13

Building a Scene

Overview

This chapter covers how you edit and
manage the contents of your scene. You
will learn how to add and remove objects
and how to organize them in a hierarchical
structure.

Building your Scene's Contents

The contents of a scene can be built by adding, deleting and replacing objects. You can also modify any object that you have created.

Adding and Deleting Objects

You can add existing objects to your scene (from other scenes or from clip art folders) in several ways: using the Objects Browser, by dragging between windows and with the **Copy** and **Paste** commands. You may even add an entire scene. In this case, the scene you add becomes a group in the new scene.

The Ray Dream Studio 5 Scene Wizard is one special way you can add an entire scene to your existing one.

When you load an existing object, its shading, position, orientation and size characteristics are brought with it. You can, of course, change any of these to fit the new scene.

For more information on importing objects from other 3D modeling applications, refer to "Using Ray Dream Studio with other Applications" on page 379

To add an object from another scene by dragging:

1 Open both scene files.

2 Drag the icon representing the object you want from the source **Hierarchy** window to the destination **Perspective** or **Hierarchy** window.

When you drag into the hierarchy, you can drag directly onto a group or an object. If you drag an object onto another object, the hot points are aligned, and the object you dragged is linked to the other object.
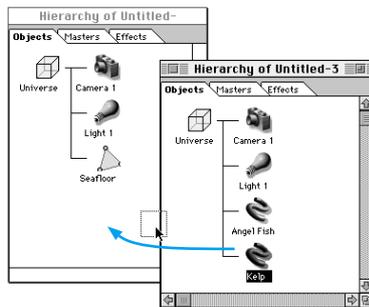
Drag the object's icon to copy the object to another scene.

To delete an object:

1 Select the object in the **Perspective** or **Hierarchy** window.

2 Choose **Edit menu▶ Delete** or press **Delete/Backspace**.

When you select a parent object within a group, you automatically select all of its child objects. If you delete the parent, the children or the group contents are deleted as well. If you want to delete an object, but not its children, change the structure of the hierarchy to place the child or contents at some other level before proceeding.

Replacing Objects

When you replace an object, the replacement takes on the positioning, alignment and size characteristics of its predecessor.

For instructions on replacing all instances of an object class, refer to "Working with Master Objects" on page 266.

To replace a single object or group:

1 Select the object you want to use.

2 Choose **Edit menu▶ Copy** or press **Command-C/Ctrl+C**.

3 Select the object you want to replace.

4 Choose **Edit menu▸ Paste** or press **Command-V/Ctrl+V**.

5 If you are pasting an object (not a group), a dialog gives you a scaling option. Make your choice and click **OK**.

Fit in Box scales the replacement to fit within the same bounding box.

Keep Scaling keeps the replacement at its original scale.

Jumping into Objects

At any time, you can select an object and "jump into" it. When you jump in, Ray Dream Studio opens the object in a modeler where you can modify it.

Note: Jumping into a group is covered in

Current Root
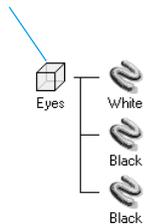
Jumping into an object allows you to modify an objects shape using a modeler.

Jumping into an Object

To jump into an object:

1 Select the object.

2 Choose **Edit menu▸ Jump In**.

You can also double-click the object preview in the **Perspective** window or its listing in the hierarchy.

Note: If you try to jump into an instance of a class, Ray Dream Studio alerts you with a dialog. You may choose to modify the master for this class or create a new master object. For more information, refer to

When you jump into a **Free Form** object, Ray Dream Studio opens it in the **Free Form** modeler.

When you jump into a **Mesh Form** object, Ray Dream Studio opens it in the **Mesh Form** modeler.

When you jump into a volumetric primitive, like **Fountain**, **Fire**, **Fog** or **clouds**, Ray Dream Studio opens the appropriate control panel.

If it's an imported or primitive object, like the cone or sphere, Ray Dream Studio opens it in the **Minimum Modeler** window. You cannot modify the geometry of the object but you can apply shaders and paint shapes.

Jumping into an Object in a Separate Window

To jump into the object in a separate window:

1 Select the object.

2 Choose **Edit menu▸ Jump In New Window**.

You may have to adjust the size and position of the windows so that both are visible on your screen.

Because your modifications are updated to the object first, and then updated to the Perspective window, performance may lag slightly when you use Jump In New Window. For this reason, Jump In New Window is not recommended for systems with limited RAM.

Jumping into an Object in a Different Modeler

Normally, jumping in opens the object in the modeler where it was created or the **Minimum** modeler for primitives and imported objects. You might prefer to open the object in a different modeler.

