in selected categories.
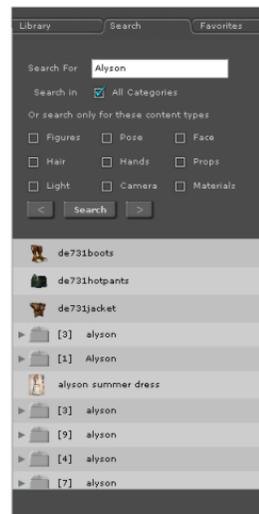
Figure 7.33

To perform a search, follow these steps:

1. Switch to the Search tab in the Library.

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

3. 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.
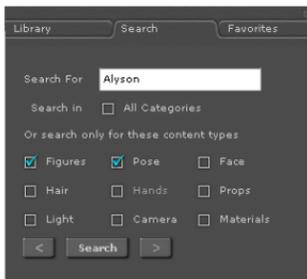
Figure 7.34

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

5. 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.

Figure 7.35

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 \ 8.0** 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.

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 to Favorites
Figure 7.36

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.

Figure 8.1

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 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 homepage.

- 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 129) 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 170) 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 61). 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 113, or you can apply still or animated poses from the library to your currently selected figure as described in The Poses Category on page 101.

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.

Figure 9.1

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.
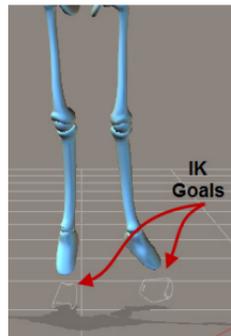
Figure 9.2

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 .

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.
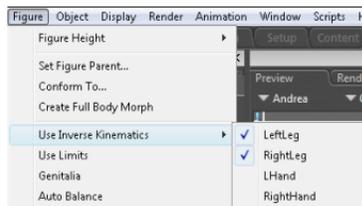
Figure 9.3

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 132) on the same limb.

Limiting Motion

Selecting **Figure > Use Limits** toggles parameter limits on and off. Please refer to Editing Parameter Dials on page 141 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.
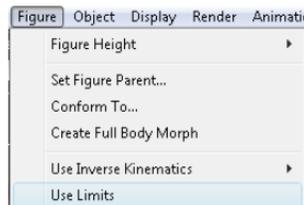
Figure 9.4

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 141.

Select **Figure > Use Limits** to toggle limits on and off. A checkmark 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 147)

- Faces (see Posing Faces on page 145)

- Eyes (see Posing Eyes on page 147)

- Animals (see Posing Animals on page 149)

Posing a Figure

The easiest way to pose a figure is to use the **Editing** tools as described in The Editing Tools on page 129. 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.

Figure 9.5

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.
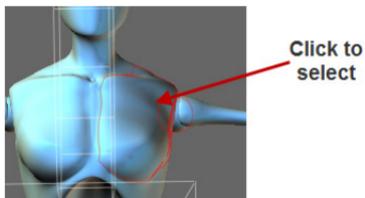
Figure 9.6

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.
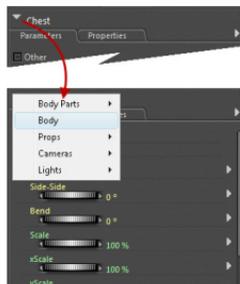
Figure 9.7

Using the Current Actor Pull-down Menu

To select a body part Actor using the pull-down menus:
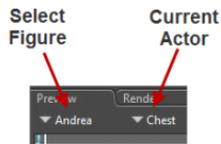
Figure 9.8

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).

The Editing Tools

The **Editing** tools appear as follows on your Poser workspace:

Figure 9.9

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 32, 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 124 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 65, and can even view your Poser scene from multiple cameras at once, as described in Changing Cameras within a Pane on page 69.

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 138.

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 138.

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 138.

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 138.

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 138.

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 138.

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 138.

Chain Break

The **Chain Break** tool ends the chain of parts affected by the **Translate** tools.

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 124 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.

Figure 9.10

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 232 for information about setting colors and other material values.

Grouping

The **Grouping** tool opens the **Group Editor** palette, which is discussed in The Group Editor on page 487.

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.

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 28: Modifying Figures & Props on page 443 for more information about morph targets and the **Morph Editor** palette.

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.

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.
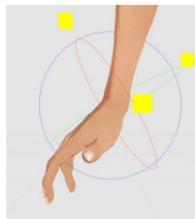
Figure 9.11

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.
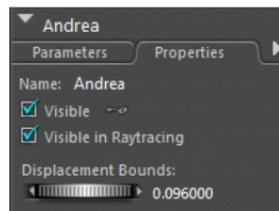
Figure 9.12

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. Clicking the **Animation Toggle** opens a pop-up menu that includes the **Animated** option. Selecting this option will place a **Visible** parameter dial on the Parameters

palette. You can then use the parameter dial to adjust the
degree of Visibility for the selected scene element.

- ***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.

- ***Displacement Bounds***: The **Displacement Bounds**
  property determines the figure's displacement boundary.
  Please refer to Chapter 18: Using The FireFly Render Engine
  on page 285 for more information about displacement bounds.

Body Part Actor Properties

Body part Actors have the following properties:
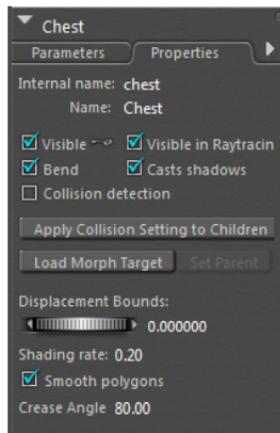
Figure 9.13

- ***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 135 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 83. Remember that selecting **Display > Bend Body Parts** bends all body parts and this property only affects the currently selected body part.

- *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 458). Please refer to Chapter 28: Modifying Figures & Props on page 443 for more information about loading morph targets.

- *Displacement Bounds*: The **Displacement Bounds** property determines the body part's displacement boundary. Please refer to Chapter 18: Using The FireFly Render Engine on page 285 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 18: Using The FireFly Render Engine on page 285 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 299 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 299 for more information about using the **Crease Angle** setting to apply smooth shading.

Parameters Palette

The **Parameters** palette contains all of the parameters for the currently selected scene element:
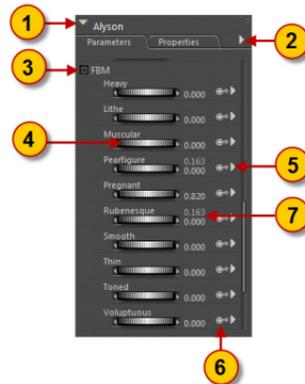

Figure 9.14

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

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 65 for more information about the **Current Actor** menu.

Parameters Palette Options Menu

The **Parameters** palette options menu (2) contains the following options:

| Create new Master Parameter |
| Create new group... |
| Delete selected groups |
| Display as ordered list |
| Memorize |
| Restore |
| Delete object |
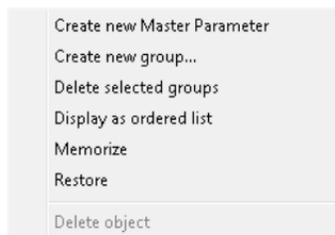
Figure 9.15

- *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 471.

- *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 as ordered list*: The **Display as ordered list** option toggles displaying parameter dials in groups or in an ungrouped list. A check mark means groups and subgroups are not displayed, and vice versa.

- *Memorize*: Selecting **Memorize** memorizes the current parameter dial settings as default. Please refer to "Memorize" on page for more information on memorizing parameter dials.

- *Restore*: Selecting **Restore** restores the most recently memorized defaults. Please refer to Restore on page 59 for more information about restoring saved defaults.

- *Delete Object*: Selecting **Delete Object** deletes the current object.

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 60, or use the **Parameter Palette** menu as described in "Parameters Palette Options Menu" on page .

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 322 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 380 and to Step 4: Cloth Dynamics Controls on page 398 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 471.

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 471.

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:
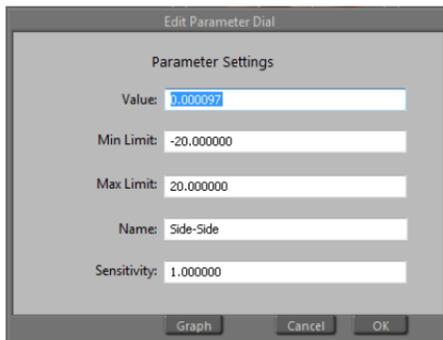
Figure 9.16

• *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 322 for more information about the **Graph** palette.

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

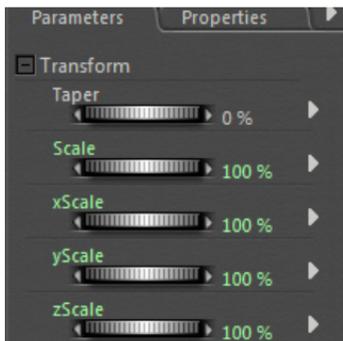Scale parameters are found in the Transform group of the Parameters palette. Their functions are as follows:

Figure 9.17

- **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 132.

- **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 131. 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.

- **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 131.

- **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
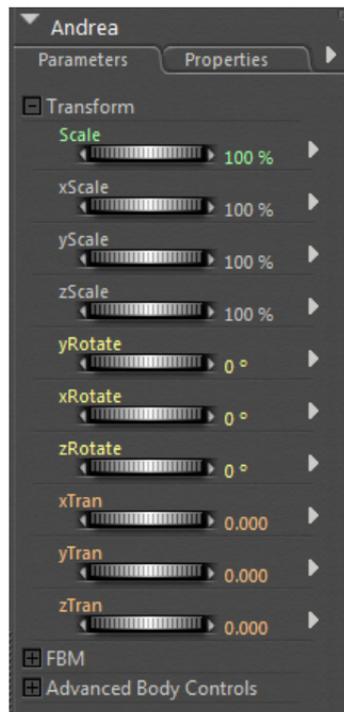figures in a scene:

Figure 9.18

- *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 458).

  🖐 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.
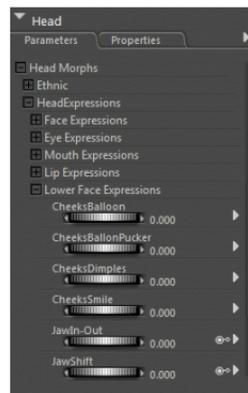
Figure 9.19

  🖐 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 28: Modifying Figures & Props on page 443 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 366 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 343). 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 344.

Figure 9.20

Figure 9.21

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.
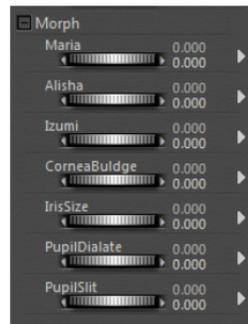
Posing Hands

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 129 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 **Additional Figure**s subfolder in the Poser 8 Figures category 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.
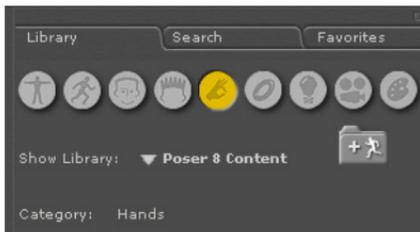

Figure 9.22

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 humanoid figures. However, animals can work with the Talk Designer if the animal includes morphs that support it.

Figure 9.23

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 43). 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.

Figure 9.24

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 113.

Other Posing and Figure Aids

The **Object** menu allows you to manipulate objects within your scene.

Lock Actor

Selecting **Object > Lock Actor** locks the currently selected element (body part, prop, etc.). To lock your desired actor, select it, then select **Object > Lock Actor**. 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 Actor**. 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.
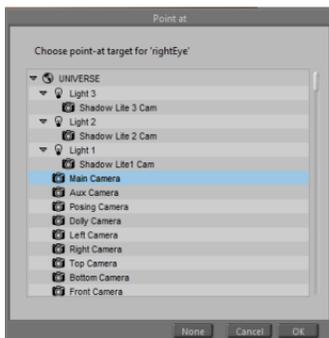
Figure 9.25

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 Poser 8 Figures library includes a **Poser 8 > 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 **Poser 8 > Ryan > (figurename) > Genitals** subfolders in the Materials category.

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 (red 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**.

Figure 9.26

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 59. 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 147 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 85.

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:

Figure 9.27. 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].

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 135.

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 the Poser Tutorial Manual, About Maps & Templates on page 22 for more information). Props can even cast shadows.

Poser's replaceable geometry feature (see Replacing a Body Part with a Prop on page 165) 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 the Poser Tutorial Manual, Hierarchy on page 14 for information about hierarchies in general, and to The Hierarchy Editor on page 493 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.

Figure 10.1

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 487).

Hair

Poser's **Hair** room (see Chapter 24: The Hair Room on page 372) 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 24: The Hair Room on page 372 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 105). 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.

Figure 10.2

To add hair to a figure from the **Library** palette, please refer to Adding Items to the Library on page 113. Hair includes parameter dials in the **Parameters** palette (see Prop Parameters on page 165), 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** category of the **Library** palette.

2. Select and add the **Messy Hair** model from the **Hair>Kozaburo** category in the **Library** palette.

3. Set the head as the parent for the hair as described in Changing a Parent on page 167.

Clothing

Poser's **Cloth** room (see Chapter 25: The Cloth Room on page 386) 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 449). Of course, Poser supports prop-based clothing and ships with both dynamic and conforming (figure-based) clothing. We'll discuss dynamic, prop, and conforming clothing in this section.

Dynamic Clothing

Please refer to Adding Dynamic Clothing on page 387 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.
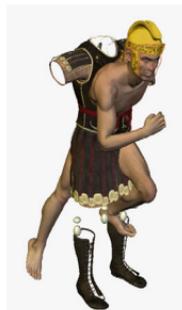

Figure 10.3

As mentioned previously, articles of conforming clothing behave like regular Poser figures and are the same as any other Poser figure

from a technical standpoint. For example, shirts have chest, neck, abdomen, and arm elements. Clothing includes all parameters as the respective body parts on a figure.

You can add conforming clothing to your scene and define it as a conforming figure, meaning that it attaches itself to the base figure and snaps to the base figure's similarly named body parts. Clothing moves with the base figure.

Adding Conforming Clothing to a Figure

Selecting **Figure > Conform To** conforms the currently selected article of Poser figure-based clothing to the desired base figure. Please visit some of the online forums (listed in Third-Party Forums on page 8) for information and tutorials about creating conforming clothing.

To add conforming clothing to a figure:

Select it from the **Library** palette and click the **Add New Figure** icon to bring it into your scene. Be sure to select clothing items designed for your desired source figure. The clothing appears in the scene, as shown in the previous graphic.

1. Use the **Choose Figure** pop-up to select the clothing item.

2. Select **Figure > Conform To**, and select the desired base figure in the pop-up that appears. Your clothing will snap to

the figure, assume the figure's pose, and move as its base figure moves.

Figure 10.4

Some tight-fitting conforming clothing may not completely cover the base figure's skin, particularly when the figure is animated. To fix this, select the base figure's body parts covered by the clothing and make them invisible using the Properties palette.

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 106.

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 50.

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 487. 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.
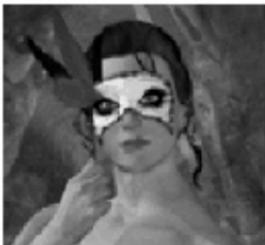
Figure 10.5

To create a prop:

Select the prop or body part you want to base the prop on.

1. Select the **Grouping** tool to open the **Group Editor** palette.

2. Select polygons for a new group and create and name the prop.

3. 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 113.

Creating Prop Parameters

You can use morph targets to create new parameters for your props. Please refer to Chapter 28: Modifying Figures & Props on page 443 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:

- *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 135 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.

- ***Display Origin***: Checking the **Display Origin** checkbox displays the prop's origin. Please refer to The Prop Origin on page 163 for more information about prop origins.

- ***Collision detection***: Checking the **Collision Detection** checkbox enables collision detection for the currently selected prop. Please refer to Collisions on page 63 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 28: Modifying Figures & Props on page 443 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 167 for information on setting prop parents.

- ***Displacement Bounds***: The **Displacement Bounds** property determines the prop's displacement boundary. Please refer to Chapter 18: Using The FireFly Render Engine on page 285 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 18: Using The FireFly Render Engine on page 285 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.

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.

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.
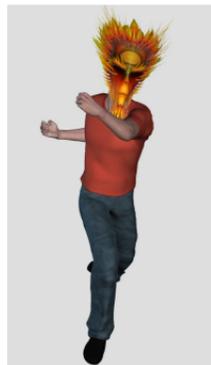
Figure 10.6

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 135.

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 The Joint Editor on page 500 for information on using the **Joint Editor** palette. The prop retains its material groups (see the Poser Tutorial Manual, Chapter 5: Multi/Sub-object Materials on page 21), 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.

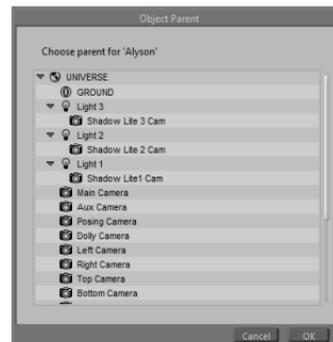## Set Figure Parent

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 the Poser Tutorial Manual, Hierarchy on page 14. 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 167.

Figure 10.7

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 the Poser Tutorial Manual, Hierarchy on page 14. 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:

Figure 10.8

You could also parent a chair to a figure's hip and make the chair inherit the figure's bend:

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 63 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 **Figure Parent** dialog:

Figure 10.9

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 167.

Delete Object

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:
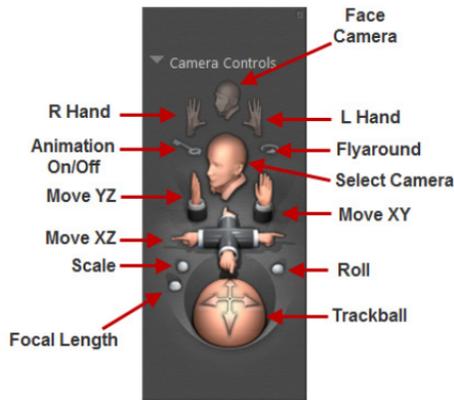
Figure 11.1

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).

Figure 11.2

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 **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 276 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.
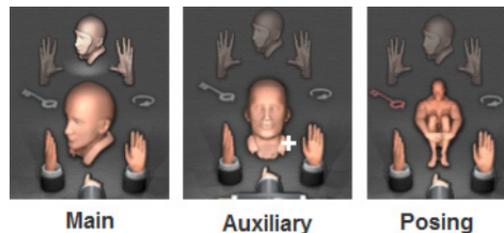
Figure 11.3

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.
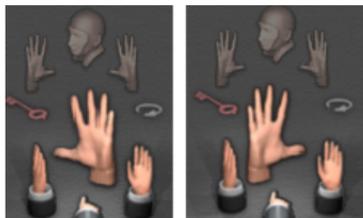

Face

Figure 11.4

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.

L Hand   **R Hand**

Figure 11.5

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 the Poser Tutorial Manual, About 3D Space on page 2 for a general discussion about 3D views.

Left	Top	Front

Right	Bottom	Back
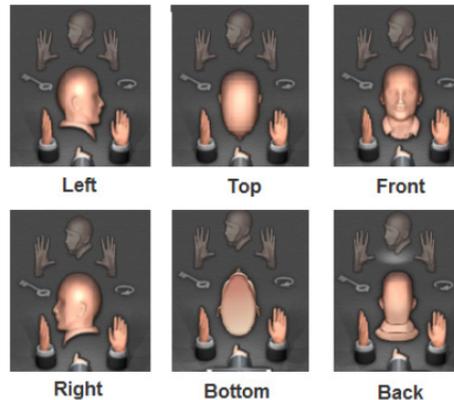
Figure 11.6

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 178 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.
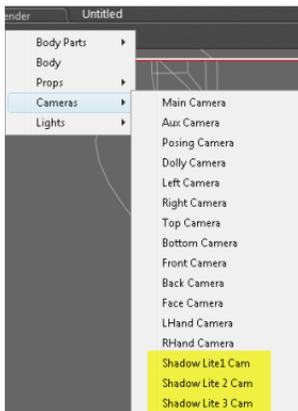
Figure 11.7

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 170).

- Click the **Select Camera** control in the **Camera** controls (see Select Camera Control on page 174).

