



Working with SOFTIMAGE 3D

A Comprehensive User's Guide

The *SOFTIMAGE 3D User's Guide* was written by Susan Duciaume, Camille Lemberg, Suzanne Gerrior, Grahame Fuller, and Edna Kruger; edited by Edna Kruger; illustrations by Richard Z'Graggen; and layout by Paul Verrall.

Special thanks to Nicole Parrot, Lafleche Dumais, Rejean Gagne, Richard Lampron, Jean-Claude Bouchard, and Nancy Nadeau for their assistance in assuring the technical integrity of this guide.

© Copyright 1996 Softimage Inc., a wholly owned subsidiary of Microsoft Corporation. All rights reserved.

Microsoft®, MS®, MS-DOS®, Windows®, and Windows NT® are registered trademarks of Microsoft Corporation in the United States and/or other countries.

SOFTIMAGE® is a registered trademark of Softimage Inc., in the United States, Canada, and/or other countries.

3D Studio Max™ is a trademark of Autodesk, Inc.

Adobe Illustrator® is a registered trademark of Adobe Systems, Inc.

Abekas® is a registered trademark of Abekas Video Systems, Inc.

Alias® is a registered trademark of Alias Research Inc.

Apple® and Macintosh® are registered trademarks of Apple Computer, Inc.

Aurora® is a registered trademark of Chyron Corporation.

AutoCAD® is a registered trademark of AutoDesk, Inc.

Flock of Birds® is a registered trademark of Ascension Technology Corp.

Indigo® is a registered trademark and Indy™ is a trademark of Silicon Graphics, Inc.

Magellan™ is a trademark of Logitech, Inc.

Macromedia® is a registered trademark and Freehand™ is a trademark of Macromedia, Inc.

PostScript® is a registered trademark of Adobe Systems, Inc.

SEGA Saturn™ is a trademark of Kabushiki Kaisha Sega Enterprises.

Targa® is a registered trademark of Truevision Inc.

TIFF™ is a trademark of Adobe Systems, Inc.

UNIX® is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company, Ltd.

V-LAN® is a registered trademark of Videomedia, Inc.

Wacom® is a registered trademark of Wacom Co., Ltd.

WSD® is a registered trademark of Accom, Inc.

All other product names mentioned in this guide may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

This document is protected under copyright law. The contents of this document may not be copied or duplicated in any form, in whole or in part, without the express written permission of Softimage Inc. This document is supplied as a guide for SOFTIMAGE 3D products. Reasonable care has been taken in preparing the information it contains. However, this document may contain omissions, technical inaccuracies, or typographical errors. Softimage Inc. does not accept responsibility of any kind for customers' losses due to the use of this document.

Document No. 90435-0596

Printed in Canada.

Table of Contents

CHAPTER ONE

Roadmap to SOFTIMAGE 3D	1
What is SOFTIMAGE 3D?	3
What's New in SOFTIMAGE 3D 3.5?	7
What's New in Documentation?	32

CHAPTER TWO

Working in SOFTIMAGE 3D	33
Introduction to the Interface.	35
Starting and Exiting SOFTIMAGE 3D	36
Space in SOFTIMAGE 3D	38
What's in a Scene?	41

CHAPTER THREE

The SOFTIMAGE 3D Interface	43
Introduction	45
Changing Modules	46
Using Menu Cell Commands	47
Using Dialogue Boxes	49
Choosing an Operation Mode	53
Undoing and Redoing Operations	54
Getting Scene Status	55
Playing an Animation	56

CHAPTER FOUR

Viewing a Scene	57
Introduction	59
Types of Windows	60
Changing Windows	62
Resizing the Windows	64
Using the Camera	66
Memorizing View Settings	71
Freezing a Window	72
Selecting a Window for Output and Rendering	73
Choosing a View Mode	74

Displaying and Hiding Elements in a Scene 77

Using the Schematic Window 79

Using the Spreadsheet Window.....84

C H A P T E R F I V E

Customizing Your Workspace 99

Introduction 101

Saving and Loading a Setup File 102

Automatic Saving 103

Changing the Window Layout.....104

Changing Colours.....106

Using the Keyboard.....108

Changing the Mouse and Cursor Setup.....118

Setting Animation Preferences.....120

C H A P T E R S I X

Managing Files.....121

Introduction 123

Databases 124

Chapters (Directories) 133

Files.....135

C H A P T E R S E V E N

Glossary of Terms 155

Glossary 157

I N D E X

C H A P T E R O N E

Roadmap to SOFTIMAGE 3D

What is SOFTIMAGE 3D?

Starting from absolutely nothing except some wild idea in your head, you can make models, animate them, give them a surface, and render them – all in one seamless environment designed for creativity. This environment is called SOFTIMAGE® 3D.

SOFTIMAGE 3D is a fully-integrated 3D software application designed specifically for animators and designers with little computer background. The software's broad range of powerful and sophisticated tools lets you produce complex 3D models and animations of outstanding quality, both quickly and easily.

SOFTIMAGE 3D is widely used by animators and designers for the film, games, broadcast, and advertising industries. The software can also be used by engineers and architects to visualize their products, packaging, and architectural designs.

Building Your Ideas in SOFTIMAGE 3D

So you've been asked by your latest client to create a scenario for an advertisement. After a few late nights in the office struggling with some ideas, you decide that your environment is a source of inspiration: you're going to animate your office supplies in a mock-epic battle scene!

Now what? Using SOFTIMAGE 3D, you can create your models, animate them, give them a surface definition, and create an atmosphere. Then render the whole thing and export it to a different medium when you're done. Go to it!

1. Build some pencils, pens, rubber bands, and the photocopier (our main adversary) using polygon mesh, patch, or NURBS surface objects. Make a desk lamp using articulated chains and invoke a little inverse kinematics for the right movement, and maybe add some soft erasers or office "toys" from meta-clay elements. Multiply the battalion of paper clips using object instantiation so that you have a better defense, then have them all follow the leader's actions using relational modelling.

See the *Modelling User's Guide* for all information on modelling.

2. Make everything move! Using path animation, animate the camera moving around the "battle field" (your desk). Make the rubber bands, paper clips, and pencils deform into different contortions using a myriad of deformation techniques: lattice,

curve, surface, shape, cluster, or Quick Stretch deformation, all of which can be animated. Do some motion capture of a dancer and transfer that motion to the pencil regiment doing a victory dance! Any motion you create can be easily edited in a number of ways to get just the right effect.

See the *Animating User's Guide* for all information on animating.

3. Using SOFTIMAGE® Particle, a separate particle animation system, animate the effect of a the photocopier spewing toner at the ranks of pencils and paper clips. You can composite the particles directly with the scene you're creating in SOFTIMAGE 3D.

See the *Particle User's Guide* for all information on creating particles.

4. Give the pencils, erasers, and office toys some material – colours, transparency, reflection, and refractive qualities can all be integrated. Bring in some textures you scanned and map them on to any of the objects using a number of 2D texture mapping techniques. Using shaders, you also add special effects that are calculated during the rendering process.

See the *Defining Materials and Textures User's Guide* for information on creating the surface definition of your objects.

5. Create the lighting of a dark and murky atmosphere inside the photocopier using a volume shader. Then add a sudden flash of light as the photocopier tries to stun the battalion of paper clips.

See the *Defining Materials and Textures User's Guide* for information on lighting and atmosphere.

6. Render it! After seeing numerous previews and doing preliminary renders of the “almost finished” product, do the final rendering of the scene. There are various types of renderers you can use to do the final rendering process. If you're using shaders, use the mental ray renderer.

See the *Rendering User's Guide* for information on how to render.

7. Save it, export it in different file formats and slap it on a disk, to video, or to film. You can even export scenes in VRML to be put on the Web.

See the *Using Tools User's Guide* for information on doing these kind of tasks when the project is over.

Your work was shown to your client and was well-received. However, a video game fanatic on the board of directors decided that it was so good, he wants to make a video game from it!

No problem. Using SOFTIMAGE 3D, you can convert all your objects to polygon mesh, then reduce the number of polygons and the colour palette with some special tools, and export it to a video game format. That wasn't so hard, was it?

Where to Start

The obvious first step for starting with SOFTIMAGE 3D is to install it. Follow the steps in the *SOFTIMAGE 3D Installation Guide* to successfully install SOFTIMAGE 3D and get it set up.

Once SOFTIMAGE 3D is installed, decide which of these two sections best describes where you are at with SOFTIMAGE 3D:

I'm New – Where Do I Start?

- Start off with the 3D Learn online tool to get a feel for the SOFTIMAGE 3D interface and some of the basic concepts. This is found on CD #3.
- Go through the *Quick Start* lessons. These are eight lessons designed to help you start using SOFTIMAGE 3D.
- Take a peek at this book, the *Working with SOFTIMAGE 3D User's Guide*. It describes the elements in the interface and many of the basic tasks that you should learn as you start working.
- Feeling adventurous? Do the lessons in the *Self-training Workbook*. This is a comprehensive set of tutorials divided in parts to match the basic modules found in SOFTIMAGE 3D: Model, Motion, Actor, and Matter. There are also tutorials for the Particle program.
- Glance through the task-based *User's Guide* set to get a feel for the different options available to you and basic procedures relating to their tasks.

I Know Where I'm Going

- See *What's New in SOFTIMAGE 3D 3.5?* on page 7, or look at the What's New in 3D Learn online tool found on CD #3. Same information, different medium.
- Flip through the task-based *User's Guide* set to get a feel for the different options available to you and basic procedures relating to

them. There might be some new information for you to learn.

- See the *Reference Guide* if you know the names of commands you want to use. There is also an HTML version of this guide on CD #4 for your convenience.
- Descriptions of standalones (including DXF and IGES converters) and developer's guide information are in HTML files on CD #4.
- If you know about the Particle program, take a look at the *Particle User's Guide*.
- If you know mental ray, the *mental ray Programmer's Guide* will answer all your questions.

What's New in SOFTIMAGE 3D 3.5?

Welcome to version 3.5 of SOFTIMAGE 3D! This version features numerous new and enhanced capabilities in each module.

This is a list of what's new for SOFTIMAGE 3D Version 3.5 in both the software and documentation.

- The interface – see below.
- Model module – see page 10.
- Motion module – see page 12.
- Actor module – see page 18.
- Matter module – see page 21.
- Tools module – see page 23.
- Standalones – see page 24.
- Focus on Games development – see page 27.
- Particle system – see page 28.
- Documentation and training materials – see page 32.

SOFTIMAGE 3D Interface

Spreadsheet Window

The Spreadsheet is a new window type that allows you to perform simple and complex queries on the elements in your scene. The results of the query are presented in rows and columns as in a spreadsheet.

The query you create or choose displays only the elements that meet the criteria of the query, which reduces the number of elements you must wade through, and increases your productivity by simplifying the task of locating elements in a busy scene. This makes the Spreadsheet very useful for selecting and deselecting elements in your scene.

Emergency Save Feature

SOFTIMAGE 3D can now detect a crash and try to back up the current scene. If you run SOFTIMAGE 3D normally, emergency saving will be active. The SI_EMERGENCY_SAVE environment

variable lets you turn this feature on or off, as well as specify a directory for the saved scenes.

Shared Files

To improve productivity, you can now save elements of your scene to a SHARE subdirectory of a chapter, which allows you to reuse components of your scene. When you use a shared element in many scenes, and modify the element, the changes are reflected in all the scenes that use that element. This feature also helps you manage disk space, since there is only one version of the shared element.

Quick Access Entries for the Database Manager

Quick access entries allow you to move easily through the Database Manager's browser. The following quick access entries are available:

- <DATABASES> returns to the Database Level in one step, if you are browsing outside the databases.
- <HOME> takes you to your home directory.
- <ROOT> takes you to the root directory.
- <ORIGINAL> returns to where you started.

Camera Support for Asymmetrical Viewing

You can now change the camera's projection plane parameters to fix distortion problems in imported scenes, to match the parameters of the real camera to a virtual camera when compositing live action with a CG (computer generated) scene, or to simply to create strange effects in SOFTIMAGE 3D when you animate your scene. You can access this option only from the Spreadsheet.

Assorted Interface Improvements

Resizing Windows

You can now resize the four windows, by dragging the small square in the centre of them that appears when you press the w Supra key. When a window is scaled up, the three others are scaled down (that is, there are no overlapping windows). There must be four windows visible to use this feature.

Middle-clicking the square while pressing the w key resets the windows.

Transformation Boxes

The transformation mode boxes (XYZ, UNI, VOL, etc.) now appear above the manipulation mode boxes (OBJ, TAG, CTR, TXT, and POL), instead of replacing them when a transformation was being performed.

Supra keys are modified accordingly: the F8 to F12 keys no longer change meaning (depending on whether an Scale, Rotate, or Translate operation is active or not).

Menu Improvements

The Supra key for a command is now displayed beside it in the menu.

Text for menu commands is now left-justified, and toggle information is displayed on the left.

Swift Keys

The same key sequence can now be used for more than one Swift key. This allows all Swift keys to be activated in the order of their creation when you enter that particular key sequence.

There is also a set of predefined Swift keys available for your use.

Schematic Window

New symbols have been added to indicate deformations in the Schematic window. The following symbols indicate how an object is affected by a curve or surface deformation (node, or branch and subnodes):

- BCD: Branch Curve Deformation
- NCD: Node Curve Deformation
- CD: Curve Sub-Deformation
- BSD: Branch Surface Deformation
- NSD: Node Surface Deformation
- SD: Surface Sub-Deformation
- As soon as you group elements as a skeleton, each element is labelled **Skel** in the Schematic window. This includes the chain root, all joints, any models embedded in the skeleton, and effector.
- After you assign an envelope to the skeleton, the label for the skeleton root changes from **Skel** to **SkRt** in the Schematic window.

- You can display information related to any combination of modules in the Schematic window. These options are available on the menu bar. For example, you display the actual links between materials and their animation files.
- You can choose to always display the prefixes of elements, never display them, or display them only if they are different from the scene. These options are available in the Schematic Window Layout dialogue box.
- The new Light mode allows you to view all information relating to lights in your scene.

Model Module

New Commands

Draw → Project on NURBS Surface

The **Draw → Project on NURBS Surface** command allows you project a NURBS curve onto a NURBS surface. You can project a curve onto a surface, use relational modelling on it, extract it, then extrude it and so on.

Draw → Trim NURBS Surface

The **Draw → Trim NURBS Surface** command allows you to use a NURBS curve to perform a variety of trimming operations on a NURBS surface.

Draw → Delete Projected Curves

The **Draw → Delete Projected Curves** command allows you to delete selected curves that have been projected on a NURBS surface.

You can delete only one projected curve at a time, but the dialogue box allows you to repeat the operation without exiting.

Draw → Delete Trim Curves

The **Draw → Delete Trim Curves** command allows you to delete selected trim curves on a NURBS surface.

Polygon → Select by Raycasting

Unlike the **Polygon → Select by Tag Vertex** and **Select by Rectangle** commands, this command (or the **g Supra** key) selects only the polygon nearest the camera. As a result, you do not inadvertently

select the polygon directly behind your selection on the other side of the 3D object.

Save → vrml and Info → attach_URL

The **Save → vrml** command in the Model module lets you convert polygon mesh objects in a scene to VRML format (extension .wrl for world). This version supports Point and Spot lights, as well as multiple lights. It also supports local and global materials, and UV-mapped 2D textures.

You can also attach a URL (Universal Resource Locator) to a polygon mesh object in the scene by using the **Info → attach_URL** command in the Model module. This allows you to link the object to another file located on the World Wide Web.

Web and Create NURBS Net

The **Effect → Web** command in the Model module allows you to convert a detailed, intricate model to a surface that represents only the external appearance of the original, ignoring any internal structure. The output surface can be a polygon mesh, or a cubic or quadratic NURBS surface.

The **Effect → CreateNURBSNet** command generates QTMs (quadratic texture maps). This command is a necessary step before exporting models for certain games platforms.

Improved Commands

Info → Distance

You can now drag the end point for distance information. As the point is dragged, distance information is automatically updated in the status line.

Surface → Skin

You can toggle your choice of curves to select and deselect for skinning. This is useful when picking and skinning large numbers of curves.

Relational Modelling

Relational modelling can now be applied with **Draw → Trim NURBS Curve**, **Draw → Extract**, and **Effect → Inverse**, in addition to those operations available in SOFTIMAGE 3D 3.0.

As usual, you must choose **Preferences → Create Modelling Relation** to activate relational modelling.

Deformation → by Curve/Surface

Deformation by Spline/Patch is now called Deformation by Curve/Surface to better reflect its support for NURBS curves and surface objects.

Motion Module

Fcurve Window

- Named selections containing at least one function curve are now available in the Fcurve Editor scroll box for easy access. This productivity enhancement may be important if you frequently work with groups of function curves (for example, all z rotations for a selection of objects).
- You can now invert a portion of an animation by scaling it precisely in the Y Scale box in the Copy/Paste Fcurve Segment dialogue box.

Function Curves

- You can now create keyframes, select, reset, or copy animation of the transformations (scaling, rotation, and explicit translation) for a single axis (x, y, z).
- The **Reset** menu has been renamed **FcrvReset** to better reflect its use.

Branch Hidden Keyframing

Now you can create real Branch Hidden animation. This new feature speeds up the update process because only one model is necessary to define a Branch Hidden animation: its children automatically inherit the visibility status of their parent. This improves productivity and makes hidden animation a much simpler task to accomplish.

Cluster Centre Constraints

There is a new constraint called **Constraint → Cluster Centre** that lets all points in a cluster preserve their relative position. This allows you to manipulate clusters through a single cluster or hierarchy of cluster centres. You can also automatically create cluster centres for new clusters. Using a regular object as the cluster centre is also useful in creating a hierarchy of cluster centres, which increases the flexibility of this tool.

Channels

Improved Channels Performance

Performance has been considerably enhanced, and should be especially noticeable on single-processor machines.

Remote Drivers

Any driver (input, output, or combined) can now automatically run on a remote machine. Select a driver in the Channel Setup dialogue box, open the Options dialogue box, select the remote mode, and type in the name of the target machine on which you wish to run the driver.

Synchronized Drivers

The driver run mode can be set from the Options dialogue box after you select a driver in the Channel Setup dialogue box.

If a driver is synchronized (the default, and the only option in earlier versions of SOFTIMAGE 3D), then it and any other synchronized participating drivers run once for each channel update cycle. No data is ignored or skipped.

Drivers are constrained to run only as often as SOFTIMAGE 3D lets them, so each driver gives data once for each SOFTIMAGE 3D update, and each driver cannot run far ahead of the others. All the drivers run in parallel, but after a driver has sent its data to SOFTIMAGE 3D, and continues on, it cannot send its NEXT data to SOFTIMAGE 3D until the other synchronized drivers have also sent their latest data.

Free-running Drivers

The driver run mode can be set from the Options dialogue box after you select a driver in the Channel Setup dialogue box.

If a driver is free-running, the driver runs as fast as it can, unconstrained by SOFTIMAGE 3D and vice versa. The driver writes its information, and SOFTIMAGE 3D picks up the latest available information whenever it has time.

Free-running drivers are good in certain cases where the driver is slow, runs best in a stream mode, or is holding up the update, but not for drivers that run very fast.

Frequency Drivers

The driver run mode can be set from the Options dialogue box after you select a driver in the Channel Setup dialogue box.

If you make a driver a frequency driver and type in a target rate, the driver attempts to run at that target rate (for example, a value of 5 means five times a second, 0.5 means once every two seconds). This roughly means that the main update loop of the driver triggers at the selected rate. If there is any time leftover after the driver has completed an update, it waits until it is time for it to execute again.

Take Recording

Take Recording allows you write raw high-resolution motion files directly from the channel drivers during a channel capture (in the liveOGL or liveGL viewer, or in Take Record mode in SOFTIMAGE 3D), and defer loading them into SOFTIMAGE 3D (and creating fcurves, etc.) until a later time.

A take is a collection of raw motion files for a collection of channel drivers participating in a channel run.

This means that each channel driver in a take record can run at its own rate, and write motion data as fast as it can to saved files. The speeds of the drivers are not constrained by each other or by SOFTIMAGE 3D, and no data are missed (every item is saved to file). At the same time, you get lower-resolution visual channel feedback in the viewer or SOFTIMAGE 3D as the take is being done.

When you load the files back into SOFTIMAGE 3D, you can choose portions from the take, and the portions are loaded at the frame pointer position onwards – a bonus is that the re-evaluation that takes place places evenly spaced keys for all channelled fcurves.

New Channels API

Two new calls for channel driver developers have been added. They allow you to deduce how the driver is being run, in which mode, on which machine, etc.

- **DK_driverGetInfo**

- This fills in a structure type `DK_DriverInfo` passed to it. Basically, this structure tells the driver information about where it is running, in which mode it is running, where SOFTIMAGE 3D is running, where the driver will take to, etc. You can get

information on all the new modes from within the driver itself. See the header file **DK_driver.h** for more details.

- **DK_driverPrintInfo**
 - This is a convenience function that will display the **DK_DriverInfo** structure you pass it to the file pointer you choose.

Converting Take Files between ASCII and Binary

There is a program called **cvt_take** which converts ASCII and binary take files to and from each other. Binary take files take up about 35% of the space that ASCII ones do. The program is located in the **/chnlDriver/stand** directory.

New Drivers

The following new channel drivers are available:

- **hybridVision**
- **eventgen**
- **rat**
- **klocker**
- **magellan**
- **listen**
- **ultrarak**
- **kbd**

Driver Timeouts

There is a new environment variable **SI_DRIVER_TIMEOUT** that you can set in the unusual circumstance that a driver takes too long to start and times out. This usually only happens on a busy network with remote drivers, so you should not have to alter this variable for standard usage.

Reconnect Button

This is a new button in the Connection Setup dialogue box that lets you perform reconnections.

Broadcast Drivers

There is an experimental broadcast driver feature that allows the output of one input driver to be “listened in to” by more than one other session of SOFTIMAGE 3D (or the viewer). If you’re interested in experimenting with this, you need to set the value of the environment variable `SI_DRIVER_ALLOW_BROADCAST` to 1, run the driver standalone (with driver `-SI_RUN -mode BROADCAST <portnum>`), and use the **listen** channel driver within SOFTIMAGE 3D to listen in. This is not documented or supported.

Expressions

New constants and functions have been added to expressions to improve the ease and flexibility of their use. These new functions are available with **Expressions** → **Edit**, **FcrvEdit** → **Expression**, and the **Expression** button in the **Channel** → **Connection Setup** dialogue box.

fcurve Evaluation

The `at_frame` function is an fcurve evaluation function based on frames. Currently, this function only works for attributes that actually have animated fcurves.

```
at_frame( ( < frame > , < parameter > )
```

Distance between Two Points

You can compute the distance between objects’ centres, and between an object’s centre and a camera or light. You can also compute the distance between two positions, expressed as vectors.

This simple distance function is tailored to return the distance between the position of two models (or elements). This function is especially useful if you are unfamiliar with or dislike vector mathematics.

```
ctr_dist( < object >, < object> )
```

Distance to Camera

This function returns the distance between a given point and the camera centre.

```
dist_to_cam ( < object > )
```

Distance to Camera Interest

This function returns the distance between a given point and the camera interest.

`dist_to_camint ( < object > )`

Remainder of Division

This function returns the remainder of the division between two floating-point values. Once a function f_1 is defined on an interval $[0, P]$, you can define a cyclic function $f_2(x) = f_1(\text{fmod}(x, p))$.

`fmod( < fvalue > , < fvalue > )`

The % symbol performs a similar function for integer values, but it is an operator like “*” (multiply) or “/” (divide) rather than a function.

Oscillation

This function defines an oscillation curve that varies in amplitude and frequency over defined ranges from start to end frame. The two interpolation parameters define the transition between the start and end values of the period and amplitude. These values can be LINEAR or SPLINE.

`oscil((< start frame > , < end frame > ,
< start period > , < end period > ,
< interpolation > , < start amplitude > ,
< end amplitude > , < interpolation >)`

Note

The same effect can be accomplished with the proper combination of sine function and scaling factors, but is not easy even if you know a bit about mathematics.

Configurable Sinus

This function returns a value (between the positive and negative values of the amplitude) on the defined sine curve at the current frame. The configurable sinus can be offset from its default start frame which is frame 0 by providing an offset value in the optional third parameter. Again, this function is provided as an easier way to accomplish what could be feasible, with some difficulty, using a single basic sine function.