Working with an object in a different modeler changes its type. This may limit your options for future editing. For

example, you can't edit a Free Form object in the **Mesh Form** modeler, then take it back into the Free Form modeler.

To jump into the object in a different modeler:

1 Select the object.

2 Choose `Edit menu▶ Jump In Another Modeler`.

Ray Dream Studio opens a dialog that shows your modeler options.

3 Select the modeler you want.

Note: Some modification options might not be available under other modelers.

Ray Dream Studio constructs 3D surfaces using facets and patches. Facets are triangular. Patches are polygons derived from Beziér curves. Some objects may be entirely facets, others may be a mixed set of facets and patches. When you open a primitive or Free Form modeler object in the Mesh Form modeler, all patches are converted to facets.

4 If you select the **Vertex** modeler, drag the slider or enter a value to set a fidelity level for creating facets from patches.

More facets creates smoother surfaces, but increases the file size and memory required for the model.

5 When you have set your options, click **OK**.

Ray Dream Studio opens the object in the selected modeler.

Building a Hierarchical Structure

The structure of a scene organizes the elements of a scene according to spatial or logical relationships. Structure simplifies arrangement operations and can save you time and trouble.

Working primarily in the hierarchy, you can structure a scene by grouping and linking objects.

The term "object" refers also to lights, cameras, and closed groups.

You'll find it's far easier to keep track of objects that you've specifically named than it is to manage generically named objects.

Every object in your scene appears in the hierarchy. The hierarchy is shown as a tree of elements, each represented by a listing or named icon. The hierarchy of a scene changes as you introduce objects, group them, and create links.

Elements may be objects, groups, cameras, or light sources. The highest level of the hierarchy is the root. It is represented by an icon entitled "Universe." It encompasses your entire scene. Beneath the universe, you may have any number of branches and sub-branches.

Changing your View of the Hierarchy

You can view the hierarchy in the **Time Line** window, vertically or horizontally. You may choose the display that's suitable for your working style and screen space.

Time Line view lists the contents of the hierarchy in outline form rather than with icons. This is especially useful for complex scenes or if you want to see as much of your hierarchy as possible.
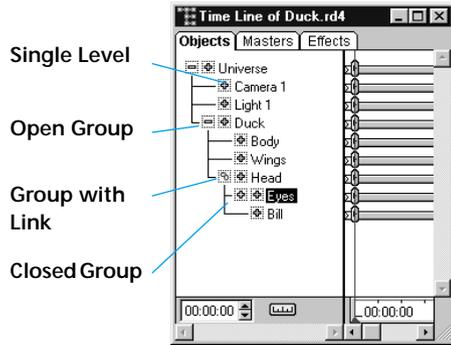
The Time Line view of the object hierarchy.

To change hierarchy display:

❶ Make sure the **Time Line** window is displayed.

To display the window, choose `Windows menu▶ Hierarchy of [filename]` or `Time Line of [filename]`.

❷ If necessary, click in the **Time Line** window to bring it to the front.

❸ Choose `View menu▶ Vertical`, `Horizontal` or `Time Line`.

Ray Dream Studio sets the display to your choice.

Navigating the Hierarchy

You can expand and collapse the items in the hierarchy to view more or fewer elements in your scene. You may need to open a series of groups to find a particular object deep in the hierarchy.
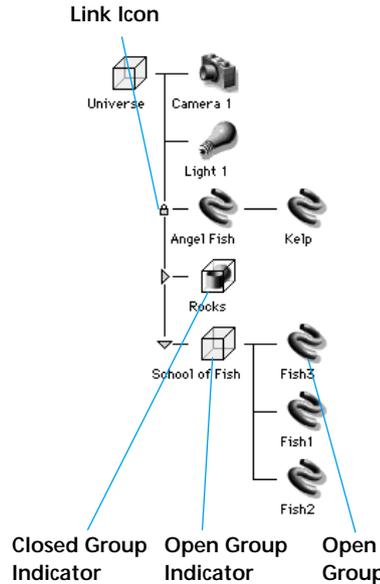
The Hierarchical view of the object hierarchy.

To return to the outer view, close the group box at each level until only the main branch, beneath the universe root, is displayed.
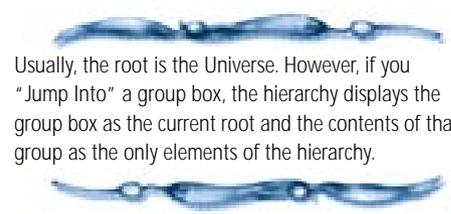
Usually, the root is the Universe. However, if you "Jump Into" a group box, the hierarchy displays the group box as the current root and the contents of that group as the only elements of the hierarchy.