- 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.
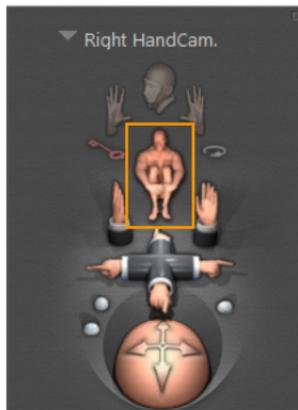
Figure 11.8

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.
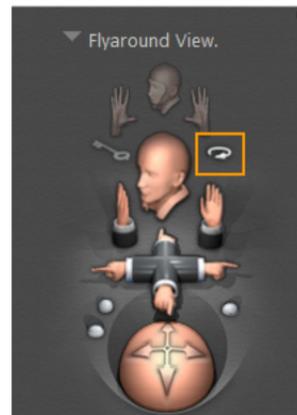
Figure 11.9

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.
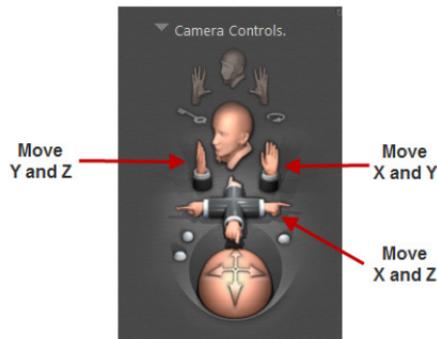
Figure 11.10

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.

Figure 11.11

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 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.
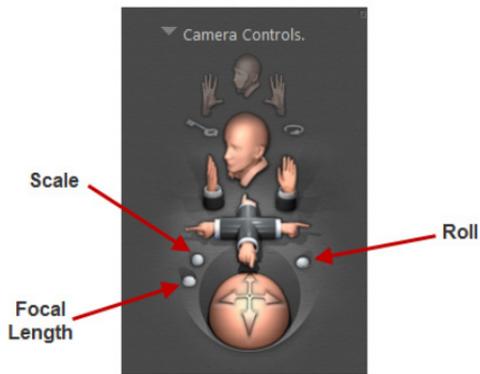
Figure 11.12

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:
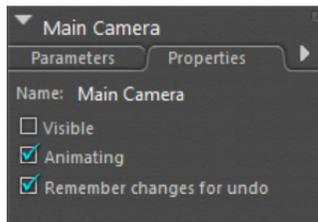
Figure 11.13

- *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 135 or information on animating the **Visible** property.

- *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 21: Animating with Poser

on page 311 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 such as Adobe® Premiere®.

- *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.
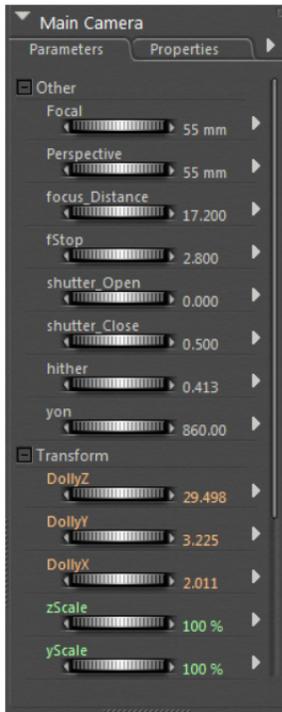
Figure 11.14

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.

- **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 crosshair so that you can position the focus. Place the crosshair 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 21: Animating with Poser on page 311.) Enter your desired value in the camera's **Focus Distance** field.

Figure 11.15: The Focus Distance control, with Alyson as the point of focus.

- *   **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. Enter your desired value in the **F-Stop** field.

The following images illustrate the Depth of Field effect:
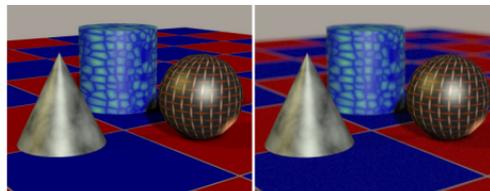
Figure 11.16: Without depth of field (left); With depth of field (right)

Poser allows you to enable or disable Depth of Field for individual renders. Please refer to Chapter 18: Using The FireFly Render Engine on page 285 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.

Chapter 11: Cameras

- *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:
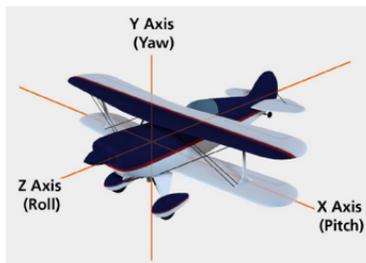
Figure 11.17

- *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 The Hierarchy Editor on page 493) 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 Actor**. Selecting this option again toggles locking off.

Camera Dots

You can save up to nine camera configurations using the **Memory** dots (described in Memory Dots on page 43). 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 11 for a description of the **Library** palette, and to Maintaining Your Library Palette on page 113 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 77 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 realtime OpenGL preview. You can also manually select which eight lights to preview in the Light Properties palette (see Light Properties on page 194).

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 the Poser Tutorial Manual, Chapter 4: Groups on page 16 or an explanation of material groups and to Part 3: Materials on page 203 for information on creating material shaders for your scene elements.

The **Light** controls appear as follows:
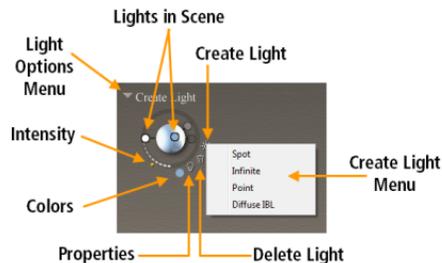
Figure 12.1

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.

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.
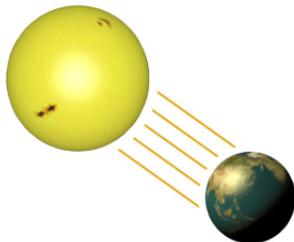
Figure 12.2

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 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 194). 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 194). 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 203 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.

Figure 12.3

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.
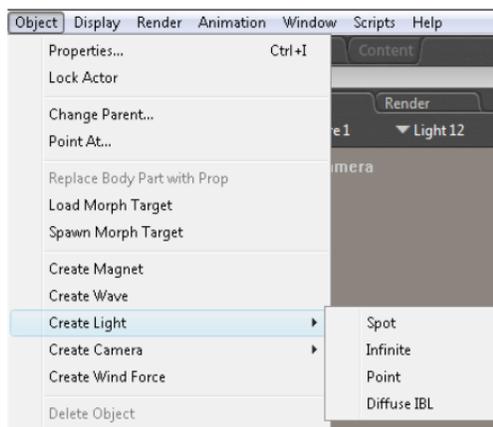
Figure 12.4

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 lightprobe. 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.

Adjust light intensity

Figure 12.5

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

Chapter 12: Lighting

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. 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.
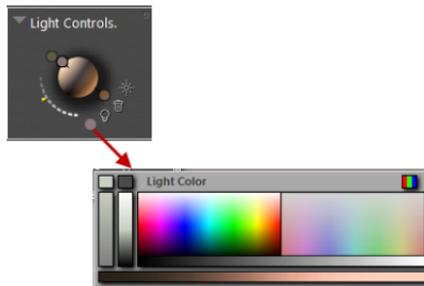
Figure 12.6

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 129 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 151) or **Object > Set Parent** (Changing a Parent on page 167) menus.

- Using the desired light's **Shadow** camera, as described in Shadow Light Cameras on page 173.

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:

Figure 12.7

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:
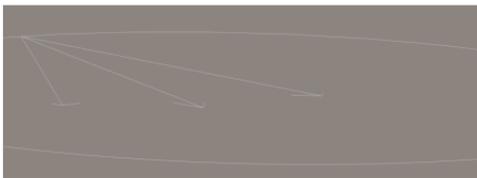
Figure 12.8

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.

Figure 12.9

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.
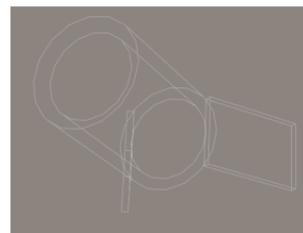
Figure 12.10

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.
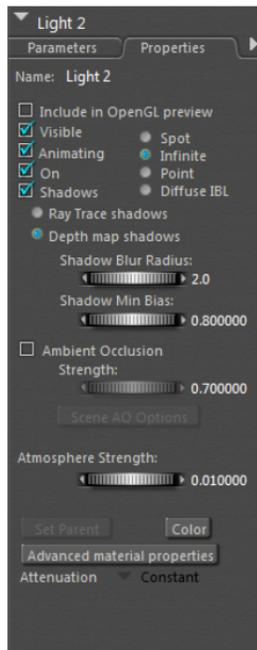
Figure 12.11

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 135 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 Min Bias*: The **Shadow Min Bias** parameter specifies how far to shift samples towards the light source to prevent self-shadowing of objects.

- • *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 253.
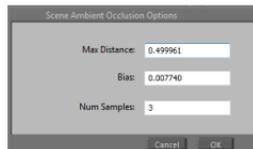
Figure 12.12

- • *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 237**.**

Figure 12.13

- • *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 for more information about the **Advanced** tab of the **Shader** window, and to 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.

Figure 12.14. Constant Attenuation.

Figure 12.15. 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).

Figure 12.16. Inverse Linear Attenuation

Chapter 12: Lighting

Figure 12.17. Inverse Linear Attenuation with Tone Mapping

Figure 12.19. Inverse Square Attenuation

Figure 12.18. Inverse Linear Attenuation with Tone Mapping, Adjusted

Figure 12.20. Inverse Square Attenuation with Tone Mapping

- ▪ ***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.

Figure 12.21. Inverse Linear Attenuation with Tone Mapping, Adjusted

Chapter 12: Lighting

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 Actor** command (see) to prevent accidental changes. Lights have the following parameters, available in the **Parameters** palette:
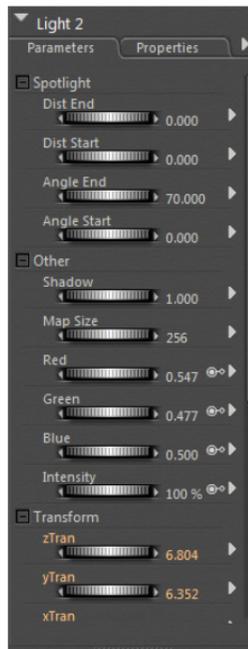
Figure 12.22

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 113 for information about adding items to the **Library** palette.

Animating Lights

Lights can be animated like other Poser objects using keyframes and tween frames. Please see Chapter 21: Animating with Poser on page 311 for information about animating within Poser.

Part 3: Materials

Chapter 13: The Material Room

Poser's **Material** room is a very powerful tool for creating and editing procedural shaders. 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 14: Working with Nodes on page 222 and Chapter 15: Material Room Nodes on page 232.

Access the **Material** room by clicking the **Material** room tab at the top of the Poser workspace. The **Material** room appears as follows:

Figure 13.1

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 61 for information about the **Document** window.

- *Light Controls (3)*: Please refer to Chapter 12: Lighting on page 186 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 the Poser Tutorial Manual, Chapter 5: Multi/Sub-object Materials on page 21.

- *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 14: Working with Nodes on page 222 and Chapter

15: Material Room Nodes on page 232 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.

- *Library Palette (10)*: Please refer to Chapter 2: Installing Poser on page 11 for information on working with the **Library** palette.

- *Parameters/Properties Palette (11)*: Please refer to The Parameters/Properties Palette on page 135 for information about the **Parameters/Properties** palette.

- *Animation Controls (12)*: Please refer to Using the Animation Controls on page 314 for information about the **Animation** controls.

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. 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. 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. 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 the Poser Tutorial Manual, About Maps & Templates on page 22.
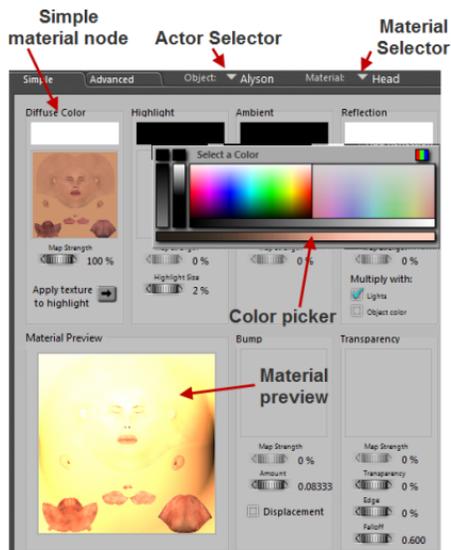
Figure 13.2

Figure 13.3

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.
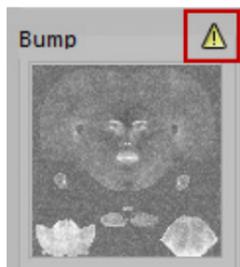
Figure 13.4

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).

Figure 13.5

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.
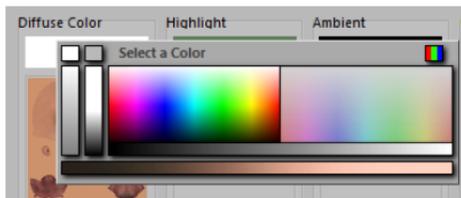
Figure 13.6

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.
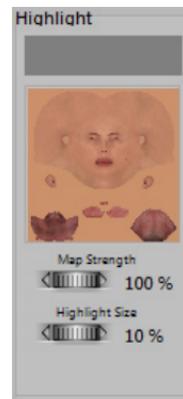
Figure 13.7

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.

["

Figure 13.9

Reflective Color is a tint that is added only when a Reflection map is applied. Use the **Reflective 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 232.

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.
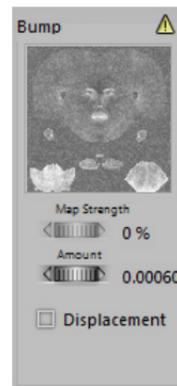
Figure 13.10

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.

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.
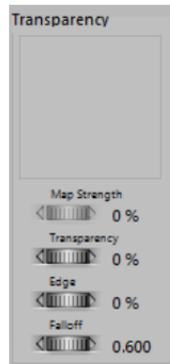
Figure 13.11

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 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.

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)*

• *Normal Map (object space)*

• *Gradient Bump*—Legacy option for Poser gradient bump maps.
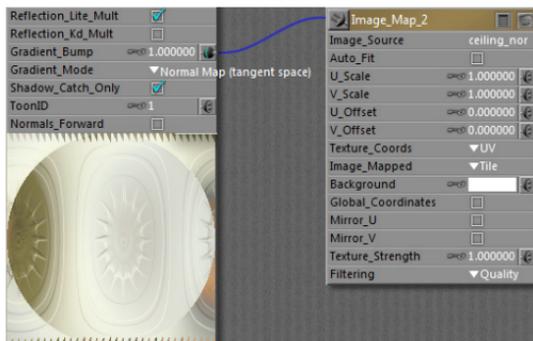
Figure 13.12

Advanced Shader View

The **Advanced** tab of the **Shader** window is where you build shaders by working with nodes. Please refer to Chapter 14: Working with Nodes on page 222 and Chapter 15: Material Room Nodes on page 232 for more information about shader nodes and how they function within Poser.
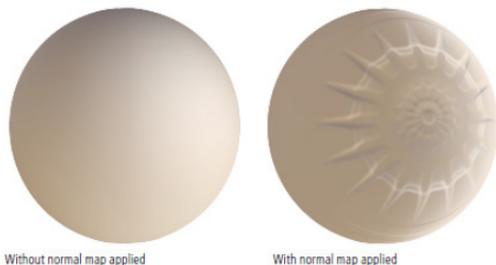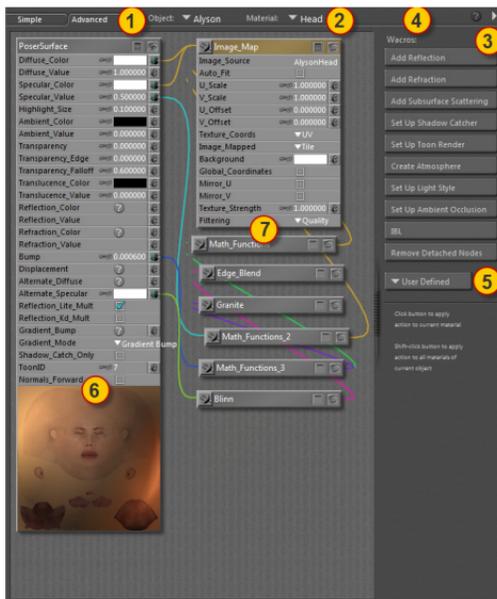

Without normal map applied   With normal map applied

Figure 13.13

Figure 13.14

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 the Poser Tutorial Manual, Chapter 5: Multi/Sub-object Materials on page 21 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, which is described in Chapter 14: Working with Nodes on page 222 and Chapter 15: Material Room Nodes on page 232. 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 14: Working with Nodes on page 222 and Chapter 15: Material Room Nodes on page 232).

- *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 232 for a detailed description of the root nodes.

Figure 13.15

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 232.

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 7: PoserPython on page 517for more information about writing Python scripts for Poser.
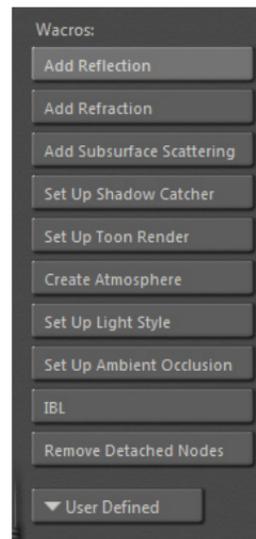
Figure 13.16

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 253 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 253 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 Subsurface Scattering*: Clicking the **Add Subsurface Scattering** Wacro button will configure all the lights in the scene to produce SubSurface Scattering effects. After you click the **Add Subsurface Scattering** button, you will see a dialog that states "The light(s): <lists the applicable lights> were set to produce Depth Map shadows." Please note that for subsurface scattering all active lights will be set to produce depth map shadows. When you click OK on this dialog, Poser attaches the following nodes:

  - A Blinn specular node will be attached to the input of the Alternate_Specular attribute on the root Material node. See Blinn on page 246 for more information on the Blinn node's attributes.

  - A FastScatter node will be attached to the input of the

Alternate_Diffuse attribute on the root Material node. See FastScatter on page 252 for more information on the FastScatter node's attributes.

- An Edge_Blend node will be attached to the input on the FastScatter node. See Edge Blend on page 240 for more information on the Edge_Blend node's attributes.

- Additionally, the output on the Image_Map node (which existed before you clicked the Add Subsurface Scattering button) will be connected to the input on the Inner_Color attribute of the Edge_Blend node.

- *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 232.

- *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 249 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 246 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 15: Material Room Nodes on page 232. 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 254 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 268. For information about Image Based Lighting and light probes, see Diffuse Image Based Lights (IBL) on page 187.

  To maximize your Image Based Lighting effects, we

recommend using Ambient Occlusion. See Light Properties on page 194 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.

  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 13: The Material Room

Chapter 14: 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 13: The Material Room on page 204.

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:
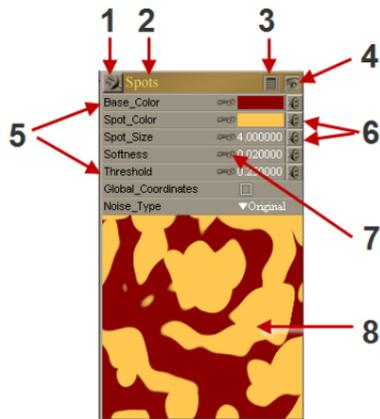
Figure 14.1

- **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. 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.

- *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 281.

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:
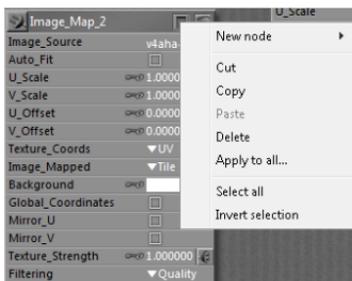
Figure 14.2

- *Disconnect*: Selecting **Disconnect** disconnects the current link between the affected node's input and all shader(s) contributing to that input. This option will appear when you click a node input with one or more links.

- *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 227 for information on linking/de-linking nodes.

- *Apply selected*: 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.

- *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.
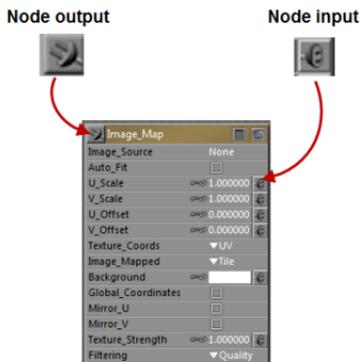
Figure 14.3

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.
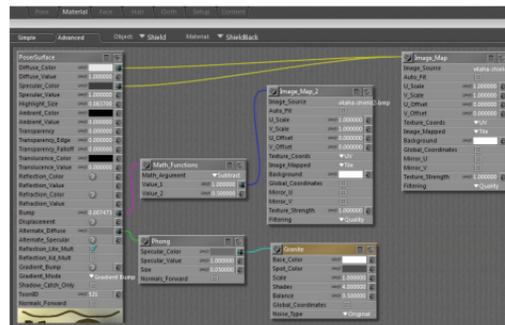
Figure 14.4

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.