`sinus( < period > , < amplitude > , [ < offset > ] )`

Ease In and Ease Out

The **ease in** and **ease out** functions are used to control the start and end of an animation. The ease in function interpolates from 0% to 100% of influence between start and end frame. The ease out function returns 100% when evaluated before start frame and 0% when evaluated after end frame. The returned value is a real number between 0.0 and 1.0. The interpolation parameter can be either LINEAR or SPLINE for both functions.

```
ease_in ( < start frame > , < end frame > ,  
< interpolation > )
```

```
ease_out ( < start frame > , < end frame > ,  
< interpolation > )
```

Time Offsets

This new feature gives you the ability to reference an object with a time offset, which is useful, for example, for forcing the camera to follow the same position of a model 10 frames prior to the current frame. The animation of a model can also be driven through constraints, but there is no possibility of recreating the time offset using this technique because constraints do not have function curves associated with them.

Actor Module

Models in Skeletons

Skeleton hierarchies can now be made up of only models, as well as any number of articulated chains.

Although any type of model can be used in a skeleton hierarchy, the most likely are null objects, since they provide more local control of envelope vertices without introducing useless geometry into a skeleton.

Models used in skeletons behave like cluster centres, and not like regular joints. They are useful mainly for local deformations of the envelope, such as facial animation and simulation of muscles.

Also, the **Skin → Reset Actor** command has moved from the **Skin** to the **Skeleton** menu.

Grouping as a Skeleton

You can now group chains and/or models as a skeleton before assigning an envelope, using the **Skeleton → Group as Skeleton** command. You can also assign certain envelopment details to the skeleton without yet assigning an envelope.

Bounding Models

There are two new types of bounding models with the **Skin → Envelope Assignment → Bounding Model** command: Inclusive and Exclusive.

- **Inclusive:** Any vertex falling within the bounding model is assigned 100% to the associated joint, without regard to relative proximity to the joint. Points falling outside any inclusive bounding model are assigned and weighted (according to their relative proximity) to the number of closest joints you assign. The default is 2.
- **Exclusive:** Any vertex falling within the bounding model is prevented from being assigned to the associated joint.

Bounding boxes (but not bounding spheres or cylinders) can now be edited. They have a real geometry and their points can be moved to define a more accurate area over the envelope.

Envelopes

NURBS as Envelopes

Automatic envelopes can now be made with NURBS. You can select a default circle and from it make a patch or NURBS envelope.

Envelope Capping

You can now automatically cap the top or bottom of the envelope, or both.

Initial Assignment

The Envelope Initial Assignment box has a new parameter: **Default nb of joints assigned**. When you select **Weighted** assignment, this option allows you to define each vertex assigned to the nearest joints. You can now specify the number of joints to which each vertex in the envelope will be assigned. The percentage weighting is still based on relative proximity. The default value is 2.

Modifying Assignment and Weighting

When you choose the **Skin → Envelope Assignment → Modify Weights** command, there are some new parameters.

- You can now select one envelope and modify the weights of selected vertices in the **Tagged Vertices** list or all of the tagged vertices.
- You can select more than one envelope and modify all the tagged vertices as shown in the **Tagged Vertices** list.
- Although you can select multiple envelopes, **Joints/Weights** lists the joints of only one skeleton at a time. As a result, selecting multiple envelopes is useful mainly if you have more than one symmetrical envelope assigned to the same joint. Thus, by selecting some or all of them, you could edit the weights of their (identical) vertices in a single operation. The effector is now listed, allowing you to manually reassign vertices to the effector.
- You can now select a joint and adjust the **Weight** slider using absolute or additive values.
- When you select **Add** or **Add Percent**, the value of the slider can be either positive or negative, which means you can:
 - Add or subtract a specific value (**Add**)
 - Add or subtract a percentage of the current weight (**Add Percent**).
- When you select **Add** or **Add Percent**, the **Weighted** check box is available. If selected, this automatically interpolates the weight values across the selected vertices' area – there is a progressive diminishing effect, spread out over the vertices associated with the selected joint. The result is a smoother, less discrete appearance in position between points.

Inverse Kinematics

Five new commands have been added to the **Skeleton** menu so that you can easily locate all the tools related to inverse kinematic chains.

Skeleton → Preferred Axis Cns

Allows you to set a preferred rotation axis constraint on any joint of an inverse kinematic chain.

Skeleton → Up Vector Cns

Allows you to set an Up Vector constraint on any part of an inverse kinematic chain.

**Skeleton → Automatic Preferred Axis Cns and
Skeleton → Automatic Up Vector Cns**

These are mutually exclusive toggle commands. You can use **Skeleton Automatic Up Vector Cns** to constrain the up direction of a chain. When this option is on and you draw a chain, SOFTIMAGE 3D automatically creates a null, constrains the first joint of the chain to the null, and makes the null the parent of the root of the chain.

Skeleton → Show Critical Zone

This command allows you to toggle a visual feedback icon for the critical zone on or off. The critical zone is the area around the chains root in which a joint is likely to “flip.”

Matter Module**Previewing Subregion Rendering**

A new option in the **Preview → Setup** dialogue box allows you to render a subregion.

Rendering

There are two new options in the Render Setup dialog box:

- **Output Images** saves the rendered frame to a file.
- **Render Subregion** renders the area you define using the subregion cropping rectangle.

Txt_Edit Commands

The **Txt_Display** menu has been renamed **Txt_Edit** to better reflect its usage.

Paint

When you choose the Paint menu cell, the Paint dialogue box appears. It allows you to manage and edit textures.

The Paint dialogue box is divided into the following major areas:

- A 2D Clip view, which allows you to view and edit different clips (textures or pictures) each of which may or may not already be associated with a model.
- A Clipboard menu which allows you to cut or copy entire images or selected areas to a clipboard, and then paste from the clipboard to the database or onto images. The Make Clip button allows you to make a new clip.
- Clip editing functions which allow you to paint and apply various editing operations to your textures/pictures.
- A palette and associated control functions which allow you to select and modify the brush colour used in the altering the clip. You can also edit the palette or manipulate palettes of a single clip or between multiple clips.
- A 3D projection view displays the texture on the model.
- Interactive UV texture editing functions, which allow you to select polygons on the image and edit their UV mapping.

Painterly Effects

The Painterly Effects package is now available via the Paint dialogue box. In it, 42 Painterly Effects are available, such as emboss, grain, or glow.

You can experiment freely, previewing the results of effects on different areas of the image, and adjusting the parameters to increase or decrease the overall changes to the surface.

The location of the Painterly Effects Plug-ins is indicated by the environment variable `SI_PAINTERLY_FX`. If this variable is undefined, the Paint FX button is dimmed.

Colour Palette

The Palette button in the Paint, Material, 2D Texture, and 3D Texture dialogue boxes displays the new Palette dialogue box. This lets you use the system palettes for selecting and mixing colours. You can create your own palettes from scratch or modify existing ones.

The reindexing of an image is the redirection (or change of pointers) of the image pixels towards new palette entries. The reindexing of an image only applies to colour-indexed images.

Custom Shader Ball

If you would like to preview a texture or material shader using the mental ray renderer, you can now do so with the Custom Shader Ball.

To display the Custom Shader Ball, select a texture or material, then click on the Edit button in the mental ray area of the Palette dialogue box. A small dialogue box with the Custom Shader Ball appears with the texture or material that you have chosen. You can also define certain parameters for the Custom Shader Ball, such as its size, the colour and the location.

Tools Module

Color Reduction

The C_Reduction menu cell command lets you load an image and create:

- A colour-indexed image which best approximates the original, but using fewer colours.
- A corresponding colour palette for the image.

Instead of creating a new colour palette, you can also load an image, then load an existing palette and use it to generate a colour-reduced image. This feature will appeal especially to games developers.

By editing the palette, you can alter the colours of the generated image. Alternatively, change some of the generation parameters and repeat the process, generating new palettes and versions of the colour-reduced image until you are satisfied with the results.

By locking individual palette entries, you can protect them from modification while editing the palette or when regenerating a new palette.

You can save palettes for reuse, as well as save the colour-reduced images in various formats.

You can also apply colour reduction to a sequence of images and specify whether you wish to apply the current palette to all images or regenerate a palette for each image.

SEGA Saturn Features

You can now export SOFTIMAGE 3D scene files to the SEGA Saturn™ file format, as well as import Saturn files into SOFTIMAGE

3D. There is also a Saturn viewer available from the **Viewer** menu cell command that lets you connect to a Saturn viewing device to see what your SOFTIMAGE 3D scene looks like on a video games machine.

Field Type Support

The **FlipBook** and **Composite** menu cell commands now allow you to select the field type (full, even dominance, or odd dominance).

Printing to Network Printers

The **Print** menu cell command now lets you print a **.lin** file to a network printer.

Scanning

The **Scanner** menu cell is no longer available because 2D scanners are no longer supported.

Standalones

There are several new and improved standalones.

SOFTIMAGE Live Viewer

The SOFTIMAGE Live viewer is an optimized, standalone viewer used to view and animate SOFTIMAGE 3D scenes. SOFTIMAGE Live can be used for live performance animation and virtual studio-type applications.

SOFTIMAGE Live has standard viewing operations such as pan, zoom, orbit, and walk-through, and can display in various modes (such as shaded, textured, and stereo). SOFTIMAGE Live also supports animation playback and channel runs with recording capabilities.

SOFTIMAGE 3D ships with two versions of the SOFTIMAGE Live standalone: liveGL and liveOGL.

imgconv

imgconv converts files between a wide variety of image file formats. It also provides a set of image processing tools such as blur, contrast, and zoom.

imginfo

imginfo can print information about any image format for which there is a dynamic shared object (DSO) installed in `$SI_LOCATION/3D/dso/sil`.

imgshow

imgshow can display any image format for which there is a dynamic shared object (DSO) installed in `$SI_LOCATION/3D/dso/sil`. To run **imgshow**, you must set the environment variable `SI_IMAGE_PATH` to point to `$SI_LOCATION/3D/dso/sil`.

imgshow automatically detects supported image file formats, so input files do not require an extension (such as `.pic`) to identify their format.

flipbook

The **flipbook** standalone now includes all the features of the Skim standalone, which is no longer shipped with SOFTIMAGE 3D.

Field Type Support

The **composite**, **flipbook**, **display**, and **showpic** standalones include new options for specifying the field type (full, even dominance, or odd dominance).

Printing to Network Printers

You can now print `.lin` and `.ps` files to network printers. The **printlin** and **printps** standalones each have a `-d` option that specifies the name of the destination printer:

```
printlin -d< printer_name >
```

```
printps -d< printer_name >
```

You can set a default printer by setting the environment variable `SI_PRINTER`. When you omit the `-d` option, **printlin** and **printps** print to `$SI_PRINTER`. If `SI_PRINTER` is undefined, then the standalones use the default system printer.

Converting NURBS with iges2soft

The **iges2soft** converter validates NURBS data and can optionally fix bad or redundant data. To fix NURBS data, you use the `-f` command line option:

- For each error fixed during the conversion, **iges2soft** writes a message to **stderr**.
- If you omit the **-f** option, **iges2soft** stops the conversion as soon as it encounters an error.

Focus on Games Development

There are a number of tools in the SOFTIMAGE 3D interface that now support games development.

The **Effect → PolygonReduction** command in the Model module allows you to reduce the number of polygons in a model. It combines three effects into one dialogue box:

- The Filter effect, which can also be applied using the **Effect → PolygonFilter** command.
- The Optimization Based effect, which can also be applied using the **Effect → PolygonOptimize** command.
- The Rule Based effect, which can also be applied using the **Effect → PolygonRuleBased** command.

Optimizing models is useful in a variety of situations. Games developers will appreciate the fast rendering that is a result of polygon reduction.

The **C_Reduction** menu cell (colour reduction) in the Tools module lets you load an image and create:

- A colour-indexed image which best approximates the original, but using fewer colours.
- A corresponding colour palette for the image.

Instead of creating a new colour palette, you can also load an image, then load an existing palette and use it to generate a colour-reduced image. This feature will appeal especially to games developers.

The **Effect → Web** command in the Model module allows you to convert a detailed, intricate model to a surface that represents only the external appearance of the original, ignoring any internal structure. The output surface can be a polygon mesh, or a cubic or quadratic NURBS surface.

The **Effect → CreateNURBSNet** command generates QTM's (quadratic texture maps). This command is a necessary step before exporting models for certain games platforms.

You can now export SOFTIMAGE 3D scene files to the SEGA Saturn file format, as well as import Saturn files into SOFTIMAGE 3D. There is also a Saturn viewer available from the **Viewer** menu cell command in the Tools module that lets you connect to a Saturn viewing device to see what your SOFTIMAGE 3D scene looks like on a video games machine.

Particle

User Interface

Besides a revamp of the user interface, there are many new enhanced capabilities in the existing modules. Some of the enhancements make creating more realistic simulations quicker and easier, while others make the graphical interface more intuitive.

- You can now change Particle's window to any size. You do this with the mouse in the same way as you resize other Motif windows.
- In the 3D viewing area, the graphical appearance of the source particle emitter has been modified to make it easier to see and manipulate.
- In the Parameter Editing area, units now appear beside text boxes. For **Size**, you can change Units (un.) to Pixels (pix.) by clicking on the un. button and selecting Pixels.
- The virtual sliders have been redesigned to avoid unintentionally changing a text box value.
- The non-modal user interface allows you to interact with the scene while editing parameters in a window or sub-menu.
- Pressing Shift - h opens a help window that displays a list of mouse and keyboard shortcut commands (supra key functions). Leave this window open for the duration of your Particle session to learn the shortcut keys.
- You can now use the **Tab** or **Enter** keys to move between text boxes in the Parameter Editing area. You can also change the numeric value in text boxes by clicking the middle mouse button; the current value is highlighted, letting you key in the new value.

Particle Module

Renamed Physical Property Parameters

Drag, Force, Vortex, and Perturbation are now named Friction, Electric, Magnetic, and Noise, respectively. The four controls still function the same.

Particle Instantiation

The Multiplication option lets you replicate an infinite number of particle instances from the original particle type. The effects of instantiation are only visible when you render your animation.

Glow

When you select the **Glow** option, the RGBA value of each particle is added, such that densely concentrated areas of particles appear brighter than sparsely concentrated areas.

Colour window

Besides a revamp of the Color window, there are many new features that will improve the quality of images that you wish to create. The following is a list of the new features:

- Colours can be expressed according to RGBA or HSLA values.
- **Sprite** is a new option that maps a picture file onto each particle generated by a source.
- **Opacity** can be expressed according to the alpha channel or the RGB colour intensity.
- The **Color Editor** is a display box that displays the selected colour and shape that you choose for the particles. When you modify a colour value or select a shape, it is immediately displayed in the **Color Editor**.
- The **Shape** option lets you select a shape to be used as an alpha channel for the particles in your system.

Decay Parameters

In the Decay Parameter dialogue box, **Lineage Limit** lets you set the number of decaying particle generations (of the same type) that are generated from your original particle.

Source Module

There are five new control buttons in the Source module that significantly increase the control and flexibility that you have over the source.

- **Visibility** determines whether the particle is displayed on the screen.

- **Regular Stream** generates a more uniform flow of particles by emitting them evenly over time.
- **Inherit Velocity** controls the velocity of the particle emissions from a moving source, from a moving 3D object that you are using as a source, or from moving vertices of shape-animated objects.
- **Path Strength** is a percentage value that allows you to control how precisely the particles are translated along the profile of a curve that has been imported from SOFTIMAGE 3D.
- **Speed Limit** allows you to set the maximum and minimum speed values at which the particles are emitted.

Obstacle Module

The Obstacle module interface includes two new options that will increase the control you have of complex sessions that contain more than one obstacle, and many different particle types.

- The **Absorb** list allows you to specify how different particle types interact with an obstacle. When the obstacle is active, it is visible to the particle types in the **Absorb** list.
- The **Emit** option allows you to specify any number of different particle types that will be generated from the collisions of the particles with a specific obstacle.

File Module

The File module interface includes a number of new options as well as the reorganization of existing controls in the Configuration area. Layout and Animation controls, previously part of the Setup window, are now in the File module Configuration area.

Layout Window

In the Layout window, Grid Step and Grid Lock are renamed Grid Size and Grid Snap respectively.

Camera Settings

The camera controls have been moved to the new Camera Settings dialogue box. New parameters let you move the camera and its interest around in your 3D viewing area.

Render Setup

Besides the reorganization of the Render Setup dialogue box, the following new controls are now included:

- The **Binary Particle File** (BPF) option lets you render your scene to disk in a binary file format. You can then import your **.bpf** file into Softimage 3D and use it with Particle customs.
- The **Field Rendering** option is used to reduce the flickering effect that results from fast moving objects when rendering to video.
- The **Depth Sorting** option tracks the x, y, and z coordinates of every particle from the first moment it is emitted in your scene.
- The **Desaturate** option clips the RGB values to a maximum of 1 (255). This option is necessary if you have activated the **Glow** option in the Particle module.
- The **Background** option in the **Compositing** area of the Render window lets you define a background colour for your Particle 3D viewing area. The background colour will then be composited with the particle. The file layout is not rendered with the scene.

Preview Setup

The Preview Setup dialogue box lets you set the options for previewing on the screen. You can preview in **Draft** quality with a small resolution for faster rendering to screen.

What's New in Documentation?

There have been various changes to the documentation and training material for this release.

- A Self-training workbook is now available for your use so that you can start experimenting with SOFTIMAGE 3D right away.
- The new six-volume User's Guide set is designed to be a task-oriented approach to the different features of SOFTIMAGE 3D. Each guide essentially corresponds to the interface and the way you work. You will find information on general working methods, modelling, animating, defining materials and textures, rendering, and using various tools and utilities. Each user's guide also has its own index.
- The two-volume reference guide allows you to refer to menu cells that are arranged in alphabetical order. Each volume has a copy of the complete reference index at the back. The reference guide is also available in HTML files on CD #4.
- The standalones (including DXF and IGES), dbtools, and channel drivers programmer's reference information is in HTML on CD #4.
- The Dkit Reference Guide is not shipped with this version, but there is information in the release notes relating to any changes since the previous version.
- An improved User's Guide for the Particle system.

C H A P T E R T W O

Working in SOFTIMAGE 3D

Introduction to the Interface

The key to SOFTIMAGE 3D is its user interface. It provides the basic tools you can use to create your masterpiece. Together with the keyboard, mouse, and an optional tablet, the interface lets you access a vast array of tools for creativity.

This user's guide covers how to use these tools in SOFTIMAGE 3D, as well as some basic concepts. There is information on:

- Starting and exiting SOFTIMAGE 3D.
- Basics on Cartesian space.
- What's in a scene.
- Using the commands and parameters.
- Different ways of viewing a scene and its elements.
- Customizing your workspace.
- Managing files and directories.
- A glossary of terms used in SOFTIMAGE 3D.

Starting and Exiting SOFTIMAGE 3D

Before learning about the basic tools in the SOFTIMAGE 3D display, you should log on to your workstation and go to your home directory. You are now ready to invoke SOFTIMAGE 3D so that its display appears on the screen.

Starting SOFTIMAGE 3D

To invoke SOFTIMAGE 3D, open a shell, type `soft` and press the Enter key. The SOFTIMAGE 3D copyright screen is displayed.

Press any key or click any mouse button to close the copyright page, or just wait a few seconds. The display appears on your screen and is ready to be used!

Starting with Command Line Options

If you type `soft -h`, you can access a list of options that allow you to define the SOFTIMAGE 3D display and specify the default database, current scene file and so on.

For a complete description of the options, see the *Standalones* HTML file on the *On-line Documentation* CD.

Running SOFTIMAGE 3D in the Background

When the software is loaded, it appears in the foreground and any keyboard entries are used to interact with the software. Although you can't see the shell when SOFTIMAGE 3D is open, it is running in the "background" and you can still enter operating commands using one of these methods:

- Open a shell without closing SOFTIMAGE 3D by choosing the **Shell** menu cell in the Tools module.
- Press Alt-F9 to minimize SOFTIMAGE 3D to an icon. You can then access the shell.
- Press Alt-F3 to put SOFTIMAGE 3D in the background. You will still see the SOFTIMAGE 3D display, but the other windows in your display are "on top" of it. To put SOFTIMAGE 3D in the foreground again, make sure that the cursor is somewhere on the SOFTIMAGE 3D display and press Alt-F1.

Exiting SOFTIMAGE 3D

To exit SOFTIMAGE 3D, use the mouse to choose the **EXIT** menu cell at the bottom of the left menu bar. A message box appears asking you to confirm your request. When you confirm that you want to exit, the software display closes and the operating system window reappears on the screen.

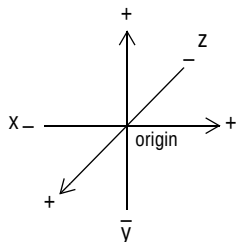
Emergency Reset

If you need to reset the system in an emergency, you should use a four-key reset (commonly known as the *Vulcan Death Grip!*) instead of the reset button on the hardware. This is safer for the system, data, and hardware. To do this, hold down Shift-Ctrl-F12-/ (forward slash on the numeric keypad) keys and wait a few seconds. This kills the current login session, the window managers, and all running applications, and then restarts the login window. Of course, by doing this you lose all information that was not saved.

Space in SOFTIMAGE 3D

Cartesian Space

One essential concept that a first-time user of 3D computer graphics should understand is the notion of working within a virtual three-dimensional space using a two-dimensional user interface.



To represent pictorial reality, 3D computer software uses the classical Euclidean/Cartesian mathematical representation of space. To represent the geometry of an object, the software uses the Cartesian coordinate system based on three perpendicular axes x , y , z intersecting at one point. This reference point is called the *origin*. You can find it by looking at the centre of the grid in any of the display windows.

XYZ Axes

To remember the direction of the x , y , z axes, use the “right-hand” rule: hold up your right hand so that your palm is facing you, then extend your thumb to the right, hold your index finger up, and point your middle finger towards you. Your thumb is pointing in positive x , your index finger in positive y , and your middle finger in positive z . The point of origin is 0, 0, 0. The opposite directions represent negative x , y , and z .

A small icon representing the three axes and their directions is shown in the corner of each window in the SOFTIMAGE 3D display.

XYZ Coordinates

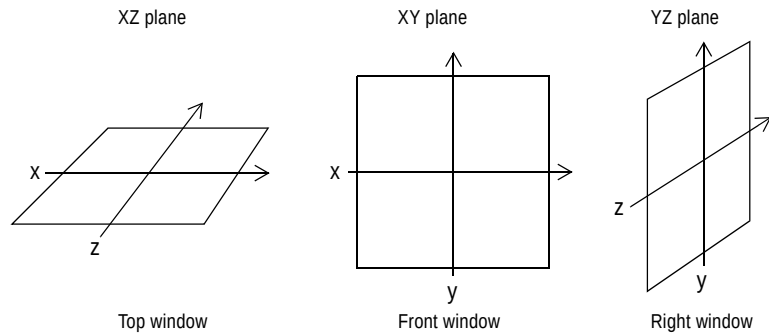
With the Cartesian coordinate system, you can locate any point in space using three coordinates. For example, if $x = +6$, $y = -6$, $z = +6$, a point would be located to the right of, below, and in front of the origin.

XZ, XY, YZ Planes

Since you are working with a two-dimensional interface, spatial planes are used to locate points in three-dimensional space.

The perpendicular axes extend as spatial planes: xz , xy , and yz . In the SOFTIMAGE 3D display, these planes correspond to three of the parallel projection windows: Top, Front, and Right.

Imagine that the xz , xy , and yz planes are folded together like the top, front, and right side of a box.



This helps give you to keep a sense of orientation when you are working within the parallel projection windows.

Global and Local Coordinate Systems

The xyz coordinate system can be global or local.

When you place an object in 3D space, it is inside a world. The reference point of that world is called the *origin* (also known as the centre of the world). It is located at the centre $(0, 0, 0)$ of the reference grid in the windows. Accordingly, the xyz coordinates locating the object in relation to the origin are called *global coordinates*.

A local coordinate system is thought of in terms of an object's own point of reference, which is its own centre. This centre also has three axes: x , y , and z . They are represented by colour-coded vectors: red for x , green for y , and blue for z .

Tip An easy way to remember the colour coding is $RGB = XYZ$.