A small icon appears to the left of every group.

Macintosh This icon is a small arrow. When the group is closed, the arrow faces to the right. When the group is open, it faces down.

The expand icon is a small arrow pointing to the right. The collapse icon is pointing down.

Windows The icon is a plus sign when the group is closed and a minus sign when opened.

The expand icon is a plus sign and the collapse icon is a minus sign.

To open or close a group

❶ Click the arrow (Macintosh) or plus/ minus sign (Windows) beside the group.

Once a group is opened, the arrow faces down and the plus sign becomes a minus sign.

To collapse the outline and close a group:

❶ Click on the arrow or minus sign.

If you are in the Time Line view, a second set of arrows (Macintosh) and plus/minus signs (Windows) appears next to groups and objects. These icons located closest to the object are used to expand the hierarchical structure of the animateable attributes. Use the icons to the left of these to expand and collapse the scene hierarchy.

Changing the Structure

You can combine multiple elements of your hierarchy in two ways: grouping and linking. You can nest groups within other groups or create a chain with multiple links.

You can reorganize your groups and links by dragging them from one location in the hierarchy to another. Don't worry about making a mistake in changing the hierarchy. You can drag an element to another level at any time.

You can drag objects individually or select several and drag them at once. To select multiple items, drag a marquee around them or hold down the **Shift** key and click on additional items.

To remove a single object from a multiple selection, hold down the **Shift** key and click it.

Drawing a marquee is an easy way to select a set of objects. However, you may not select a group exclusive of its contents or a parent exclusive of its children.

Selecting elements in the hierarchy applies not only to the selected object, but, in the case of a closed group box, to its contents, and in the case of a parent object, to its children.

Groups and Links

Groups and links are similar — both let you combine multiple objects in your scene so that you can manipulate them as a single unit, but their usage is quite different.

Grouping is a way of creating collections of objects that make structuring and navigating through your scene more manageable. Groups are static, in that they don't change the relationship between the objects in the groups, they only contain them. This is similar to the group function in 2D illustration and drawing programs.

Links on the other hand, let you define an active relationship between the "parent" object and the "child" object. By applying

various types of links you can "tie" them together so that moving the parent effects the child, but moving the child does not effect the parent.

The exception to this is when applying the Inverse Kinematics behavior to a child object in a linked chain. for more information on Inverse Kinematics, refer to .

Grouping Objects

As you build up your scene, you'll want to group related objects. Grouping allows you to control a set of objects as a single unit.

You can arrange a group just as you do a single object. During any positioning or orientation operation, the objects in a group retain their spatial relationship to one another.

How you organize your groups is up to you. You'll often create groups based on the logical context of a set of objects—for example, the "hub, axel, spokes, rim and tire." When arranged properly and

grouped, the set of objects becomes a single object you could name "bicycle wheel."
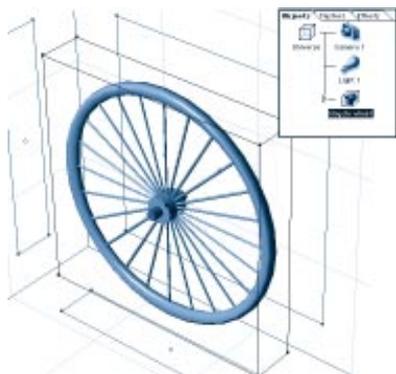
You can group all objects into a single object which can then be named.

You can also create groups based on the proximity of a set of objects—for example, "all objects on the bookshelf."
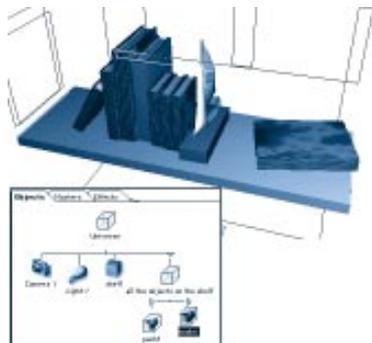
You can also group objects based on their proximity to one another.

You can nest one group within another to as many levels as you like. As you build a complex scene, you'll find nesting groups helps manage the multitude of elements.

Don't worry about perfecting the shape of an object before putting it in a group. You can always open the group, then open the object for editing.

To create a new group:

1 Select the objects you want to group. You may select the objects in either the **Perspective** or **Hierarchy** window.

2 Choose **Arrange menu▸ Group**. You may also click the **Group/Ungroup** icon in the **Standard** toolbar or press **Command-G/Ctrl+G**.

A box icon (or group listing, in **Time Line** window) appears in the **Hierarchy** window under the current root.