Figure 14.5

- To create an instance of the node that is currently selected in the Shader window, open the **Options** menu and select **New Node > Category > Subcategory > Node.** Connect the new node as desired.
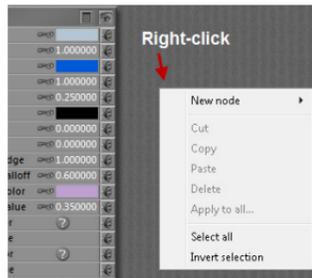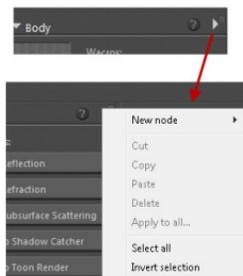
Figure 14.6

- 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.

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.
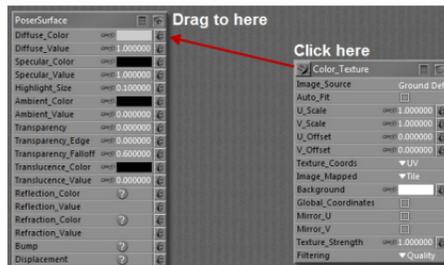
Figure 14.7

- **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.
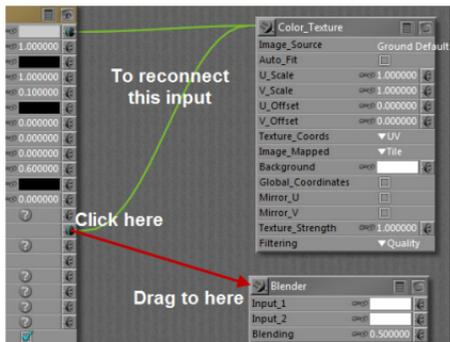
Figure 14.8

- **_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.
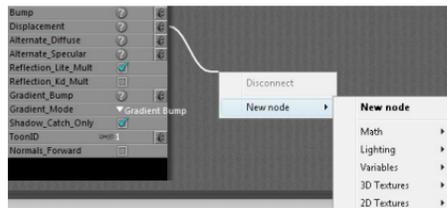
Figure 14.9

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.
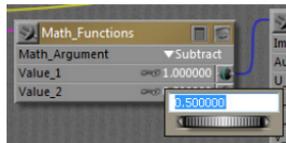
Figure 14.10

Some node values are pull-down menus. Use these as you would any other pull-down menu.
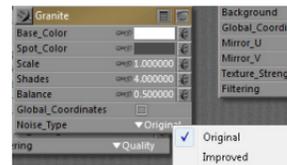
Figure 14.11

Also, clicking a color within a node opens a standard Color Picker, which you can use to quickly select your desired color.

Figure 14.12
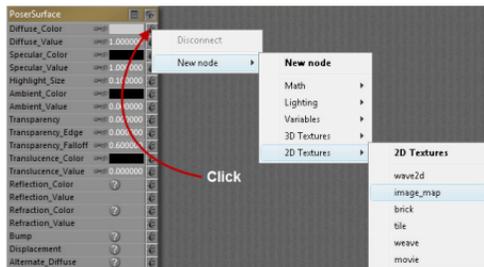
Figure 14.13
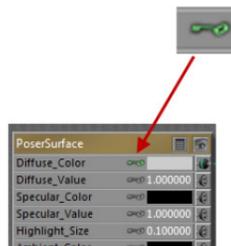
Figure 14.14

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:

- *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 141.

- *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 322 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 21: Animating with Poser on page 311 for more information about animating within Poser.

Chapter 15: 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:
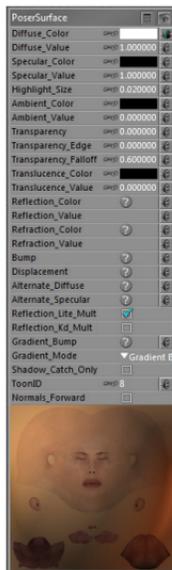
Figure 15.1: Visualizes direction of surface normal.

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.

- *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

Chapter 15: Material Room Nodes

- *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 the Poser Tutorial Manual, Bump Maps on page 23 for information about bump.

- *Displacement*: The **Displacement** attribute defines the amount of displacement in the material. See the Poser Tutorial Manual, Displacement Map on page 25 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 268 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:*
  - *Normal Map (Tangent space):*
  - *Normal Map (Object space):*

  For more information about normal maps, see Normal Maps on page 213.

- *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). Use this option to avoid shading artifacts on double-sided polygons.

  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:
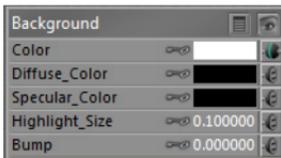
Figure 15.2

- *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:
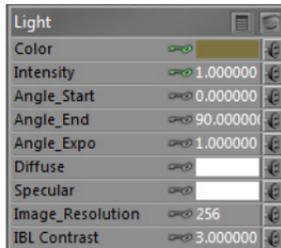
Figure 15.3

- *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:
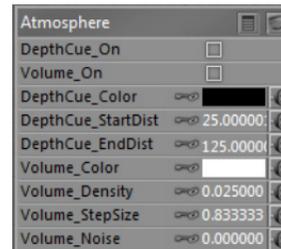
Figure 15.4

- *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 and Shadows on page 71.

- *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 194.

- *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.
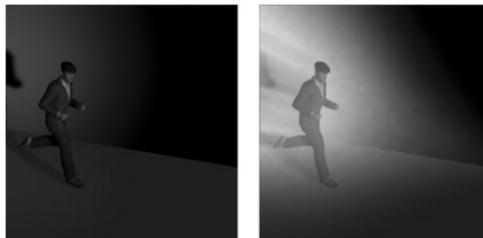
Figure 15.5: Without volumetric rendering (no fog) on left; With volumetric rendering (with fog) on right

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:

Figure 15.6

- • **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).

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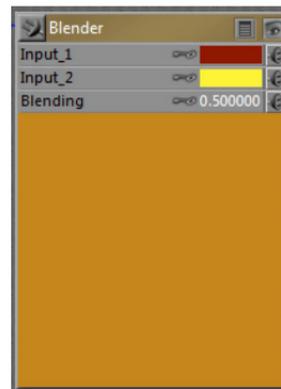
Edge Blend

The **Edge Blend** node blends color nodes based on surface and camera angles. It has the following attributes:

Figure 15.7

- **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:

Figure 15.8

- **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:
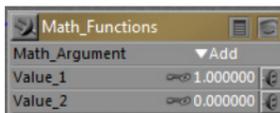
Figure 15.9

- **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

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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:
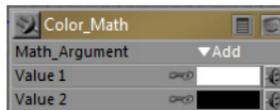
Figure 15.10

- *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:
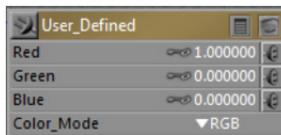
Figure 15.11

- **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.
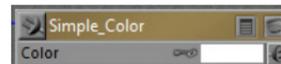
Figure 15.12

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:

Figure 15.13

- **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.

Figure 15.14

- **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.

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:
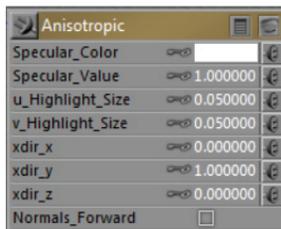
Figure 15.15

- *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:
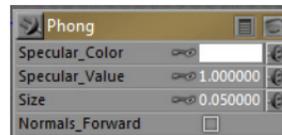
Figure 15.16

- *Specular Color*: The **Specular_Color** is the color of any highlight that appears on the object surface. Highlights lend

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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:
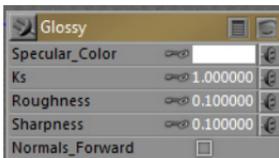
Figure 15.17

- *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:
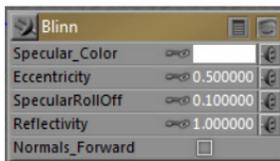
Figure 15.18

- ***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.
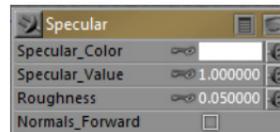
Figure 15.19

- ***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

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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.

Diffuse Nodes

Clay

The **Clay** node applies a clay-like lighting model to the selected material. It has the following attributes:

Figure 15.20

- *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:
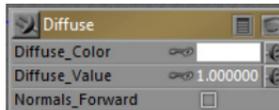
Figure 15.21

- *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 irradance 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:
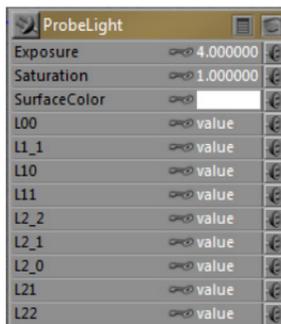
Figure 15.22

- • **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 186 for more information about adding and configuring lights.

Toon

The **Toon** node gives your material a cartoon-like look. It has the following attributes:
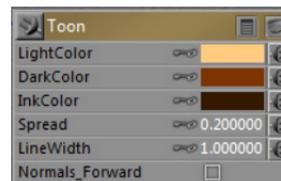
Figure 15.23

- • **Light Color**: The **LightColor** attribute specifies the light color.

- • **Dark Color**: The **DarkColor** attribute specifies the dark color.

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- *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:
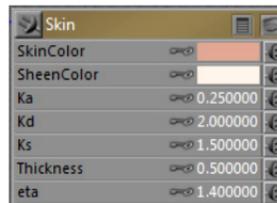
Figure 15.24

- *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.

Velvet

The **Velvet** node allows you to create the appearance of realistic velvety fabric. It has the following attributes:
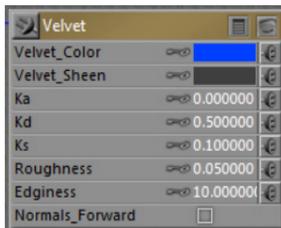
Figure 15.25

- ***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 top, translucent skin layer.

- ***Edginess***: The **ETA** attribute controls the density of the top, translucent skin layer.

- ***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:
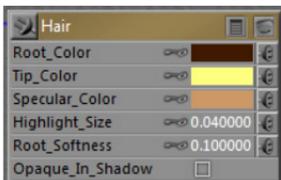
Figure 15.26

- • **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).

FastScatter

The **FastScatter** node offers an easy application of SubSurface Scattering (SSS) effects. 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 results of the **FastScatter** calculation closely approximate true SubSurface Scattering. Additionally, **FastScatter** has the advantage of being several times faster than traditional SubSurface Scattering, because it does not require raytracing. The **FastScatter** node has the following attributes:
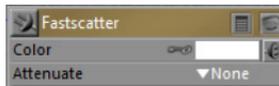
Figure 15.27

- *Color*: The **Color** attribute allows you to specify the color tint of the sub-surface area.

- *Attenuate*: The **Attenuate** attribute specifies that the **FastScatter** node will ignore light originating from the direction of the camera, and will afford maximum influence to light directed towards the camera. The degree of influence of light coming from directions between those two points will be weighted in the **FastScatter** calculation, according to the light's angle in relation to the camera.
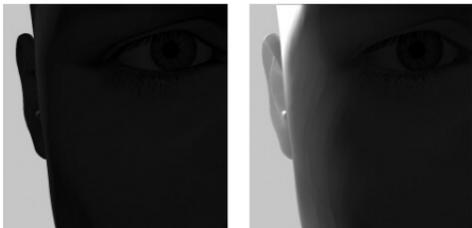
Figure 15.28: Without FastScatter/no SSS (left); With FastScatter/with SSS (right)

Raytrace Nodes

To use the raytracing nodes, you must have raytracing enabled in the **Render Settings** dialog, as described in the "The Render Settings Dialog" chapter, beginning on page .

Reflect

The **Reflect** node specifies the reflection color when raytracing. It has the following attributes:
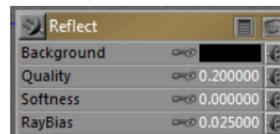
Figure 15.29

- *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

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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:
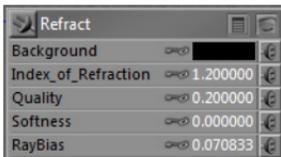
Figure 15.30

- **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:
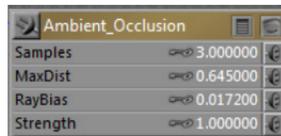
Figure 15.31

- *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.
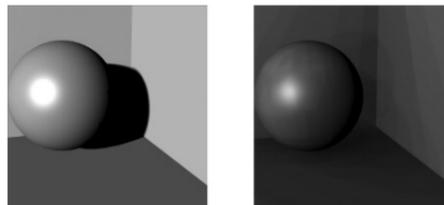
Figure 15.32: Without Ambient Occlusion (left); With Ambient Occlusion/depth mapped shadows (right)

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:
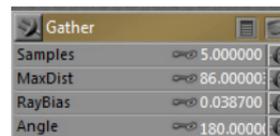
Figure 15.33

- **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.
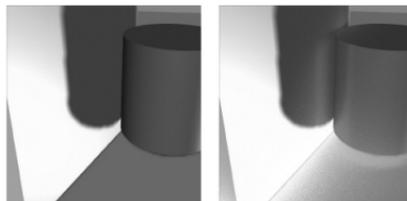
Figure 15.34: Without Gather/no color bleeding (left); With Gather/color bleeding (right)

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.
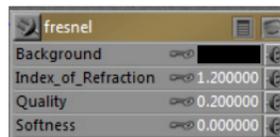
Figure 15.35

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:
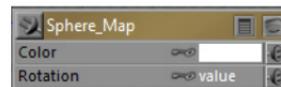
Figure 15.36

- *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:

Figure 15.37

- **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.
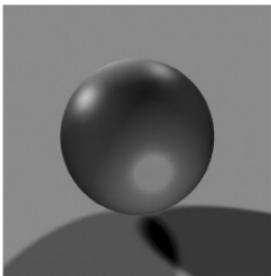
Figure 15.38: Visualizes direction of surface normal.

P

The **P** node defines a point in space. It has the following attributes:

Figure 15.39

- **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:
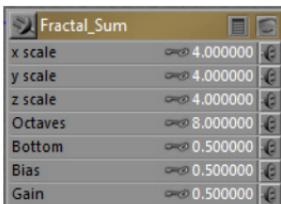
Figure 15.40

- **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:
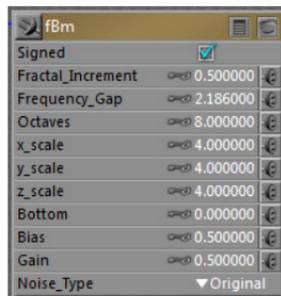
Figure 15.41

- **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:

Figure 15.42

- *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.

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- **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:
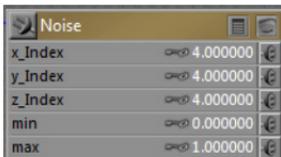
Figure 15.43

- **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:
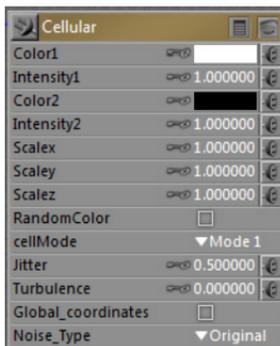
Figure 15.44

- **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.

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- *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:
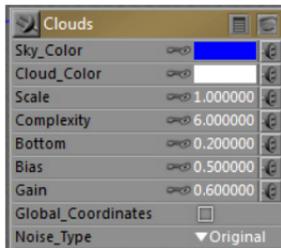
Figure 15.45

- *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:
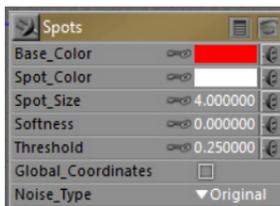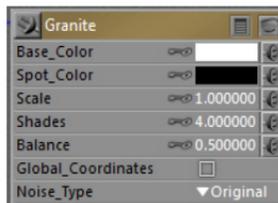

Figure 15.46

- **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:
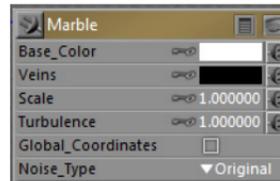
Figure 15.47

Chapter 15: Material Room Nodes

- **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:

Figure 15.48

- **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:
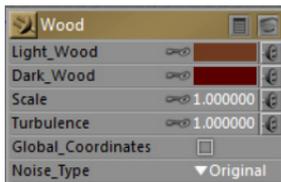
Figure 15.49

- *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.

Figure 15.50

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.
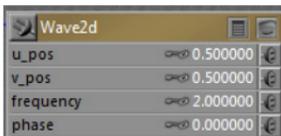
Figure 15.51

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 the Poser Tutorial Manual, About Maps & Templates on page 22for a general discussion about maps, and to the Poser Tutorial Manual, Chapter 14: Creating and Assigning Textures on page 104 for a brief description on creating maps. This node has the following attributes:
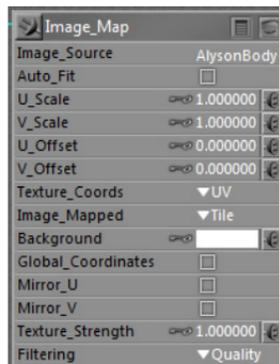
Figure 15.52

- *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. Click **OK** to implement your changes or **Cancel** to abort.
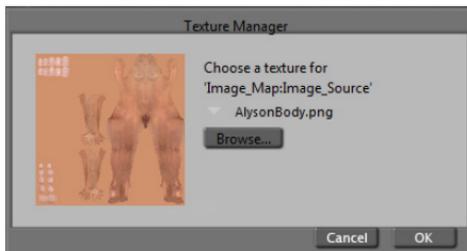
Figure 15.53

- *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.

Chapter 15: Material Room Nodes

- **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.

Brick

The **Brick** node simulates brick or stone wall patterns. It has the following attributes:
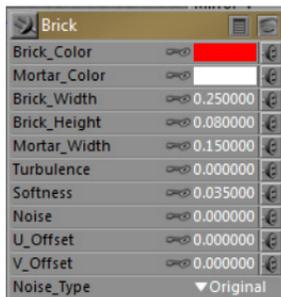
Figure 15.54

- *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.

Chapter 15: Material Room Nodes

Tile

The **Tile** node is a 2D texture that simulates tile patterns. It has the following attributes:
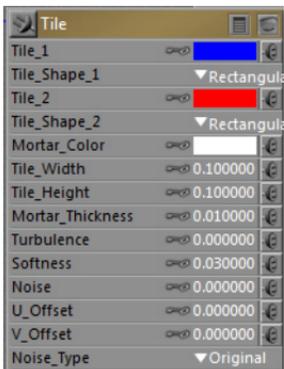
Figure 15.55

- **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:
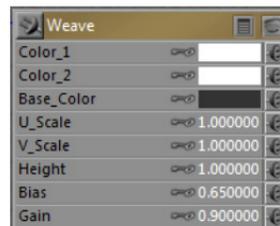
Figure 15.56

- *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. It has the following attributes:
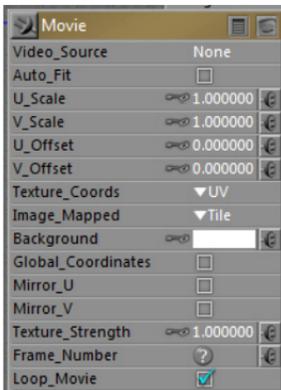
Figure 15.57

- *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.

Chapter 15: Material Room Nodes

Part 4: Rendering

Chapter 16: 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 276 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 67 for a complete description of this feature's functionality.

Sketch Style Render

Selecting **Render > Sketch Style Render** renders your scene using the current Sketch Designer settings. Please see Chapter 19: The Sketch Designer on page 304 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.

Figure 16.1 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 17: The Render Settings Dialog on page 280 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 18: Using The FireFly Render Engine on page 285 for information about using the **3D Motion Blur** feature. You can also blur a single frame for test purposes by selecting **Render > MotionBlur Document**.

Figure 16.2

Render Settings

Selecting **Render > Render Settings** opens the **Render Settings** dialog. Please refer to Chapter 17: The Render Settings Dialog on page 280 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 74 for more information on the **Render Dimensions** dialog settings.