The centre of an object is only a reference – it is not necessarily in the middle of the object because it can be relocated (as well as rotated and scaled).

Transformation in XYZ Space

An object in 3D space has three main characteristics which fall under the term *transformation*. These are:

- Size (known as *scale*)
- Orientation (known as *rotation*)
- Location (known as *translation*)

When you create an object, SOFTIMAGE 3D automatically initializes its parameters of transformation, locating the origin at the centre of the world. During your work session, you will need to change these parameters to assemble objects and animate them. The conventions for using transformation are described as follows.

Scaling

The size of an object is thought of as its *scale*. When an object is created, its scale is automatically set to 1.0. An object is scaled from its centre. The values related to scaling are called *factors*. A cube created at a length of 5 and scaled with a factor of 2 has a length of 10. A negative scaling yields an inverted object.

For more information on scaling, see *ScaleX/Y/Z* on page 1246 in the *Reference Guide*.

Rotation

The orientation of an object is set by the rotation of its centre. All possible orientations can be set with a combination of three angles of rotation: x-axis, y-axis, and z-axis. The reference axis for the rotation can be the global axis or its local axis.

For more information on rotation, see *RotX/Y/Z* on page 1217 in the *Reference Guide*.

Translation

The location of an object is defined by its *points* in space. As mentioned earlier, a point is defined by three coordinates on the Cartesian axes x, y, and z. When you move an object, you are changing these coordinate values.

For more information on translation, see *TransX/Y/Z* on page 1425 in the *Reference Guide*.

What's in a Scene?

As soon as you create objects and organize them in space, you are working on a *scene*. When you save the scene, SOFTIMAGE 3D creates a scene file that references the element files for the objects, the camera, lights, and any other elements included in your scene, such as materials and textures, and many more.

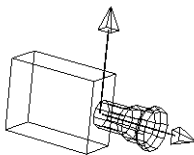
If objects, lights, or cameras are animated, SOFTIMAGE 3D saves their motion in animation files. It also saves the settings for the final rendering of the scene, wireframe colours, and the various window preferences you set.

For more information about saving objects and scenes, see *Managing Files* on page 121.

Objects

Objects are the basic building blocks of 3D computer graphics. An *object* is a mathematical description of a two- or three-dimensional shape that can be as simple as a two-point curve or as elaborate as a three-dimensional shape with thousands of points. When you work in SOFTIMAGE 3D, you usually work with an object's representation, also known as a *wireframe*. Every object has a centre, which is a reference for the object's shape, location, orientation, and size.

For information about different kinds of objects (curve, surface, face, polygon mesh, and meta-clay), refer to the *Modelling User's Guide*.



The Camera

The camera is the tool you use to view a scene and compose the final rendered image. What the camera sees is displayed in the Perspective window. You can see the camera itself in any of the parallel projection windows, represented by a camera icon. It also has an interest which shows the direction the camera is pointing.

There are many parameters related to the camera, including its roll, field of view, and depth of field, as well as the picture format, etc. Most of these parameters can be animated.

You can also use more than one camera while working on your scene by displaying more than one Perspective window. This allows you to view your scene in different ways to help you determine exactly how to render your scene. However, you can render with only one camera's point of view.

For more information on using the camera, see *Using the Camera* on page 66.



Lights

Another basic element you will work with is *light*. There are four kinds of light sources you will use in your scenes, not including the software's default light (a point light) which vanishes when you define a light source. The types of light sources include an infinite light, a point light, a spotlight, and the sun.

There are several parameters related to lights including direction and cone angle for spotlights, fall-off, colour, shadow, and light position. All of these can be animated. You can use as many lights in a scene as you wish, but each light you add slows down the rendering slightly. An optimum number is usually two or three lights. The final settings for all light parameters should be made before working on the material definition of your objects within a scene.

For more information on lights, see the *Defining Materials and Textures User's Guide*.

Materials and Textures

Once you have created an object, you can apply material and 2D or 3D textures to define its surface's appearance. An object is defined by points in space that are connected together to create a surface. Material attributes can be such qualities as colour, reflectivity, or transparency, plus many more. Textures can be added to create the 3D appearance of marble, stone, clouds, wood, etc., or you could map a picture onto your object, such as a logo.

Performing material and texture definition should be done in relation to defining your light sources since parameters associated with light affect the material and texture attributes of the object.

For more information on lights, see the *Defining Materials and Textures User's Guide*.

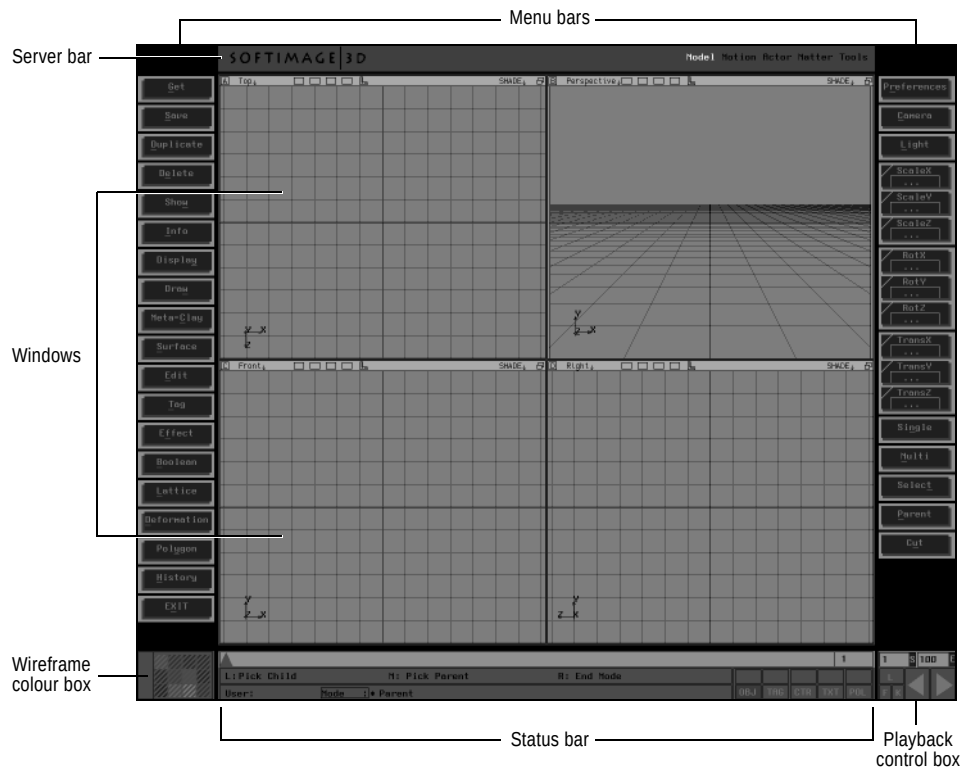
C H A P T E R T H R E E

The SOFTIMAGE 3D Interface

Introduction

This chapter describes all parts of the SOFTIMAGE 3D display.

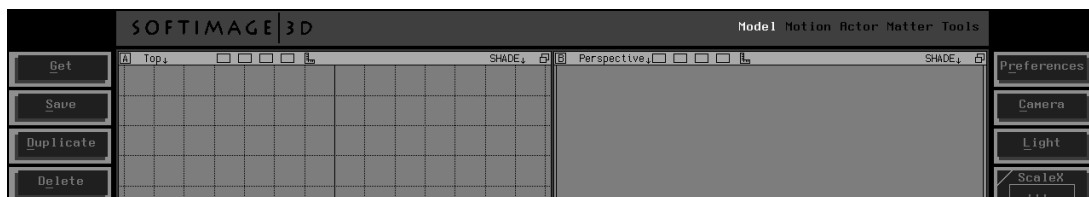
The SOFTIMAGE 3D display is where you work. This display includes the windows, a server bar at the top, two menu bars on the left and right sides containing menu cells, a wireframe colour box, a status bar, a time line, and a playback box.



For more information on using the windows, see *Viewing a Scene* on page 57.

Changing Modules

The server bar is located above the windows. The left side of the server bar shows the SOFTIMAGE 3D name (click on it to get version information) and the right side shows the modules: Model, Motion, Actor, Matter, and Tools. Modules represent the main categories of tasks that you perform in SOFTIMAGE 3D.



When a module is in use, its name is highlighted and the server bar is coloured accordingly: violet for Model, green for Motion, salmon for Actor, blue for Matter, and gold for Tools.

When you want to move from one module to another, use any mouse button to click its name in the server bar.

You can also use Supra keys to change modules:

- F1 for Model
- F2 for Motion
- F3 for Actor
- F4 for Matter
- F5 for Tools

The Supra keys give you quick access to menu cells of other modules that are useful for your current task. For example, you could quickly go to the Model module to use the **Edit** menu cell commands while you are doing shape animation, then go back to the Motion module to save a keyframe with the **SaveKey** commands.

Using Menu Cell Commands

Choosing Menu Cells



The menu bars contain menu cells and are located on either side of the windows. Many of the menu cells are common to several modules, and are available when those modules are in use. Other menu cells are particular to a certain module and appear only when that module is selected. When you move from one module to another, you will see the menu cells in the menu bars change.

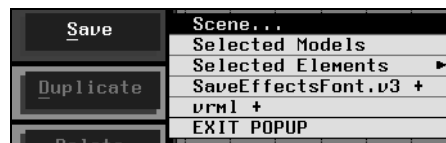
To activate a menu cell, click on it with the left mouse button. The selected cell is highlighted in the colour corresponding to the module that you are in, such as violet for the Model module. When you choose some menu cells, they open a dialogue box directly, such as the **Render** menu cell in the Matter module. Most, however, have commands that you must choose.

Choosing Menu Cell Commands

Most menu cells include commands. When you open one of these cells, a menu is displayed listing the available commands associated with that menu cell. A black bar highlighting the command indicates the default command or the command that was used last.

Commands that have three dots (ellipses) after their name indicate that a dialogue box appears. For more information on dialogue boxes, see *Using Dialogue Boxes* on page 49.

There are different ways to choose a command:



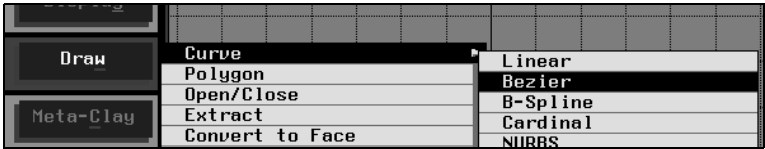
- Move the mouse up or down in the menu – the black bar also moves up or down the list to show which command is selected. Click when the desired command is highlighted.
- Use the up and down arrow keys and press Enter when the command you want is highlighted.
- Type the first letter of the command name to move to the next command for the menu cell starting with that letter. Press Enter when the command you want is highlighted.

- Press either the Ctrl or Alt key to display an underlined letter for each command (called *accelerator keys*). Keep the Ctrl or Alt key held down and press the underlined letter: this executes the command immediately.

Choosing Subcommands

A black arrowhead beside the name of a menu cell command indicates that the command contains a submenu.

Choose the command to open the submenu with its own set of commands.



You can choose a subcommand the same way as you choose a command. To go back to the previous command level, click **EXIT POPUP** or use the left or right arrow key (depending on which side of the display the menu cell command is located). To exit a menu entirely, right-click the mouse or press the Esc key.

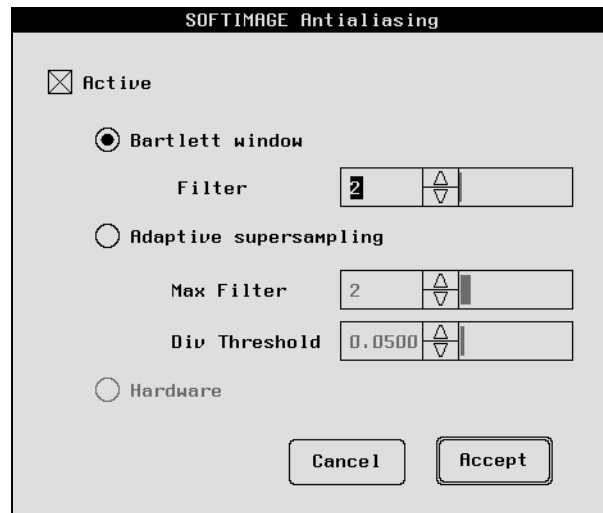
Repeating the Previous Command

Every menu cell has a good memory: you can choose the command that was used the last time the menu cell was selected by middle-clicking the menu cell. The menu command (and its subcommand, if appropriate) is not displayed, but the command is executed. This shortcut is particularly useful for repeatedly calling command sequences such as **SaveKey → Object → Transformation** when creating keyframes.

This memory feature also applies when you change modules. Each module has a memory for each of its menu cells, regardless of whether a menu cell is shared between two or more modules. For example, say you chose **Get → Primitive → Sphere** in the Model module, then chose **Get → Primitive → Torus** in the Motion module. When you return to the Model module and middle-click the **Get** menu cell, the Create Sphere dialogue box is displayed (from **Get → Primitive → Sphere**, the command you previously chose in **Model**).

Using Dialogue Boxes

Selecting a menu cell command often displays a dialogue box. A dialogue box is an important tool for interacting with the software because it contains the various parameters needed to perform an operation. Parameters are grouped, categorized, coded, and are identified by several kinds of icons, described in this section.



Some dialogue boxes can also be changed to an icon. To do this, place the mouse cursor in the box and press Alt-F9 on the keyboard.

Interactive Dialogue Boxes

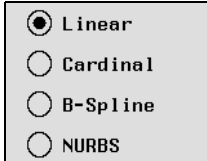
A dialogue box that has a double border indicates an interactive dialogue box. As you make changes in the dialogue box, they have a corresponding effect on your scene – you don't have to close the dialogue box first. This allows you to try different values before accepting the final ones.

If the double-bordered dialogue box contains a **Key** button, it means that it the dialogue box is also interactive with the time line and the playback box. This lets you change the frame number in the time line, key a value, go to the next frame, change the parameters, key a value, etc., all while keeping the dialogue box open. You can then play back your animation and see the keyed values being updated.

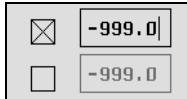
Moving Dialogue Boxes

Most dialogue boxes can be moved around on your screen by clicking on their black title bars and dragging them to a new location.

Selecting Options



Mutually exclusive options are options that cannot be performed together since selecting one disables the others. These options are represented by a radio button associated with the option name. The black dot in the middle of the circle indicates that the option is selected. To select or deselect an option, click it with any mouse button.

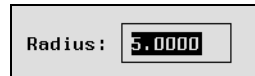


Independent options are options that can work either by themselves or together with the other options in the group. They are identified by a small check box associated with the option name. An X in the box indicates that the option is active. To select or deselect the option, click it with any mouse button.

If a check box has a double border, it means that its values can be keyed.

Changing Text Box Values

A text box is usually located beside an option name. It lets you change the values for that particular option by typing in either text or numerical values.



To enter information, move the mouse cursor inside the appropriate box. The mouse buttons are configured so that clicking allows you to insert characters at the cursor location. You can use the left and right arrow keys on the keyboard to move the cursor to the appropriate place in the text box.

There are several methods for changing the contents of a text box:

- Click and drag the mouse to select part of the contents you want to replace. The selected characters are highlighted. Now type in the text you want.
- Click to place the cursor, then use the Shift key with the left or right arrow key to select characters that are to the left or right of the cursor. You can delete or replace these characters.

- Middle-click to select a word or right-click to select the entire contents of the text box so that you can completely replace it with the text that you type.
- Delete characters to the left of the cursor using the Backspace key, or delete characters to the right of the cursor using the Delete key.

Text boxes come in different sizes and may have arrows at the ends to allow you to enter long text strings (such as an element name). If the text box contains more characters than it can display, it automatically scrolls in response to the position of the cursor.

If a text box has a double border, it means that its values can be keyed.

Moving among Text Boxes

You can move from one text box to the next one in the same dialogue box by pressing either the Tab or Enter key. To move back to the previous text box, press the Shift-Tab key combination. When you have reached the last text box in the dialogue box, pressing the Enter key activates the command button with a double border (usually the Ok button).

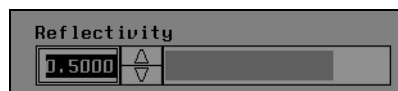
Math Operations

All text boxes with numbers allow you to use the four basic math operations (addition, subtraction, multiplications, and division). To use this feature, click the cursor at the end of the number in the text box, enter the symbol for the math operator (+ - * /), and then enter the next number to result in something like this: 50+25. You can use only one math operator per text box.

If the number is long, it may not be completely visible in the text box, so scroll to see the end of the number before you place the mouse cursor in the text box.

Using Sliders

A slider is a handy tool that you will find in many dialogue boxes.



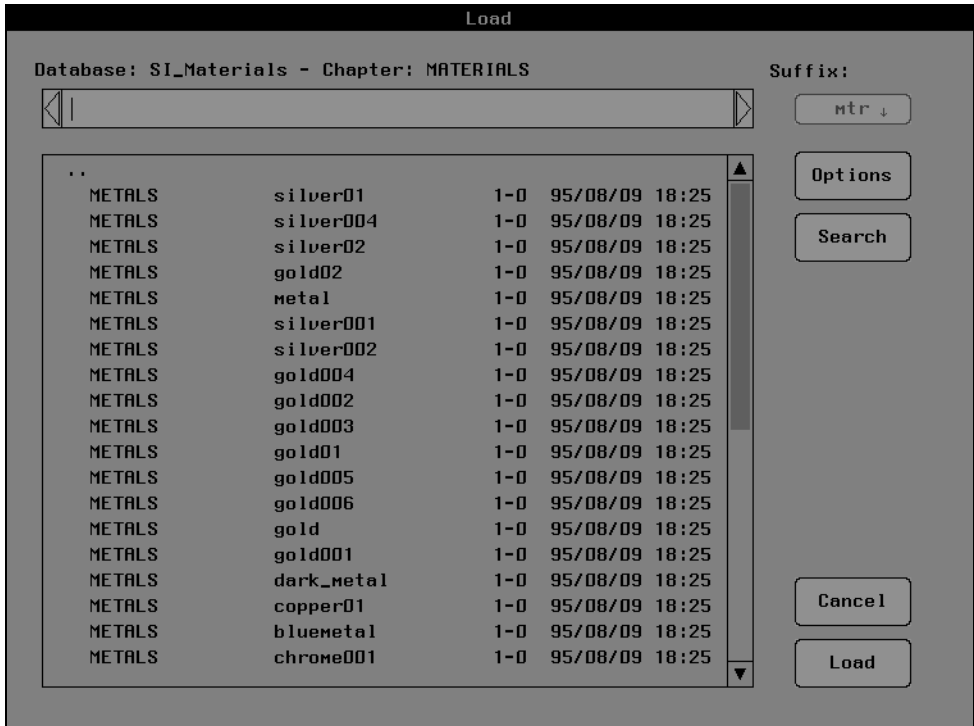
It allows you to enter values in different ways and shows you the standard range of the parameter. The slider is a long box composed

of three sections that correspond to three different ways of entering values. The text box on the left displays the current value of the option. The value can be modified in these ways:

- Drag the slider's grey rectangle to change the current value.
- Type the value directly into the text box. If the text box has a double border, it means that its values can be keyed.
- Increase or decrease the current value by using the two arrows beside the text box. These arrows work in conjunction with the mouse buttons. Left-click to apply a small increment, middle-click to apply a medium increment, and right-click to apply a large increment.

Using Browsers

The browser is a type of dialogue box used specifically to read or save files. It includes a scroll box, text box for direct input of a path, and four command buttons. For information about databases, chapters, and files, see *Managing Files* on page 121.





Choosing an Operation Mode

Five manipulation modes are displayed by default in the mode area to the right of the status bar at the bottom of the display. Above the manipulation modes, up to five transformation modes are sometimes displayed.

Manipulation modes allow you to choose what to manipulate: selected objects (OBJ), tagged points (TAG), centres (CTR), 2D texture support (TXT), or individual polygons on a polygon mesh object (POL).

You can select a manipulation mode using either the mouse or the F8 to F12 keys which map respectively to the five boxes in the Manipulation mode menu. These manipulation modes can be used with either the **Single** or **Multi** menu cells selected (single or multi-mode selection).

Transformation modes allow you to choose how any transformations are applied to the element selected. When you choose any of the **Scale**, **Rotate**, or **Translate** menu cells, the relevant transformation choices are displayed in the transformation mode row above the manipulation modes.

For more information on both these modes, see *Manipulation Modes* on page 13 and *Transformation Modes* on page 14 in the *Reference Guide*.

Undoing and Redoing Operations

To help you work in SOFTIMAGE 3D, the commands in the **History** menu cell lets you undo and redo most operations:

- Undo operations by choosing the **History** → **Undo** command or by pressing the **u** Supra key and left-clicking the mouse.
- Redo operations by choosing the **History** → **Redo** command or by pressing the **u** Supra key and right-clicking.
- Set the number of operations which can be undone/redone by choosing the **History** → **Setup** command. It displays the History Setup dialogue box in which you set the number of operations (stack size) that SOFTIMAGE 3D remembers.
- Erase the history memory by choosing the **History** → **Dispose** command. When deleting a scene and loading in a new one, this command ensures that no traces of the old scene are left, often freeing up memory space.

To deactivate the **History** commands completely, choose the **History** → **Setup** command and deselect the **Active** option.

Note

The History menu is not available in all modules, but the **u** supra key for the **Undo** and **Redo** commands is.

What Can You Undo?

The **History** → **Undo** command is used mainly to undo transformations, geometry modifications, tagged points, and cluster, function curve, Spreadsheet, and DopeSheet operations. It can also recuperate deleted objects and parent links which have been cut.

Not all operations can be undone. For example, any operation (such as duplication or extraction) which preserves the original object and creates a second one cannot be undone. But fear not, the original object is preserved unchanged.

Furthermore, when you delete an element and then try to undo the deletion, you can recuperate all information that was completely contained within the element. However, if there was a link with another element, this information is lost and cannot be restored.

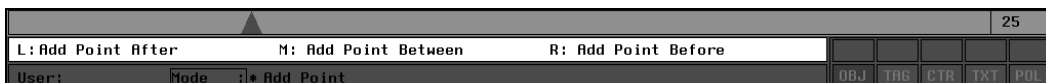
For more information and conditions, see *History* on page 849 in the *Reference Guide*.

Getting Scene Status

The status bar is located at the bottom of the SOFTIMAGE 3D display. It shows you information that you need to know for performing operations or to understand an error.

Mouse Line

The middle line in the status bar is the mouse line. It shows the current functions of the three mouse buttons. The displayed functions depend upon the currently active menu cell operation, as well as the location of the mouse cursor on the screen.



Status Line

The bottom line in the status bar is the status line. It displays the user login name, information about current operations such as which action mode is active, and sometimes warning or error messages.



There are three levels of status line messages: Message, Error, and Warning. A box around one of these words in the status line indicates that a new message, error, or warning is in the See Contents dialogue box (the log file for this is in `/usr/tmp/soft.status`). If you click on one of these words (or the words **Status** or **Mode**), the See Contents dialogue box appears in which you can view these messages that have occurred during your work session. A dotted line is added every time you open this dialogue box, separating each message in the box. The most recent message appears at the bottom of the list.

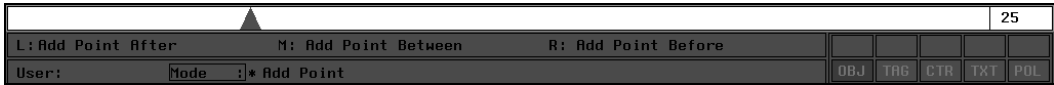
Playing an Animation

There are different ways of playing an animation, but the most common way to do this while you're working in SOFTIMAGE 3D is by using the time line and the playback box.

For more information about playing an animation, see *Playing an Animation* on page 17 of the *Animating User's Guide*.

Using the Time Line

The top line in the status bar is the time line. Its width represents the length of an animation sequence.



The triangular pointer (time line pointer) can be moved back and forth along the time line causing the animated sequence to be displayed in the windows. To move the pointer, either click anywhere along the time line to move it to that position, or drag the pointer with the mouse.

Using the Playback Box



The playback box allows you to view animation using various techniques. It is located in the lower-right corner of the software display.

