Perspective Tool Box

- **Selection** selects objects.
- **Rotation tools** rotate object in 2D/3D.
- **Zoom** enlarges areas. Alt/Option zooms out.
- **Hand** scrolls/pans image.
- **Text** creates text objects.
- **Free Form** creates objects in the Free Form modeler.
- **Geometric Primitive tools** create geometric primitives and planes.
- **Modeling Wizard** opens Modeling Wizard.
- **Create Light** creates a new light source.
- **Create Camera** creates a new camera.
- **Camera tools** pan, dolly or track the current camera.
- **Render Preview** renders a scene area.
- **Paint Shape Select** selects paint shapes.
- **Create Paint Shape tools** create rectangular, polygon and oval paint shapes.
- **3D Paint Brush** paints brushstrokes on objects.
- **Eyedropper** displays selected shader in Shader Editor.
- **Display Planes button** hides/displays grid planes.

Zoom

- **Zoom In** zooms in on an area.
- **Zoom Out** zooms out of an area.
- **Actual Size** shows image at actual size.
- **Zoom to Select** zooms in on selected objects.
- **Zoom to All Objects** zooms to area showing all objects.
- **Zoom to Working Box** shows the entire working box.

Preview

- **Interactivity** enables interactivity in animation preview.
- **Bounding Box Quality** displays all objects as bounding boxes.
- **Wireframe Quality** displays objects as wireframes.
- **Preview Quality** displays objects with using flat shader colors.
- **Shaded Preview Quality** displays the effects of lights on objects.
- **Better Preview Quality** displays all shader surface properties on objects.
- **Render** starts a rendering.

Standard

- **New** creates blank new scene.
- **Open** opens an existing scene file.
- **Save** saves the current scene.
- **Print** prints rendered images.
- **Cut** cuts selection.
- **Copy** copies selection.
- **Paste** pastes selection.
- **Group** groups selected objects.

Internet

- **Go to MetaCreations Online** goes directly to MetaCreations website.
- **Go to Third-Party website** goes to third-party websites.

Time Controller

- **Play** plays an animation.
- **View Motion Paths** displays/hides object motion paths.
- **Play Backward** plays animation in reverse.
- **Stop** stops preview.
- **Previous Frame** jumps back one frame.
- **First Frame** jumps to first frame in animation.
- **Last Frame** jumps to last frame in animation.
- **Next Frame** jumps forward one frame.
- **Loop** loops animation preview.
- **Frames Per Second** sets the frame rate for your animation.
- **Current Time** sets current time in animation.

00:00:00   6 fps

RAY DREAM 3D

QUICK REFERENCE CARD

MetaCreations

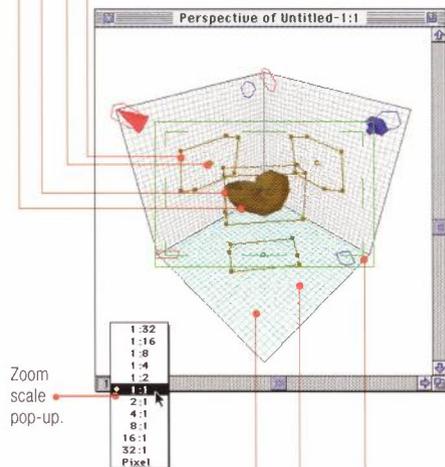## Perspective Palette

Choose a **View▶ Preset** or navigate the current camera to change the view.

- Object Preview.
- Object Bounding Box.
- Hot Point projection.
- Projection.

Zoom scale pop-up.

```
1:32
1:16
1:8
1:4
1:2
1:1
2:1
4:1
8:1
16:1
32:1
Pixel
```

⌘-Click /Ctrl-Click working box to select it. Manipulate on screen (Virtual Trackball, drag with Selection tool) or use Properties palette.

Working box (active plane in green). Used as a reference. Control grids with Display Planes button.

Production Frame defines region to be rendered.

Display Plane button

- Click to display/hide object preview.
- Click the plane you want to display/hide.
- Option/Alt-Click to set active plane.

Properties Palette

- Send Hot Point to center.
- Use outline view.
- Use control view (shown).
- View other Properties tabs.
- Click to lock/unlock hot point with center.
- Change object (center of bounding box) position.
- Choose position and size units.
- Choose coordinate system.