Materials

Selecting **Render > Materials** opens the **Material** room. Please refer to Chapter 13: The Material Room on page 204 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 17: The Render Settings Dialog

To open the **Render Settings** dialog, select **Render > Render Settings**. This window appears as follows:
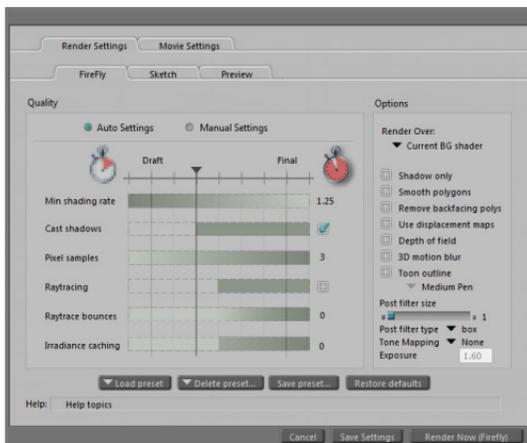
Figure 17.1

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 18: Using The FireFly Render Engine on page 285 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 19: The Sketch Designer on page 304 .

- *   *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 19: The Sketch Designer on page 304 more information about using the **Sketch Designer** render engine, please see .
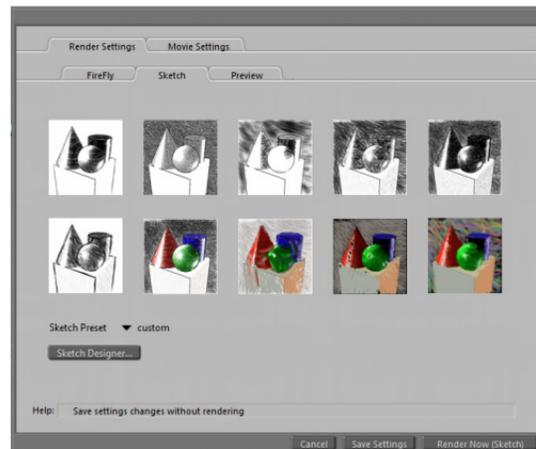
Figure 17.2

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.
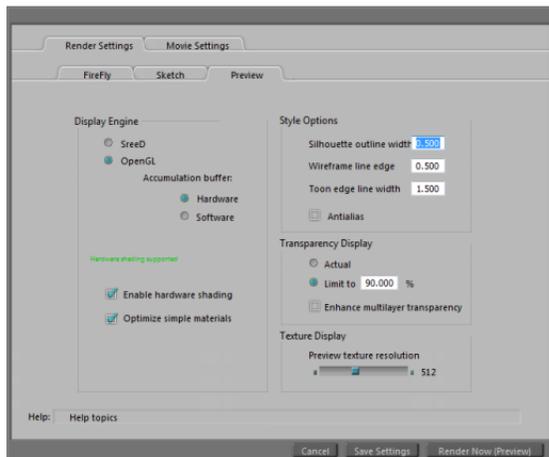
Figure 17.3

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 65 for more information about the OpenGL

hardware rendering option for Poser. If you select OpenGL, the **Accumulation Buffer** offers hardware acceleration for a number of functions related to combining images in the scene preview. We recommend using this hardware acceleration, if your graphics card will support it. If you are unsatisfied with the scene preview rendering results using the hardware acceleration option, then you should select the software option.

Poser supports texture resolutions up to 4096 x 4096 for Scene Preview displays. You can set the resolution you wish to use in the **Document** window's Preview display using the **Preview Texture Resolution** slider. This slider will offer a range of resolutions, from 128 x 128 pixels up to 4096 x 4096 pixels.

The maximum resolution available with the Preview Texture Resolution slider will be adjusted to match the maximum resolution your hardware will support.

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.

You can enable procedural shader previews by clicking the **Enable Hardware Shading** checkbox, and vice versa. This feature is disabled by default. Additionally, you can enable shader optimization by checking the **Optimize Simple Materials** checkbox, and vice versa. When shader optimization is enabled, shaders will not be generated for simple materials. Optimization is enabled by default.

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 Ambient Occlusion, normal maps, and other raytracing effects, as well as some of the Variable nodes.

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.

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:

- *Outline Width*: The **Outline Width** option allows you to specify the width of the lines used in the Outline display style.

- *Wireframe Line Width*: The **Wireframe Line Width** option allows you to specify the width of the lines used in the Wireframe display style.

- *Cartoon Edge Line Width*: The **Cartoon Edge Line Width** option allows you to specify the width of the Toon Outline display option, as enabled via the FireFly render settings.

Click the **OK** button to apply your settings.

Movie Settings

You can access the **Movie Settings** window by toggling the **Movie Settings** tab next to the **Render Settings** tab. Please refer to Chapter 22: Rendering Animations on page 351 for more information on movie settings.

Tips & Tricks

This chapter 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.

- Refer to the Poser Tutorial Manual, Chapter 13: FireFly Render Tips on page 99 in the **Tutorials** folder of your Poser installation folder for more tips on render improvements.

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 18: 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 187.

- *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 268 for more information).
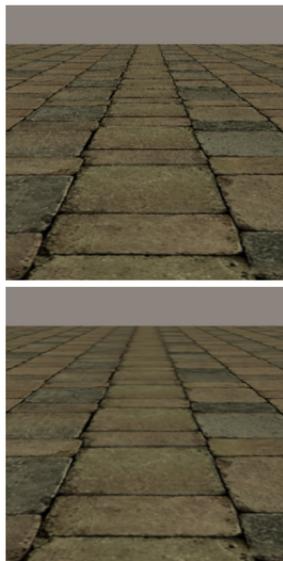
Figure 18.1: Without Texture Filtering (top); With Texture Filtering (bottom)

- **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 29.

• *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 29 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 29 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.
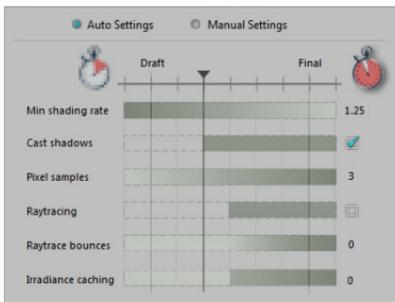
Figure 18.2: Auto Settings
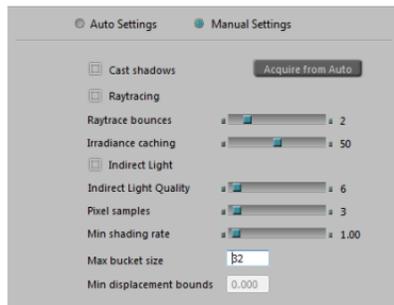
Figure 18.3: Manual Settings

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
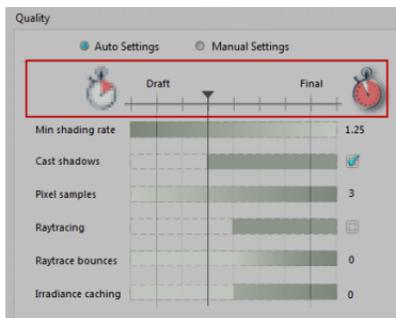
Figure 18.4: Increase or decrease render quality with the Render Quality slider.

Manual Settings
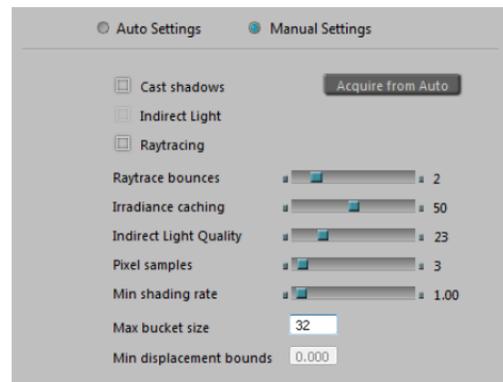
Figure 18.5

- *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.

- ***Indirect Light***: Only enabled when Raytracing (below) is enabled. See Indirect Light on page 293.

- ***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.
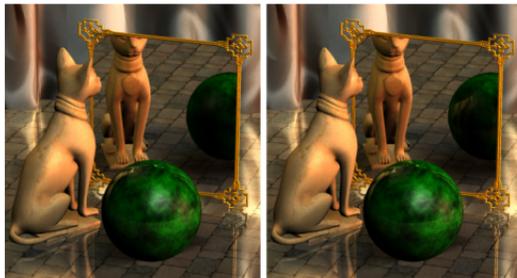
Figure 18.6 One raytrace bounce (left); three raytrace bounces (right)

- **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 293).

- **Indirect Light Quality**: See Indirect Light on page 293.

- **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.
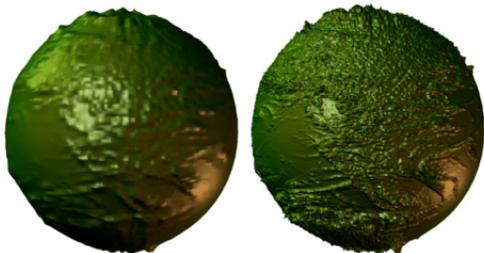
Figure 18.7 High minimum shading rate (left), loss of detail; Low minimum shading rate (right), full detail visible

- **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.
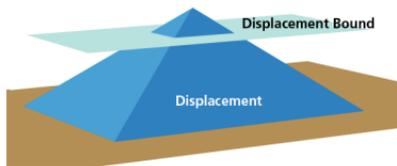
Figure 18.8

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.
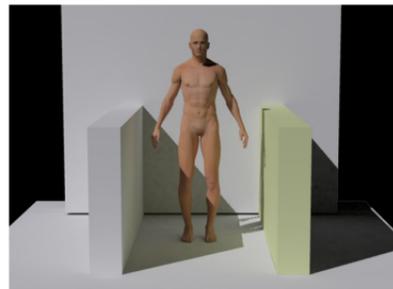
Figure 18.9

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.
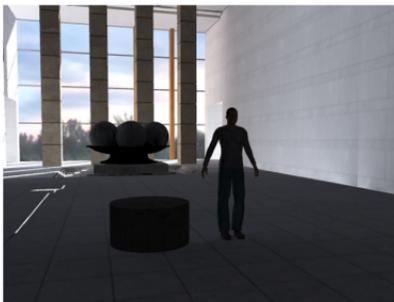
Figure 18.10

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 prepass displays red dots in the places where indirect light is calculated explicitly. Following the prepass, the final render is completed using the indirect light calculated in the prepass.

FireFly Options Settings

- **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 72 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 51 for information on importing background pictures.

- ▪ ***Current Background Shader***: Selecting **Current Background Shader** renders the image/movie over the specified background shader. Please refer to Root Background Node on page 235 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 299 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.
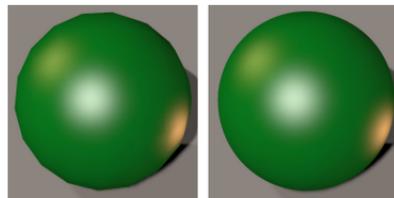
Figure 18.11: Without Polygon Smoothing (left); With Polygon Smoothing (right)

- • ***Remove Backfacing Polygons***: Check the **Remove Backfacing Polygons** 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 the Poser Tutorial Manual, About Maps & Templates on page 22 for a description of maps in general, the Poser Tutorial Manual, Displacement Map on page 25 for a description of displacement maps, and Chapter 13:

Chapter 18: Using The FireFly Render Engine

The Material Room on page 204 for information about the **Material** room (maps are added to nodes that are part of shaders).
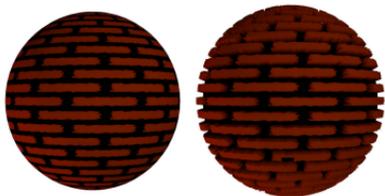
Figure 18.12: Without Displacement (left); With Displacement (right)

- **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 179 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 179 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.

Figure 18.13: 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.
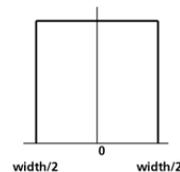
Figure 18.14

- *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.
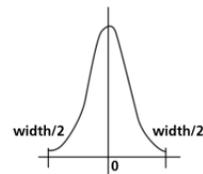
Figure 18.15

- *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.
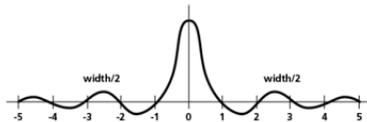
Figure 18.16

- **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.

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 Chapter 22: Rendering Animations on page 351 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.
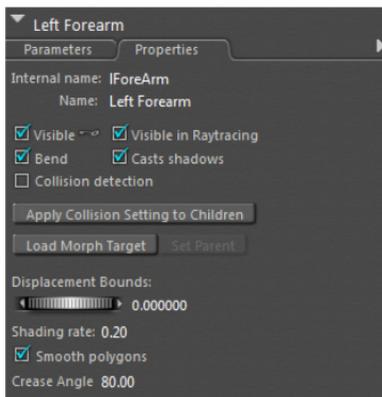
Figure 18.17

To change the crease angle globally, select **Edit > General Preferences**, and click on the **Document** tab.
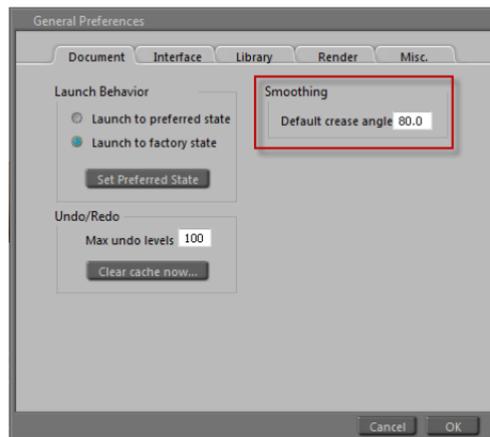
Figure 18.18

The following images provide examples of a sphere with crease angles set at 10 degrees and 80 degrees, respectively:
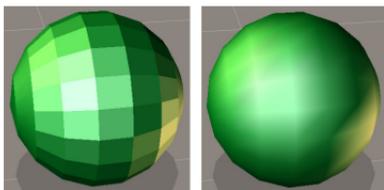
Figure 18.19

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 487 for more information about creating new groups.
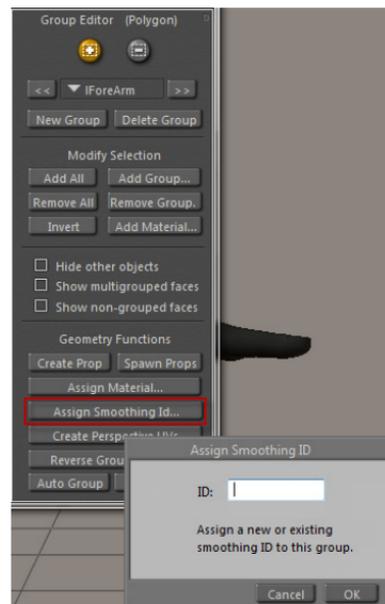
Figure 18.20

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 294 for more information about applying this option.
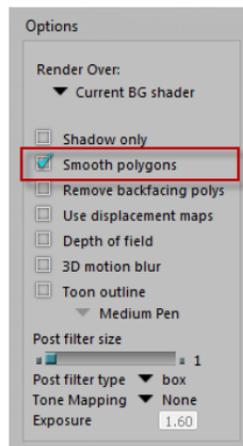
Figure 18.21

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.
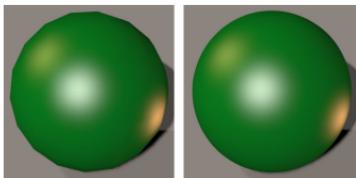
Figure 18.22

Chapter 19: 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!
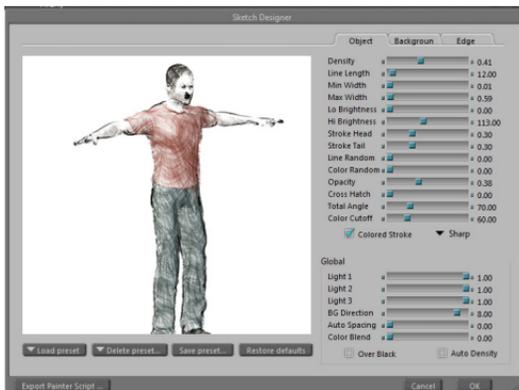
Figure 19.1

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 20: 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 22: Rendering Animations on page 351 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, or all cloth and hair dynamics. For more information about dynamic cloth and hair, see Chapter 24: The Hair Room on page 372 and Chapter 25: The Cloth Room on page 386.

Retime Animation

Selecting **Animation > Retime Animation** allows you to adjust the timing of your animations. Please refer to Retiming Keyframes on page 329 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 330.

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 20: The Animation Menu

Chapter 21: 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 123 for information about posing human figures, and to Posing Animals on page 149 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 147 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 145 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 158 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 444 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 449 for more information about force fields.

- *Materials*: You can animate material shaders as described in Part 3: Materials on page 203.

- *Walk Paths*: You can create paths that your figures walk along, as described in Creating a Walk Path on page 340.

- *Background*: You can animate the background using the **Material** room. Please refer to Part 3: Materials on page 203 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 51 and to Importing Movies on page 50 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 124 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 314 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 317 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 138. Please refer to Using Graphs on page 322 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 336 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 344 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:
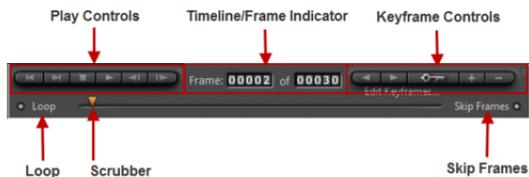
Figure 21.1

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:
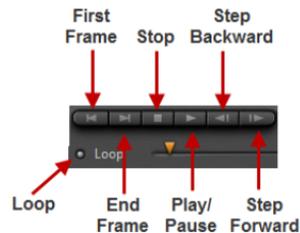
Figure 21.2

*   ***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

Chapter 21: Animating with Poser

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 70).

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:
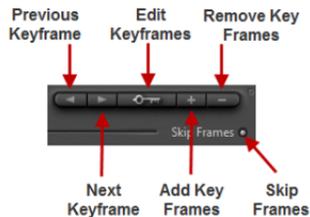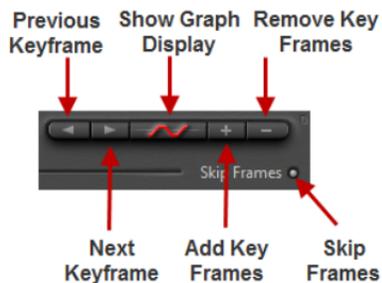

Figure 21.3

- *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.
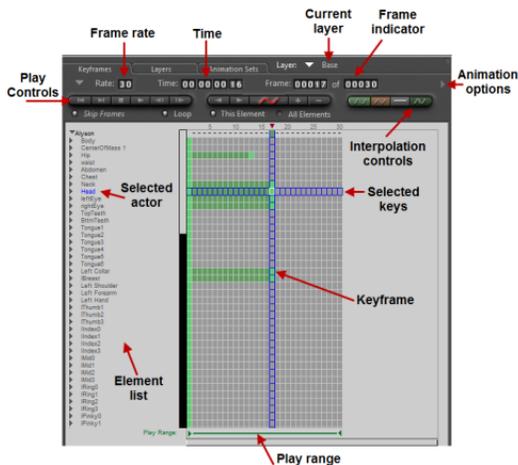
Figure 21.4

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 331 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

You can also set the output frame rate using the **Movie Settings** window (Chapter 22: Rendering Animations on page 351). 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

Play Controls

The **Play** controls are identical to their counterparts in the **Animation** controls. See 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:

Figure 21.5

- *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 309 for more information.

- *Quaternion Interpolation*: Selecting the **Quaternion Interpolation** option toggles quaternion interpolation on and off. Please refer to Quaternion Interpolation on page 309 for more information.

Keyframes Tab

The **Keyframes** tab 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:
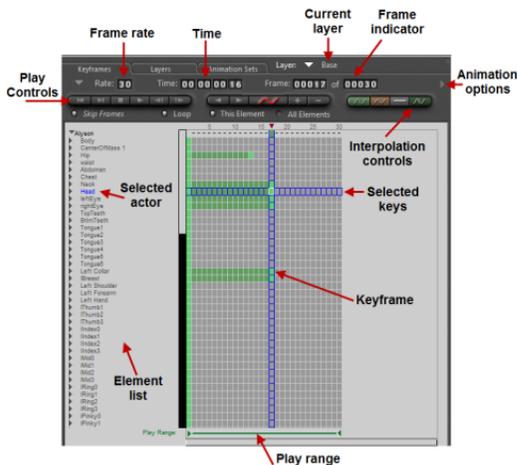
Figure 21.6

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 331 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.