To play forward, click the large forward arrow, and to play backward, click the large back arrow. To stop playback at any time, click any mouse button. You can also loop an animation sequence by clicking the "L" and then playing either forward or backward.

For more details on using the playback box, see *Playback Box* on page 9 in the *Reference Guide*.

Viewing a Flipbook

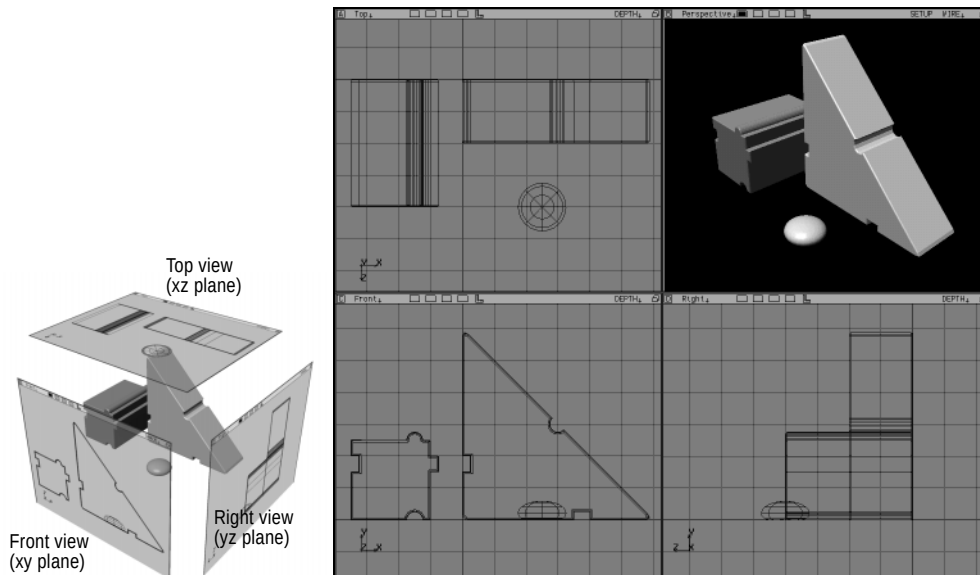
Once you have rendered an image sequence, you can use the **FlipBook** menu cell in the Tools module to display the animation on the screen. The flipbook is similar to traditional flipbooks, because it plays back a sequence of images. For more details on this, see *Viewing a Flipbook* on page 26 of the *Animating User's Guide*.

C H A P T E R F O U R

Viewing a Scene

Introduction

The viewing area of the SOFTIMAGE 3D display contains four windows. This is your workspace.



Four default windows

Counterclockwise from top left: Top, Front, Right, and Perspective.

By default, one Perspective projection window and three parallel projection windows (Top, Front, and Right) are displayed as shown above.

Each window is identified by a letter in its upper-right corners: A, B, C, and D. You can also display other types of windows such as Ortho, Schematic, Fcurve, Spreadsheet, and DopeSheet.

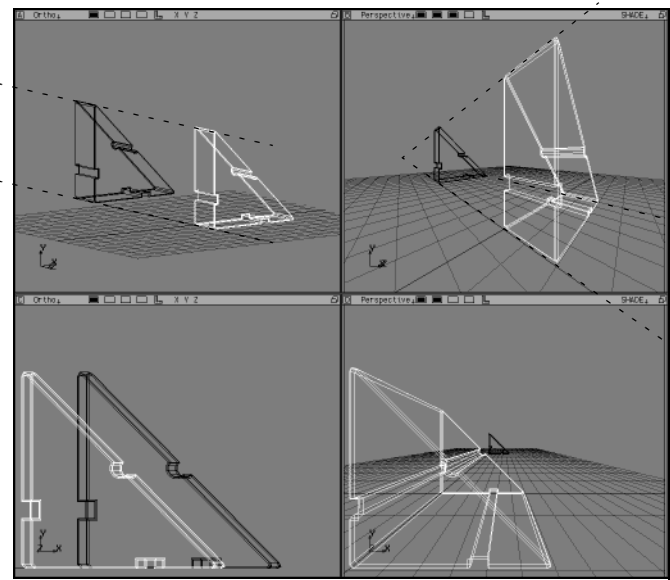


In addition to choosing a window, you can also select a view mode, such as wireframe, shaded, ghosted, etc.

Types of Windows

The Perspective window shows objects in a scene from the camera's point of view. All objects in a scene converge toward a central vanishing point and objects nearer to the point of view appear larger than those farther away. When you change the location of the camera or its field of view, you see the effects in the Perspective window. Since this is the window that is rendered by default by SOFTIMAGE 3D, you should always use it to plan composition of objects, animation, lighting effects, and so on.

Three of the four parallel projection windows appear in the display by default (Right, Front, and Top). In a parallel projection window, an object's projection lines do not converge (hence the term *parallel*). For example, if you drew lines extending from a cube's edges, they would never meet. Because of this, the distance between an object and the camera has no influence on the scale of the object. If one object is closer to the camera, and another object is farther away, both appear to be the same size.



Parallel projection
Projection lines are parallel; two identical objects appear same size regardless of distance. (Left top and bottom).

Non-parallel projection (perspective)
Projection lines are not parallel; two identical objects appear different in size and shape.

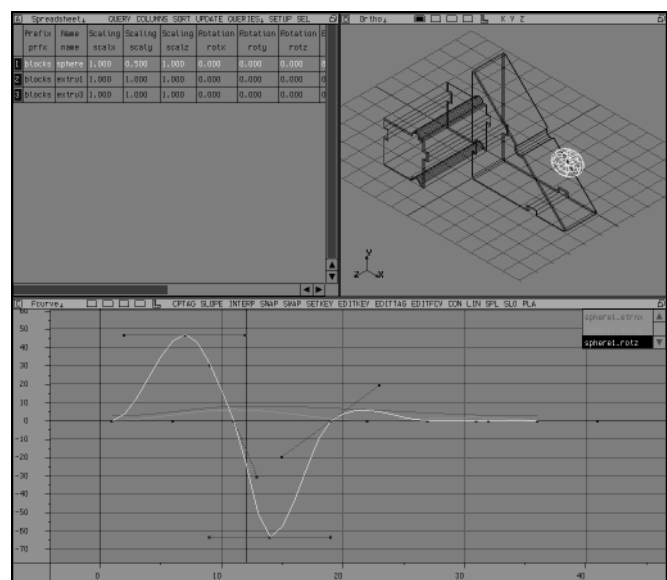
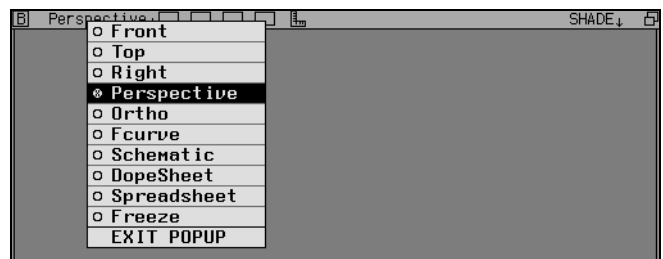
The fourth parallel projection window is called Ortho. Unlike the Top, Front, or Right windows, in the Ortho window the orientation of the camera is not limited to be perpendicular to the global coordinate planes (xy, xz, yz). You can orbit the camera to look at the scene from any angle while maintaining its parallel projection nature.

The Schematic and Spreadsheet windows let you see hierarchy relationships and individual scene elements. These are described in *Using the Schematic Window* on page 79 and *Using the Spreadsheet Window* on page 84.

The Fcurve and DopeSheet windows let you edit your animation. These are described in *Editing Function Curves* on page 30 and in *Editing with the DopeSheet Window* on page 53 in the *Animating User's Guide*.

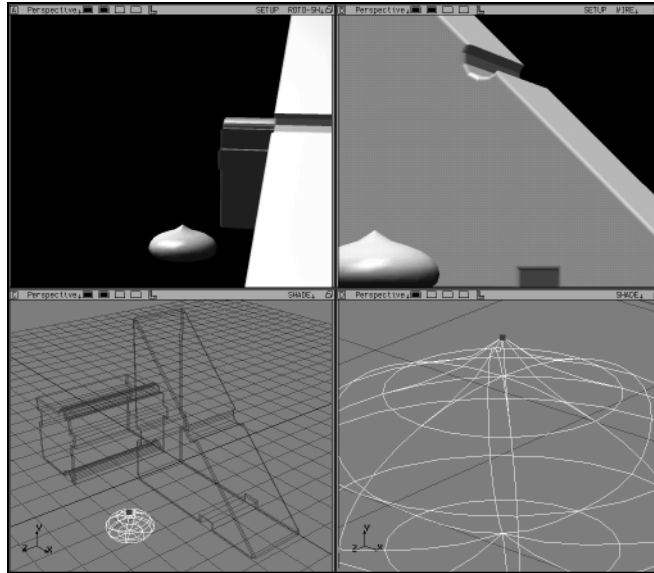
Changing Windows

You can change the types of windows to other windows by clicking the name of the window (such as Perspective) in the window title bar. This displays a menu listing the nine window types: Front, Top, Right, Perspective, Ortho, Fcurve, Schematic, DopeSheet, and Spreadsheet (Freeze is not a window type).



Other windows
Spreadsheet (top left), Ortho (top right), and
Fcurve (bottom)

If you like, you can display more than one window of the same type. You can also toggle between the previous and currently selected window by middle-clicking the window title.

**Multiple windows**

All four windows are Perspective.

Each can have different modes and camera settings.

Note

Displaying more than one Perspective window shows more than one camera in the scene, but only the camera in the default Perspective window (window B) can be rendered and saved.

Resizing the Windows

There are two ways to change the size of the window: interactively with the mouse, or with the sizing icon found in each window.

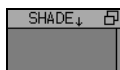
Interactively Resizing the Windows

You can resize the four windows in SOFTIMAGE 3D interactively follow these steps:

1. Press the w Supra key and a box appears at the intersection of the four windows.
2. Position the cursor over the box and drag the windows to whatever size you want.
3. To reset the windows back to equal sizes, press w again and middle-click.

This method of resizing windows works only when the Perspective, Front, Top, Right, or Ortho windows are open. If you have the Fcurve, Schematic, or Spreadsheet window open, you cannot resize those windows unless you decrease the window to quarter-view (right-click the sizing icon). Then resize the four windows, and switch back to landscape or portrait sizes again (right-click on the sizing icon).

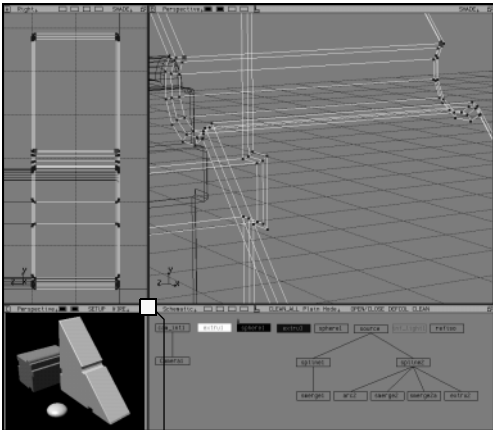
Using the Sizing Icon



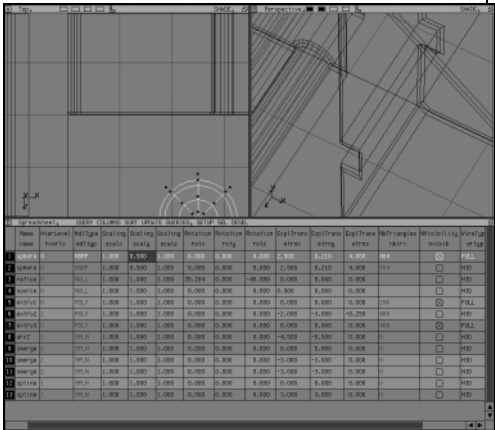
The sizing icon in the upper-right corner of each window resizes the window so that it fills the entire screen (full view), a horizontal half-view (landscape), or vertical half-view (portrait). You can easily toggle between these views and reduce the window to its original size (quarter-view) at any time.

- To toggle between a quarter-view (the four windows) and full view, click the sizing icon.
- To toggle between a quarter-view and a landscape view (horizontal), right-click the sizing icon.
- To toggle between a quarter-view and a portrait view (vertical), middle-click the sizing icon.
- To toggle between a half-view (portrait or landscape) and full view, click the sizing icon.

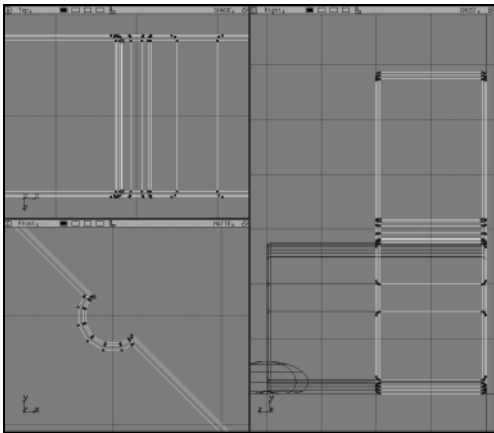
You cannot toggle directly between the landscape and portrait views.



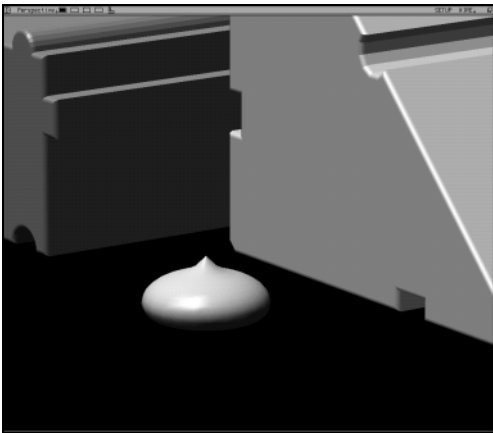
Interactive resize
Press w, click on point where four windows meet, and drag. Left-click to resize, middle-click to reset.



Landscape view (bottom half)
Right-click the sizing icon.



Portrait view (right side)



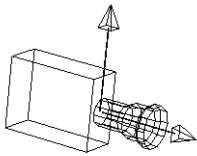
Full view



Using the Camera

The camera is the device that lets you view your scene and appears as a camera icon in a scene. It has a camera interest to which it always points – the interest icon is three intersecting lines, like a null object. Ultimately, the camera's view is what is rendered for your final image. By default, the camera view that you see in the Perspective window is what is rendered. For more information on rendering, see the *Rendering User's Guide*.

To use the camera to view your scene while working, there are a number of ways you can manipulate it. You can zoom in and out, frame objects, orbit, track, and dolly the camera as you work. You can also choose the camera settings and its aspect ratio. At any point, you can reset the camera to its default position and parameters.



Showing and Selecting the Camera

To show the camera icon in a scene, choose the **Camera → Show Camera** command. This command lets you display (or hide) the camera and its interest in all windows except window B when it is Perspective. Only the camera's interest appears in the Perspective window because this window is actually the camera's view.

To select the camera icon, choose the **Camera → Select Camera** command. You will find this command useful if the camera is hidden by other objects in the scene. If you can see the camera, you can also select the camera as you would any other element in your scene by pressing the space bar Supra key and clicking it or by choosing the **Select** command.

If the camera is visible, you can also choose **Show → Cone** to show a cone outline representing the area shown by the camera view.

You can select the camera's interest by choosing the **Camera → Select Interest** command. By default, the interest is located at the origin of the scene (where all three global axes intersect) and may be difficult to see, which is why you need this command. If you can see the camera interest, select it as you would any other element, or by pressing the space bar and right-clicking the camera icon.

Setting Up and Resetting

The **Camera → Settings** command lets you set up all parameters for the camera. These include things such as position of the camera and its interest, camera angle, depth of field, lens shaders, etc. See the **Camera → Settings** command in the *Reference Guide* for a description of each parameter.

To reset the camera and all its parameters to their default values, choose the **Camera → Reset** command.

You can also reposition the camera to the scene's origin and preserve relative positions of the other elements in the scene to the camera. To do this, choose the **Camera → To Origin** command. This command is useful when hierarchies with very large translations and scaling produce some jittering when animated. You cannot undo this command after you have selected it. Saving your scene after using this command saves it with the new translations.

Framing Elements in Windows

You can frame elements in windows in two ways: framing selected elements or framing all elements (elements include the camera, its interest, lights, and all objects).

The **Camera → Frame Selection** command frames the selected element or elements in all windows except Perspective. Pressing the **Shift-f** Supra key frames elements for all windows (except the Perspective), or use the **f** Supra key to frame the selected element in a single window, including the Perspective.

The **Camera → Frame All** command frames all elements in all windows except the Perspective. Pressing the **Shift-a** Supra key frames all elements for all windows (except the Perspective), or use the **a** Supra key to frame all elements in a single window, including the Perspective window.

Zooming

To zoom in and out of your scene or pan in all windows, choose the **Camera → Zoom** command or hold down the **z** Supra key. Click the left mouse button to pan, the middle button to zoom in, and the right button to zoom out. The currently activated command is put on hold until you release the key.

Note that zooming in or out in the Perspective window changes the view angle setting of the camera, the same as does zooming with a real camera.

You can also zoom the camera by choosing the **Camera → Rect Zoom** command. This lets you define a rectangular area that becomes the new magnification in all windows. Holding down the **Shift-z** Supra key does the same thing.

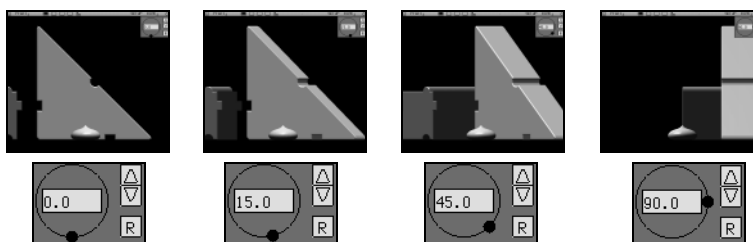
To do a rectangular zoom, click in a window, hold down the left mouse button to zoom in, or the right mouse button to zoom out, and then drag the mouse diagonally to define the rectangle.

If you do a rectangular zoom in the Perspective window, the 1:1 option appears in its title bar. Clicking on the 1:1 option brings you back to the view before you zoomed in (or press the **a** Supra key). This option is especially useful in the Rotoscopy view mode.

Orbiting the Camera

The **Camera → Orbit** command allows the movement of the camera to pivot around its point of interest. Using the **o** Supra key does the same thing. This lets you study your scene's overall “look” in any angle in the Perspective or Ortho windows. The left mouse button allows full movement, the middle mouse button allows movement in longitude, and the right mouse button allows movement in latitude.

Since you can't orbit the camera in the Front, Top, or Right windows using this command, there is an orthographic camera available in the Layout dialogue box (click the “L” ruler icon in the Front, Top, or Right windows' title bars). Selecting the **TurnTable** option in this dialogue box lets you orbit the orthographic camera about one axis so you can view your scene from various angles (for example, you can only orbit around the y-axis in the Front window, or the x-axis in the Top window).



Orbiting in orthographic windows with the TurnTable
Front window at different rotations (0, 15, 45, and 90 degrees).

If nothing is selected in the scene, the camera rotates around the global axis (at the origin); if you have an object selected, the camera rotates around the axis of that object. When you select more than one object with the **Multi** menu cell, the orthographic camera rotates around an average centre of the selected models, but the interest of the camera remains at the centre of the selected model.

To display the TurnTable control icon in all three orthogonal windows, click the **All Views** option at the bottom of the Layout dialogue box.

There are three ways to rotate this camera:

- Drag the point around the circle.
- Click the arrows to move the camera by increments.
- Type the desired angle value directly into the text box in the centre of the circle.

To reset the orthographic camera to its default position (0.0), click the **R** button.

For more information on the parameters, see *Layout* on page 30 in the *Reference Guide*.

Tracking, Dollying, and Rolling

The **Camera → Tracking** command allows you to move the camera and the interest at the same time so that you pan across a scene. You can also press the **z Supra** key and hold down the left mouse button to do the same thing. Follow the mouse instructions shown at the bottom of the interface to track horizontally, vertically, or both.

The **Camera → Dolly** command allows the movement of the camera to dolly or truck toward the camera interest. Using the **p Supra** key is the same as choosing this command.

Follow the mouse instructions shown at the bottom of the interface to dolly at different speeds.

The **Camera → Roll** command allows the movement of the camera to roll about its z-axis. Follow the mouse instructions shown at the bottom of the interface to roll at different speeds.

The camera normally flips when it reaches its zenith because its “up vector” always points toward the positive y-axis of the origin. To prevent this from happening during animation, use the **Constraint → Up Vector** command.

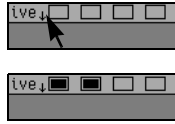
Choosing an Aspect Ratio

When you import an image, you can select its aspect ratio of the image by choosing the **Camera → Picture Format** command.

It is very important to set the aspect ratio when you first start working on a production. This ensures that what you see in the Perspective window accurately shows you what will be within the frame in the final rendering.

When you choose this command, the Picture Format dialogue box appears. You can select standard aspect ratios for film, slides, and video. To customize a non-standard picture format, specify the aspect ratio, or define the size of the image (width and height).

Memorizing View Settings

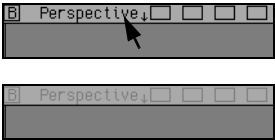


The Memo Camera option in the windows' title bars allows you to memorize and retrieve up to four different camera settings in each window. This feature is useful for quickly toggling between points of view while working on complex scenes. Memo cameras are especially useful for quickly zooming in on a desired object in a hierarchy in the Schematic window.

- To record the current camera view setting into memory, middle-click one of the four boxes in the window title bar. The box is filled to show that a view has been saved.
- To retrieve (recall) one of the settings from memory, left-click the box representing the desired setting. This resets the camera view to the one that was saved.

Tip You can also recall a camera position by placing the cursor in the appropriate window and pressing the Supra keys 1, 2, 3, and 4 to select the four memo cameras from left to right.

- To cancel or reset the memory, right-click the desired box.



Freezing a Window

A frozen window is not refreshed so that the display in the remaining active windows is updated more quickly. Right-click the window title on the left side of the title bar to activate or deactivate a window. When a window is inactive, or “frozen,” its title is dimmed.

You can also freeze a window by choosing the **Freeze** option from the menu that appears when you click the window’s title.

Selecting a Window for Output and Rendering



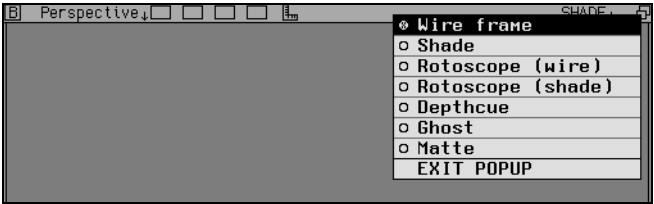
Only the camera output in window B (the default Perspective window) can be rendered and saved if you are using the SOFTIMAGE renderer. If you are using the Ghost, Depthcue, hardware renderer, Rotoscope, hidden line, or mental ray renderers, this restriction does not apply.

To select a window for output in PostScript®, or for rendering with one of these renderers, click the letter identifier icon (A, B, C, and D) in the window title bar. The window is highlighted in red when it's selected.

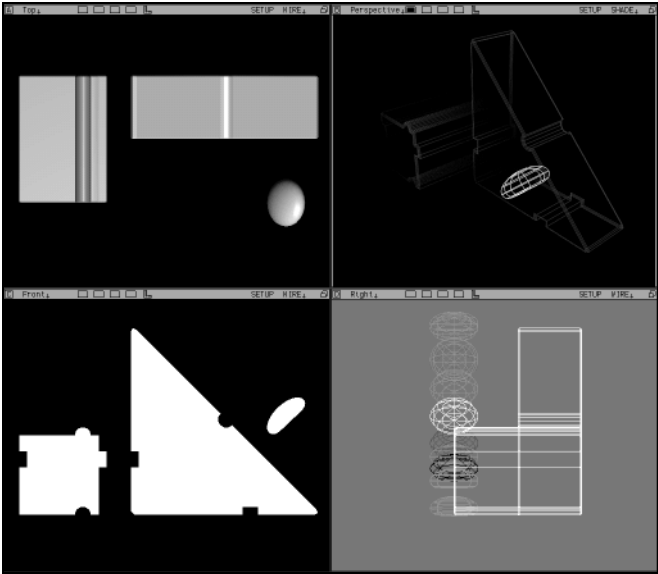
For more information on rendering using any of these rendering types, see the *Rendering User's Guide*. For more information on PostScript output, refer to the **Tools → Output** menu cell command in the *Reference Guide*.