By default, group boxes are named **Group x**, where **x** is a sequential number (1, 2, 3...).

Click the Group icon to group the selected objects.

To change the name of a group:

1 Click on the name of the group in the **Hierarchy** window.

If you're using the **Time Line** window, don't click, but hold down the mouse button for a second or two.

Ray Dream Studio opens the **Edit Name** dialog.

2 Enter the new name and click **OK**.

Note: You may also change a group's name in the **Properties palette: General tab**.

You can have Ray Dream Studio automatically prompt you to name groups you create. Choose **File menu▸ Preferences**: **Hierarchy Tab** and enable Ask for name.

To add objects to a group:

Drag the icons of the objects you wish to add onto the group box icon.
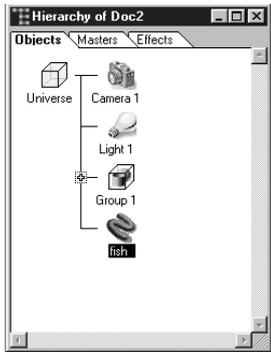
Drag the object icons into the group box.

Note: You can bring an object into the scene and immediately place it in a group. Drag the object from its source (**Browser** palette or other scene hierarchy) and drop it directly onto a group box icon.

To remove objects from a group:

Simply drag the selected objects to another point in the hierarchy. For example, you can drag onto the universe icon. This places the objects on the main branch of the hierarchy.

Opening and Closing Groups

You can open and close groups while you work. When the group is closed, you can manipulate the entire group as a single object. When a group is open, it maintains its structure in the hierarchy, but you can select and move each component object independently.

This is a great time saver and gives you maximum flexibility. You can easily adjust the objects in your groups, but maintain their structure in the hierarchy.

To open a group:

Click the right-facing arrow/plus/minus sign beside the group listing in the hierarchy.

A group box is the root of its contents. While the group box is open, indicated by the open box icon, its contents are displayed on a subbranch.   .

On the Macintosh, click the left-facing arrow to open a group. Click the down arrow to close the group.

In Windows, click the plus sign to open a group. Click the minus sign to close the group.

Note: Ungrouping is different from opening a group. Ungrouping gets rid of the group; the contents appear at that level of the hierarchy.

To close a group:

Click on the down-pointing arrow/minus sign.

The icons of the group's components collapse into the box, and the display returns to the next higher level of the hierarchy.

Group Bounding Boxes

In the **Perspective** window, the elements of a group are enclosed in a single bounding box, which is visible when the group box is closed. When you create a group, the group bounding box is set parallel to the planes of the working box.

The group bounding box is defined as "the smallest box, with the same orientation as the working box, that encloses all bounding boxes of the group's contents." If you add or remove objects from the group, the dimensions of the group bounding box may

change. The orientation of the group bounding box, however, does not change as you add or remove elements.
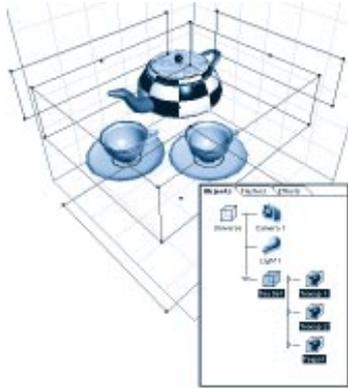
Group bounding boxes are created parallel to the working box.

After reorienting a group, the group bounding box will no longer be parallel to the working box.

To re-calculate the group bounding box:

1 Select the group you want to recalculate.

2 Choose `Arrange menu▶ Ungroup` or press **Command-U/Ctrl+U**.

3 Choose `Arrange menu▶ Group` or press **Command-G/Ctrl+G**.

Jumping In and Out

You can jump into a group to modify the relative positions and attitudes of the objects it contains.

Within a group, a **Local Universe**, also called the Object/Group Universe, is used. This coordinate system's axes are parallel with the walls of the group's bounding box, with its origin at the center.

The Local Universe maintains the relative positions of the objects when you move or rotate the group as a whole. That is, regardless of how you manipulate the group bounding box, the content objects have the same positions in terms of the Local Universe.

To jump into a group:

1 Select the group.

2 Choose `Edit menu▶ Jump In`.

You can also double-click the group box icon in the hierarchy to jump in right away.

Note: To open the group in a separate window (while keeping the **Perspective** window visible), use `Edit menu▶ Jump In New Window`.

When you jump into a group, the **Hierarchy** window displays the group box as the current root and its contents as the only elements of the hierarchy. Simultaneously, the **Perspective** window redraws to display only the contents of this group.

When you jump into a group, the working box is oriented parallel with the group's bounding box. This enables you to work in terms of the group's Local Root Universe. If this is not what you want, you can align the working box with the Global Universe.