Figure 21.7

- *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

- *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

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:
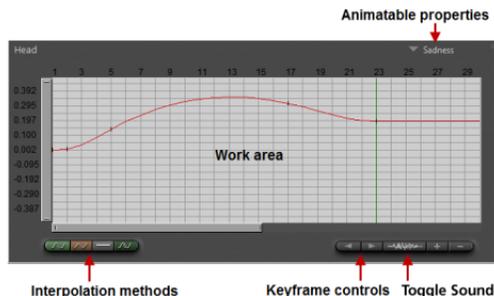
Figure 21.8

- • *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 322.

- • *Keyframe Controls*: See Keyframe Controls on page 316.

- • *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 344.

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:

Figure 21.9

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 322) 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.
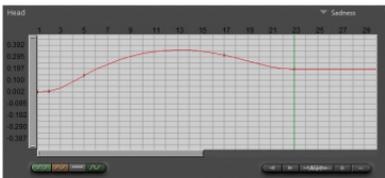
Figure 21.10

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. 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 the Poser Tutorial Manual, Splines on page 11*l* 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:
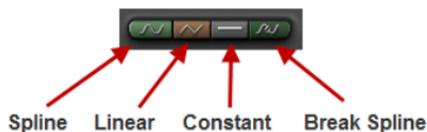
Figure 21.11

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.
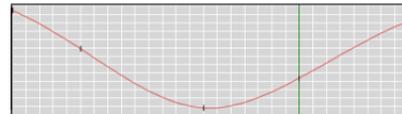
Figure 21.12

- **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.
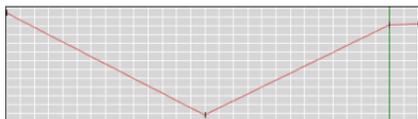
Figure 21.13

• **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.
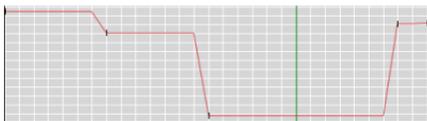
Figure 21.14

• **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.
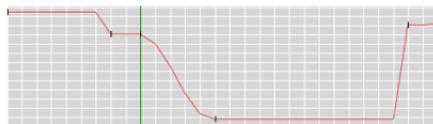
Figure 21.15

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.

Figure 21.16

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 the Poser Tutorial Manual, Splines on page 11). 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:
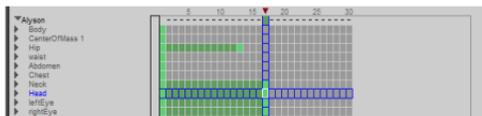
Figure 21.17

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 322.

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 327). 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.
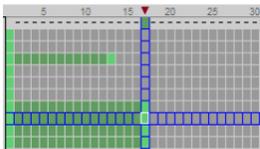
Figure 21.18

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 326. 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:
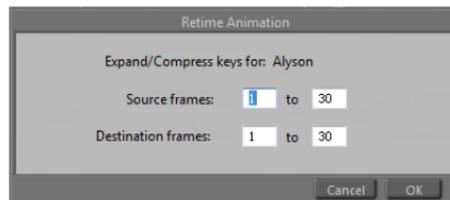
Figure 21.19

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.

1. To retime keyframes:

2. Open the **Retime Keys** dialog box.

3. Enter the start and end frames for the section of animation you want to retime in the **Source Frames** fields.

4. 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.

5. 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:
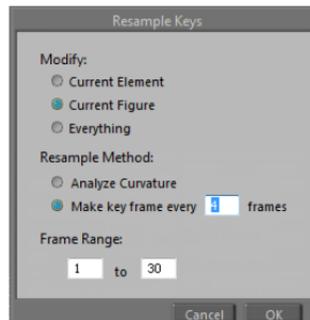
Figure 21.20

- **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.
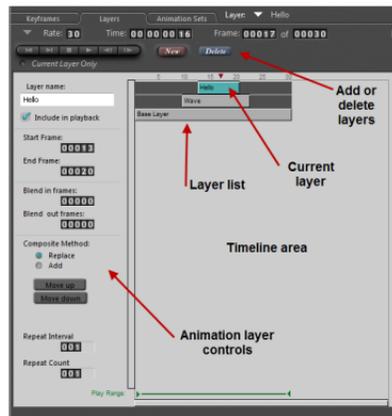
Figure 21.21

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 317 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.

Figure 21.22

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:
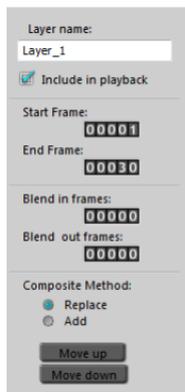
Figure 21.23

- *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.

- *Repeat Interval*: Specifies the number of frames for each cycle of a repeated animation clip.

- *Repeat Count*: Specifies the number of times that the selected clip repeats in your animation.

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.
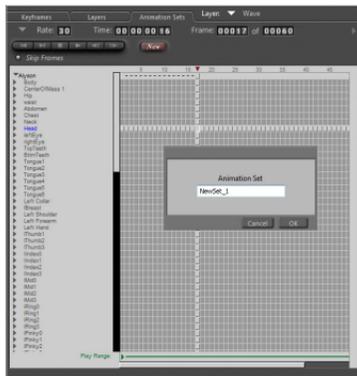
Figure 21.24

- 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.

Figure 21.25

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 7: PoserPython on page 517, 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.
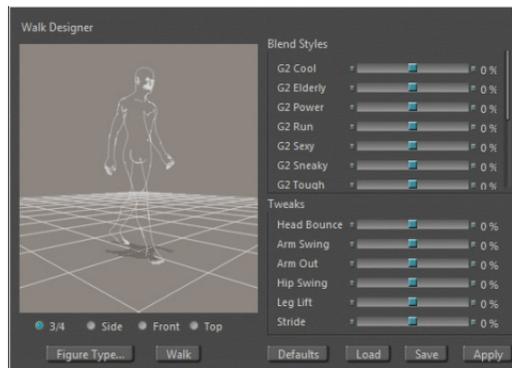
Figure 21.26

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 525 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 340 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:
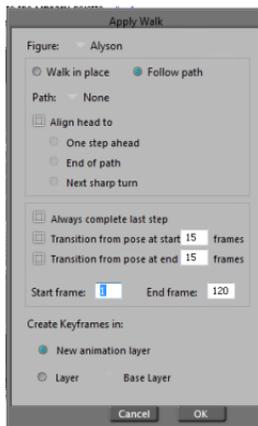
Figure 21.27

- ***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 331.

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 336). 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:
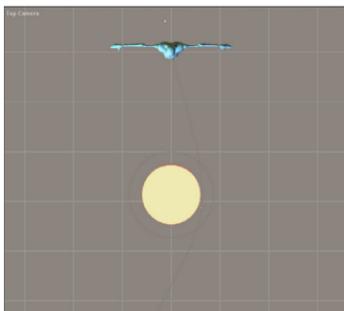
Figure 21.28

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:

Figure 21.29

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 127

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:
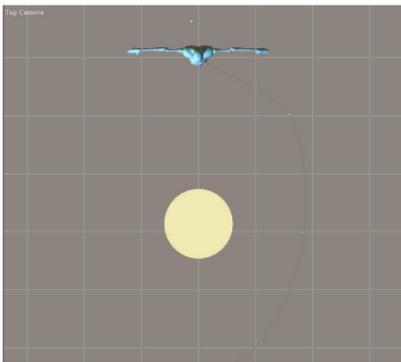
Figure 21.30

Figure 21.31

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 for more information about the **Walk Designer**.
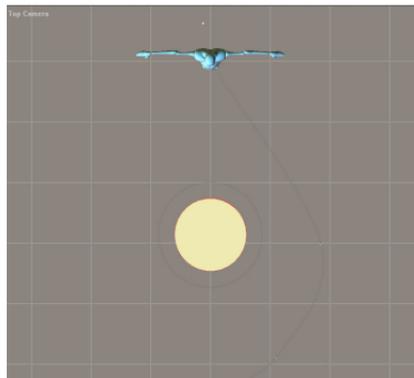
Because of the nature of the spline used for walk paths, it is impossible to create a hard right-angle turn. These and other abrupt direction changes can result in unnatural-looking walks.

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 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 344 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.
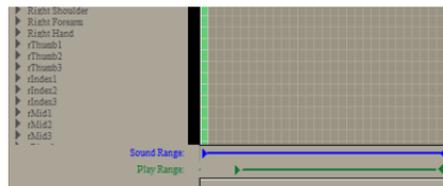
Figure 21.32

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 322 and click the **Toggle Sound Display** button to toggle waveform display on and off.

Figure 21.33

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. This palette can be accessed in the following ways:

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.
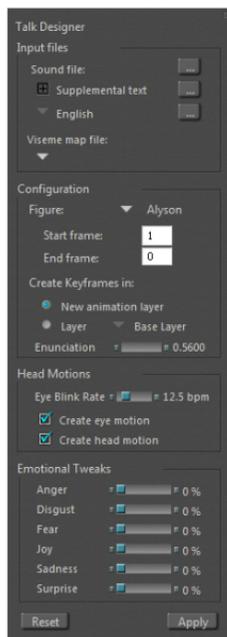
Figure 21.34

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 331.

- *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 textbox 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 327).

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.

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 for more information on saving still or animated poses to the **Library**.

Chapter 22: 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:

Figure 22.1

To use the **Movie Settings** window:

1. Select your desired movie format using the **Format** pull-down menu. Your available options are:

    -   ***Image Files:*** 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.

    -   ***AVI (Windows)/QuickTime (Macintosh)***: These are the default Windows/Macintosh movie formats. We recommend that you use these formats only for preview purposes while still working on your animation, as they provide the fastest possible access to rendered results.

    -   ***Flash***: Adobe Flash is a popular format for animations posted on Web sites.

2. 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.

3. 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 18: Using The FireFly Render Engine on page 285 for more information about the FireFly renderer, and Chapter 19: The

Sketch Designer on page 304 for more information about the Sketch Designer renderer. The Preview renderer provides a quick draft-quality render of your movie.

4. Under the **Options** section, you can enable the following options for AVI/Quicktime and image files, by checking the appropriate checkboxes:

   ▪ *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.

5. Specify your desired export **Resolution** options:

   ▪ *Frame Size*: Select your desired frame size in pixels by entering your desired width and height in the **Width** and **Height** fields, respectively. Some standard movie sizes are: 160x120, 320x240, and 640x480.

   ▪ *Constrain Aspect Ratio*: Checking the **Constrain Aspect Ratio** checkbox preserves the animation'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. Larger movies require vastly increased rendering times and take up far more room on your hard drive.

▪ *Quick-Scale Resolution*: 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 this 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 318 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.

AVI Options

When you choose to render your animation as an AVI, the **Video Compression** dialog includes the following settings:
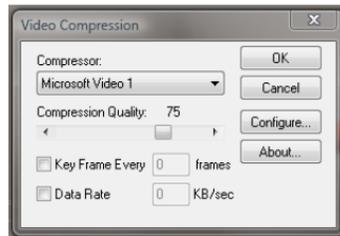
Figure 22.2

- **Compressor:** Select which Codec you wish to use from the **Codec** pop-up menu. Note that certain Codecs offer additional configuration settings. Click on the **Configure** button, if enabled for your selected Codec, to set up your desired configuration.

  Certain Codecs may require a specific image aspect ratio

Chapter 22: Rendering Animations

in order to function properly.

Depending on which Codec you select, the following settings may also be available:

- *Compression Quality:* Adjust the **Compression Quality** slider to your desired level, from 1-100. Higher quality compression will take longer to generate and require more system resources to compute.

- *Key Frame every X Frames*: This setting specifies how often the codec will set up a keyframe in the resulting movie file. This is not to be confused with the keyframe frequency in your actual Poser animation.

- *Data Rate*: You can choose to specify a maximum rate of data processing in KB per second.

QuickTime Options

When you choose Quicktime format and click the Options button, the Compression Settings dialog opens. This dialog includes the following settings:
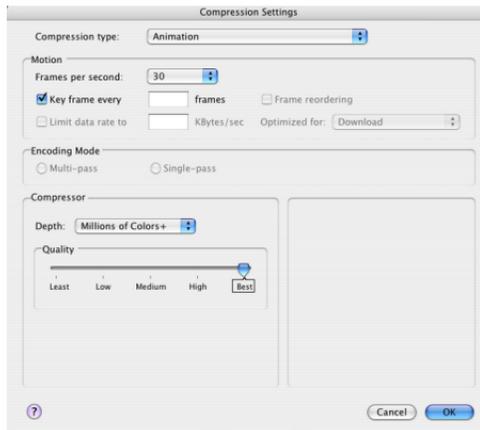
Figure 22.3

- *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 Pixlet Video**, **Apple VC H.263**, **DV-PAL**, **DV/DVCPPRO-NTSC**, **DVCPRO-PAL**, **DVCPRO50-NTSC**, **DVCPRO50-PAL**, **H.264**, **JPEG 2000**, **MPEG-4 Video**, **None**, **Photo-JPEG**, and **PNG**.

  Certain Codecs may require a specific image aspect ratio

in order to function properly. Depending on the codec you select, the selections will vary.

The following settings are some common settings that may appear with one or more compression options:

- *Frames Per Second*: Enter the number of frames per second at which you wish your movie to run.

- *Key Frames Every x Frames*: This setting specifies how often QuickTime will set up a keyframe in the resulting movie file. This is not to be confused with the keyframe frequency in your actual Poser animation.

- *Frame Reordering*:

- *Limit Data Rate to x KBytes/sec*: You can choose to specify a maximum rate of data processing in KB per second

- *Optimized for*:

- *Encoding Mode*: Choose **Multi-pass** or **Single-Pass**

- *Color Depth*: Select your desired color bit depth from the **Color Depth** pop-up.

- *Quality*: Adjust the **Compression Quality** slider to your desired level, from 1-100. Higher quality compression will take longer to generate and require more system resources to compute.

Flash Options

Clicking the **Flash Options** button opens the **Flash Settings** dialog:

You have the following options when exporting Adobe Flash movies:
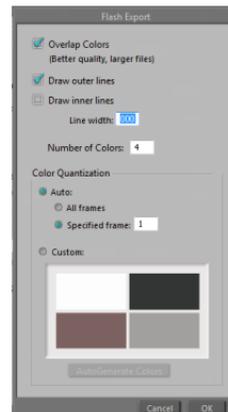
Figure 22.4

- *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 23: 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):

- 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 and Miki2

- 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**, F**ace Shaping Tool** as desired. These windows are described in the sections that follow.

Figure 23.1

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 366) 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 458) 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:

Figure 23.2

- **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:
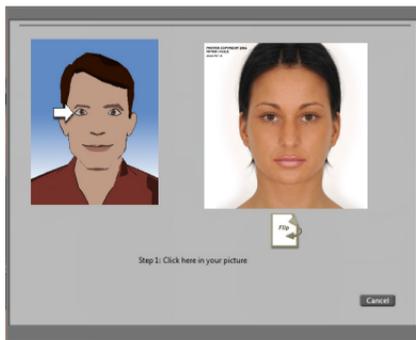
Figure 23.3

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.
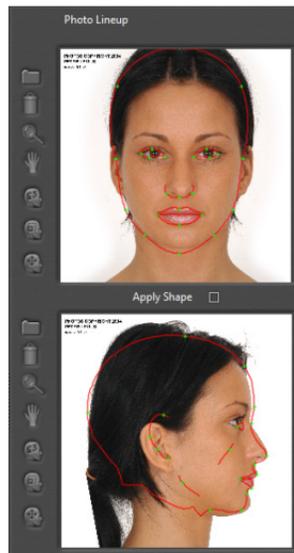
Figure 23.4

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

Chapter 23: The Face Room

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:
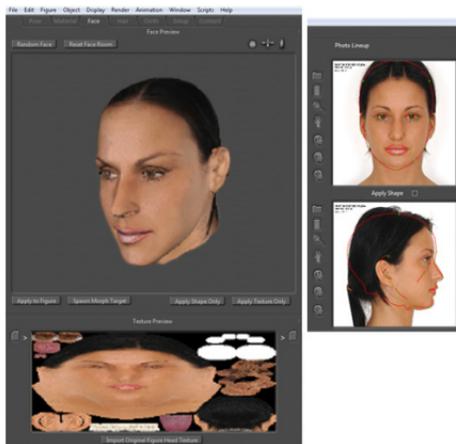
Figure 23.5

👆 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 138. 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 322). 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 458), you can use any combination of clicking and dragging morph targets and/ or adjusting **Face Shaping** parameter dials in the **Face Shaping**

Tool palette.
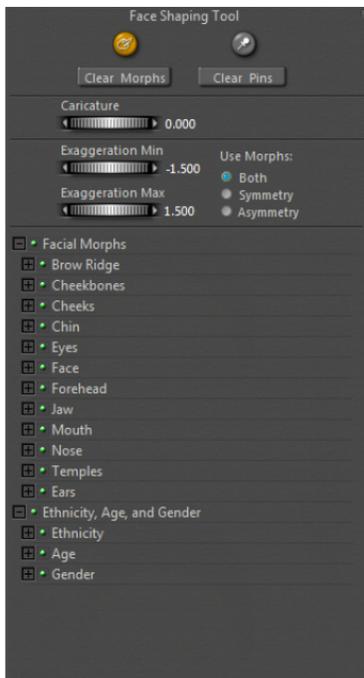
Figure 23.6

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

Chapter 23: The Face Room

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 322) 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 the default Poser texture, which is visible 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 49 for information about the **Save As** dialog).

The Poser male figures use different texture coordinates than the female and child figures. When loading and saving textures, you are prompted to select if the texture is for the male figure. Select **Yes** if the texture if for the male, or **No** if the texture is for the female or child figures.

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 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 470 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 24: 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 13: The Material Room on page 204) 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 449) 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:

Figure 24.1

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 with pre-grown and styled hair in the **hair>Strand-Based hair** category 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 384 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. You learn how to create skullcaps in the Poser Tutorial Manual, Chapter 17: The Hair Room on page 179.

Please refer to the Poser Tutorial Manual, Chapter 4: Groups on page 16 for a general discussion about groups.

Figure 24.2

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 487 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.
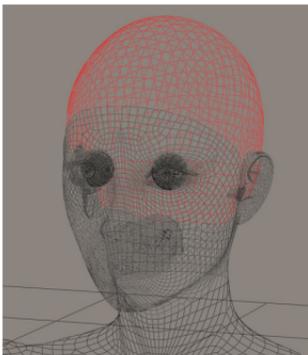
Figure 24.3

🖐 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:
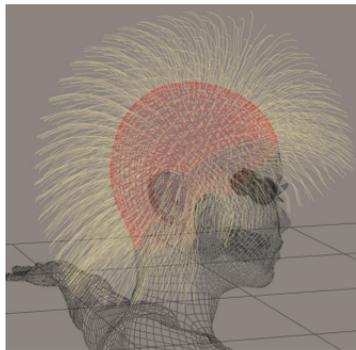
Figure 24.4

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:
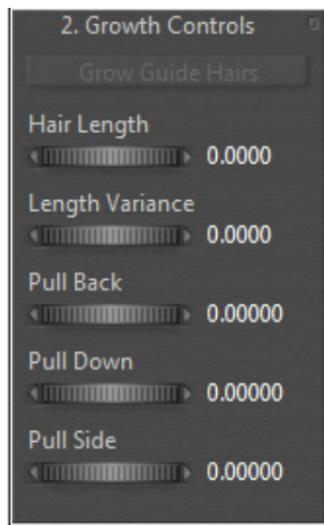
Figure 24.5

- *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:

Figure 24.6

- *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:
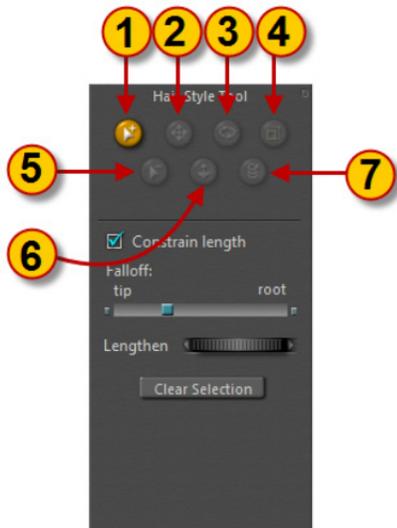
Figure 24.7

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.
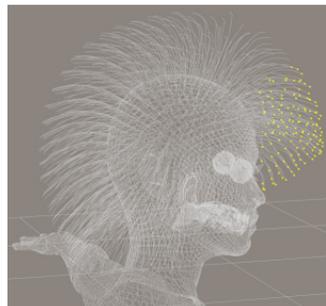
Figure 24.8

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

Chapter 24: The Hair Room

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:
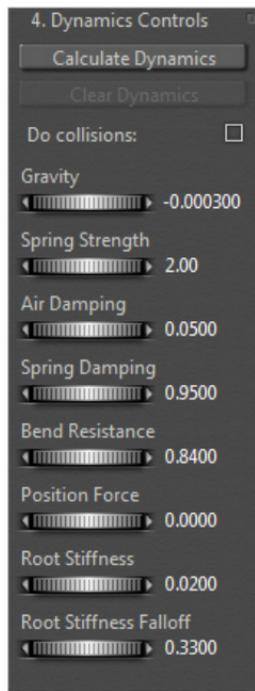
Figure 24.9

- ***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.