Properties : Sphere (Primitive)

- General Transform Behaviors Mapping Mode Sha...
- System: Global   Units: in
- ▽ Position
- Center 3.60 -4.24 -28.06
- Hot Point 3.60 -4.24 -28.06
- ▽ Orientation
- Yaw 0.00 Pitch 0.00 Roll 0.00
- Around Hot point   ☐ Hierarad
- ▽ Size & Scaling
- Size X 24.00 Y 24.00 Z 24.00
- Scaling % 100.00 100.00 100.00 ☑ Overall
- ☐ Keep Proportions
- Lock: Both hot point and center

Change object orientation.

Resize/scale object in X, Y or Z.

Apply changes to object.

Enable Auto (Apply).

Return to previous settings.

Scale object proportionally.
Choose reference when resizing.

Browser Palette

- Pop-up to choose between *Apply All Channels* and *Apply Non Empty Channels*.
- Click an item to select it. Then click Apply to put it on selected object. Double click an item to open it in a document window.
- Shader folder/directory.
- View other Browser tabs.
- Choose other view of listings.
- Choose options for Browser files and folders.

Drag item, camera, light, render filter listing into scene to use it.
Drag Shader listings onto object to apply them.
Drag item (from Perspective, Hierarchy, Shader Editor, Properties palette) into appropriate Browser tab (under folder column) to add it to the Browser.
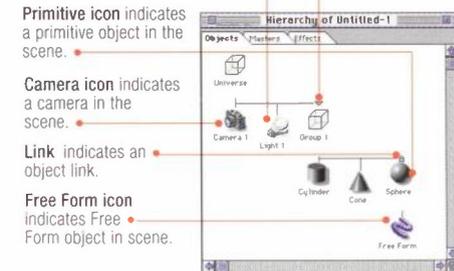
Time Line Window

- **Objects hierarchy** shows logical relationships (groups and links) of all elements in scene.
- **Masters tab** lists each object of unique geometry. Objects in the scene are copies of the master.
- **Effects tab** lists **Scene Settings window: Effects tab** features in use.
- **Key event marker** sets properties at that point in time.
- **Tweeners** double-click to set tweener options.
- When markers overlap, shows a plus sign. Zoom in/change scale to distinguish them.

Opens group. Click to close.

Links. Drag child (Free Form) onto parent (Sphere) to create. Drag child onto root (Group 1 or Universe) to separate.

Current time (hours: minutes: seconds: frames). Edit field to move to a specific time.

- Displays time/frames on time axis.
- **Render range.** Drag edges to change beginning.
- **Time Axis.**
- **Current Time Bar.** Drag to set time or click on the axis.
- Sets time axis scale and animation frame rate.

Hierarchy Mode

Light icon indicates a light in the scene.

Open Group indicates that the objects in the lower branch belong to the same group.

Primitive icon indicates a primitive object in the scene.

Camera icon indicates a camera in the scene.

Link indicates an object link.

Free Form icon indicates Free Form object in scene.

Hierarchy of Untitled-1

Tool Modifiers

3D PAINT TOOLS

Tool	Action	By Itself	+Shift	+Option/Alt
Toggle Key W	Click on a paint shape	Selects a paint shape on the surface of a 3D object.	Adds or removes paint shapes from the current selection.	
	Drag a paint shape	Moves the paint shape on the surface of a 3D object.		
	Drag a paint shape handle	Resizes the paint shape on the 3D object.	Constrains proportions of paint shape.	Wraps the paint shape around the back of the object.
Toggle Keys S,C,G	Drag to create (Rectangle, Ellipse)	Creates a rectangular, polygonal, or elliptical paint shape on the surface of a 3D object.	Rectangle, Ellipse: Constrains proportions of paint shape. Polygon: Constrains segments to horizontal, vertical.	Wraps the paint shape around the back of the 3D object.
Toggle Key B		Paints the selected shader on the surface of a 3D object		Forces the creation of a new brush shape.
Toggle Key E		Grabs the shader form an object or paint shape.		

FREE FORM MODELER SELECTION TOOLS

Tool	Action	By Itself	+Shift	+Option/Alt
Toggle Key T	Click on a shape	Selects the shape, making all of its points visible.	Adds or removes shapes from current selection.	Selects the shape and all its points.
	Click on a point	Selects the point.	Adds or removes points from current selection.	Selects all the points on a shape.
	Drag a point	All selected points move together.	Restricts movement to angles increments of 45°	
	Drag a handle	Adjusts the shape by moving the tangents.	Restricts movement to angles increments of 45°	Moves the selected tangent independently of its opposite tangent.
	Drag a group's corner	Resizes the group.	Resizes proportionally	