To jump out of a group:

Choose `Edit menu▶ Jump Out`. You can also double-click the group box icon in the hierarchy or click the **Done** button at the bottom of the **Perspective** window.

When you jump out, the **Hierarchy** and **Perspective** windows returns to displaying the universe.

Linking Objects

Linking creates a "physical connection" between objects. In a linked pair, one object is the "parent" and the other is the "child." When you change the position or orientation of the parent, the child moves with it. However, you can still more or rotate the child independently of the parent.

Linking is used to create articulated structures, like an arm. The hand is linked to the forearm, which is linked to the upper arm, which is linked to the shoulder.
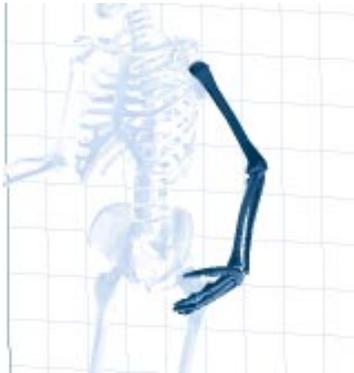
Linking is used to create articulated structures, like an arm.
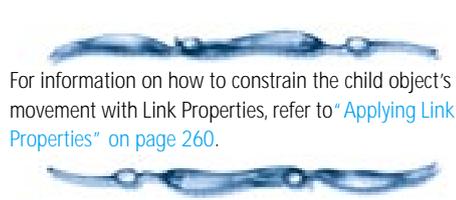
For information on how to constrain the child object's movement with Link Properties, refer to

To link an object to another:

1 In the **Hierarchy** window, drag the object or group's item (icon or listing) onto the item of the desired parent.

Link icon

Aquarium   Fins
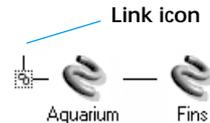
To link an object, drag the object's icon onto the parent.

The link icon appears prior to the parent object.

Note: If you duplicate a parent object, you'll also be duplicating all of its child objects.

To attach an object to a parent that is off screen in the Hierarchy window, drag the new element with the Option/Alt key held down. This automatically scrolls the window's contents to reveal additional elements.

To break a link:

Select the child object's item and drag it to another point in the hierarchy.

You cannot link a child object to a simple group. To do this, you must first promote the group to a master object. Then you can link the object (child) to the group (parent). See

Applying Link Properties

Linked objects have properties that constrain the child's movement relative to the parent. An excellent real world example of this is the human hand. The hand is linked to the forearm. Its range of motion (relative to the forearm) is limited—you can't bend it forward or back more than 90° or side-to-side more than 45°—anything more would break the wrist. These are just the kind of limits you can impose with link properties.

Once you have created a link, you can apply properties for setting limits.

Links become a more powerful tool for creating spatial relationships between objects when you apply a Link Property. This is especially true when setting up your scene for animation. Not only can you use links to constrain the movement of objects, but by applying the Inverse Kinematics behavior, you can create kinematic chains that allow you to manipulate the parent by moving the child.
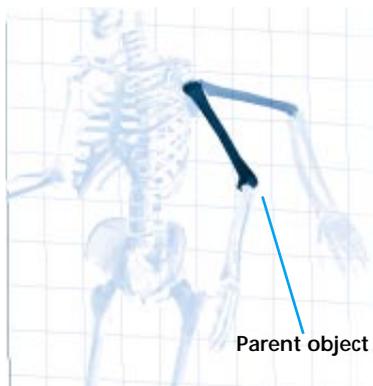
Parent object

Kinematic chains allow you to manipulate the parent by moving the child.

For more information on using Links and Inverse Kinematics in animations, refer to "Animating" on page 295.

To apply a link property:

1 Position the child object where you want it in relation to the parent.

2 Position the child object's hot point where you want it.

3 Select the child object or group.

4 Choose Windows menu▶ Properties. The **Properties** palette appears.

5 Click the **Links** tab.

6 Choose the type of link you want to apply from the pop-up— **None**, **2D Plane**, **Axis**, **Ball Joint**, **Custom**, **Shaft**, **Lock** and **Slider**. Each of these is described below.

7 Choose your options for the specific **Link Property**. How to use the option controls is covered in "Setting Link Controls" on page 263."

8 When you are ready to apply your changes, click **Apply** at the bottom of the **Properties** palette.

You may enable the **Auto** option to have your changes updated automatically.

Types of Links

There are eight link types available: **None**, **2D Plane**, **Axis**, **Ball Joint**, **Custom**, **Shaft**, **Lock** and **Slider**.