Hair Properties & Parameters

To access a hair object's parameters and properties, you must first select the desired hair object. Strand-based hair has the following properties and parameters:

Hair Properties
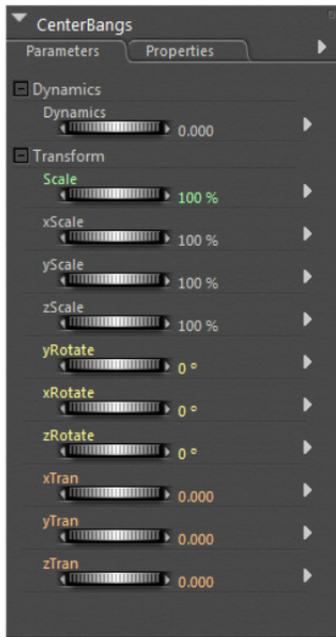
Figure 24.10

- *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 135 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 83. 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 18: Using The FireFly Render Engine on page 285 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 18: Using The FireFly Render Engine on page 285 for more information about shading rates.

Hair Parameters

Strand-based hair has the following parameters:
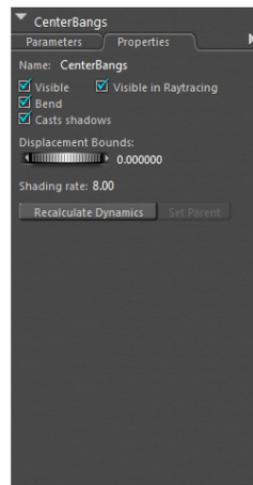
Figure 24.11

- • *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 13: The Material Room on page 204 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.

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 51).

- 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. Select a hair group and open the **Hair>Strand-Based Hair** category in the **Library** palette.

2. Click the **Add to Library** button.

3. You will be prompted to select your desired hair subset(s).

4. Clicking the **Select Subset** button in the **Set Name** dialog opens a hierarchical display allowing you to select the hair groups that you want to save. Be sure to save the parent object!

Strand-based hair is created on a per-object basis for each scene.

Chapter 25: 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:

Figure 25.1

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 97, 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.

Please refer to Chapter 25: The Cloth Room on page 386 for detailed information about the **Cloth** room and its controls.

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.

Please refer to Chapter 25: The Cloth Room on page 386 for detailed information about the **Cloth** room and its controls.

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.
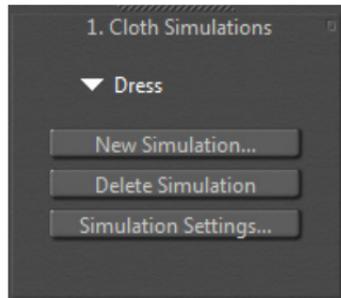
Figure 25.2

Creating the Simulator

To create a simulator, click the **New Simulation** button in the **Cloth Simulation** area of the screen to open the **Simulator Settings** dialog:
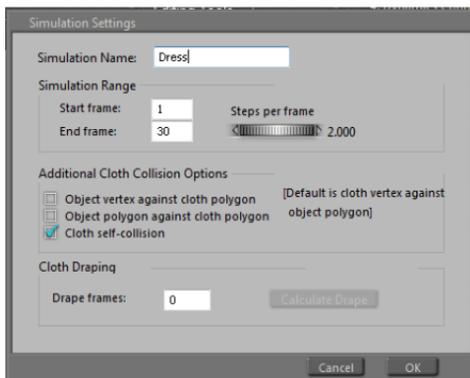
Figure 25.3

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).
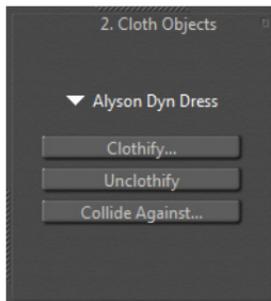
Figure 25.4

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.
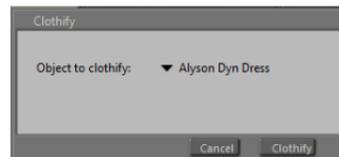
Figure 25.5

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 401.

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:
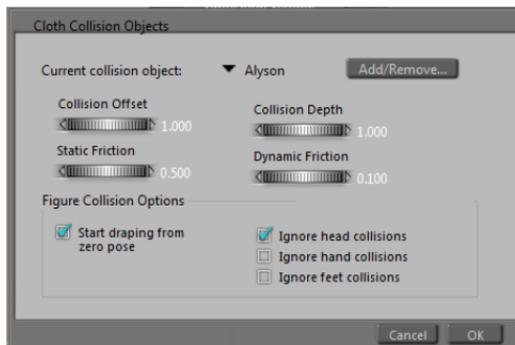
Figure 25.6

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.
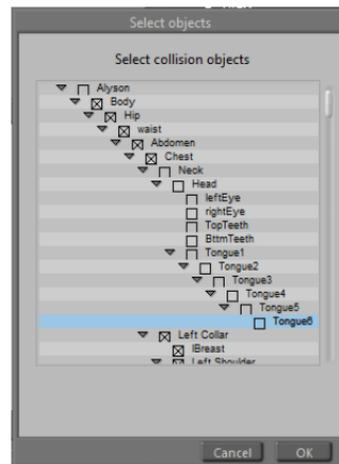
Figure 25.7

- **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 394 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 394 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. You may also try reducing the Steps per frame value from its default of 0.2 to as little as 0.005.

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.
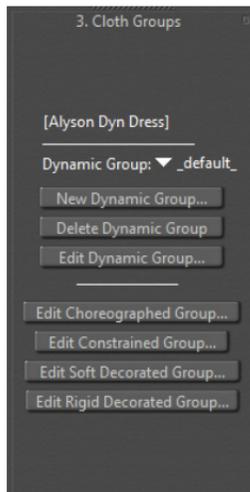
Figure 25.8

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.
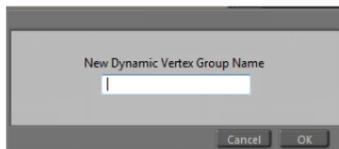
Figure 25.9

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 487 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 487 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 487 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 487 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 487 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.

Chapter 25: The Cloth Room

- 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:
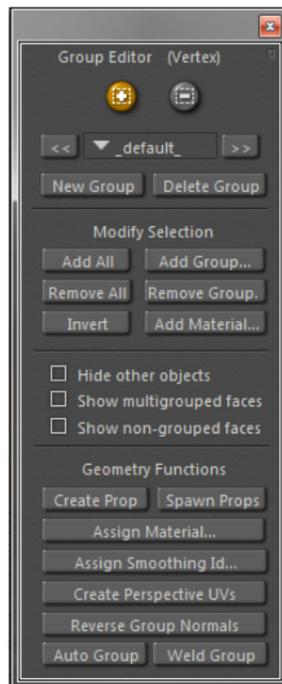
Figure 25.10

- *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.

- *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:

Figure 25.11

- **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 163 for information about prop properties.

- Dynamic cloth has the same parameters as strand-based hair objects. Please refer to Hair Parameters on page 383 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 487 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 470. 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 55.

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 124). Next, open the **Joint Editor** palette (see The Joint Editor on page 500) 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 Chapter 25: The Cloth Room on page 386.

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 26: 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.
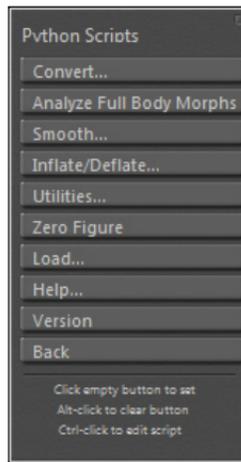
Figure 26.1

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 405.

- **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 411

- **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 409 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 413.

- **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 (shown in Figure 26.1) to open the Wardrobe Wizard dialog shown in the following figure.

Figure 26.2

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.
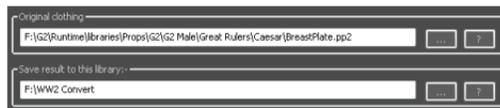
Figure 26.3

 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 **C:\Program Files\Smith Micro\Poser 8** (or wherever your Poser 8 installation is located.)

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.
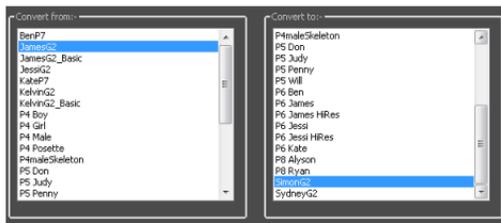
Figure 26.4

Choosing the Clothing Type

Select the type of clothing that best describes the clothing being converted.
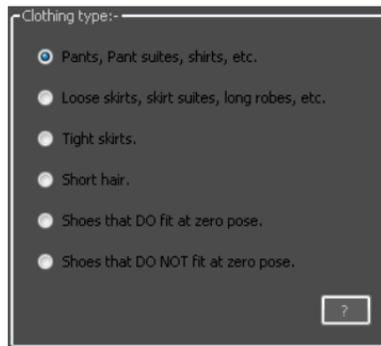
Figure 26.5

- **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 425 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:
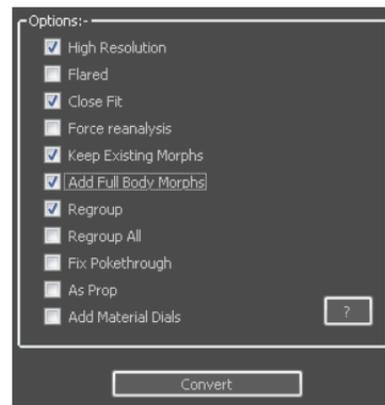
Figure 26.6

- **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.

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.
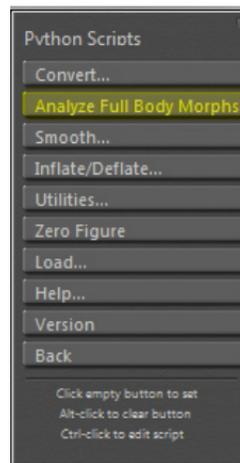
Figure 26.7

2. A dialog opens, and prompts you to select the morphs that you want to include in your clothing.

Figure 26.8

- 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.
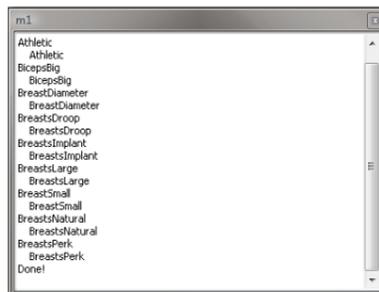
Figure 26.9

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.

Chapter 26: Wardrobe Wizard

The various utilities that are available appear in the menu shown below. These utilities are described in the sections that follow.
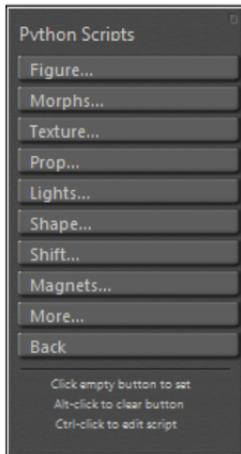
Figure 26.10

Figure Utilities
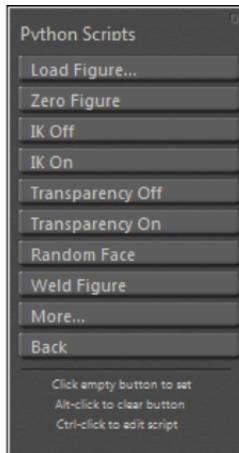
Figure 26.11

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
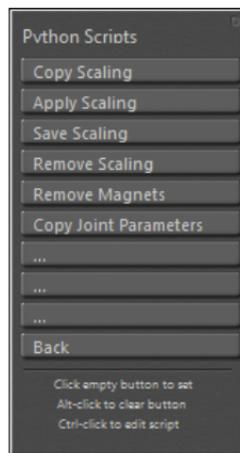
Figure 26.12

- **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

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found in your Poser installation folder as **Poser 8 \Runtime \Python \poserScripts \PhilC \Wardrobe Wizard P8 \ 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.
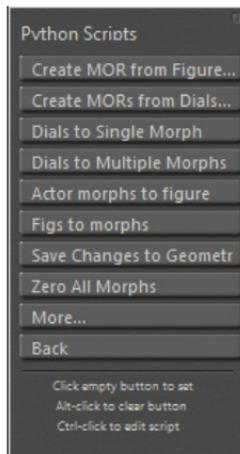
Figure 26.13

- *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 Geometr**y 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
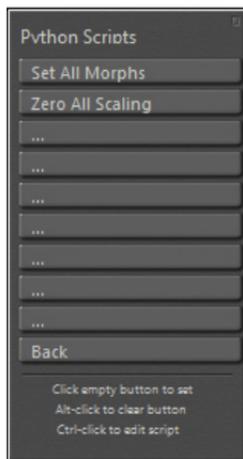
Figure 26.14

- **_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
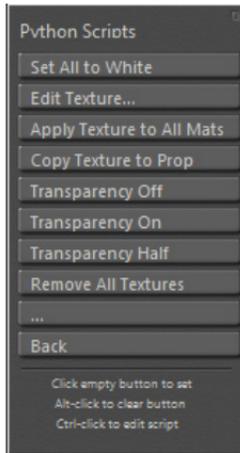
Figure 26.15

- **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
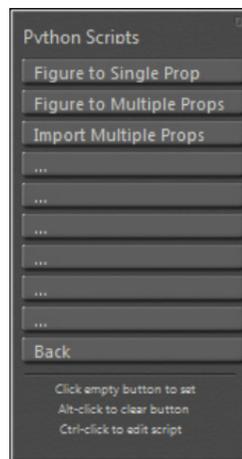
Figure 26.16

- **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 Poser 8 \ Runtime \Python \poserScripts \PhilC \Wardrobe Wizard p8 \ 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
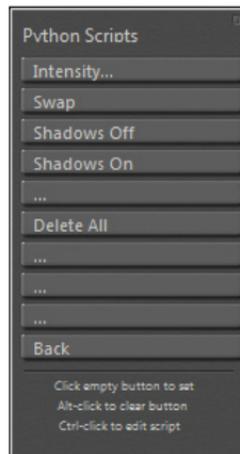
Figure 26.17

- ***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 on 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 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".
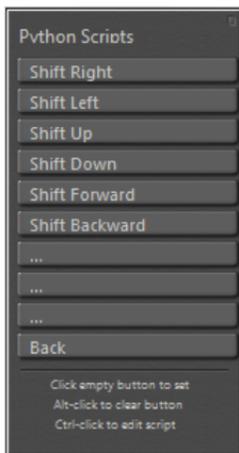
Figure 26.21

- • **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
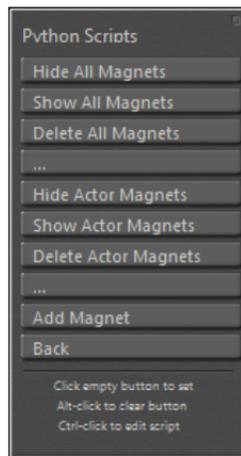
Figure 26.22

- • **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
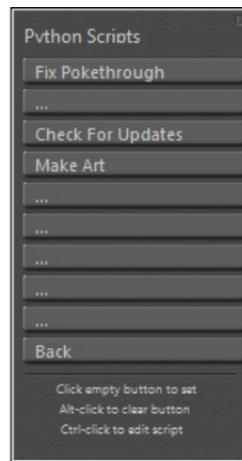
Figure 26.23

- ***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.

Figure 26.24

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.

Figure 26.25

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.

Figure 26.26

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:filen
ame.obj
```

Absolute Path

```
C:\Documents and Settings:Administrator:My
Documents:My Poser Files:Runtime:Geometries:Folder:Sub
Folder: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 458.

Chapter 27: 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:

Figure 27.1

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 Poser Tutorial Manual, Chapter 26: Advanced Figure Creation on page 278, which covers the text-based figure creation method in detail. This document is in Adobe Acrobat (PDF) format and is included in the **Documentation** folder on your Poser CD.

- Using the hierarchy palette (discussed in The Hierarchy Editor on page 493) 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.

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 50 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 Poser 8 figures are listed in Poser 8 Figures Hierarchy on page 494.

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 the Poser Tutorial Manual, Hierarchy on page 14 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 **Poser 8 Male (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.
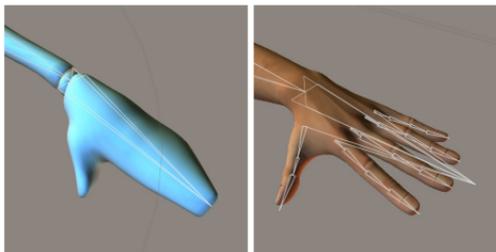
Figure 27.2

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.
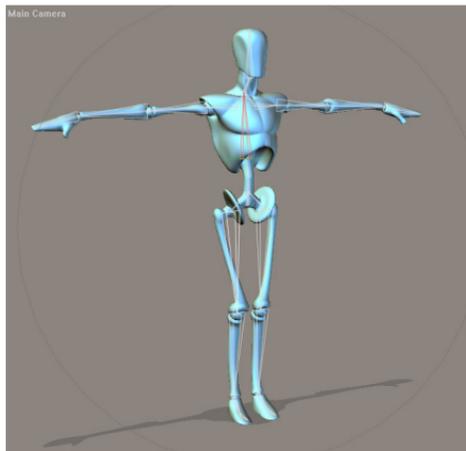
Figure 27.3

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 434.

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.

Figure 27.4

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.
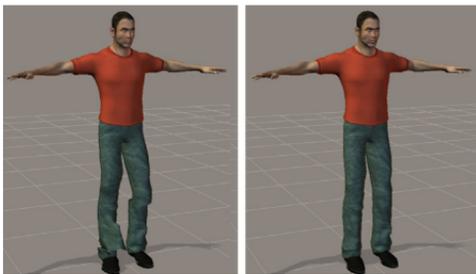
Figure 27.5

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 155) 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.

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 Falloff Zones on page 509 for an explanation of spherical and capsule 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.
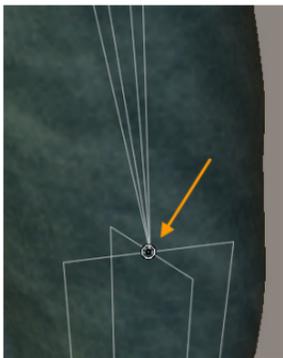
Figure 27.6

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 Falloff Zones on page 509 for an explanation of spherical and capsule 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.

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 The Joint Editor on page 500 for complete information on using the **Joint Editor** palette.

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 155 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 Poser 8 figures are listed in

- *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 52, 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 487 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. Please refer to Rotation Orders on page 515 for information on setting joint rotation orders.

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 The Joint Editor on page 500.

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 155. 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 The Hierarchy Editor on page 493.

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 499.

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 124 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 141 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 471.

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 28: 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.

Figure 28.1

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 458 and Creating Morphs in Other Applications on page 468.

- You can use the **Grouping** tool (see The Group Editor on page 487 to create cloth, hair, or other groups. You can also deform polygon groups as mentioned in Using Deformers with Grouped Objects on page 458. The **Grouping** tool is located in the **Editing** tools display.

- The **Scale** and **Taper** tools (see Scale on page 131 and Taper on page 132, 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 165).

- 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 Actor on page 151. 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 154.

- 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 155 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 70) 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 471 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 129 for information on using the **Editing** tools. Here's an example of a sphere deformed by a magnet:

Figure 28.2

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.
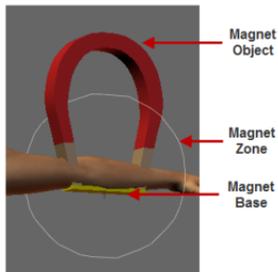
Figure 28.3

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:
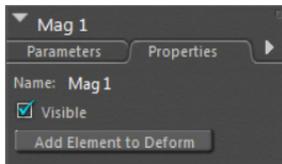
Figure 28.4

- *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 135 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:

Figure 28.5

- *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:
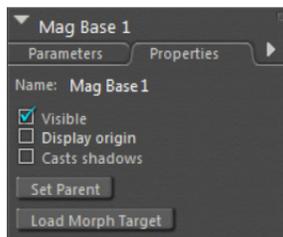
Figure 28.6

- *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 135 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 Poser Tutorial Manual, Global vs. Local Coordinates on page 7 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 the Poser Tutorial Manual, Hierarchy on page 14 for a description of hierarchical relationships and to Changing a Parent on page 167 for information on setting parents.