FREE FORM MODELER SELECTION TOOLS

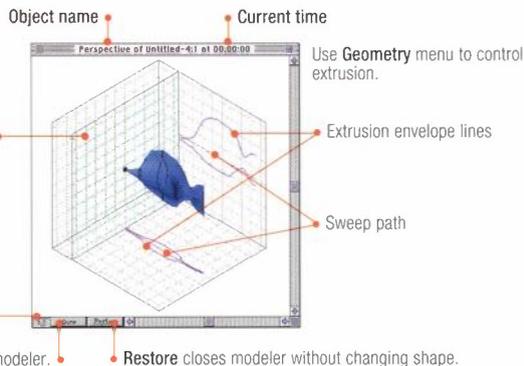| Tool	Action	By Itself	+Shift	+Option/Alt
Toggle Key D	Click	Creates a corner point.	Constrains angle between new point and previous point to 45° increments.	
	Click and Drag	Creates a curve point.	Constrains angle of tangents to 45° increments.	
	Click the opposite endpoint of the shape	Closes the shape.		
Toggle Key *	Click and drag on a corner point	A pair of parallel tangents is extended as you drag, creating a curved point.		
	Drag a corner point's tangent.	The two tangents are made parallel, creating a curve point.		
	Click on a curve point	Retracts the tangents, creating a corner point.		
	Drag a curve point's tangent	The handle is freed from its opposite handle, and moves independently.		
Toggle Key +	Click on a shape's outline	Adds a vertex to the shape.		If performed on the sweep path, creates a cross section at the same time.
Toggle Key -	Click on a point.	Deletes the point.		
	Click on a shape's segment	Deletes the segment from the shape. Cross sections only.		
Toggle Key A,Z,X,F		Automatically creates preset shapes.	Constrains to square frame.	
Toggle Key H	Click on a cross section plane	Creates a 2D Text shape and opens the Text dialog.		

Free Form Modeler

Free Form Tools

Selection selects and moves points and sections.

Rotation rotates object in 2D and 3D.

Zoom zooms in on an area.

Hand pans modeling window.

Pen draws sweep paths and cross section shapes.

Point tools adds, deletes, and converts points.

Draw tools draws primitive cross section shapes.

Text adds text to cross section.

Render Area renders an area of object.

Paint Shape Selection selects paint shapes.

Paint Shape tools draw different types of paint shapes.

3D Paint Brush paints brush strokes on object.

Eyedropper displays selected shader in Shader Editor.

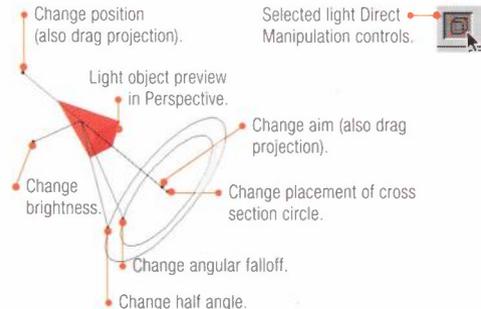**Display Planes** displays/hides grid planes.

Free Form Modeling Window

Use **Sections** menu to control cross sections.

Object name

Current time

Cross section plane (current drawing plane). Contains cross section shape.

Use **Geometry** menu to control extrusion.

Extrusion envelope lines

Sweep path

Zoom pop-up Controls zoom scale.

Done closes modeler.

Restore closes modeler without changing shape.

Interactive Controls

Properties Palette: Light Tab

Change position (also drag projection).

Selected light Direct Manipulation controls.

Light object preview in Perspective.

Change aim (also drag projection).

Change brightness.

Change placement of cross section circle.

Change angular falloff.

Change half angle.

Properties Palette: Camera tab

Change position (also drag projection).

Selected camera Direct Manipulation controls— Properties palette: Camera tab.

Change zoom level (zoom lens only).

Change aim (also drag projection).

Camera object preview in Perspective.
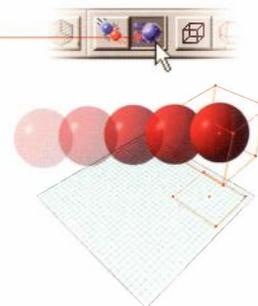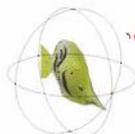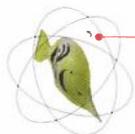
Interactivity

Interactivity button when enabled, you can see objects move in the Perspective window during an animation preview or as you drag. This button should always be enabled when previewing animations.
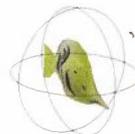
Virtual Trackball

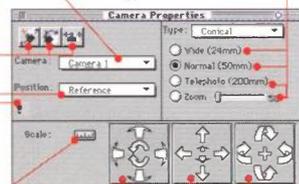- Drag outside the circles to rotate in relation to the display.