Choosing a View Mode

You can select different viewing modes in which to display your scene. By default, the view mode name displayed is SHADE. Clicking on this name displays a menu that lets you access the Wire frame, Shade, Rotoscope (wire or shade), Depthcue, Ghost, and Matte view modes, which are described on the following pages.



You can also toggle between the previous and currently selected view mode by middle-clicking the view mode name displayed in the title bar.



View modes: Clockwise from top left: Shade, Depthcue, Ghost, and Matte.

Wireframe

By default, the wireframe view mode is displayed in each window. A wireframe is an image made up of the edges of objects, and drawn as lines resembling a model made of wire. This image displays all edges or contour lines without attempting to remove invisible or hidden parts, or to fill surfaces.

Shade

Shade provides a quick-shaded (hardware shaded) view of your scene which closely approximates its realistic “look,” but does not show shadow, reflection, transparency, or differentiation between point and spot lights. You can, however, view textures on an object. To speed up redrawing an image on a screen, the Shade view switches to wireframe view when you move an object, but you can set this to remain in Shade view.

Tip

For a more realistic view of your scene, choose the **Preview** command in the Matter module (see page 1170 of the *Reference Guide*). This lets you view textures and special material attributes such as transparency, reflectivity, and refraction.

You can also view garbage mattes and tiled textures on an object – see the Shade Setup dialogue box in the *Reference Guide* on page 34.

Rotoscope (Wireframe) and Rotoscope (Shade)

These two view modes allow you to perform rotoscoping in wireframe or shaded modes. Rotoscoping is a technique in which individual frames of a video or film are imported into SOFTIMAGE 3D and “traced.”

Once you have done a rectangle zoom, the mouse buttons are configured as follows:

- Left mouse button pans.
- Middle mouse button zooms in.
- Right mouse button zooms out.

To reset the zoom or pan, select 1:1 displayed in the window title bar when the rotoscope mode is active, or choose **Camera → Reset**.

Note

You can use the forward or backward arrows to advance the sequence of your animation.

Depthcue

The Depthcue view mode provides fast colour wire rendering. The portion of the model closest to the camera appears “brighter” in colour, giving the sense of depth in the z-axis. It is usually used to derive more visual feedback from the models displayed on a screen because the hardware shading is often too slow for complex models and scenes.

Ghost

The Ghost view mode allows you to display a series of frozen snapshots of your animated objects at the current frame, next keyframes, and previous keyframes. This option helps you to view and edit your animation using traditional animation in-betweening techniques.

Keyframes are displayed by default, or you can select any frame in the animated sequence to display as a static (reference) frame. By default, the current ghost keyframe is white, the next two keyframes are violet, and the previous two keyframes are fuschia pink.

Matte

You can view the matte value layer of your scene in the Matte view mode. The matte value of an object can have a value between 0 and 1. A matte value of 1.0 appears white and a value of 0.0 is black. All the values in between 0 and 1 are shown as levels of grey.

For more information about setting the matte value of an object, see **Info ➔ Selection** on page 856 of the *Reference Guide*.

Displaying and Hiding Elements in a Scene

The **Show** and **Display** menus allow you to display certain items when necessary and hide them or display them in simplified form at other times.

Displaying Visual Elements

Elements such as object centres, control points, and object normals are useful to visualize for many modelling and animating tasks. By default, some of these items are shown, and others hidden.

In any module except Tools, the **Show** menu commands allow you to toggle these selections on or off. To do so, simply choose the **Show** command you want.

Note

Some operations automatically activate these commands. For example, when you use the t Supra key to tag points, **Show → Tag** is automatically activated so that you can immediately see the results.

When you draw a curve, **Show → Point** and **Show → Line** are automatically activated, but deactivated again when you press the Esc key to end the drawing mode.

Activating or deactivating the **Show** commands affects the scene's refresh rate, but does not affect the object information that is saved with a scene.

Not all “show” commands are in the **Show** menu. For example, some object-specific ones are found in the **Camera** menu, the **Meta-Clay** menu in the Model module, and the **Skeleton** and **Skin** menus in the Actor module. There is often interaction between commands in the **Show** menu and other menu selections.

For more information on the **Show** menu, see page 1284 of the *Reference Guide*.

Displaying Objects

The **Display** menu commands simplify your display by either hiding objects or displaying them in a simplified form. These commands are useful when you wish to concentrate on only a few objects in a crowded scene or to save time required in refreshing the display when transforming objects.

The **Display** menu is available in all modules except Tools. For more information on **Display** menu commands, see their descriptions starting on page 267 of the *Reference Guide*.

Hiding Elements

The **Display → Hide** commands allow you to make elements (objects, cameras, lights) invisible in the windows. When you hide an element, the corresponding rectangle in the Schematic window changes from filled to outlined.

The hidden element remains selected or becomes deselected, depending on which command you chose.

When you save a scene, all hidden elements are saved as “hidden.”

Animating the Effect

You can animate the visible/invisible status of objects as follows, with the result of objects appearing and disappearing over time.

1. Select the object (or branch of a hierarchy).
2. Choose the **Display → Hide → Toggle & Keep Selected** command.
3. Move the time line to the frame where the object should be hidden.
4. Choose either the **SaveKey → Object → Node Visibility/ Branch Visibility** or **SaveKey → Branch → Node Visibility** command.

Displaying in Simplified Form

The **Display → Bounding Box** commands display only the object's bounding box instead of the object itself. This accelerates the refresh rate of the display, since there is less geometry to redraw. It is especially useful when animating complex scenes because you can view the playback in real time without skipping too many frames.

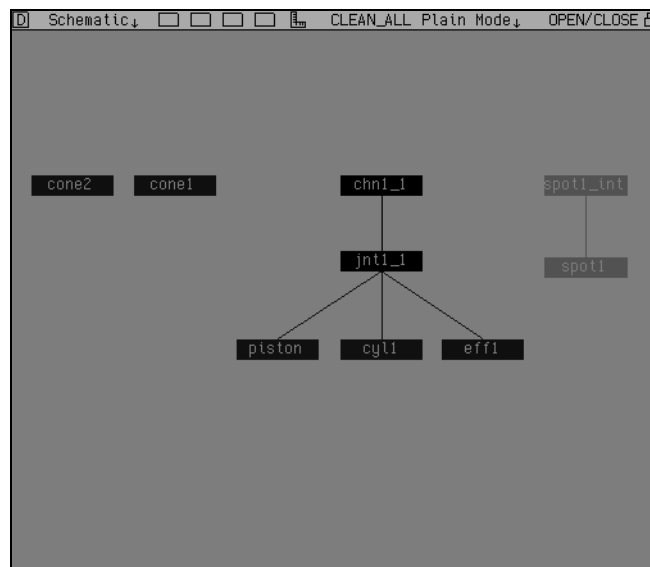
Ghosting Objects

The **Display → Ghost** menu commands display the selected object with dotted lines, making it less visible on the screen than objects which are not ghosted. The selected object becomes a bounding boxes as you apply a transformation (scaling, rotation, translation) on it or as you orbit, zoom in or out, or pan with the camera. The object is refreshed only when you release the mouse button. This is often useful for keeping track of an animated object's movement while you are setting keyframes.

Using the Schematic Window

The Schematic window simplifies your work by allowing you to view the objects in your scene in their hierarchical structure, as well as their relations with other elements. This way, you can analyze the way a scene is constructed and see all elements of a scene, including materials and textures. For more information on hierarchies, see *Hierarchies* on page 279 of the *Modelling User's Guide*.

It also provides a set of viewing modes and options that allow you to perform additional operations.



How Elements are Positioned

When you create a new scene, elements are added to the right of the previous element. The parent of a child in a hierarchy is always placed above its child.

Elements and hierarchies are placed chapter by chapter, starting with the cameras, models, and then the others. All similar element types (such as lights, cameras, materials, etc.) are grouped together in the Schematic window to make your work easier. This, however, does not change their arrangement in the scene itself. For example, the camera and its interest are shown together in the Schematic window, but it has no relation to their position in the Perspective window, or any other window.

Showing and Hiding Links (Relations)

Relationships between elements in a hierarchy are shown as lines called *links* in the Schematic window. You can choose to show links for only selected elements, which can be useful in managing a complex scene.

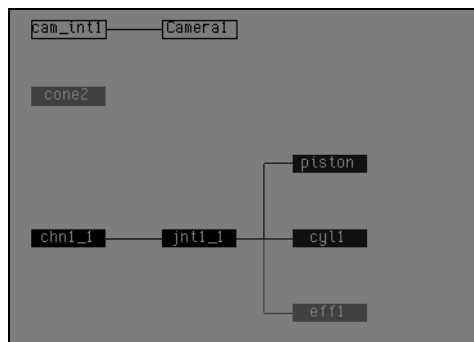
From the Layout dialogue box in the Schematic window, you can display links for all items, for selected items only, or for selected visible item.

1. To change the links shown, click on the Layout ruler icon in the window title bar.
2. Choose one of the options listed beneath **Relations Display**.
3. Click Ok to accept the changes.

For more information about relations displayed for each of the options, see *Relations Display* on page 63 of the *Reference Guide*.

Changing the Layout and Organization

You can change the layout and organization of the Schematic window in the Layout dialogue box. This may help ease some of the clutter that is created when multiple modes are selected for viewing.



Layout options

Vertical arrangement with parallel hierarchy lines.

1. Click on the Layout ruler in the window title bar.
2. To change the way hierarchies are positioned in the Schematic window, select the options listed below **Overall Organization** and **Overall Layout**.

Viewing the Hierarchy

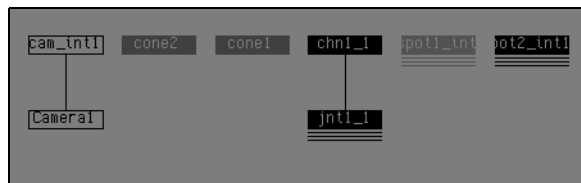
Changing the Hierarchy Sorting

You can change the sorting order in which hierarchies are placed. This helps you gain space, allowing you to view the hierarchies in the order that they are loaded or created, from tallest to shortest, or from narrowest to widest. You can change the sorting using the **CLEAN_ALL** option in the window title bar and by setting the sort options in the Layout dialogue box.

Expanding and Collapsing Hierarchies

The **OPEN/CLOSE** option in the title bar allows you to expand and collapse any hierarchy or sub-hierarchy to simplify the Schematic window. Collapsing or opening hierarchy elements includes their materials and textures. To activate the option, click **OPEN/CLOSE** in the title bar: the name turns red. Once this option is activated, you can use the mouse buttons as follows:

- Middle-click a parent object to collapse a hierarchy. A collapsed hierarchy is displayed in the Schematic window as a box (representing the parent) with three lines beneath it.



- To expand the hierarchy again, left-click on this box.
- To deactivate the **OPEN/CLOSE** option, click on it again.

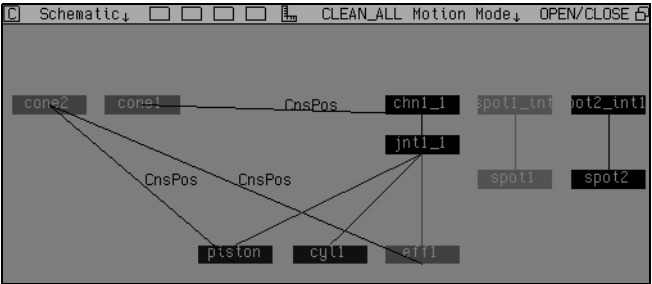
Editing an Element

The **OPEN/CLOSE** option also allows you to display the Info Selection dialogue box for a selected item. You can then view the element's settings and edit them, if you like.

- To display the Info Selection dialogue box for an object which is not collapsed, click the **OPEN/CLOSE** option and then click the element's icon.
- To deactivate the **OPEN/CLOSE** option, click on it again or press the Esc key.

Choosing a Schematic Viewing Mode

You can view hierarchy elements in the Schematic window in five modes: Light, Model, Motion, and Matter. You can add any combination of modes to the “plain” mode which is displayed by default. Each mode displays specific elements which increases the details that you can view about your scene.

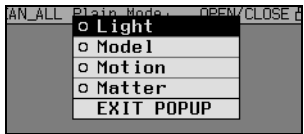


Motion Mode: position constraints are visible.

The Schematic view modes are cumulative meaning that you can display one to five modes simultaneously. For example, you can view animated textures and their associated animation files.

For example, to view associations between lights and models:

1. Click on the mode name in the window title bar. The default display is Plain mode.
2. Select Light mode and Model mode and exit the menu.



Associations between lights and models are now displayed in the Schematic window.

Applying Default Colours

Default colours are applied to certain types of elements when they are created (see *Colours* on page 59 in the *Reference Guide*). This makes them easier to recognize. The default colour palette is the same as in the Wireframe Colour box (see *Changing Colours* on page 106).

The **Default Colours** option in the Schematic Layout dialogue box is selected by default, but you can deselect it if you like. You can also

select the **DEFCOL** option in the window's title bar to apply the default colouring to elements.



You can highlight a default-coloured element temporarily by applying a different colour from the Wireframe colour box. For example, to quickly spot a specific animation file, you could colour it pink instead of green. Clicking **DEFCOL** returns it to the default assigned colour.

Cleaning Up the Scene

There are two options in the Schematic window that help you manage its general cleanup.

- To reorder the schematic representation of only children selected objects, click **CLEAN** in the window title bar. If you select the root and click **CLEAN**, nothing will happen. To view this option in the title bar, the Schematic window must be in landscape view or enlarged, otherwise it is obscured.
- The **CLEAN_ALL** option repositions all hierarchies according to the preferences you have set for **SORT** and **CLEAN_ALL**. When you move a child within a hierarchy and then select the **CLEAN_ALL** option, the child keeps its position relative to the root of the hierarchy. Its relative position is not modified by **CLEAN_ALL** unless the **Reset user pos.** option in the Layout dialogue box is selected before the **CLEAN_ALL** operation, or you hold down the right Shift key while selecting **CLEAN_ALL**. The Schematic window remembers the “user positions” for all hierarchy elements, so you must specifically reset these with the **CLEAN_ALL** option.

Cleaning Preferences

In the Layout dialogue box, use either one or both of the options under the heading **Clean All Options** to more effectively clean up your Schematic window.

- Click **Clean automatically after a Mode change** and **SOFTIMAGE 3D** cleans up the Schematic window automatically each time you change the mode view (such as if you change between Light and Model modes).
- Click **Compact empty areas** to make sure that space in the Schematic window is not reserved for materials and textures or animation files if they are not visible.

Using the Spreadsheet Window

The Spreadsheet window allows you to perform simple or complex queries on the elements in your scene. Depending on what you want to do, you can use a predefined query or create your own custom query.

A	Spreadsheet	QUERY	COLUMNS	SORT	UPDATE	QUERIES	SETUP	SEL	DESEL
	Prefix prfx	Name name	HierLevel hierlv	MdlType mdltyp	NbTriangles nbtri	NbVisibility nbvisib	WireType wrtyp		
1	Bike	obj135	9	JNT		☒	FULL		
2	Bike	obj136	10	JNT		☒	FULL		
3	Bike	obj162	6	JNT		☒	FULL		

What Does the Spreadsheet Do?

The Spreadsheet allows you to find and edit a total of approximately 500 animatable and non-animatable parameters. For more information about the parameters available in the Spreadsheet, refer to the *List of Attributes* in Appendix D.

Using the Spreadsheet allows you to display only the elements that match the criteria of the query. This reduces the number of elements you must wade through, and increases your productivity by simplifying the task of locating elements in a busy scene. You can also edit multiple elements from within the Spreadsheet window. Rather than selecting each element individually, you can run a query and edit many at once. For example, you can use the Spreadsheet to hide all the lights in your scene at once.

The Spreadsheet is very useful for selecting and deselecting elements in your scene. The Schematic window may be used for this purpose, but with a large and complex scene, you may not be able to read the text boxes.

Note

A query is used only to filter the elements you wish to view in the Spreadsheet and to find all the elements that are related using a subquery. The elements displayed in the Spreadsheet are not selected in the scene.

Moving around in the Spreadsheet

To highlight and subsequently edit items in the Spreadsheet, you have a variety of options:

- Select an entire column by clicking on the column name.

- Select specific cells using the left mouse button.
- Multi-select by dragging your mouse, either vertically or horizontally (if the values are the same type, such as translation information). If many cells are selected and you change the value in the first cell by using the middle mouse button, the change is propagated to all the selected cells.
- Scroll automatically while dragging your mouse.
- Double-click the cell to open the **Info → Selection** dialogue box.
- Press Enter to open the **Info → Element** dialogue box.
- Toggle Boolean fields (either activated or deactivated).

For more information about what action each mouse button performs, see page 75 of the *Reference Guide*.

Selecting and Deselecting Elements

You can select objects for manipulation from the Spreadsheet. This should not be confused, however, with selecting cells for editing in the Spreadsheet. Cells that are selected for editing are highlighted in grey. When you select objects for manipulation (traditional selection), the text in the cells is shown in white. This provides visual feedback that the selected objects in the Spreadsheet correspond to the selections in the windows.



You can also use the space bar to select elements from the Spreadsheet.

You can select or deselect objects using the window title bar options, **Sel** and **Desel**. Both these options work the same way, except one selects objects and the other deselects them.

Selecting an object in Single selection mode

1. Highlight the a cell that corresponds to the element you wish to select.
2. Click **SEL** in the title bar. The object is selected in all windows.



If you have highlighted more than one cell and you are in Single mode, the last cell that is highlighted corresponds to the object selected.

Selecting objects in Multi selection mode

1. Highlight the cells in the Spreadsheet that correspond to the elements you wish to select. You can do this by dragging the mouse or clicking on the column title. For more information about using the mouse buttons in the Spreadsheet, see page 75 of the *Reference Guide*.
2. Click SEL in the title bar select them in all views.

Selecting all objects in the Spreadsheet

While in Multi mode, right-click the SEL option to perform a global selection. All of the elements displayed in that particular query are selected.

What is a Query?

In the Spreadsheet window, a query is the means of finding elements or relations that fit specified parameters. When you query the Spreadsheet, you are searching for the answer to a particular statement such as, “Find all the blue objects in the scene.” In the simplest case, you will want to filter a certain number of elements from *all* the elements present in your scene. To do this, you apply a set of conditions on various attributes of the elements: in other words, a query.



You can save queries to reuse later.

Main Queries

The main query is the first query that SOFTIMAGE 3D executes. The main query may have multiple clauses, and must be executed first before you can get the results from a subquery. There can be only one main query.

Clauses

Clauses are expression that are used to filter elements from the scene. The main query or sub-queries may have more than one clause, each of them composed using any of the possible attributes in SOFTIMAGE 3D. For example, model type is an attribute. For a comprehensive list of all the attributes available in the spreadsheet, see the *List of Attributes* in Appendix D.

Subqueries or Relations

A Spreadsheet query is comprised of a main query, and possibly subqueries, that are organized hierarchically. The main query is limited in that it is only composed of clause statements that filter elements in the scene. A subquery is composed of a relation and clause statements. The relation that you specify in a subquery finds all elements that are related to the elements in its parent query (either the main query or another subquery). The clause statements of the subquery filter the new list of elements (ones that are related to the parent query).

For example, to list all the models in the scene and their associated materials, you would need to build a two-level query: a main query and one subquery. The main query would list all the models (`this.chptyp==MOD`) and the subquery would find all the related materials (`Mat- Forward`). If you want to limit the number of related materials even further, you would modify the subquery clause (`this.mtblur==TRUE` to only display materials that use Static Blur).

Note

Main queries and subqueries are not mutually exclusive: many of the queries you design will have either one or two levels of “questioning.” However, the Spreadsheet query structure is hierarchical: subqueries are not executed until the results from the main query are returned.

Creating a Query

Using a Predefined Query

At the simplest level, you will want to filter certain elements that fit a basic criteria from the scene. The easiest way to do this is to choose one of the “prefab” queries from the menu bar.

1. Click on **QUERIES** in the window title bar.
2. From the menu, select the query you want to use. The query runs automatically, and the results appear in the Spreadsheet window.

Note

If you have changed or edited the contents of a predefined query and want to perform another query, a warning appears.

For a complete description of the predefined queries, see *QUERIES* on page 77 of the *Reference Guide*.

Creating Your Own Query

You can create your own queries from scratch, or you can edit existing queries, such as the predefined queries.

If you decide to create your own query, or modify one of the existing predefined queries, you will want to add, remove, or replace additional clauses or subqueries from within the Query dialogue box.

1. Click on **QUERY** in the window title bar to open the Set Query dialogue box where you can edit and create queries.
2. Click on the Main query in the **Query description** box.
3. Click on the clause you wish to edit in the **Selected Query Clauses** box. When you open the Set Query dialogue box, the main query and clause are always highlighted. To edit the main query clause, you do not have to click on it first before you use the Edit Clause section of the dialogue box, or the **Edit Exp.** button.
4. Edit the highlighted clause in the **Edit Clause** section at the bottom of the Query dialogue box.

There are three columns in the **Edit Clause** section: **Field**, **Operator**, and **Value**. Click in the **Field** scroll box to choose the attribute you want to use to in the current query clause. If you are not sure which attribute you wish to use, see Appendix D, or click on the attribute and read the help line that appears just below the column.

5. Once you have selected the desired attribute in the **Field** scroll box, select the operator you wish to use in your query clause. You can choose from among seven different operators.

See *Operator* on page 84 of the *Reference Guide* for a description of the operators available, or click on an operator and read the help line that appears below the scroll box.



The attributes in the Field scroll box are listed according to the chapter to which they belong. For example, modelling attributes are listed under the Model heading (grey).

6. Enter a value in the **Value** column. You may either enter the value in the text box, or click on a value in the scroll box. In the case of text, enter the text string.
7. Click **Accept** to apply the clause and place it in the **Query** description box and the **Selected Query Clauses** boxes.

8. To run the query without saving it to file, click **Ok**. Some of the results are displayed in the Spreadsheet window. To display more of the queried information, see *Displaying the Query Results* on page 92.

For information about saving your custom queries, see *Saving a Query* on page 93.

Creating a New Query with Subqueries (Relations)

Subqueries are based on relations between elements in your scene. For example, if you have created a query to get all the parent objects, and you want to see information about the children of these objects, you would add a subquery to get the children's relations.

To modify the main query:

1. In the Query dialogue box, highlight the main query and change the main query clause displayed in the **Selected Query Clauses** scroll box by selecting the **Field**, **Operator**, and **Value** in the **Edit Clause** section (for example, `this.chptyp==MOD`).
2. Click **Accept** to apply the changes to the main query.
3. Click on **Subquery** to add a subquery to the main query. A dialogue box appears, allowing you to choose the relation to use in the new subquery.

Note

The subquery relations that are displayed are contextual. For example, if you have a subquery to get the 2D Global Textures and add another subquery, the only relations you can choose are: **Exp**, **Fcurves**, **Shader**, **Shader_Array**, **T2DEnv**, **T2DLoc**, and **T3DLoc**.

You must select the direction in which you want to access the relation. For example, to get the textures for materials, you would select **Forward** (default). If you have created a main query to get the materials first, and want to get the models that have those materials, you must select **Backward**.

A message is displayed at the bottom of **Add Subquery** showing the source and destination of the selected relation, making it easier for you to select **Forward** or **Backward**.

4. Click **Ok** to add the selected subquery to the main query. The new subquery is displayed in the **Query** description scroll box.



You can add as many subqueries as you want, but you probably will not need more than three or four levels.

5. Follow the procedures on page 92 for displaying and sorting query results.
6. Click Save to save the query, or click Ok to run the query without saving it.



If you click Cancel after modifying a query, the changes you have made to the query statement(s) are lost.

Creating a Query Using Expressions

You can use the Expression Clause Editor to create custom queries that are complex and require specific input that cannot be specified from the simple Edit Clause section of the Set Query dialogue box.

The Edit Clause dialogue box allows you to create clauses by entering a **Field**, **Operator**, and **Value**. It can handle only simple expressions, such as `this.chptyp == MOD`. When you want to create queries that have functions or more complex syntax, you must use the Subquery Expression Editor.