- *Load Morph Target*: Clicking the **Load Morph Target** button displays the **Load Morph Target** dialog, allowing

Chapter 28: Modifying Figures & Props

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 458). Please refer to Chapter 28: Modifying Figures & Props on page 443 for more information about loading morph targets.

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.

Figure 28.7

- **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 487 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 the Poser Tutorial Manual, Hierarchy on page 14 for a description of hierarchical relationships and to Changing a Parent on page 167 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 448 for information on using this graph.

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:
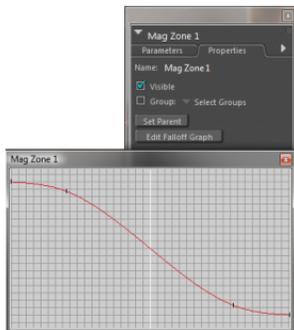
Figure 28.8

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.
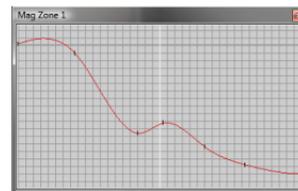
Figure 28.9

Locking Magnets

You can lock magnets to prevent accidental changes. Please refer to Lock Actor on page 151.

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.

Figure 28.10

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:
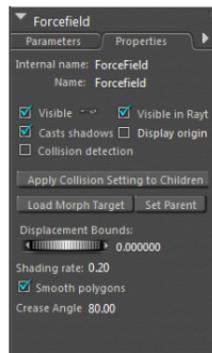
Figure 28.11

- **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 135 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 163 for more information about force field origins.

- *Collision detection*: Checking the **Collision Detection** checkbox enables collision detection for the currently selected force field. Please refer to Collisions on page 63 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 458 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 the Poser Tutorial Manual, Hierarchy on page 14 for a description of hierarchical relationships and to Changing a Parent on page 167 for information on setting force field parents.

- *Displacement Bounds*: The **Displacement Bounds** property determines the force field's displacement boundary. Please refer to Chapter 18: Using The FireFly Render Engine on page 285 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 18: Using The FireFly Render Engine on page 285 for more information about shading rates.

- *Smooth Polygons*: to be added.

- *Crease Angle*: to be added.

Force Field Parameters

Force fields have the following parameters, available in the **Parameters** palette:
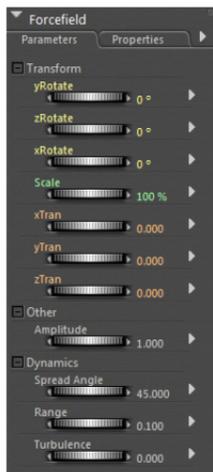
Figure 28.12

- **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 129 for information on using the **Editing** tools. Here's an example of a sphere deformed by a wave:

Figure 28.13

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:

Wave object →
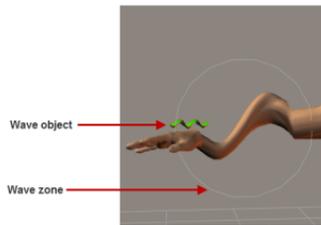
Wave zone →

Figure 28.14

- • **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:
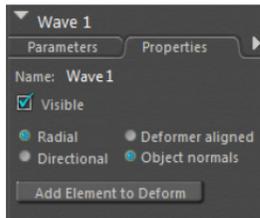
Figure 28.15

- *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 135 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:
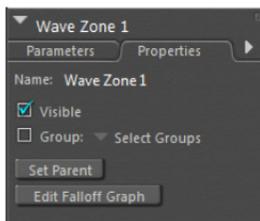
Figure 28.16

- *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 135 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 487 for information on using the **Grouping** tool. A group is selected when a checkbox appears next to the group listing.

- *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.

- *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 167 for information about parenting objects.

   👆 Setting the Wave Zone's Display Style to Wireframe can help make it more visible in your Document Window.

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 448.
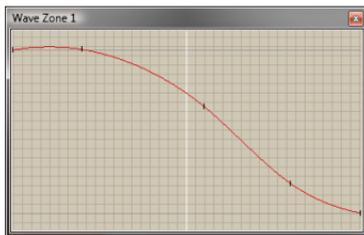
Figure 28.17

Wave Deformer Parameters

Wave deformers can use the following parameter dials in the
Parameters palette:
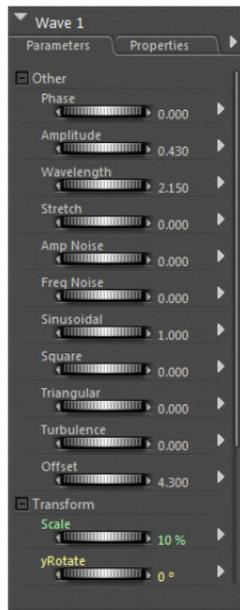
Figure 28.18

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.

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Using Deformers with Grouped Objects

You can create custom groups using the **Group Editor** palette as described in The Group Editor on page 487 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.

Figure 28.19

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.
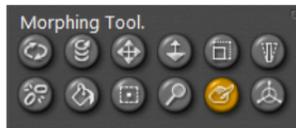
Figure 28.20

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.
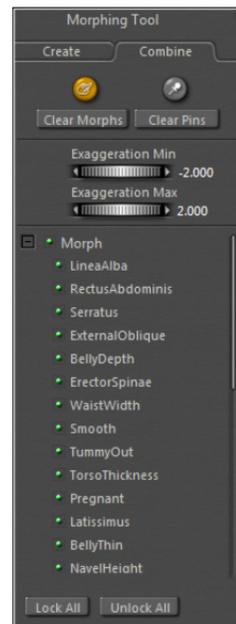
Figure 28.21

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.

Figure 28.22

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:

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Figure 28.23

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 141 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.

- *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

- ***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. 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 471.
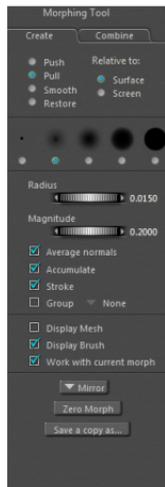
Figure 28.24

To use the **Create** tab:

1. At the top of the **Create** tab, click the radio button for the action you wish to use to modify the vertices: **Push**, **Pull**, **Smooth** or **Restore**.

Figure 28.25

- **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.

- **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.

2. Select the mode in which you wish to work: Relative to **Surface** or **Screen**.

- **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.

3. 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.
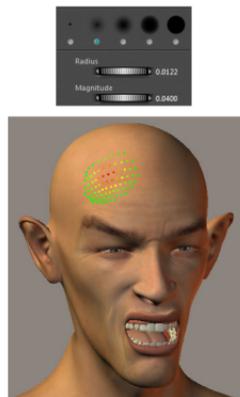
Figure 28.26

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.

4. 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.

5. 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.

Figure 28.27

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.

6. 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.
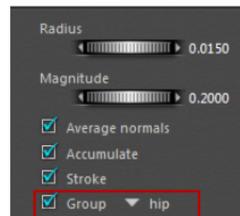
Figure 28.28

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 29: Figure and Prop Editors on page 487 for more information about the **Group Editor**).

7. Enable or disable the following options to suit your requirements:

   ▪ *Average normals:*

   ▪ *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.

8. 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.

9. When you have completed your modifications, click the **Save Copy As** button to propagate your work to a new morph target.

The **Create** tab also contains the following Display options:
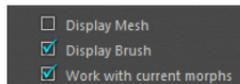
Figure 28.29

- **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 77 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.

Figure 28.30

targets:

Figure 28.31

- *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
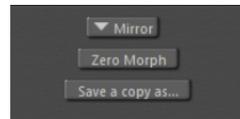
- *Mirror*: The **Mirror** button at the bottom of the **Create** tab brings up a pop-up menu offering six options of different axes and directions for creating symmetrical changes on the currently selected object, for example "-x to x" or "z to -z". Note that these axes refer to the local coordinate 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

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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. 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 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.

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 55.

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 120 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.
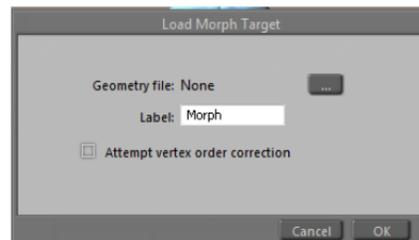
Figure 28.32

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

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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.

1. 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.

2. 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.

3. 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.
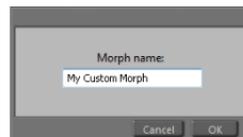
Figure 28.33

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.

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 138. 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.

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, 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.

Figure 28.34

Figure 28.35
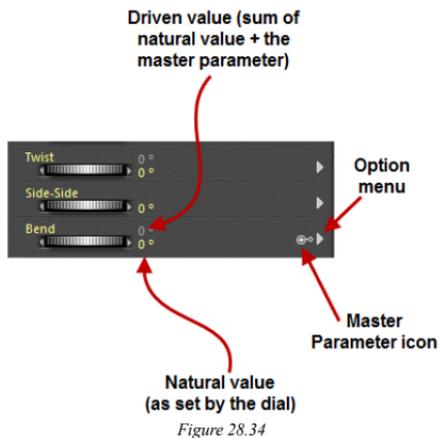
Select Alyson's **Left Forearm,** and click the Option Menu arrow at the right of the **Bend** parameter to display the menu shown in the following figure. Choose **Edit Dependencies** from the menu that appears. This opens the Dependent Parameters window.
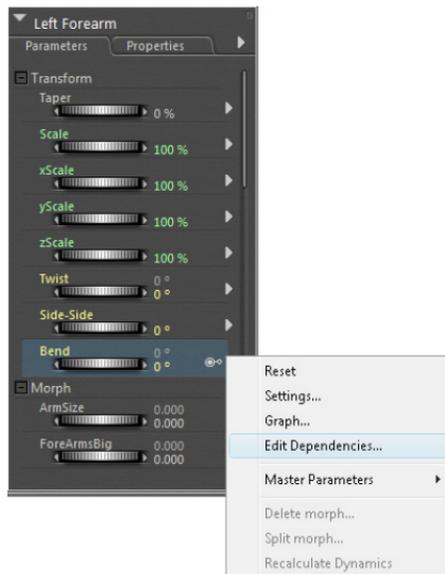
The **Dependent Parameters** window displays the following settings and options:

• *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.
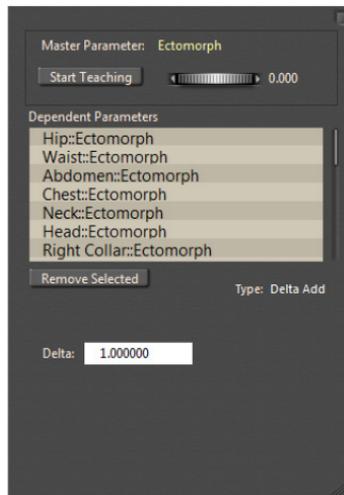
Figure 28.36

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.
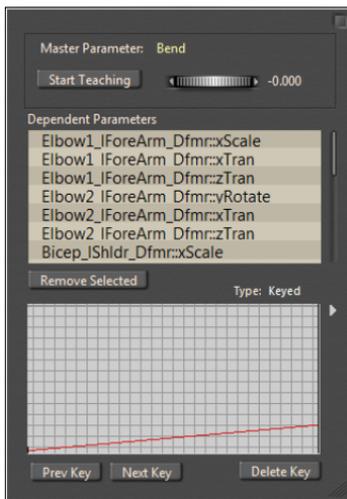
Figure 28.37

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.
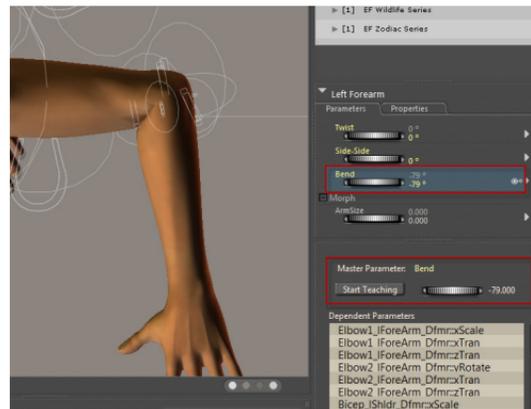
Figure 28.38

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:

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- 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.**
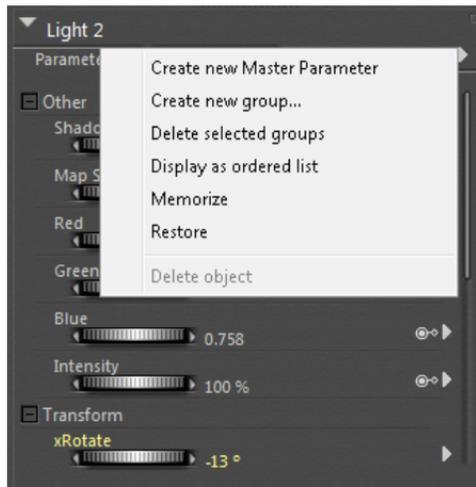
Figure 28.39

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.
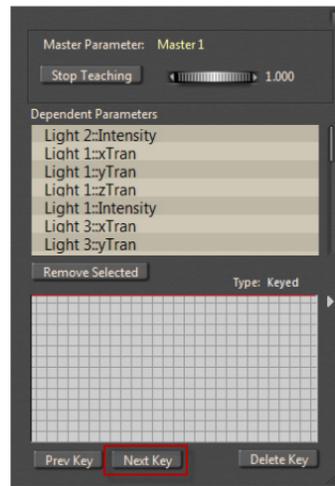
Figure 28.40

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.

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10. In the Properties palette, set the intensity of your current light to 0% (off). Then do the same for the other two lights.
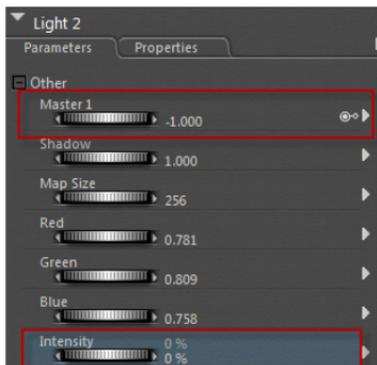
Figure 28.41

11. 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.
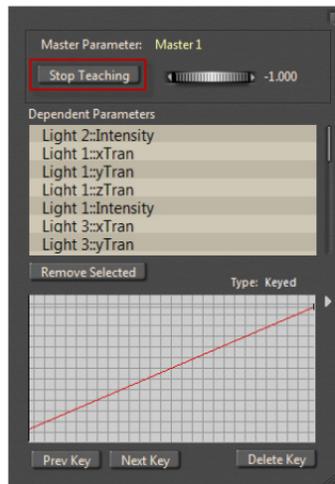
Figure 28.42

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.

Figure 28.43

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.
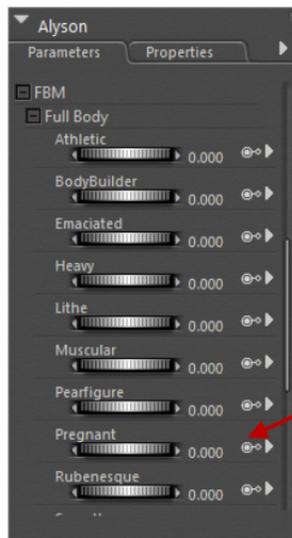
Figure 28.44

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 471,
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.
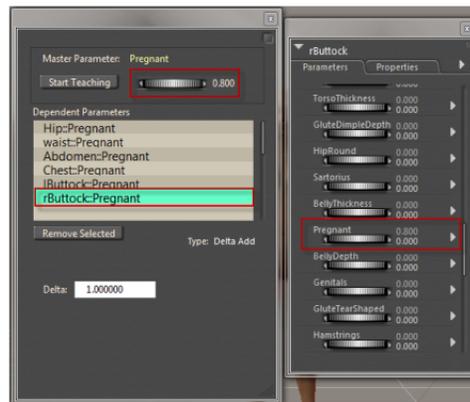
Figure 28.45

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.

Figure 28.46

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
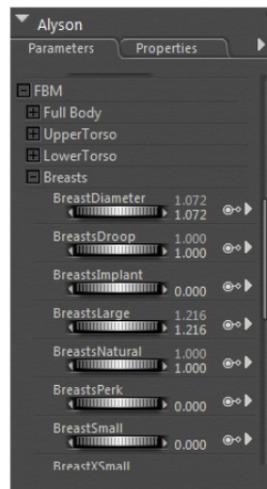
Figure 28.47

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
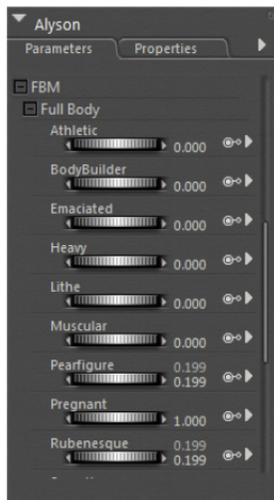
Figure 28.48

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.
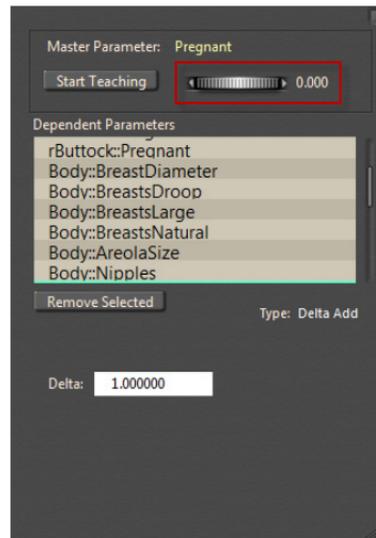
Figure 28.49

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

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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.
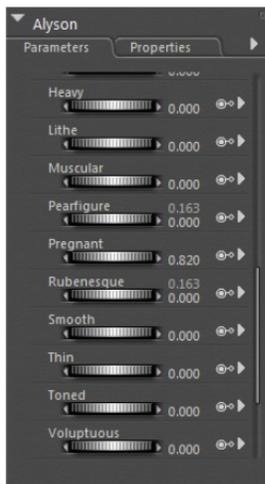
Figure 28.50

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.
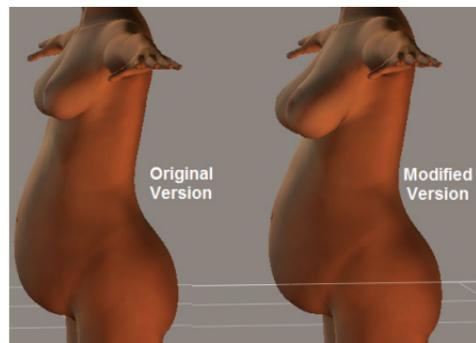
Figure 28.51

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.
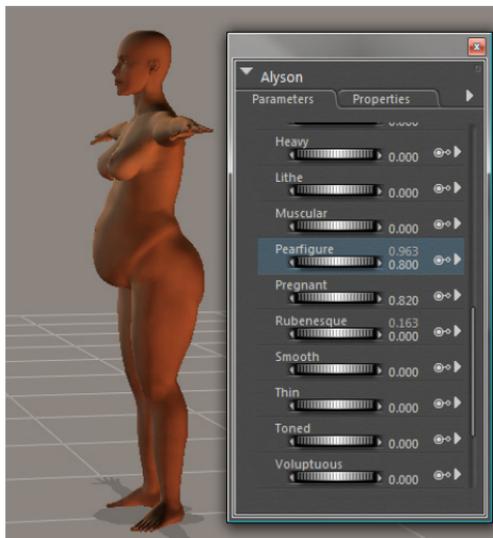
Figure 28.52

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 113.

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 26), 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.

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 497.

Chapter 29: 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 13: The Material Room on page 204 for information about the **Material** room.

- Creating hair groups in the **Hair** room. Please refer to Chapter 24: The Hair Room on page 372 for information about the **Hair** room.

- Creating cloth groups in the **Cloth** room. Please refer to Chapter 25: The Cloth Room on page 386 for information about the **Cloth** room.

- Creating body parts in the **Setup** room. Please refer to Chapter 27: The Setup Room on page 428 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 492 for information on how to select polygons in the Group Editor.

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. In vertex mode, you can add/remove your currently selected vertex/vertices to the current vertex group.

In polygon mode, you can only create/edit/delete polygon groups. Likewise, in vertex mode, you can only create/edit/delete vertex groups. However, 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 image) with the suffix **P**. 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.

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.

Using the Group Editor

To create/edit a group, select the **Grouping** tool, which opens the **Group Editor** palette.