- Drag within the rings to roll the object in 3D.

- Drag where rings intersect to constrain the rotation axis. Hold down Shift while dragggging to constrain rotation angle increments.

Camera Properties palette

- Hides/shows navigation controls.
- Choose preset or save current position.
- Camera Dolly, Pan and Track tools (also on Standard tool bar).
- Choose between cameras in the scene.
- Choose and change camera lens types.

Camera Properties

Type: Conical
- Wide (24mm)
- Normal (50mm)
- Telephoto (200mm)
- Zoom

Camera: Camera 1

Position: Reference

Scale:

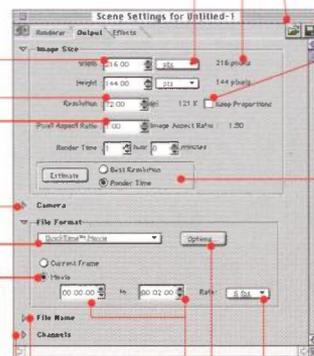**Sets** translate and rotate increments.

Pan Controls rotate camera on its own axis.

Track Controls translate camera.

Dolly Controls rotate camera around selected object (origin if no selection).

Scene Settings window: Output tab

- Sets pixel aspect. Use ratio of 1 (square) in all cases but broadcast video.
- Sets image resolution.
- Sets rendering dimensions.

Scene Settings for Untitled-1

Renderer   Output   Effects

▽ **Image Size**
Width: 216.00 — 216 pixels
Height: 144.00 — 144 pixels
Resolution: 72.00 ppi   121 K   Keep Proportions
Pixel Aspect Ratio: 1.00   Image Aspect Ratio: 1.50
Render Time: 1 hour 0 minutes
Estimate   ○ Best Resolution ● Render Time

▽ **Camera**

▽ **File Format**
QuickTime™ Movie   Options
○ Current Frame
● Movie   00:00:00:00 to 00:02:00 Rate: 6 fps

▷ **File Name**
▷ **Channels**

- Chooses units of measure.
- Number of pixels in each dimension.
- Load saved settings.
- Saves current render settings.
- Maintains aspect ratio when changing dimensions.
- Estimates best resolution in render time or time to render at current settings.

- Sets file name options for Batch Queue.
- Selects mask and other data for additional image channels.
- Choose between rendering a still image or a movie.
- Choose Output file format.
- Choose camera to use for rendering.

- Sets frame rate.
- Sets options for the selected format.
- Sets in point and out point (render range) of movie.

Arrange Menu (F)

Compound
. . . .⌘-Option-G . . . Ctrl+Alt+G
Break Apart Compound
. . . .⌘-Option-U . . . Ctrl+Alt+U

Sections Menu (F)

Center . . . . .⌘-Shift-C . . .Ctrl+Shift+C
Next . . . .⌘-Right Arrow
. . . . .Ctrl+Right Arrow

Previous . . . .⌘-Left Arrow
. . . . .Ctrl+Left Arrow
Show Shapes Numbers
. . . .⌘-Shift-N
. . . . .Ctrl+Shift+N

Cross Section Options
. . . .⌘-Option-N
. . . . .Ctrl+Alt+N

Free Form Modeler Tools (F)

Pen Tool . . . . .D
Convert Point . . . .*
Add Point . . . .+
Delete Point . . . .-

2D Primitive Shape
Rectangle . . . . .A
Rounded Rectangle . . . . .Z
Oval X
Hexagon . . . . .F
2D Text . . . . .H

Cross Section Shortcuts (F)

Move to First Cross Section
. . . .⌘-Option-Left Arrow
. . . . Ctrl+Alt+Left Arrow
Move to Last Cross Section
. . . .⌘-Option-Right Arrow
. . . . Ctrl+Alt+Right Arrow

UNIVERSAL **MAC** **WIN**

P=PERSPECTIVE, F=FREE FORM

File Menu

New	⌘-N	Ctrl+N
Open	⌘-O	Ctrl+O
Close	⌘-W	Ctrl+F4
Save	⌘-S	Ctrl+S
Print	⌘-P	Ctrl+P
Preferences	⌘-Shift-P	Ctrl+Shift+P
Exit	⌘-Q	Alt+F4