There is one expression function that is used primarily in the Spreadsheet: the **has_relation** function. This function allows you to filter certain elements that have a relation to each other. It is a condition that returns TRUE or FALSE statements if the current element has any relation to the other specified element. For example, you can display all the models in your scene that are constrained by position, by using the **has_relation** function with the **CnsPos** relation.

Hiding Objects that are Outside the Workspace

You can use the Spreadsheet to create a query that allows you to toggle the visibility of objects that are outside an area that you have defined in your scene. This is useful to help speed up redraw time, and to locate objects in your scene.

Using Distance to Camera to Toggle Visibility

This is a simple example that shows you how to limit the visibility of objects in your scene based on their distance from the camera.

1. In the Spreadsheet window, click **QUERIES** and choose the **Model_General** predefined query.

2. Click **QUERY** in the title bar. The Set Query dialogue box appears. The main query description should read:

Main_Query: `this.chptyp == MOD`

3. Click the **Edit Expr.** button. The Subquery Expression Editor dialogue box appears.
4. In the Clauses text box, enter the following expression:
`this.chytyp == MOD && ctr_dist_cam (this.) > 1000`
5. Click Ok to exit the Subquery Expression Editor dialogue box.
6. In the Set Query dialogue box, click Save. In the Save Spreadsheet Setup dialogue box, type a prefix and name. Click Save in this dialogue box.
7. Click Ok in the Set Query dialogue box to run the query. The Spreadsheet displays all the models that are farther away from the camera than the distance you have specified.
8. Click the heading of the Node Visibility column (NVisibility) to select the entire column. Middle-click in any cell in the column to toggle the visibility of the objects.

Using Query Expressions to Define a Clipping Plane

This is a more complex example that shows you how to create a custom query that you can reuse in future scenes to view only objects that are within a defined space. Once you have created this query, all you have to do is create two nulls, position them, run the query, and then toggle the visibility of the objects in the Spreadsheet.

In this example, you are defining the region in the Front window in which you are interested.

1. Create two nulls to represent the near and far planes of your scene. Position them in the scene.
2. Choose **Info → Selection** and name the nulls **near** and **far**.
3. Open the Spreadsheet window, and make sure that the **Model_General** query (**QUERIES**) is selected.
4. Click **QUERY** in the title bar. The Set Query dialogue box appears. The main query description should read:

Main_Query: `this.chptyp == MOD`

5. Click the **Edit Expr.** button. The Subquery Expression Editor dialogue box appears.
6. In the **Clauses** text box, enter the following expression:

```
( this.mdltyp == MOD ) !( this.etrnz <= near.etrnz  
&& this.etrnz >= far.etrnz )
```
7. Click **Ok** to exit the Subquery Expression Editor dialogue box.
8. In the **Set Query** dialogue box, click **Save** and type a prefix and name in the **Save Spreadsheet Setup** dialogue box. Click **Save**.
9. Click **Ok** in the **Set Query** dialogue box to run the query. The Spreadsheet displays all the models that are farther away from the camera than the distance you have specified.
10. Click the heading of the **Node Visibility** column (**NVisibility**) to select the entire column. Middle-click in any cell in the column to toggle the visibility of the objects.

Displaying the Query Results

The Spreadsheet query only displays information related to your query. There are predefined columns and attributes that are automatically displayed, but you may want to view more information.

To display additional results from your query to expand or concentrate the information in your query, select **COLUMNS** from the window title bar, or from the **Columns** button from within the **Set Query** Dialogue box. The attributes are grouped by chapter, and you can choose the ones you want to display. There is no limit on the number of columns in the Spreadsheet.

1. Click **COLUMNS** in the window title bar to display the attributes available to display in the Spreadsheet window.
2. From **Available Columns**, select the attributes to display and click **Add**. The selected attributes are displayed in the **Displayed Columns** scroll box.
3. Click **Exit** to accept the changes and return to the **Set Query** dialogue box.

Updating the Spreadsheet Window

You can specify when you want to update the contents of the Spreadsheet window. This is useful when you have a large scene that may take a long time to update, and you are making many changes.

You can choose to update the scene automatically each time you edit the values in the Spreadsheet, or you can select **No automatic update**, and use the **r Supra** key to update the scene.

You can also specify that the Spreadsheet updates automatically when the scene data changes, to update for selected cells only when the scene changes, or to update the Spreadsheet yourself using the **r Supra** key.

Sorting the Contents of the Spreadsheet

You can sort the results displayed in the columns of the Spreadsheet. Click **SORT** in the window title bar, or from the **Sort** button from within the Set Query dialogue box.

1. In the Set Query dialogue box, click **Sort** to display the options for sorting the results of your query.
2. This dialogue box has two scroll boxes: **Available Criteria** and **Sort Criteria**. Select the criteria you want to use to sort the query results, and click **Add** to place the attributes in the **Sort Criteria** column.
3. Click **Exit** to accept the changes and return to the Set Query dialogue box.



You can sort based on criteria that is not displayed in the Spreadsheet window. For example, you can sort elements by scale, but display only the names of the elements.

Saving a Query

In the Spreadsheet, you can create custom queries that are designed to perform a useful task to reuse in other scenes. If you do not save your queries, you will have to rebuild them each time. SOFTIMAGE 3D provides some predefined queries that cover general areas, but you may want to modify the existing queries to meet your needs.

1. Create your own query, select the columns you want to display, and sort the columns (if you need to).
2. Click **Save** to open the Save Spreadsheet Setup dialogue box.

3. Enter the prefix and name of the query into the text boxes and click Save. This returns you to the Query dialogue box.
4. Your query is saved to the **Spreadsheet_Setup** chapter. If you have no Spreadsheet chapter, you can create one when a message box appears prompting you to do so. You can save your file to it.

For more information about saving files and databases, see *Managing Files* on page 121.

Loading Queries

Once you have saved a query, you can load it for reuse.

1. Click **QUERY** in the window title bar. This opens up the Set Query dialogue box.
2. Click **Select**, and browse to the chapter in which you have saved the query. For information about using SOFTIMAGE 3D browsers, see *Managing Files* on page 121.
3. Once you have loaded the query from the database, click **Ok** to run the query, or edit the contents to create a new query.

Editing in the Spreadsheet

Once you have run a query to filter the elements in your scene, you can edit the attributes of the elements displayed in the Spreadsheet.

There are many animatable and non-animatable attributes that are available for editing from the Spreadsheet window. All editing must be done by selecting one or many cells in the Spreadsheet and changing the values manually. The Spreadsheet does not have a search and replace function.



Once you have made a change to the Spreadsheet, you can undo it. See the **History → Undo** command in the *Reference Guide*.

From within the Spreadsheet window, you may edit cells of the same type. For example, each attribute displayed in the Spreadsheet is either a character, Boolean, or floating point value. You can edit all the Boolean values at once, but you cannot edit cells containing Boolean and character values at the same time. The following outlines the types of editing that you can do based on the types of cells and the mouse button you use.

Left Mouse Button

- Click and drag your mouse to scroll. This selects all the cells that are of the same value (Boolean, numeric, or text). If many cells are selected and you change the value in any cell by using the middle mouse button, the changes are propagated to all the selected cells.
- Press Enter to open the **Info → Elements** browser. From here, you can scroll through the lists to view information about any element in your scene. See **Info → Elements** on page 892 of the *Reference Guide* for more information.
- When you double-click on most cells, the **Info → Selection** dialogue box appears. For information about the parameters, see **Info → Selection** in the *Reference Guide*.
- When you double-click on cells containing information such as textures and materials, the appropriate Texture or Material dialogue boxes appear. You can then edit the values in these dialogue boxes. For information about editing textures and materials, see the *Defining Materials and Textures User's Guide*.

Middle Mouse Button

- Middle-click to open the text edit dialogue box. This allows you to change the name or the value of the cell. Click again to highlight the contents of the cell.
- When you middle-click on a cell containing scaling, translation, or rotation values, the appropriate editing dialogue box appears.
- Middle-click once on cells containing Boolean values to activate or deactivate the properties of the cell. For example, to select all hidden objects in the scene at the same time, left-click in the column title and then middle-click anywhere on the cells of the column.

Spreadsheet Examples

This section gives you some examples of how to use the Spreadsheet, from simple to complex queries.

Using a Predefined Query to Edit Lights (Simple)

You can hide all the lights in your scene at once by using the predefined Lights query in the Spreadsheet.

1. From the window title bar, select **QUERIES** and then **Lights**. The lights attributes appear in the Spreadsheet window.
2. Click on the heading of the Light Visibility column (LightVis) to select the entire column.
3. Middle-click in a Light Visibility cell to toggle all lights on and off.

That's all there is to it!

Modifying an Existing Query to Toggle Node Visibility (Moderate)

You can edit a predefined query to create your own customized queries. This example allows you to toggle the Node Visibility of polygon mesh models in your scene.

1. In the window title bar, click **QUERIES** and select the **Model_General** query.
2. Click **QUERY** in the title bar to open the Query dialogue box.
3. Click **Insert** to add another clause to the main query.
4. At the bottom of the dialogue box in the **Edit Clause** section, double-click to expand the **MODELS** chapter in the **Field** scroll box, and set the following clause:

`mdltyp == POLY`

by selecting **mdltyp** in the **Field** scroll box, the **==** symbol as the **Operator**, and typing **POLY** in the **Value** text box. Then click **Accept**.

5. Click **Ok** to run the query.
6. You can toggle the visibility of your polygon mesh models by clicking on the heading of the Node Visibility column (**nvisibility**) to select the entire column.
7. Middle-click in any Node Visibility cell to toggle the visibility on and off.

Changing the RGB Values of Lights (Advanced)

You can create queries to change values that you have already keyframed for various elements in your scene. Once you have done your query, you can use the Spreadsheet window to edit existing keyframe values, and change the animation without having to delete and then redo whichever keys you need to change.

The following example shows how you can create a scene with spotlights, and then change their keyed RGB values in the Spreadsheet window.

This query requires a few more steps:

1. Create a scene with three spot lights.
2. Create a keyframe for each light at frame 1 to be white. At frame 25, key the lights to red, green, and blue. At frame 50, key all the lights to black. Play back the animation to verify that the keyframes are set.
3. Open a Spreadsheet window.
4. Click **QUERY** in the window title bar to open the dialogue box in which you will create a query for the keyframe values of the lights.
5. Select the **Main Query** and go to the **Edit Clause** section of the dialogue box. Enter `chptyp == LIG` as the **Field**, **Operator**, and **Value** and click **Accept**. The default query in the Query description box are overwritten by your changes.
6. Click **Subquery** and choose **Fcurves** from the list of relations. Click **Ok**.
7. While **Subquery 1. FCurves - F** is highlighted, click **Insert**. In the **Edit Clause** section, double-click **ANIMATION** in the **Field** scroll box and select `fcvname`. Set the operator `==` and enter the following **Value**: `lgr`. Click **Accept** to apply the changes.
8. Select the clause you have just created in the previous step and click **Copy**. Click **Paste** twice to insert two more clauses.
9. Edit the two clauses you have added by selecting each one and changing the values as follows:

```
fcvnam == lgg
```

```
fcvnam == lgb
```

Click **Accept** after you change each clause to apply the new values.

For the second and subsequent clauses, click **Swap AND/OR** to change the && symbol to ||.

Your **Selected Query Clauses for Subquery 1** should be:

```
this.chptyp == ALL &&  
this.fcvnam == "lgr" ||  
this.fcvnam == "lgg" ||  
this.fcvnam == "lgb"
```

These clauses select all the element that are called **lgr**, **lgg**, and **lgb**. These elements are the red, green, and blue values of the lights.

10. Select the last three clauses and group them using the **Group** button. This places parentheses around these clauses.
11. Click **Subquery** to add another subquery. The only relation you can choose is **FcvKeys**. Select this, and click **Ok**.
12. Highlight the **Main Query** and click **Columns** to set the attributes to be displayed in the spreadsheet. Set the following attributes to be displayed for the main query:
 - **General:**
 - chptyp
 - name
 - **Lights:**
 - ligvis
 - ligtyp
13. Select **Subquery 1** in the **Set Displayed Columns** dialogue box. Set **fcvname** and **fnkeys** to be displayed. Remove **chptyp** and **name**. Click **Exit**.
14. In the **Query** dialogue box, click **Save**, and enter the **Prefix** and **Name** for your query in the **Save** dialogue box. Click **Save**.
15. Click **Ok** to execute this query. The results are displayed in the **Spreadsheet** window.

You can now edit the RGB values you set for each light at frames 0, 25, and 50. Experiment with different RGB values, and play back the animation to see the changes in your scene.

C H A P T E R F I V E

Customizing Your Workspace

Introduction

There are a number of parameters that can be customized in SOFTIMAGE 3D. This allows you to set up your workspace as you like it, and allows you the flexibility to change your preferences as you need to.

You can set an automatic saving procedure to help you avoid losing any work you do, and SOFTIMAGE 3D also uses an emergency save feature to automatically save your scene when it crashes. This option can be enabled or disabled based on your preferences.

You can also change your display to use a grid, and define such elements as the keyboard Swift keys and Supra keys, the mouse cursor settings, wireframe and desktop colours, and animation preferences.

Once you have specified all your preferences, you can save a setup file that allows you to load your custom file.

Saving and Loading a Setup File

When you save a scene, some information is saved in a setup file for that scene. This is stored in the database in the **SETUP_SOFT** chapter as the `<scene_name>.sts` file. This file includes such things as:

- Desktop and layout information
- Camera settings
- Mouse settings
- Settings for the **Show** menu, the **Preferences** menu, and various toggle commands found in menus in all modules except Tools
- Rendering and preview settings
- Duplicate Setup settings

For example, if you save a scene with the model displayed in the Perspective window at its full size and certain camera settings, whenever you reload the scene, it is displayed in this format.

You may save preferred settings to an `.sts` setup file using the **Preferences** → **Setup File** → **Save** command, then load it whenever you need it using the **Preferences** → **Setup File** → **Load** command. You can also load the preferences file using the `-s` option when you start SOFTIMAGE 3D from the command line.



You can save an empty “dummy” scene with all your preferences set. Each time you create a new scene, load this “dummy” scene initially, and then save your work under a different name.

Automatic Saving

The **Preferences → Auto Save** command allows you to set an automatic saving procedure. This allows you to save your work to a backup database while it is in progress. This ensures that you always have a recent backup copy of your scene.

You must create a backup database called **BACKUP** before choosing this command. If you have an existing backup directory, the current **BACKUP** database is renamed to **BACKUP_TMP** when you use this command. A new **BACKUP** database is created which receives the saved backup scene. If the backup is successful, the **BACKUP_TMP** database is removed. This means that there is always only one scene in the **BACKUP** database at any time. The scene that was saved in **BACKUP** can be loaded like any other scene.

For more information about creating a database, see *Managing Files* on page 121.

1. Choose the **Preferences → Auto Save** command. The Auto Save dialogue box is displayed.
2. Select the **Active** option to activate auto saving.
3. Specify the path to your **BACKUP** database in the **BACKUP Database** path text box.
4. Select the frequency at which you want the auto save to occur. You can select one of the default options (**5**, **15**, **30** or **60** minutes), or specify another length of time in the **Other** text box, except 0 (zero). If you specify 0, it reverts to 1 minute by default.

A message is displayed on the status line telling you if the Auto Save option is activated or deactivated.

Emergency Saves

To avoid losing your work in the event of a crash, **SOFTIMAGE 3D** can detect a crash and try to back up the current scene. This option is enabled by default, but you can deactivate it using the **SI_EMERGENCY_SAVE** environment variable. For more information on setting this environment variable, see the *SOFTIMAGE 3D Installation Guide*.

This option is designed to save the scene when **SOFTIMAGE 3D** crashes, and the scene you retrieve may or may not be corrupted depending on what caused the crash.

Changing the Window Layout



In the title bar of the windows, the ruler icon is used to change the window's layout. Selecting it with any mouse button opens the Layout dialogue box. The Schematic window has different options than those available for the other windows, but you open the dialogue box the same way (see *Layout* on page 30 in the *Reference Guide*). You can not change the layout of the Dopesheet and Spreadsheet windows.

The dialogue box options for all other window types allow you to modify the window grid rulers, set point snaps using a set of Magnet options, set the Fast Playback mode for the selected window, and activate a TurnTable option that allows you to move an orthographic camera for the parallel projection windows.

Layout D

	X	Y	Z
Grid lock :	☐	☒	☐
Grid size :	1.000	1.000	1.000
Grid display:	1.000	1.000	1.000
☒ Grid visible	☐ Ruler visible		
☒ Axis visible	☐ Field guide		
☐ TurnTable visible			
Angle increment:	45.0		
Magnet :			
☒ Off	☒ Unselected Objects		
☐ On Point	☐ All Visible Objects		
☐ On Tag			
☐ Fast play back			
All Views Cancel Ok			

The All Views button sets the layout settings for all views.

The Layout option for each window are saved when you save the scene. You can create a default Setup File for the Layout parameters using the Preferences ➔ Setup File command (see *Saving and Loading a Setup File* on page 102).

Using a Grid or Magnet

You can display or hide a grid, set its size in SOFTIMAGE units, and lock objects to the grid. The **Grid lock** option allows you to move an object (centre) or points by the exact amount set by the grid size. This allows you to line up objects precisely. Select this option for **X** when using the Fcurve window to avoid moving keyframes to a non-integer frame (such as 4.87 or 34.26).



You can also use the FcrvEdit → **Set Keys on Frames** command which makes every frame an integer number.

The **Magnet** option lets you snap points on the selected or unselected object:

- When adding or moving a point, you can snap on the closest point or tagged point of an unselected object by default.

You can also specify that points snap to objects:

- Points on unselected objects, or any visible object, including the object containing the point you are moving.

Showing and Hiding Window Elements

The **Axis visible** option shows or hides the xyz axis-reference icon in the lower-left corner of each window.

The **Ruler visible** option shows or hides the rulers in the parallel projection windows.

You can also show or hide the field guide on the Perspective window using the **Field Guide** option. This shows the safe projection area, the safe action area, and the safe title area. These options help compensate for differences between video and film, and are often used for title sequences.

The percentage of each option is 100, 90, and 80 percent respectively of full size for the height and 133.333, 120, and 106 percent respectively for the width. These percentages are the same for NTSC, PAL, and SECAM.

Changing Colours

Changing Wireframe Colours



The wireframe colour box, located in the lower-left corner of the software display, allows you to colour wireframe objects. It is used primarily to help identify objects by colour coding and does not affect the colour of the rendered object.

By default, the wireframe colour box is not activated and appears dimmed.



1. Activate the colour box by clicking the grey bar on its left side.
2. Select the desired colour by clicking it in the box.
A white rectangle appears around the selected colour.
3. Apply the colours:
 - To single objects, click the object.
 - To an entire branch of objects, middle-click the parent of the branch.
 - To the whole hierarchy of objects, right-click any object in the hierarchy.
4. Deactivate the wireframe colour box by clicking its grey bar again or by choosing any menu cell.

You can change the wireframe colours of objects at any time. Wireframe colour is *not* considered to be an attribute of objects so it is saved in scene files rather than in model files.

The default colours for various elements in SOFTIMAGE 3D are:

Lights	Orange
Unselected objects	Black
Animation files	Green
Textures 2D/3D	Dark blue
Materials	Light blue
Instances	Fuschia
Effectors	Red
Selected elements	White

Selected chain inside an envelope	Light green, powder blue, yellow, mauve
In Skin → Envelope Assignment → Skeleton Colour	Light blue
In Skin → Envelope Assignment → Joint Colour	Red



The Schematic window has an option that automatically assigns a wireframe colour to certain new elements, such as lights, materials, effectors, etc. For more information, see *Layout* on page 30 in the *Reference Guide*.

Changing the Desktop Colours

The **Preferences → Desktop Colours** command allows you to customize the SOFTIMAGE 3D desktop colours (including the wireframe colour box) and save them to a file.

To change your desktop colours:

1. Choose the **Preferences → Desktop Colours** command. The Desktop Colours dialogue box is displayed.
2. Set the parameters as desired to modify the colours for the selected desktop items, such as the window backgrounds, menus, status bar information, or dialogue box backgrounds.
3. Click **Save** to save the desktop colour preferences. Click **Ok** to apply the colours.



The changes you make to the colours in the dialogue box are reflected in the desktop interactively, but changes to the colours in the dialogue box itself are not saved.

For more information, see **Preferences → Desktop Colours** on page 1150 in the *Reference Guide*.

Using the Keyboard

The keyboard is used to sign on, enter operating system commands, and start the SOFTIMAGE 3D software. It also lets you perform various keyboard shortcuts for tasks done in the SOFTIMAGE 3D display.

When SOFTIMAGE 3D is loaded, it appears in the foreground and any keyboard entries are used to interact with the software. Although you can't see the shell when SOFTIMAGE 3D is open, it is running in the "background" and you can still enter operating commands using one of these methods:

- Open a shell without closing SOFTIMAGE 3D by choosing the **Shell** menu cell in the Tools module.
- Press Alt-F9 to minimize SOFTIMAGE 3D to an icon. You can then access the shell.
- Press Alt-F3 to put SOFTIMAGE 3D in the background. You will still see the SOFTIMAGE 3D display, but the other windows in your display are "on top" of it. To put SOFTIMAGE 3D in the foreground again, make sure that the cursor is somewhere on the SOFTIMAGE 3D display and press Alt-F1.

Keyboard Shortcuts

Certain keys can perform the equivalent of some menu cell operations in SOFTIMAGE 3D.

There are three types of keyboard shortcuts:

- Accelerator keys which are simply combinations of *Alt-key* or *Ctrl-key* to choose a menu cell or open a dialogue box.
- Supra keys which are a predefined set of keyboard shortcuts for the most common commands and operations in SOFTIMAGE 3D.
- Swift keys which are keyboard shortcuts you create.



Accelerator Keys

Each menu cell has an underlined letter in its name. When you press the Alt or Ctrl key and the corresponding letter on the keyboard, it is the same as choosing that menu cell or command with the mouse.

Coloured underlined letters occur in menu cells specific to that module. For example, menu cells that appear only in the Motion module, such as **SetKey** and **FcrvEdit**, have green underlined letters. These work with the Alt key; for example, Alt-f opens the **Effects** menu in the Motion module.

Light grey underlines occur in menu cells which are shared between two or more modules, such as the **Constraint** menu cell in both the Actor and Motion modules or the **Get** menu cell in all modules except Tools. These letters work with the Ctrl key. For example, Ctrl-G opens the **Get** menu and Ctrl-m activates the **Multi** menu cell for selecting multiple objects.

Editing Accelerator Keys

If you don't want to use the default accelerator key combinations, you can edit the **.rsrc** file for each module (such as **Actor.rsrc** for the Actor module) found in the **/rsrc** directory where SOFTIMAGE 3D is installed. The shortcut letter that is underlined is preceded by an @ character (indicating the Ctrl key) or the % character (indicating the Alt key).

If you change an underlined letter for a menu cell which appears in several modules, you must change its definition for all relevant modules. For example, if you change the **Get** menu cell's underlined letter, you would also have to change it in the **Model**, **Motion**, **Actor**, and **Matter** **.rsrc** files.



If you do change the default letters, you must make sure that there is no conflict with other menu cell letters. If two items share the same accelerator key, the key always activates the first item and ignore the second one.

Supra Keys

Supra keys are a predefined set of keys mapped to the most common menu cell command operations, such as **z** for zoom, instead of having to choose the **Camera → Zoom** command.

Most Supra keys are valid only as long as the key is pressed. For example, when you release the **z** key, you exit the “zoom” mode.

Note

A few keys such as **a** and **f** (used for framing objects in windows) do not follow this rule and are activated simply by pressing and releasing the key.

You can remap the default settings for Supra keys according to your preferences. For example, you could temporarily remap a Supra key for a short-term, repetitive operation, or permanently reassign it if the associated operation is one which you rarely use.

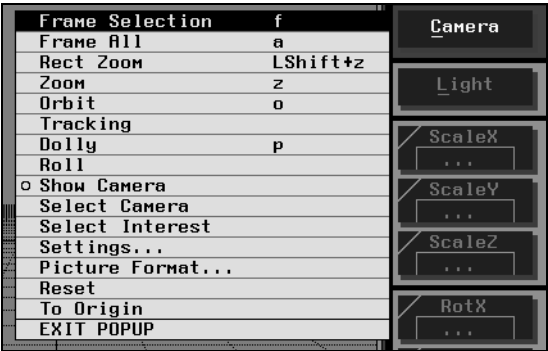
Take the example of **y** for selecting a polygon by rectangle. If this operation is something you rarely use, you can remap **y** to some other operation.