None

None is the default link property. You are free to position the child object anywhere in your scene.

2D Plane

The **2D Plane** link restricts the movement of your object to a specific plane. This plane is relative to the child object's axis, not the global universe. For example, if you rotate the object, the plane that it moves on will tilt.

Click a radio button to select the plane you want: **XY**, **ZY** or **ZX**.
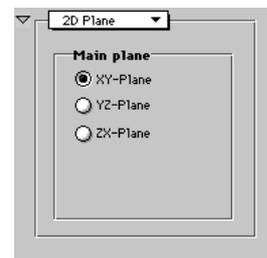
The 2D Plane controls are used to control links on a specific plane.

Axis

In the **Axis** link, a child object can be rotated around its hot point on one of the three axes. The rotation can be locked, limited, or free.

- If the rotation is locked, no movement occurs.
- If the rotation is free, the rotation is an unlimited 360° on that axis.
- If the rotation is limited, you can constrain the rotation between two points.

For more information on setting rotation controls, refer to "Setting Link Controls" on page 263.
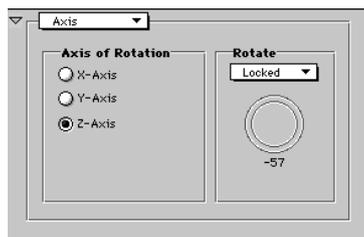
The Axis controls are used to control links on the axis.

Ball Joint

The **Ball Joint** link allows you to rotate the child object 360 degrees around its own hot point. Like the 2D Plane link, the Ball Joint link is not related to the parent object, except when moving the parent. There are no constraints on any axis.

There are no options for the Ball Joint.

Custom

The Custom link allows you to build your own combination of constraints using sliders and axis rotation controls.
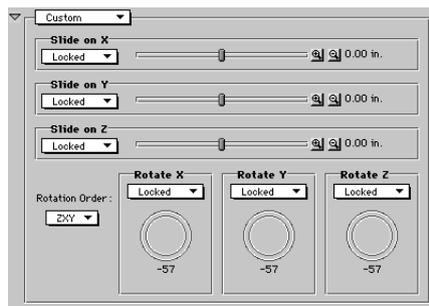
The Custom controls are used to create your own constrains.

Shaft

In the **Shaft** link, the child object can both rotate around one of its axes, while it slides up and down the same axis. Perhaps the best way to think of a shaft link is to visualize a firehouse pole. The firefighters can slide down the pole while also rotating around it.
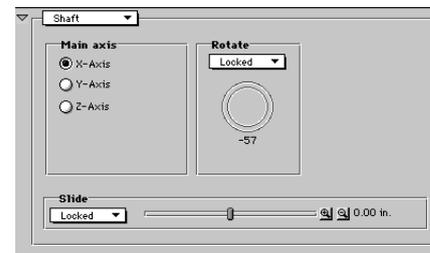
The Shaft controls are used to rotate on one axis while sliding up and down on the axis.

Choose the main axis of rotation and set both rotation and slider controls. For information on setting these controls, refer to "Setting Link Controls" on page 263.

Lock

A **Lock** link means that the child object is locked to the parent object. You cannot select the child object and move it, but it will move in relation to the parent when the parent is moved.

There are no options for the Lock property.

Slider

A **Slider** link sets constraints for the child object's movement along its X, Y, and Z axes. Movement on each axis can be **Locked**, **Limited**, or **Free**.

- **Locked** prevents any movement on that axis. This is the default setting.

- **Limited** allows you to place limitations on movement in both directions.

- **Free** lets the object move anywhere along that axis.
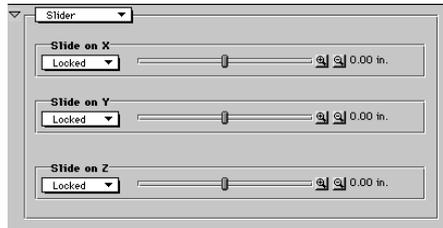
Slider Controls.

Set your options using slider controls. For information on setting slider controls, refer to "Setting Link Controls" on page 263.

Setting Link Controls

All link properties use two primary types of controls— slider and axis rotation.

To set a link slider control:

1 In the **Preferences palette: Link tab**, choose the type of constraint from the pop-up—**Locked**, **Limited** or **Free**.

Ray Dream Studio displays the controls for the chosen constraint.

The link slider control are found in the Custom, Shaft and Slider link options.

2 Drag the slider markers to set position limits and a new position.

In **Free** mode, the slider has one marker. You can drag the marker to move the object along that axis.

You can double-click the slider to set the current position numerically.

The Free mode allows you to set limits along an axis.

In **Limited** mode, the slider has three markers.