Figure 29.1

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:
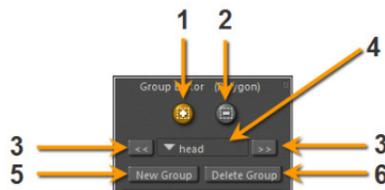
Figure 29.2

- **Select button (1)**: Click the **Select** button to enable polygon selection, and then click within the current object to add polygons/vertices to the current group.

- **Deselect button (2)**: Click the **Deselect** button to enable polygon deselection, and then click within the current object to remove polygons/vertices from the current group.

- **Previous and Next buttons (3)**: Clicking the **Previous** (**<<**) and **Next** (**>>**) buttons cycles through the currently existing groups. Alternatively, you can use the pull-down menu between these buttons to jump directly to the desired group. These buttons are primarily used in the **Hair** and **Cloth** rooms.

- **Current Group pull-down menu (4)**: Use the

Current Group pull-down menu to jump directly to your desired group. This menu is primarily used in the **Hair** and **Cloth** rooms.

- *New Group button (5)*: Clicking the **New Group** button creates a new group with the currently selected polygons. Enter a name for the group in the dialog box that appears. This function is disabled in the **Hair** and **Cloth** rooms.

- *Delete Group button (6)*: Clicking the **Delete Group** button deletes the currently selected group.

Figure 29.3

- *Add All button (7)*: Clicking the **Add All** button places all polygons comprising the current object into the currently selected group.

- *Add Group button (8)*: Clicking the **Add Group** button adds all the polygons or vertices from the group you select in the **Add Group** dialog to the current (currently selected) group.

- *Remove All button (9)*: Clicking the **Remove All** button removes all polygons from the currently selected group.

- *Remove Group button (10)*: Clicking the **Remove Group** button removes the polygons or vertices from the selected subgroup to the current (currently selected) group.

- *Invert button (11)*: Clicking the **Invert** button inverts the current selection, that is, selects all deselected polygons and vice versa.

- *Add Material button (12)*: Clicking the **Add Material** button creates a new material group consisting of the currently selected polygon(s).

Figure 29.4

- *Hide Other Objects box (13)*: 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 (14)*: 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 (15)*: 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.

Figure 29.5

- *Create Prop button (16)*: 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 (17)*: 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 (18)*: 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 (19)*: 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 299.

- **Create Perspective UVs button (20)**: 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 (21)**: 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 (22)**: See The Auto Group Command on page 491 below.

- **Weld Group button (23)**: See The Weld Group Command on page 492 below.

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 Poser 8 figures is shown in Poser 8 Figures Hierarchy on page 494. 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.

👆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.

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 the Poser Tutorial Manual, Hierarchy on page 14 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 151).

- IK chains.

Poser 8 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 Poser 8 figures are shown below in their correct hierarchical structure. Poser 8 figures 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** 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 Setup Room on page 428) 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:

Figure 29.6

- *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.

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.
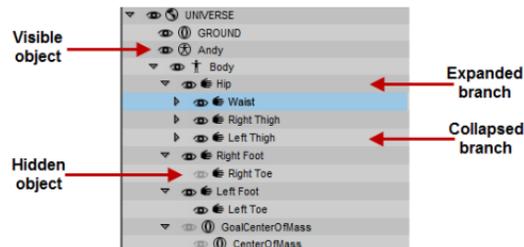
Figure 29.7

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). 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.
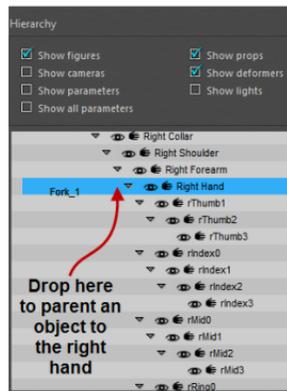
Figure 29.8

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 167) to open the **Set Parent** dialog.

3. Select the parent body/body part in the dialog and click **OK**.

Applying Standard Rotation Order

Please refer to the Poser Tutorial Manual, Applying the Standard Rotation Order on page 286 for more information about this function.

Applying the Standard Hierarchy

Please refer to the Poser Tutorial Manual, Applying the Standard Hierarchy on page 286 for more information about this function.

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.
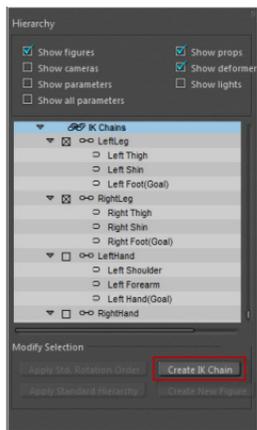
Figure 29.9

🖐 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.

Creating a New Figure

Please refer to the Poser Tutorial Manual, Chapter 26: Advanced Figure Creation on page 278 for more information on this legacy method of figure creation.

The Joint Editor

This section explains how to use the **Joint Editor** palette for positioning and/or fine-tuning joints. To open the palette, select **Window > Joint Editor**.
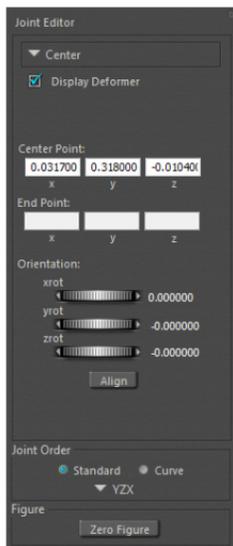
Figure 29.10

The **Joint Editor** palette adjusts the currently selected joint (**Pose** room) or bone (**Setup** room) by allowing you to control both joints and blend zones. You can manipulate joints and blend transformers directly, thereby modifying how a joint or bone works. You can use this functionality to:

1. Fine-tune the blending of existing figures to suit your needs.

2. Create new types of effects.

3. Customize joints and transformers when creating your own figures (such as using the **Setup** room, described in Chapter 27: The Setup Room on page 428).

A figure's joints control how parts bend, twist, and bulge. Realistic figure movement is controlled by joint settings. For example, a human knee can't bend forward.

A figure's bending and twisting motion is created using transformers, which skew, stretch, or scale polygons in the transformation zones to produce the desired motion. This is how a single static mesh object can become a fully pose-able figure within Poser. Transformation zones are defined by assigning inclusion and exclusion angles to each zone. Polygons in the exclusion angle are not affected by a joint bending, while polygons in the inclusion angle are affected. The area between the inclusion and exclusion angles is called the blend zone, where polygons are adjusted to create a smooth transition between surrounding polygons.

Using the Joint Editor

This section discusses using the **Joint Editor** palette in general terms and covers the options common to all joint parameters.

To edit a joint's parameters, begin by selecting the desired joint and

opening the **Joint Editor** palette by selecting **Window > Joint Editor**. The general options available are:

- *Selecting a Joint*: To select a joint, click the desired bone or joint.

- *Selecting a Joint Parameter*: Use the pull-down menu at the top of the **Joint Editor** palette to select the joint attribute you wish to edit from among those available for the selected joint. Parameters available for the selected attribute will appear in the palette.

- *Use Spherical Falloff Zones*: The **Use Spherical Falloff Zones** option toggles spherical falloff zones on and off. Please refer to Falloff Zones on page 509 for more information about falloff zones.

- *Zero Figure*: Selecting **Zero Figure** reverts all joint rotation parameters to zero.

The following section contains detailed information for each joint attribute.

Editing Joint Attributes

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. For example, 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.
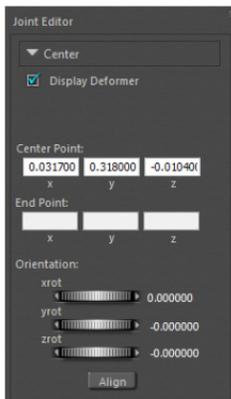
Figure 29.11

The following options are available when adjusting the **Center** joint parameter:

- **Display Deformer**: The **Display Deformer** option toggles the display of the actual joint on and off (which may be redundant when you are in the **Setup** room). This option works globally for all falloff zones when clicked.

- **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.

- **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. 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.

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. Holding your arm out with the palm down, 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.
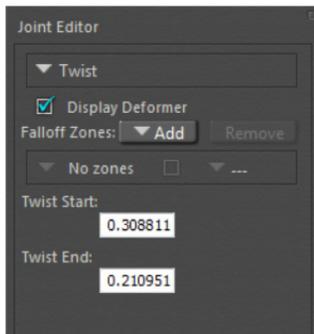
Figure 29.12

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. 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.

The Twist parameter has the following settings and options:

- *Display Deformer*: The **Display Deformer** option toggles the display of the Falloff Zone geometries for the rotation channels. This setting is on globally for all joints.

- *Falloff Zones*: See Falloff Zones on page 509.

- *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. Note that 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.

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.

Figure 29.13

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.

Bend, Side to Side, and Front to Back

Adjusting the **Bend** attribute controls the angles of the bend transformers and defines how bulges are created. Flex various joints and note both the limits of your flexibility and how skin and muscles bulge as you move. The **Bend** attribute lets you control how this occurs in your figure.
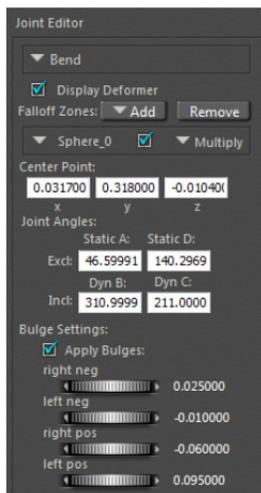
Figure 29.14. Bend attribute settings.

Like the **Bend** attribute, the **Side-Side** and **Front-Back** attributes control the angles of the **Side-Side** and **Front-Back** transformers and define how bulges are created. These attributes are suited for omnidirectional joints such as your wrists, shoulders, hips, ankles, etc.
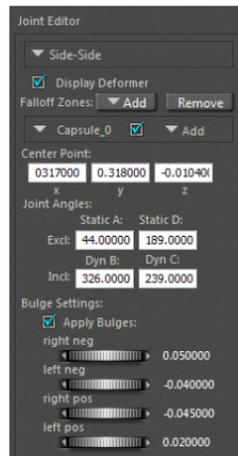
Figure 29.15. Side-Side attribute settings.

Chapter 29: Figure and Prop Editors
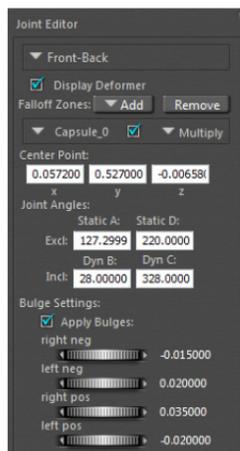
Figure 29.16. Front-Back attribute settings.

The following parameters change the angles of the bend, side-to-side, and front-to-back transformers, respectively. Further, Poser can create bulges to emulate your muscles bulging as you move. Each of these three parameters is functionally identical when editing these joint attributes in the **Joint Editor** palette.

You can use the **Editing** tools to adjust these parameters. These parameters 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.

They consist of the following settings:

• *Center Point*: The **Center Point** defines the center of the joint in 3D space. 0,0,0 is defined as being in the center of the skeleton on the floor. The motion (bending, side to side or front to back) occurs at the center point.

• *Joint Angles*: The **Static A** and **Static D** values determine the exclusion angle. The **Dynamic B** and **Dynamic C** angles determine the inclusion angle.

• *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.

Inclusion & Exclusion Angles

The **Bend**, **Side-Side**, and **Front to Back** parameters allow you to define the inclusion and exclusion angles for the selected joint. The

inclusion angle appears as two green lines forming an angle, with the exclusion angle being a pair of red lines forming an angle.

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. When editing inclusion and exclusion angles, the red lines represent the exclusion angle while the green lines represent the inclusion angle.

- 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.

- 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.

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.
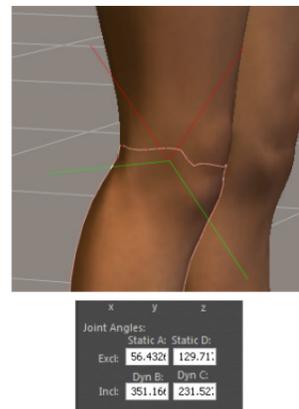
Figure 29.17

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.

End Zone

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.

Figure 29.18

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, the Poser 4 Business Man figure'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.
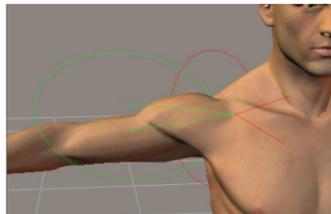
Figure 29.19

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.

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, Up-Down). A Falloff Zone section appears in the Joint Editor where it is appropriate to use falloff zones on a joint.

There are two types of falloff zones: *Spherical* and *Capsule,* described in the sections that follow. Multiple Falloff Zones can be combined, regardless of type. The type of blending can be set as additive or multiply in the **Joint Editor**.

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.
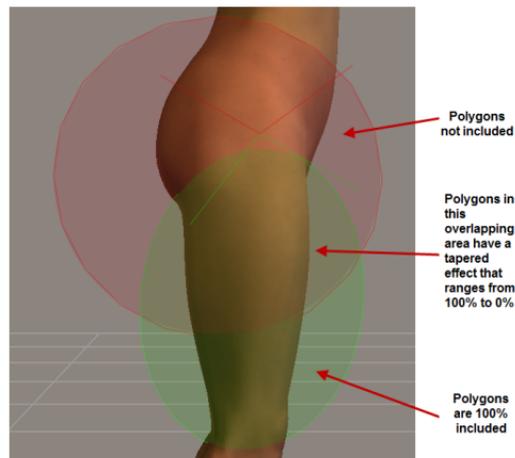
Figure 29.20

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**.

- Click the red sphere to edit the unaffected area. The Parameters/Properties palette displays its properties as the

outerMatSphere.
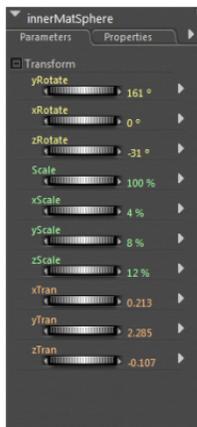
Figure 29.21

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.

    TIP! 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 134.

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. 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.
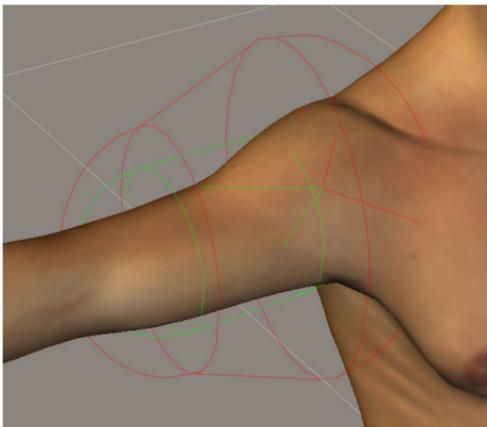
Figure 29.22

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.

- 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.
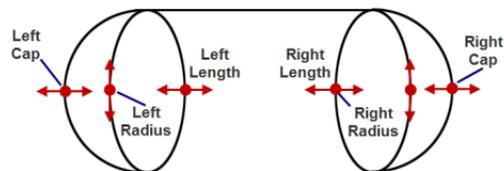
Figure 29.23

- **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

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Length.

Creating and Using Falloff Zones

As mentioned previously, you can use Falloff Zones on rotation joint rotations such as Bend, Side-Side, Up-Down, and Front-Back. When a joint property can utilize Falloff Zones, the Joint Editor displays a Falloff Zones area that appears as shown in the following figure.
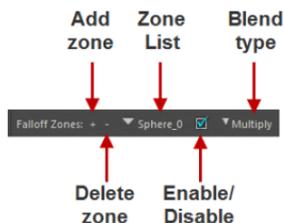
Figure 29.24

Adding a Falloff Zone

To create a falloff zone:

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.
   - ▪ *Cancel*: Choose this option to return to the Poser workspace without creating a new 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 509) or MatCapsules (see Capsule Falloff Zones on page 510).

5. Repeat steps 1-4 to add additional falloff zones if desired.

Blending Multiple Falloff Zones

In addition to offering two types of falloff zones, Poser 8 also allows you to use more than one falloff zone for a joint. The Joint Editor now provides a drop-down menu that lists the falloff zones that have been created for each joint. You can add one or more spherical or capsule falloff zones to any joint.

For an example of using multiple falloff zones, add the Poser 8 male or female to your scene (Ryan or Allison), and 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.
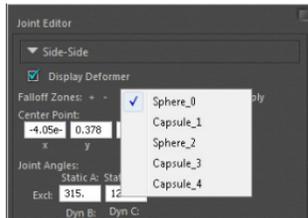
Figure 29.25

 NOTE: 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** or **Add** from the blend mode selection menu.
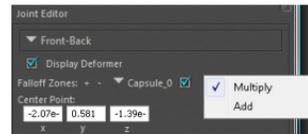
Figure 29.26

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 sphere or capsule falloff zone that you want to delete.

3. Click the **- (minus) icon** in the Falloff Zones area of the Joint Editor.

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 sphere or capsule falloff zone.

3. Click the checkbox next to the falloff zone name. The falloff zone is enabled when the box is checked, and disabled when the box is unchecked.
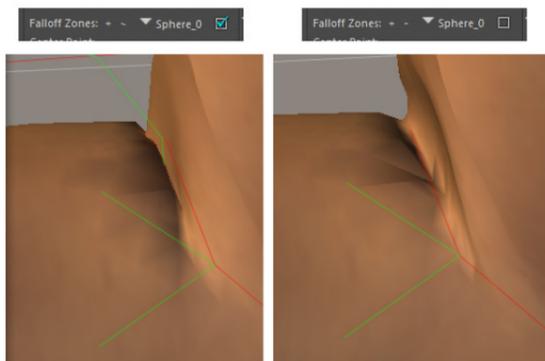
Figure 29.27: Falloff zone enabled (left) and disabled (right)

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.
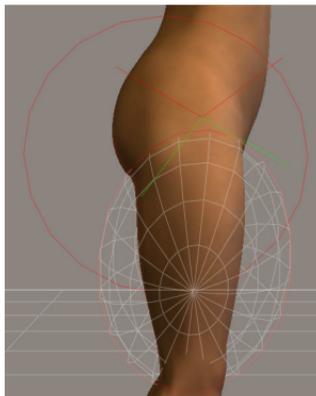
Figure 29.28

Figure 29.29

Rotation 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.
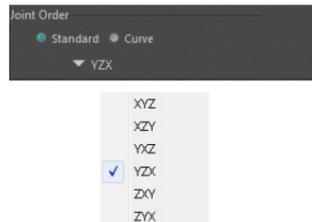
Using the Front camera position, the X axis runs from left to right, the Y axis runs from bottom to top, and the Z axis runs from the back to the front. This is called a right-handed coordinate system.

Determining the best rotation order for each joint 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.

If you change joint order, you will probably need to readjust the joint zones on the currently selected bone.

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Each joint consists of three separate joint primitives, one twist and two joints. 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, with the remaining rotation axis placed in the middle. For example, a shin is vertical and twists about the Y-axis. When the shin bends, it is most likely to bend around the X-axis. 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.

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 155. 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 49 for information on saving Poser scenes, and to Chapter 2: Installing Poser on page 11 for information on working with the **Library** palette.

Part 7:
PoserPython

Chapter 30: 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 8 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 31: 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**.
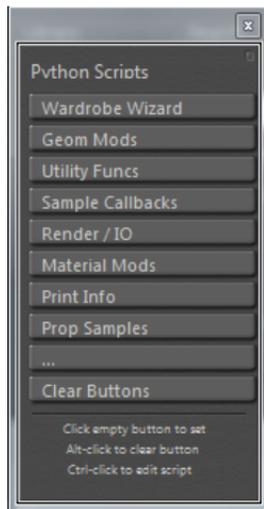
Figure 31.1

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 26.

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.

- *Poser Tutorial Manual*: This Tutorial Manual provides step-by-step instructions for basic and advanced tasks with Poser. If you have a "How do I...?" type question, you may find the answer here.

- *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 8 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 after installing the application on http://my.smithmicro.com/register.

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 A: Technical Support

Appendix B: Poser File Structure

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.

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.

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 nine 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 stores files containing preference information in the user's home directory on the system drive. This preference information includes: Memory dots, Library preferences, Poser UI preferences, and the Poser.ini file. On Windows, these preference files are stored in the following location: **<DriveOnWhichWindowsIsInstalled>:\Documents and Settings\<UserName>\Application Data\Poser**. On Macintosh OS X, they are stored in the following location: **/Users/<UserName>/Library/Preferences/Poser/**.

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 89 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

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 new Dependent Parameters editor in Poser 8 can help you do this and more. Refer to Using Dependent Parameters on page 471 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

Appendix B: Poser File Structure

pairs add rotation in degrees of xRotate to certain values of the
Custom_Morph parameter.

Appendix B: Poser File Structure

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