In this guide, the Supra keys mentioned are always the default Supra keys. Changes to Supra keys can be saved to a file containing keyboard setup information (see *Keyboard Setup Files* on page 116). You can also reset the Supra key settings to the default values.

Viewing Supra Key Settings

To view a list of all current Supra key settings, choose the **Info → Supra Keys** menu command.

The default Supra key settings are also listed individually beside the relevant menu command.



Note

Menus display only the default settings for Supra keys. They are not updated if you edit the settings.

Editing Supra Keys

- There must be a Supra key defined for each operation in the Supra Keys list. For example, the Duplicate Immediate operation is mapped by default to Supra key d. You can remap the Duplicate operation to a new key or key combination, but you cannot leave it blank.
- You can only assign one operation per Supra key.
- In cases of conflict, Swift keys override Supra keys. If editing a Supra key conflicts with an existing Swift key, a warning appears. Nothing prevents you from doing this, but the Swift key action takes priority regardless of your changes to the Supra key settings. If necessary, you could change the Swift key and reuse the key or key combination for the Supra key action.
- You cannot use a Supra key combination of Alt and any function key, such as Alt-F3. These combinations are used by the operating system.

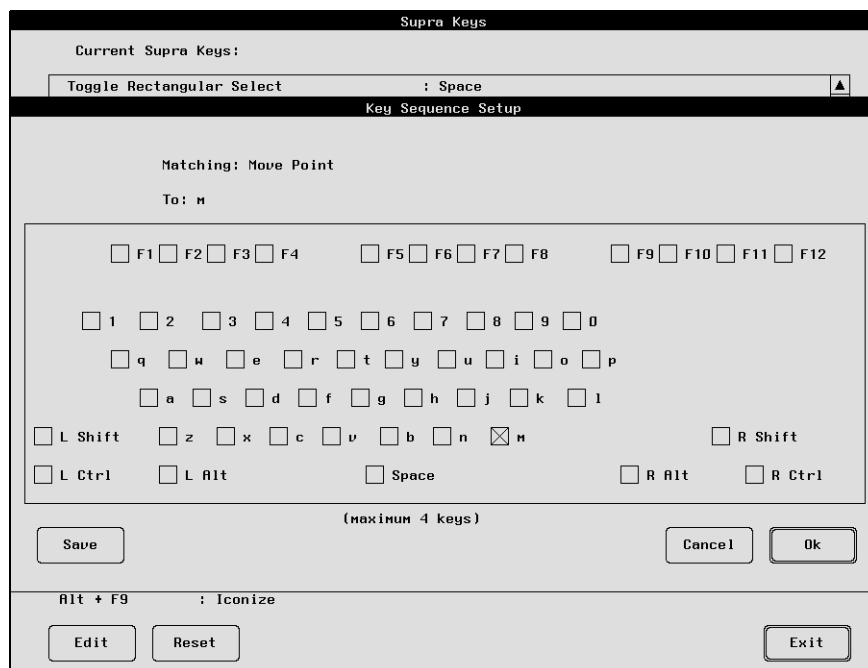
To edit a Supra key:

1. Choose the **Info → Supra Keys** command.

The Supra Keys browser appears, listing all available Supra keys.

2. Select a key in the list and click **Edit** (or double-click on your selection).

This opens the Key Sequence Setup dialogue box, overlaying the Supra Keys browser.



3. To map a key, click in its corresponding check box or press the desired key on the keyboard. You can select one or more check boxes. For example, to remap the Duplicate operation you can:
 - Deselect the **d** check box, and select another, such as **i**.
 - Make a key combination, such as **d** and **i**, or **Space** and **i**.

A warning appears if the key(s) are already used by another Swift key or Supra key operation.

4. If you like, you can save your changes to an **.sks** file (see *Saving your Edits to a File* on page 113).
5. If you click **Ok**, the changes exist only for the current work session. This action closes the Key Sequence Setup dialogue box. The Supra Keys browser is still open, displaying the updated Supra key.
6. If you wish to return to the default settings, click **Reset**. You are prompted to confirm this action.

Saving your Edits to a File

1. To save your changes to a file immediately after editing the key sequence, click **Save** in the Key Sequence Setup dialogue box.

Alternately, anytime during a work session, you can save changes to a file by choosing the **Preferences → Keyboard Setup → Save** command.

Note

Either action opens the browser, where you can save all current key mappings (Supra and Swift keys) to any **.sks** file of your choice.

2. When saving to a new file name, enter the **.sks** suffix, such as **mykeys.sks**.

Swift Keys

Swift Keys are key sequences that you can create. They are the equivalent of either:

- Choosing a menu cell command such as mapping the **g** and **p** key combination to the menu cell command **Get → Primitive → Sphere**. This opens up the Create Sphere dialogue box, as would choosing the command with the mouse.
- Selecting an option in a window title bar, such as choosing the **SLOPE** option in the **Fcurve** window title bar. If the title bar option normally opens a menu or a dialogue box, the Swift key does the same. However, you cannot select an option in a dialogue box opened with a Swift key.

You can also create, edit, and delete Swift keys and save the new key mapping to a keyboard setup file.

How do Swift Keys Compare to Supra Keys?

Like Supra keys, some Swift keys are predefined. They can be edited and the changes saved to a keyboard setup (**.sks**) file, if desired.

Unlike Supra keys, Swift keys can be deleted, even the predefined ones. Also unlike Supra keys, you can program more than one action to one Swift key. For example, if you have two commands that you want to activate at the same time (**Show → Centre** and **Show → Points**), you can program a single key or combination, such as **Shift-p**, to perform both operations at the same time.

Viewing Swift Keys

You can view a list of all Swift keys or view them in the menus beside the relevant commands.

To display the browser with a list of existing Swift keys, choose the **Info → User Swift Keys** menu command.

To display Swift keys in the menus, load the **.sks** file with the set of Swift keys you want to use. For example, to display the default Swift keys in the menus, load the **SIKeys.sks** file; otherwise, load any **.sks** file. The procedures for loading a keyboard setup file are described on page 117. Swift keys are then displayed in parentheses beside the related menu command: for example, **Surface → Skin (k + s)**. As soon as you create or edit a Swift key, the new setting is displayed in the User Swift Keys list.

Surface	Extrusion
	Revolution
	Skin (k + s)
Edit	Four Sided
	Bevel.v5 +
	GuidedExtrude.v4 +
Tag	HrcBevel.v5 +
	PolyBevel.v3 +
	TBranch.v3 +
Effect	EXIT POPUP

Creating a Swift Key

Here are some notes to consider when creating a Swift key:

- When you try to define a Swift key which conflicts with a Supra key, a warning appears. If you continue, the Swift key overwrites the Supra key.
- When you try to define a Swift key combination which conflicts with an existing Swift key, a warning appears. In this case, the latest definition is added to the previous one. When you subsequently use the Swift key, all the operations are performed in the same order as the order in which they were defined, from earliest to latest definition.
- You cannot use a key combination of Alt and a function key, such as Alt-F3. These combinations are used by the operating system.
- You can create or edit a Swift key with or without saving it to an **.sks** file. Without saving, the key mapping is only valid for the current work session and is lost when you exit SOFTIMAGE 3D.

For additional notes on creating Swift keys, see the **Preferences → Keyboard Setup → Learn** command on page 1165 of the *Reference Guide*.

To create a Swift key:

1. Choose the **Preferences → Keyboard Setup → Learn** command or press Shift-F1 on the keyboard.

An icon shaped like a graduation cap appears (for learning, of course!) and the status bar at the bottom of the screen informs you that you are in “Learning Swift Key” mode.

2. Choose the menu cell command you want (such as **Save → Scene**) or select an option from a window’s title bar (such as the Layout option).

The Key Sequence Setup dialogue box appears when the command or option has been selected. This dialogue box is the same one that appears when you edit a Supra key setting (see *Editing Supra Keys* on page 111).

3. To map a key, click in its corresponding check box or press the desired key on the keyboard. You can select one or more check boxes.

A warning appears if the key(s) are already used by either a Supra key or another Swift key.

4. If you want the changes to exist only for the current work session, click **Ok**. The key is updated in the User Defined Swift Keys list, which can be viewed with the **Info → User Swift Keys** command.

Note If you have used **Preferences → Keyboard Setup → Load** to load an .sks file, the updated key or key combination is also shown in parentheses beside the related menu cell command.

5. If you want to save your changes to a file, click **Save**. This opens the browser where you can select or name the .sks file in which to save your changes.

Note This saves all current key mapping, including both Swift keys and Supra keys.

6. When saving Swift keys to a new file, enter the .sks suffix after the file name.

Deleting or Editing a Swift Key

1. Choose the **Info → User Swift Keys** command to display the User Defined Swift Keys dialogue box.
2. To delete a Swift key, select the key from the list and then click the Delete button. A warning message box appears to confirm that you want to do this.
3. To edit a Swift key, click **Edit**. This displays the Key Sequence Setup dialogue box in which you can edit the existing Swift key definition in the same way that you created it.

Keyboard Setup Files

The keyboard setup for a work session is defined in the currently loaded **.sks** file, which contains the currently defined Swift keys and Supra keys. The default file is called **SIKeys.sks**.

You can create and save other **.sks** files, each with a different set of Supra/Swift key definitions, and then load a different file before or during a work session using the **Preferences → Keyboard Setup** commands.



If you want to keep the system default settings available, it is recommended not to overwrite the default **SIKeys.sks** file; instead, save your “custom” files to different names.

For example, in addition to the default **SIKeys.sks**, you may have another file called **model.sks**, one called **motion.sks**, and so on. When beginning a modelling session, you could load your custom **model.sks** file.

When you start SOFTIMAGE 3D, it searches for the **SIKeys.sks** file in the following locations in this order:

- The path specified with the **-k** command line option. For example:
-k /usr/people/elmo/SIKeys.sks
- The current directory.
- The **/rsrc** directory where SOFTIMAGE 3D is installed.

Loading a Keyboard Setup File

To load a different .sks file, you can do either of the following:

- Start SOFTIMAGE 3D using the command line option **-k** with the path and name of the keyboard setup file you have saved. For example:

```
soft -k /usr/people/elmo/model.sks
```

- During a work session, choose the **Preferences → Keyboard Setup → Load** command and select the .sks file you want.

Customizing the Keyboard Layout

The default keyboard layout (USA) can be reset to interpret characters and symbols of international keyboards such as French, German, Spanish, and others. To customize the layout mapping to match your keyboard layout:

1. Open a shell and type **keyboards** at the prompt.

The Keyboard Layout dialogue box is displayed, presenting a choice of international keyboard layouts.

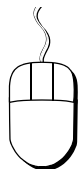
2. Select the appropriate one, click **Apply** to confirm the modification, then click **Quit** to close the dialogue box. You do not have to log out and invoke SOFTIMAGE 3D each time a new layout is set.

Note

Normally, you can type an accent symbol, such as [^], and then a letter, such as “a”, to obtain the letter with the accent over it. This is not currently supported in SOFTIMAGE 3D. However, you can use some special characters, such as Noël. For more information, see the *Sample Font Set* in the *Reference Guide*.

To use the numbers on the number keypad, make sure that the NumLock key on the keypad is activated.

Changing the Mouse and Cursor Setup



The mouse is a pointing device that fits in the palm of your hand. It is electronically connected to the cursor that you see on the screen. When you move the mouse, the cursor moves in a corresponding manner across the screen.

The mouse has three buttons referred to as *left*, *middle*, and *right*. These have different functions depending on which tool in the interface (menu cells, playback box, time line, etc.) you are using. The functions of the mouse buttons are shown in the mouse line at the bottom of the display when you need to perform a certain operation using them. Unless otherwise stated, always use the left mouse button to perform operations.

There are three basic ways to use the mouse: clicking, double-clicking, or dragging. Clicking means that you press down quickly on a mouse button and then release it. Double-clicking means pressing the mouse button twice in quick succession. Dragging means holding down a mouse button while moving the mouse, and then releasing the button. These three actions almost always apply to using the left mouse button.

Selecting and Picking Elements

Two common actions you will perform using the mouse are *selecting* and *picking*. Selecting means to hold down the space bar (or use the **Select** menu cell) while clicking on an element in a scene. *Picking* indicates that you are in a certain mode of action: when you are in this mode, you can click on an element without having to hold down the space bar.

Setting Up Mouse Preferences

You can set up your mouse to reflect how you work. You can change the size, speed, and appearance, as well as choosing to zoom in to where the cursor is located. Changes you make are saved in the setup file associated with the scene. You can also save and reload a setup file using the **Preferences** → **Setup File** → **Save** and **Load** commands (see *Saving and Loading a Setup File* on page 102).

To display the mouse as a spinning disk when your computer is busy performing calculations, choose the **Preferences** → **Busy Cursor** command. This is the default action.

By choosing the **Preferences → Zoom on Cursor** command, the camera zooms in to or out from the position of the cursor in any window, except the Spreadsheet which has scroll bars.

You can also set up preferences for how your mouse “behaves” by choosing the **Preferences → Mouse** command. In the Mouse Preference dialogue box, you can:

- Have the mouse cursor move to either the selected button or the centre of a dialogue box when you open it, or you can leave the mouse at its current location in the interface.
- Enlarge the cursor size, which is sometimes useful when doing demonstrations, or if you’re fairly near-sighted!
- Make the mouse move more quickly or slowly by changing its displacement.
- Have bells ring out when severe errors are reported on the status line.

Setting Animation Preferences

In the **Preferences → Animation** command, you can set parameters to create and modify an animation more efficiently. For example, you can select a colour keyframe feedback option to quickly identify keyed objects.

When working in the Motion module, you can activate an option that automatically updates key values of a modified animation. This eliminates the need to key each change made to that object.



This option only works if the time line pointer is on an object translation keyframe. In other words, it only saves a keyframe if there is already a translation keyframe at that time line position.

1. Choose the **Preferences → Animation** command. The Animation Preferences dialogue box is displayed.
2. Activate the desired options. For example, you can specify that you want coloured keyframe feedback. This means that a selected and keyed object at the currently displayed keyframe is red.

You could also select the default interpolation of function curves when they are first created using the **SaveKey** commands.

3. Click OK to confirm the settings and exit the dialogue box.

For more information about the options available in the Animation Preferences dialogue box, see page 1154 of the *Reference Guide*.

C H A P T E R S I X

Managing Files

Introduction

The file management tools in SOFTIMAGE 3D are designed to allow you to maximize your productivity and optimize the use of your resources, whether you are working by yourself or together with a production team.

The file management tools are basically all found in the Database Manager dialogue box (page 764 in the *Reference Guide*) and Database Exchange Manager (page 784 in the *Reference Guide*) dialogue box. Between the two of them, you can perform the following tasks:

- Name and identify your scenes and other elements.
- Organize your work according to your needs.
- Save and retrieve files.
- Copy, move, and delete files.
- Share files created for specific elements in your scene, such as materials and textures applied to models, or a character's animation.

Databases

A database is simply defined as a place where you store information. In SOFTIMAGE 3D, a database consists of a set of directories used to organize your work. There is one directory for the database itself, and a series of subdirectories (called *chapters*) for each type of item that can be created in the software.

SOFTIMAGE 3D looks for your databases in the list of database entries stored in a file called **DatabaseDir.rsrc**. This file is automatically updated (or created if no databases exist) each time you create a new database (see *Creating the First Database* on page 126). It lists the name and location of each database you have access to, and allows you to change your default database. If you create new databases using the Database Manager, they are automatically appended to the file. You can also move your databases easily by editing this file to modify the desired database path.

Current (Default) Database

The default database which is the first listed in your **DatabaseDir.rsrc** file is automatically identified as the current read and write (RW) database when you start SOFTIMAGE 3D.

When you choose **Get → DB Manager** and double-click the .. (double dots) at the top of the list, you are at the Database level. At this level, the default database is the first one on the list. The other databases are identified with **loc** to show it is a local database or with **sys** to show it is a system database.

The current read database is prefixed by an **R** in the list of available databases, to show you which database is currently being used to read files into SOFTIMAGE 3D. This means that when you choose **Get → Scene** or **Get → Element**, SOFTIMAGE 3D automatically opens a browser to this database.

The current write database is prefixed by a **W** to show you in which database your files are being saved. When you click **Save**, SOFTIMAGE 3D automatically specifies that the scenes or models are saved to this database.

You can easily read files from or save files to a different database by selecting the desired database from the database list accessed from the Load or Save dialogue boxes (using **Get → Scene** or **Get → Element**, or **Save → Scene** or **Save → Element**).

The database you select to read from or save to then becomes the current read or write database.

Modifying the DatabaseDir.rsrc File

To modify your DatabaseDir.rsrc file, open it with a text editor and use this syntax substituting the italicized text with the name of your database:

```
DATABASE name_of_database
```

```
PATH full_path_name_of_data_base
```

For example:

```
DATABASE playtime
```

```
PATH /usr/people/peewee/playtime
```

These two lines must be placed in this order in the file for SOFTIMAGE 3D to find the databases.

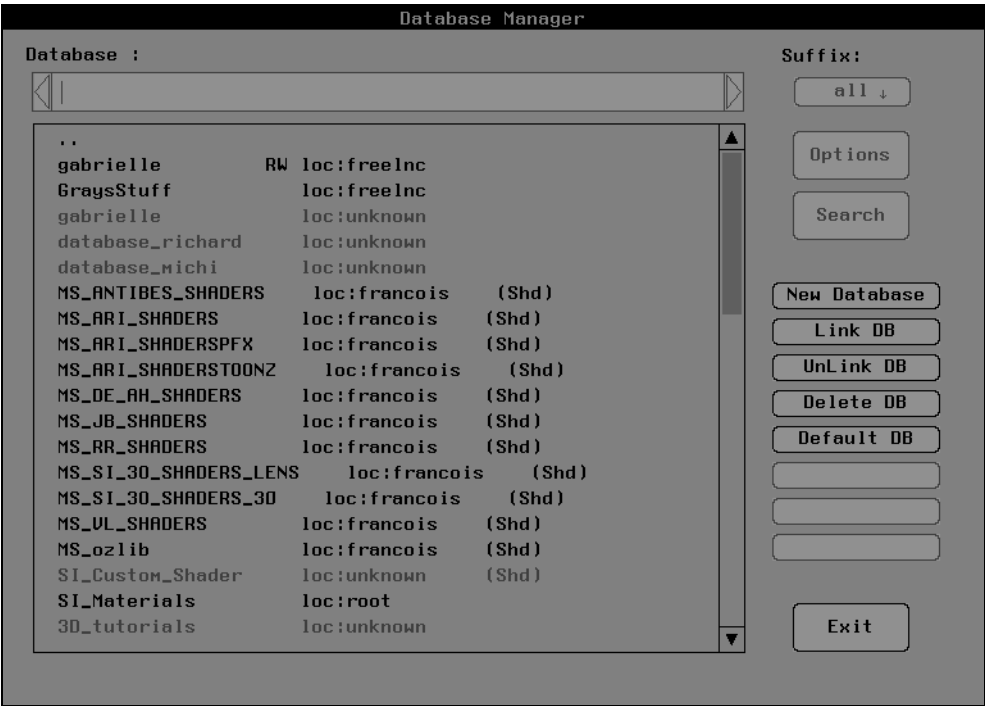
System Databases

In addition to the local databases listed in your DatabaseDir.rsrc file, you can also create system (global) databases that can be accessed by many users. This is a good way to create libraries of materials, textures, pictures, and other elements. Like local databases, they can be accessed at the Database level.

System databases are listed in a file called DatabaseSys.rsrc in the SOFTIMAGE 3D resource (/rsrc) directory. This file is identical in structure to the DatabaseDir.rsrc file, but is owned by root and is configured when SOFTIMAGE 3D was installed.

As an example, in following diagram, global databases are identified by an SI prefix, such as SI_Materials_lib. An identifier to the right of

the database name shows if the database is loc or sys.



Creating Databases

Creating the First Database

SOFTIMAGE 3D contains a first empty database, as well as a set of library and demo scene databases. If, for any reason, there is no database available at startup, SOFTIMAGE 3D displays a warning and then prompts you to create a first database.

1. In the message box that appears, click **Create**.
2. In the Set Database dialogue box, enter the name of the database. By default, your home directory appears in the **Path** text box.

Note Special characters have a specific meaning in most operating systems. Since they may cause problems if you use them in database or file names, SOFTIMAGE 3D automatically replaces special characters with underscores (_). This is a list of special characters that will be replaced:

space ` ! @ # \$ % ^ & * () + [] { } | \ ; : ? = < > "

3. Click the **Create** button.

A message appears stating that a database has been created and your **DatabaseDir.rsrc** file has been updated with this information.

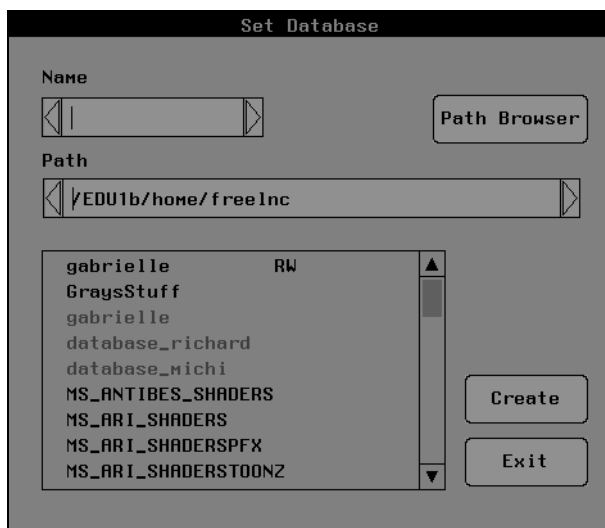
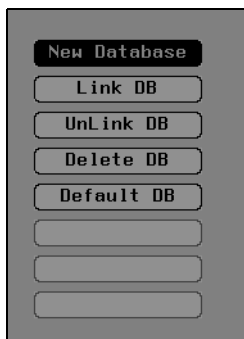
4. Click **Exit**.

Creating More Databases

When you to create a new database, it is added to the **DatabaseDir.rsrc** file and is displayed in the list of available databases.

1. Choose **Get → DB Manager**.
2. In the Database Manager dialogue box, click the **New Database** button.

The Set Database dialogue box appears.



3. If you know the desired path for the new database, type it directly in the **Path** text box. If you don't know the path, click the **Path Browser** button to display the browser, and select the desired path name.
4. Click **Ok** to return to the Set Database dialogue box.
The path of the new database is displayed in the **Path** text box.
5. In the **Name** text box, specify the name of the new database you want to create in the path you have chosen.

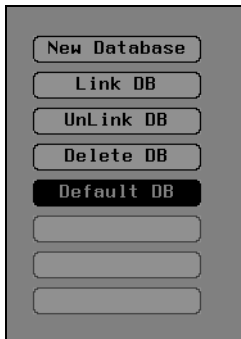
6. Click **Create** to create the new database and exit the dialogue box.

The new database is added to the **Database.Dir.rsrc** file and to your list of available databases.



You cannot create a database within a database. SOFTIMAGE 3D checks the path you have entered and if there is a conflict, a warning message appears.

Changing the Default Database



You can change the default database, which is the database that is displayed when you initially open the Database Manager. When the default is changed, the **DatabaseDir.rsrc** file is updated, and the new default database name is moved to the top of the available database list.

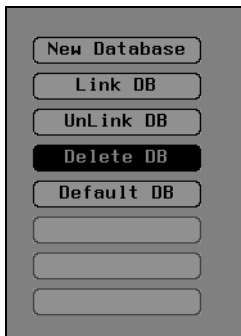
The next time you start SOFTIMAGE 3D, you are automatically in that database.

1. Choose **Get → DB Manager**.
2. In the Database Manager dialogue box, select the database you want to be the new default database from your list of available databases.
3. Click the **Default DB** button.

If you use this command, your **DatabaseDir.rsrc** file is overwritten. If you want to keep any comments in this file, edit it manually.

A message appears at the bottom of the dialogue box telling you that your **DatabaseDir.rsrc** file has been updated. The new default database moves to the top of your list of available databases.