Edit Menu

Undo ⌘-Z Ctrl+Z
(P, F)
Redo ⌘-Y Ctrl+Y
(P, F)
Cut ⌘-X Ctrl+X
(P, F)
Copy ⌘-C Ctrl+C
(P, F)
Paste ⌘-V Ctrl+V
(P, F)
Duplicate ⌘-D Ctrl+D
(P, F)
Duplicate with Symmetry
⌘-Option-D Ctrl+Alt+D
(P, F)
Insert Camera ⌘-Option-C Ctrl+Alt +C
(P)
Insert Light ⌘-Option L Ctrl+Alt+L
(P)
Select All ⌘-A Ctrl+A
(P, F)
Select All Objects
⌘-Option-A Ctrl+Alt+A
(P)
Find ⌘-F Ctrl+F
(P, F)
Jump In ⌘-Down Arrow
Ctrl+Down Arrow
(P)
Jump In New Window
⌘-Option-Down Arrow
Ctrl+Alt+Down Arrow
(P)
Jump Out ⌘-Up Arrow
Ctrl+Up Arrow
(P, F)

View Menu (P, F)

Preset Positions Reference
⌘-O Ctrl+O
Drawing Plane
(F)
⌘-5 Ctrl+5
Top ⌘-8 Ctrl+8
Bottom ⌘-2 Ctrl+2
Left ⌘-4 Ctrl+4
Right ⌘-6 Ctrl+6
Front ⌘-1 Ctrl+1
Back ⌘-3 Ctrl+3
Wireframe ⌘-Shift-Y Ctrl+Shift+Y
Preview (Fast)
⌘-Option-Shift-Y
Shift+Ctrl+Alt+Y
Better Preview (Phong)
⌘-Option-Y
Ctrl+Alt+Y
Grid ⌘-J Ctrl+J
Production Frame
(P only)
⌘-Option-F Ctrl+Alt+F

Arrange Menu (P)

Align
On Working Box
⌘-Shift-K Ctrl+Shift+K
On Universe ⌘-Option-K Ctrl+Alt+K
On Gravity ⌘-Shift-G Ctrl+Shift+G
Reset Orientation
⌘-Option-Shift-K
Ctrl+Alt+Shift+K
Align Objects
⌘-K Ctrl+K
Group ⌘-G Ctrl+G
Ungroup ⌘-U Ctrl+U
Point At ⌘-M Ctrl+M
Center Hot Point
⌘-Option-H Ctrl+Alt+H

Send Working Box to
Global Universe
⌘-Option-B Ctrl+Alt+B
Local Universe
⌘-B Ctrl+B
Selection ⌘-Option-Shift-B
Ctrl+Alt+Shift+B

Render Menu (P, F)

Scene Settings
⌘-Shift-T Ctrl+Shift+T
Use Current Settings (to render now)
⌘-R Ctrl+R

Windows Menu (P, F)

New Perspective
⌘-7 Ctrl+7
Current Shader Editor
⌘-/ Ctrl+/
Properties ⌘-T Ctrl+T
Camera Properties
⌘-E Ctrl+E

Perspective Window Tools

Camera Dolly Y
(P)
Camera Pan U
(P)
Camera Track I
(P)
Selection T
(P, F)
Zoom ⌘-Spacebar
Ctrl+Spacebar
(P, F)
Hand Spacebar
(P, F)
Render Preview R

Rotate Q
(P, F)
Virtual Trackball V
(P, F)
3D Paint Select W
(P, F)
3D Paint Create
(P, F)
Square S
Oval C
Poly G
3D Paint Brush B
(P, F)
Dropper E
(P, F)

Magnification (P, F)

Zoom In ⌘-+ Ctrl++
Zoom Out ⌘- Ctrl+-
1:1 Zoom Level
⌘-= Ctrl+=

Manipulation Features

Nudge Arrow Key
(P)
Nudge (x5) Shift Arrow Key
(P)
Lock Hot Point Caps Lock
(P)

Alignment Palette

Select Anchor Object Tab

Shading

Current Shader Editor
Jump In Subshader
⌘-Shift-Down Arrow
Ctrl+Shift+Down Arrow
Jump Out Subshader
⌘-Shift-Up Arrow
Ctrl+Shift+Up Arrow

Time Line Manipulation

Nudge Selected Key Event Marker
One Pixel Ahead Right Arrow
One Pixel Back Left Arrow

One Frame Ahead Shift+Right Arrow

One Frame Back Shift+Left Arrow

Advance Current Time to Next Marker
Option+Right Arrow
Alt+Right Arrow
Move Current Time to Previous Event
Marker Option+Left Arrow
Alt+Left Arrow

Time Line Tools

Add Key Event Tool K

MetaCreations
The Visual Computing Software Company

Z-RD3-C10-C-001