- The marker on the left sets the outer constraint in the negative direction away from the object's hot point. Drag the marker to change the limit.

- The marker in the middle sets the current position of the object. Drag the marker to move the object along that axis between the limits.

- The marker on the right sets the outer constraint in the positive direction away from the object's hot point. Drag it to set a new limit.

The Limited mode allows you to set negative and positive limits along the axis.

The text field to the right displays the position of the currently selected marker.

3 If the slider range is too large to give you precise control, click the plus magnifying glass icon to the right. Click it as many times as necessary to decrease the slider scale.

4 If the slider range is not large enough to let you set the constraint limit where you want, click on the minus magnifying glass icon. Click it as many times as necessary to increase the slider scale.

To set axis rotation controls:

1 In the **Preferences palette: Link tab**, choose the type of constraint from the pop-up—**Locked**, **Limited** or **Free**.

Ray Dream Studio displays the controls for the chosen constraint.

The Axis rotation controls are found in the. Axis, Custom and Shaft link options.

2 Drag the markers to set position limits and a new position.

In **Free** mode, your object can rotate 360° around the chosen axis. Drag the marker to rotate the object.

The Free mode allows you to set limits on the chosen axis.

In **Limited** mode, the angle ring displays three markers.

• The top marker defines the outer constraints of the rotation on the positive side of the axis. Drag the marker to change the limit.

• The middle marker sets the current position of the object. Drag the marker to rotate the object between the limits.

• The lower marker defines them for the negative side of the axis. Drag the marker to change the limit.
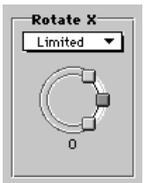
The Limited mode allows you to set limits for the negative and positive sides of the axis.

Controlling Links Directly

The Direct Manipulation option for **Link** properties provides an onscreen description and control of the objects's motion and rotation range. You can drag handles on the wires to control these properties.

To use the Direct Manipulation controls for link properties:

1 Follow the previous instructions to apply a Link property to an object and set link controls on it.

2 After you've chosen the constraint type, click the **Direct Manipulation** button to display the controls on the object.

Click the Direct Manipulation button to display the object controls.

The controls appear as a set of wires with "handles" at certain points. The appearance of the wires depends on the type of link and type of constraint.
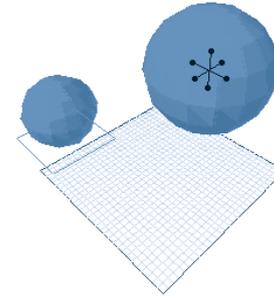
The Direct Manipulation controls appear at certain points.

You won't see the control wires when the constraint type is Locked.

The Direct Manipulation controls require Auto Apply enabled.

For slider controls, you'll see a straight wire. When the constraint is "Limited," the handles at the ends determine the limit for sliding on that axis.

Note: If you don't see the wire, it's probably inside the object. Use the slider in the **Properties palette: Link tab** to extend the range.

To set slider options directly:

• Drag the handle at the end of the wire to change the limit in that direction.]

• Drag the object to change its position along the wire. The object's hot point slides along the wire until it reaches the end.
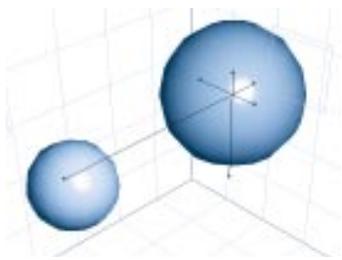
Drag the wire handles to change the range limits for motion on this axis.

For rotation controls, you'll see a wire arc that describes the object's angular rotation range. The line within the arc describes the current rotation.

To set rotation controls:

• Drag the handle at the end of the arc to change the rotation limit.

• Drag the handle on the line within the arc to rotate the object within the range.

Building Chains of Links

The parent-child link enables you to easily manipulate multiple objects from a number of reference points by creating chains of linked objects. This feature is useful in creating articulations, especially when used in conjunction with the Inverse Kinematics feature.

For example, if you wanted to create a fully articulated arm— one that could bend at the shoulder, elbow, wrist, and each of the five finger joints—you should arrange the objects to construct the arm, then link them into a chain with the fingers at the deepest level of the hierarchy and the shoulder at the root.

A chain of links allows you to create fully articulate joints.

The Links Browser

The **Browser palette: Links tab** lets you save link settings that you can later apply to your objects.

The methods for saving to the **Browser** palette and using saved settings are common to the several browser categories. For complete information on using the **Browser** palette, refer to "Using the Browser Palette" on page 28.

Working with Master Objects

Most scenes use one or more duplicates of some particular object. Each duplicate is not an independent object but an Instance of the original Master object. For example, if you create a chair using four duplicate chair legs, the four legs of a chair are object instances of a master object called, "chair leg."
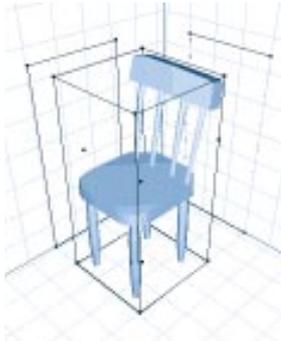
Using master objects allows you to create variations of an object, but yet maintain control of the object through the master object.

The position, orientation, size, hot point location, and shading of each object instance may be unique. The shape, however, must be common.

Shading of instances may be unique or common. A good example of common shading would be a dozen bottles on a shelf, all having the same label. Working at the master object level, you could change the labels on all twelve bottles in one operation. Working at the instance level, you could put a stain on one of the labels. Later, you could change all of the labels by modifying the master object without affecting the stain.

The following list describes the priority of shading layers. Items higher in the list cover those below.

- Instance Paint Shape
- Master Paint Shape
- Instance Primer
- Master Primer

Objects and Masters Tabs in the Hierarchy

The **Hierarchy** window contains three tabs that change your view of the objects displayed in the hierarchy. The **Objects** tab displays all the objects and object instances in your scene. The **Masters** tab displays only the master objects. The **Effects** tab displays any Rendering effects you may have applied to your scene.

Object Instances of "Chair" pieces
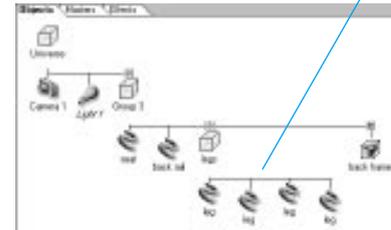
The Hierarchy window's Objects tab can be used to display all objects and instances of the object.

Master Objects of "Chair" pieces
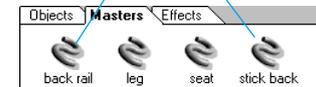
The Hierarchy window's Masters tab allows you to view your master objects.

Unlike the **Objects** tab, the **Masters** and **Effects** tabs do not let you structure or group objects.

To display Master objects:

1 Click the **Master** tab in the **Hierarchy** window.

You create a new master object each time you add a new object to the scene.

Jumping into an Instance

When you jump into an instance object, Ray Dream Studio displays a dialog alerting you. In the dialog, you may choose to modify the master object of this class or create a new master from this instance.

You may have multiple instances with the same name, but you may not have two master objects with the same name. When you create a new master object by modifying an object instance, Ray Dream Studio names the new class object by appending a number to the old name.

If you modify an instance when you had intended to modify the master object, you can easily get back on track by replacing the master with your modified instance. Refer to "Master Object Operations" on page 267.

You can create new instances of the master object by duplicating an existing instance, copying and pasting, or by dragging the object from the **Master** tab into the scene.

For information on special duplicating features, refer to "Duplicating Objects" on page 247.

Master Object Operations

When you modify a master object, all object instances are automatically updated to the new form. Their individual position, orientation, scale, symmetry, and region shading remain unchanged.

To modify a master object:

1 In the **Time Line** window, click on the **Masters** tab to display all master objects.

2 Select the master object you wish to modify.

3 Choose **Edit menu▶ Jump In** to open it for editing.

You can **Jump In New Window** if you want to modify the object in one window while viewing the scene in another.

You may also double-click its listing in the **Master** tab to open it for editing

4 Use the modeling or shader tools to modify the object.

5 Click **Done** to jump out of the object and apply your changes.

To replace a master object:

1 Select and copy the object that will replace the existing master object.

2 In the **Time Line window: Masters tab**, select the master object you want to replace.

3 Choose **Edit menu▶ Paste** or press **Command-V/Ctrl+V**.

When you replace a master object, every instance of the class is replaced by the new object. Each object instance of the replacement uses the positioning, alignment, scale, and symmetry characteristics of its predecessor.

To use a group as a master object:

1 Select the group in the hierarchy.

2 Drag the group over the **Masters** tab, then down to drop it where you want it.

A master group operates under the same rules as a master object. If you jump into one instance of the master group and modify its contents in any way — the number of elements, their relative positions or orientations — you separate this group instance from its master, thus creating a new master group.

The Objects Browser

The `Browser palette: Object tab` lets you save objects, groups and full scenes that you can use later.

The methods for saving to the **Browser** palette and using saved settings are common to the several Browser categories. For complete information on using the **Browser** palette, refer to "Using the Browser Palette" on page 28.