Deleting a Database



You can permanently remove a selected database and all its contents, as well as the entry referring to it in the **DatabaseDir.rsrc** file. If you want to keep any comments in this file, edit it manually.

If any files are stored in a database that you are trying to delete, a warning dialogue box appears before the deletion starts.



This process *cannot* be undone! It will delete all files within the database, including all chapters.

1. Choose **Get → DB Manager**.

2. In the Database Manager dialogue box, select the database to be deleted from the list of available databases.
3. Click the **Delete DB** button.

If the database is not empty, a warning dialogue box is displayed before the database is actually deleted.

4. Click **Delete** to confirm the deletion and exit the dialogue box.

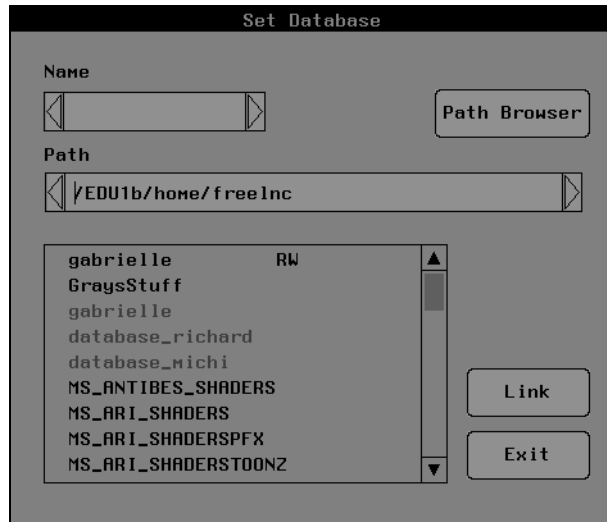
Linking and Unlinking Databases

Linking Databases

You can quickly access an existing database (such as a database created by another user) by adding it to your list of available databases. The database is added to your **DatabaseDir.rsrc** file and is not removed until you unlink it.

1. Choose **Get → DB Manager**.
2. In the Database Manager dialogue box, click the **Link DB** button.

The Set Database dialogue box is displayed.



3. If you know the path of the outside database you want to link to your own, type the path name directly into the **Path** text box. If you don't know the path, click the **Path Browser** button to display the browser, and select the desired path name.
4. Click **Ok** to return to the Set Database dialogue box.

The path of the database to be linked is displayed in the **Path** text box.

5. In the **Name** text box, specify the name of the database in the path to which you want to link. The names you can choose from appear in the scroll box.

6. Click **Link**.

A dialogue box is displayed to inform you that this database is linked to your own.

7. Click **Exit** to exit the dialogue box.

The database is added to the **DatabaseDir.rsrc** file and to your list of available databases.

Tip You can use the Database Browser to type the path to get to the directory that you want to link using the “.” quick access entry. Once you enter a directory that SOFTIMAGE 3D recognizes as a database structure, you are prompted to create a link to that database.

Unlinking Databases

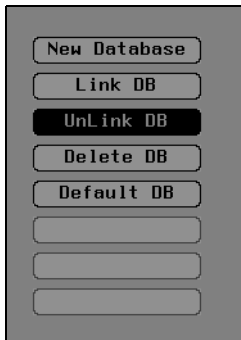
After you have linked a database, you can unlink it, removing it from the **DatabaseDir.rsrc** file and from your list of available databases.

1. Choose **Get → DB Manager**.
2. In the Database Manager dialogue box, select the database to be unlinked from the list of available databases.
3. Click the **Unlink DB** button.

If you use this command, your **DatabaseDir.rsrc** file is overwritten. If you want to keep any comments in your file, edit it manually.

4. The selected database is unlinked.

Note If you do not have access permission for a **DatabaseDir.rsrc** file when unlinking databases, a warning message appears.



Browsing outside Databases

In the Database Manager, double-clicking the two dots (..) at the top of the Database Level list allows you to access outside databases, which lets you reach another user's database, for example.

Using Quick Access Entries

To quickly access various directories, you can click on quick access entries to jump from one directory to another without scrolling or typing path names. These are displayed as <HOME>, <ROOT>, <ORIGINAL> and <DATABASES>.

If you are browsing outside the databases, you can return to the Database Level in one step by double-clicking <DATABASES>, which is always located at the top of the displayed list.

Double-click <HOME> or type ~ to go to your own root directory, or type ~username in the **Path** text box to go to someone else's home directory.

Double-click <ROOT> or type / (forward slash) in the **Path** text box and press Enter to access the machine's root directory.

Double-click <ORIGINAL> to jump back to the directory in which the browser was opened.

Path Shortcuts

You can also type path shortcuts in the **Path** text box to access outside databases. There are a number of shortcuts you can use:

For example you can type paths that:

- Start with .. (double dots)
- Contain / (forward slash)
- Contain ~ and ~username
- Contain \$<env var> (and envvar can include a ~)
- Lead to listed and unlisted databases (you are prompted to add a database that is not listed)

Checking for a Match in a Database List

You can check for an exact match to a file or database by typing the name and/or path and pressing Enter. If SOFTIMAGE 3D finds an exact match, the database or file is opened. If a partial match is

found, then the first entry that matches is presented. Press Enter to scroll down the list of matches.

Using the dbtools Standalones

The **dbtools** standalone database tools are a set of shell-like commands that can be used to manage SOFTIMAGE 3D databases and files more easily than with the regular IRIX shell commands. The **dbtools** commands may be entered one at a time interactively, or listed in a file for batch execution from a script file.

 You can use **dbtools** to see or edit a binary file from its ASCII version. This is an easy way to edit a value from a file if you know exactly what you want to do.

To use the standalone database tools, type

```
dbtools [-r <resource path>]
```

at the command line in a shell. This reads the **DatabaseDir.rsrc** file referenced by the **SI_DBDIR** environment variable, if it exists. Once this file is read, you can enter the **dbtools** commands.

For more information about using **dbtools**, see the *dbtools* HTML file on the *On-line Documentation CD*.

Chapters (Directories)

The Chapter level is automatically displayed when you choose the **Get → DB Manager** command, showing the current database and a list of all the chapters within it.

A chapter, often called a directory or folder in many operating systems, is the place in a database where each type of SOFTIMAGE 3D element is stored. Chapters are created automatically when a database is created. The chapter names are predefined, and when you save a scene or element, it is automatically stored in the appropriate chapter. For example, the **MATERIALS** chapter contains all materials in the database.

Chapter.rsrc Files

The **Chapter.rsrc** file is created when the database is created. It is located in each chapter and contains two lines that describe the contents of the directory and the number of versions allowed. The first line of the file contains the suffix describing the types of files contained in the chapter, such as **ani** for animation files or **mtr** for material files. The second line shows the number of file versions (4 is the default) to be saved.

Copying, Moving, and Deleting Subdirectories

Using your operating system commands, you can create subdirectories in any chapters to store objects or elements to access from SOFTIMAGE 3D. However, you cannot create your own chapters in the databases.

For example, once you render your work, the rendered sequence is placed in the **RENDER_PICTURES** chapter, which may be long to scroll through. You can create a subdirectory of this chapter using the operating system commands and move the rendered sequence to this location. This may make it easier to locate files by group or project, and does not clutter your browser.

The same applies for moving, and deleting subdirectories of chapters: you must use the operating system commands to make these changes.

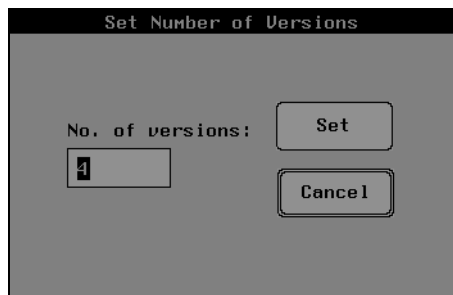
Setting the Number of File Versions Saved

You can specify the number of versions each chapter keeps for its specific files. By default, this number is 4.

For example, if you set the number of versions to 3 for the **MODELS** chapter, then up to three versions of each model are saved. If more than three versions exist, the oldest version is discarded, as long as it is not used in a scene and is not explicitly locked.

To change the number of versions saved:

1. Choose **Get → DB Manager**.
2. In the browser, select a chapter name. To select more than one chapter at a time, click while holding the Shift key.
3. Click the **Set #versions** button. The Set Number of Versions dialogue box is displayed.



4. Type the new number of versions to save into the **No. of versions** text box.
5. Click **Set** to confirm the change and exit the dialogue box.

When you make a change here, the **Chapter.rsrc** file is updated.

Tip You can also change the number of versions by editing the **Chapter.rsrc** file with a text editor.

If you really need to save disk space, you can set the number of versions to 1. Each file you save generates a new version, but the previous version gets removed immediately. It does not mean that files are overwritten, because SOFTIMAGE 3D can't delete a file if it is still being used by a scene in the database. However, you should be careful using 1 as the number of versions: do *not* click **Cancel All** while you are saving scenes. An incomplete scene results, and the previous version of the scene might already be partially deleted!

Files

The File level in a database displays a list of all files contained in a selected chapter and gives you access to a series of options that permit you to view the file's contents and information about the file, lock a file, or delete it. You can also set options for your files to define the way they are sorted and displayed, or search for specific files.

Each element you create or define receives a meaningful default name that you can modify with **Info → Selection** to better reflect its use in your project. These names are used as file names when elements are stored in chapters.

File Names

SOFTIMAGE 3D file names are comprised of up to five components as follows:

<prefix>-<name>.<version no.>-<substitution no.>.<suffix>

- The **<prefix>** is used to help you identify an item. You do not have to specify a prefix, but SOFTIMAGE 3D uses the name of the scene you save as the default prefix for all elements unless you specify a different prefix. Prefixes help you organize scene and library elements in the browsers.
- The **<name>** is the element or scene name. When you save a scene, you can specify a name for the entire scene. The elements in the scene, such as models or lights, are saved according to the name assigned using the Info Selection dialogue box. Default names are created with the elements. For example, the first cube created in a scene would be named "cube1."
- **<version no.>**: Each time an element is saved, a new version or copy is created automatically. The version number is incremented so that you can identify the last saved version. This ensures that you do not unintentionally overwrite any files. To avoid creating too many files, you can specify the number of versions to keep for the elements in each chapter (see *Setting the Number of File Versions Saved* on page 134). When the maximum number is reached, the oldest version is deleted automatically if the element is not used in any scene, and if it has not been locked.
- **<substitution no.>**: You can include a substitution number in a file name to create different levels of precision for an element. This allows you to substitute one for another while you are working on

your scene. This would typically be used if you saved versions with different resolutions and you wanted to save refresh time.

- The **<suffix>** identifies the file's type. For example, an **.rsrc** suffix identifies your file as a resource file, or a **.pic** suffix as a default SOFTIMAGE 3D picture file. A suffix is usually required when you need to import a file into SOFTIMAGE 3D, or when you export a SOFTIMAGE 3D file to another source.

Note Special characters have a specific meaning in most operating systems. Since they may cause problems if you use them in database or file names, SOFTIMAGE 3D automatically replaces special characters with underscores (_). Here's a list of special characters that will be replaced:

space ` ! @ # \$ % ^ & * () + [] { } | \ ; : ? = < > "

Picture Files

Picture files are a special case in SOFTIMAGE 3D since they can be stored in a different database than the one where your scene is located as well as outside databases.

When texture files are read from a scene, SOFTIMAGE 3D checks for the necessary picture files in the following places in this order:

- The explicit path stored in the texture file.
- The **PICTURES** chapter of the database where the scene is currently read from. The **PICTURES** chapter of any database lists all pictures used for 2D textures.
- The **PICTURES** chapter of all system databases.
- The explicit path from the scene elements.

The best way to store your pictures is to create a picture library in a system database (see *System Databases* on page 125). This way, you don't have to copy the picture files to each database you create. If you do store your picture files in a system database, you are not prompted to copy these picture files each time your scene is copied. However, if you plan to send your database elsewhere to show a scene, the pictures should be copied into the database where the scene resides.

Note The **dbtools** standalone program can be used to quickly look at paths stored in texture files and edit them if desired (see the **lspic** and **chgpic** commands in the *dbtools* HTML file on the *On-line Documentation CD*).

Animation Files

When you save an animated scene, SOFTIMAGE 3D also saves animation files that can then be associated to several different objects or model hierarchies. These files contain a list of function curves and a list of objects using the function curves. This lets you create a library of defined animations.

You can save animation files for all types of SOFTIMAGE 3D elements, including lights, the camera, materials, and so on.

You can also use a library of structure keys, which are saved animation values that can be stored in libraries. You can apply all or some of the information saved with a structure key to one or many objects with corresponding elements. The **Get ▶ From Library** commands allow you to load structure keys or animation files and apply them.

For more information on animation files and structure keys, see *Animation Files* on page 289 of the *Animating User's Guide*.

Saving a Scene or Element to a File

To save elements and scenes, choose the **Save** menu cell and one of its commands (**Scene**, **Model**, or **Element**). If you are saving a scene, you are asked to assign it a name. If you are saving an element, its current name is used. The files are then saved in their appropriate chapters.

You can save an entire scene, or save a scene containing only certain elements that you select.

You can access a database browser to specify a different database in which to save your file. In the case of scenes, you can also access a scene browser, select an existing scene name, and save it under a new name.

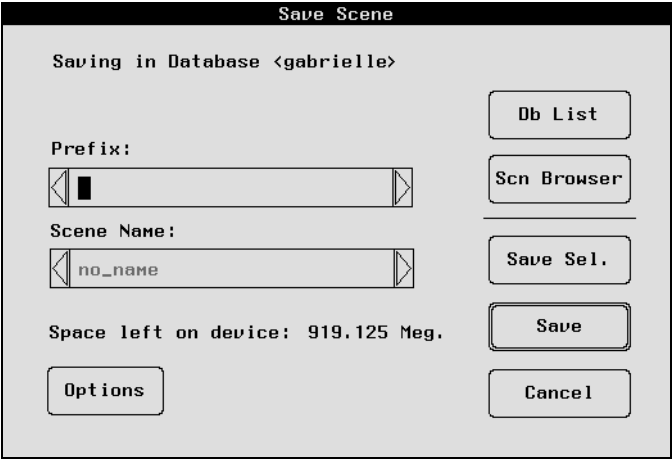
Note

SOFTIMAGE 3D has a simple database lock protection to prevent conflicting save operations within a given database. When you save a file and someone else is currently saving in the same database, a message appears stating the database is locked and who owns the lock. You can override the lock, but there is no guarantee you will not overwrite someone else's work.

Saving a Scene

1. Choose the **Save → Scene** command.

The Save Scene dialogue box is displayed.

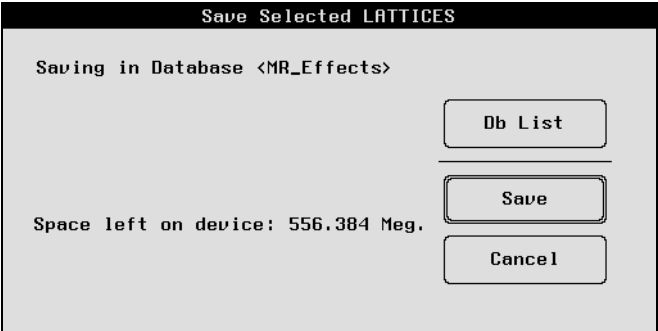


2. Enter a **Prefix**, if desired and a name for the scene, or select a scene name using the **Scn Browser** button.
3. Click **Save** to save all the elements to the scene or click **Save Sel.** to save selected elements only (then select those elements).

Saving Selected Elements

1. Choose the **Save → Selected Elements** command and the desired subcommand that corresponds to the type of element you want to save.

The appropriate Save Selected dialogue box is displayed.



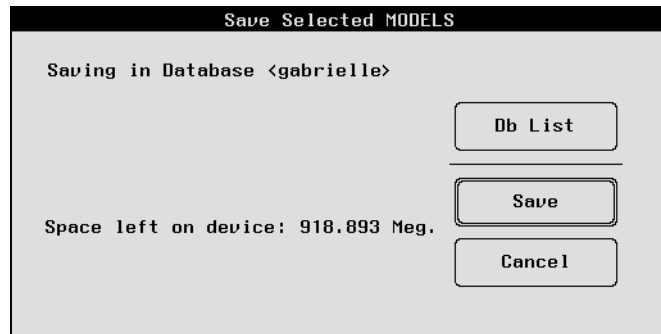
2. Click **Save** to save the element in the appropriate chapter in the current database, or click **Db List** to open a browser and select a different database.

Saving Models

When you save a model, it saves only the selected objects (models) to the **MODELS** chapter in the current or specified database using the models' name that has been defined in the Info Selection dialogue box.

1. Choose the **Save → Selected Models** command.

The Save Selected MODELS dialogue box is displayed:



2. Click **Save** to save to the current database, or specify a different database using the available databases browser accessed using the **Db List** button.

Automatic Saving

The **Preferences → Auto Save** command allows you to set an automatic saving procedure. This allows you to save your work to a backup database while it is in progress. This ensures that you always have a recent backup copy of your scene.

Note

You must create a backup database called **BACKUP** before activating this command.

Refer to *Automatic Saving* on page 103 for more information.

Number of Versions Saved

Each time an element is saved, a new version or copy is created automatically. The version number is incremented so that you can

identify the last saved version. You can specify the number of versions saved to avoid saving too many versions of the files. See *Setting the Number of File Versions Saved* on page 134 for more information.

Emergency Saves

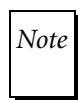
To avoid losing your work in the event of a crash, you can set the `SI_EMERGENCY_SAVE` environment variable that lets SOFTIMAGE 3D detect a crash and then try to back up the current scene.

When you start up SOFTIMAGE 3D after a crash (or it autostarts), you are prompted to load the crashed scene. The emergency save dialogue box also displays the directory to which the scene was saved. This only happens the first time you start SOFTIMAGE 3D after a crash.

 If your cursor locks up due to a crash, go to another machine and remote log on onto the crashed machine. Type `gc lear` to free up the cursor and then follow the steps in the emergency save dialogue boxes.

Scene information is saved, as well as information about particles and channels setup and the general display layout setup.

The emergency save feature is enabled by default, but you can use the `SI_EMERGENCY_SAVE` environment variable to activate or deactivate it.

 This option is designed to save the scene when SOFTIMAGE 3D crashes, and the scene you retrieve may or may not be corrupted depending on what caused the crash.

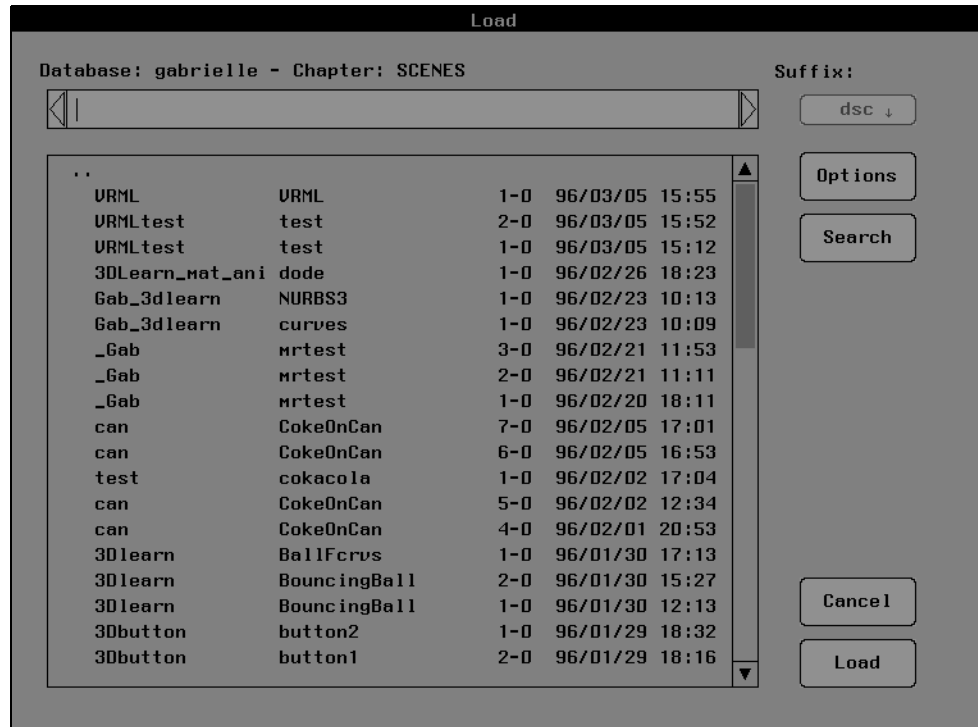
For more information on setting the emergency save environment variable, see the *SOFTIMAGE 3D Installation Guide*.

Loading a Scene

After you have saved a scene to file, you can load it into SOFTIMAGE 3D. To do this:

1. Choose the Get → Scene command.

The Load browser for the current Read database's SCENES chapter is displayed.



2. Select the scene file name you want to load then click the **Load** button, or double-click on the scene file name.

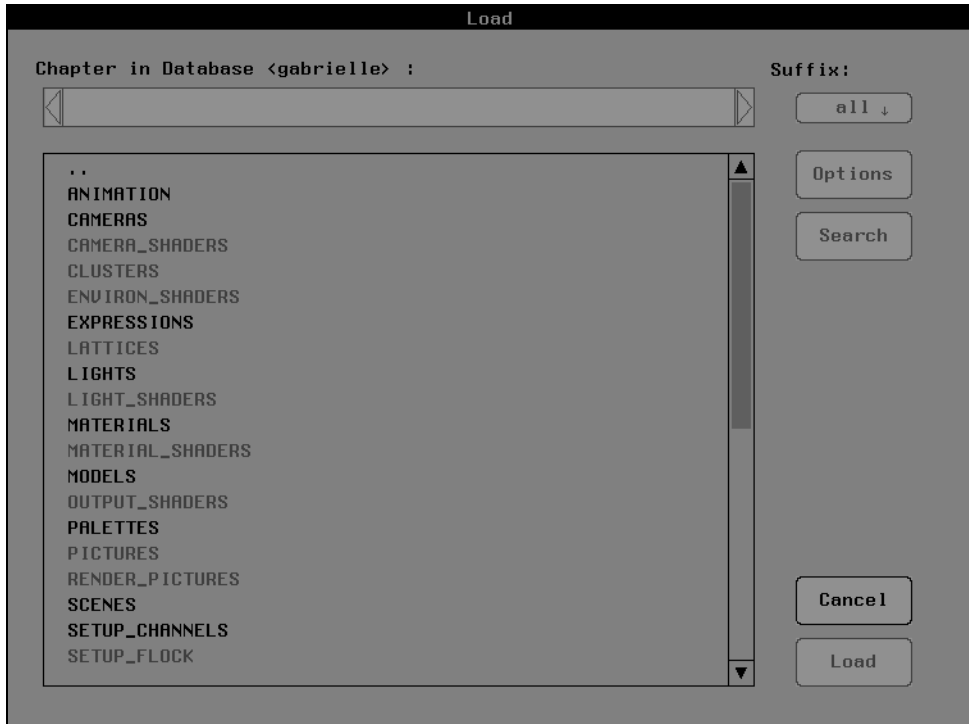
To access scene files in other databases, double-click the two dots (..) at the top of the scroll box to move up to the database level. You can then enter another database's list of scenes.

Loading an Element File

After saving an element to file, you can load it into SOFTIMAGE 3D.

1. Choose the **Get → Element** command.

The Load browser listing the current database's chapters is displayed.



2. Select the chapter containing the type of element you want to load by double-clicking on the chapter name. SOFTIMAGE 3D displays the list of elements for that chapter.
3. Select the element you want to load, then click the **Load** button, or double-click on the element file name.

Note To access element files from a different database, double-click the two dots (..) at the top of the scroll box to move up to the database level. You can then switch directories and move back down the tree.

Renaming an Element or Scene

Although elements receive a default name when they are created, you can rename them by selecting the element and choosing the **Info → Selection** command. The **Info → Elements** command also allows you to edit an element's name or prefix, and set an element substitution number.



For quick access to the Info Element dialogue box for a selected element, press the Enter key anywhere in the interface. For quick access to the Info Selection dialogue box, open a Schematic window, click **OPEN/CLOSE** in the window's title bar, and then pick the object.

You can also access the **Info → Selection** dialogue box through the Spreadsheet. See *Editing in the Spreadsheet* on page 94 for more information.

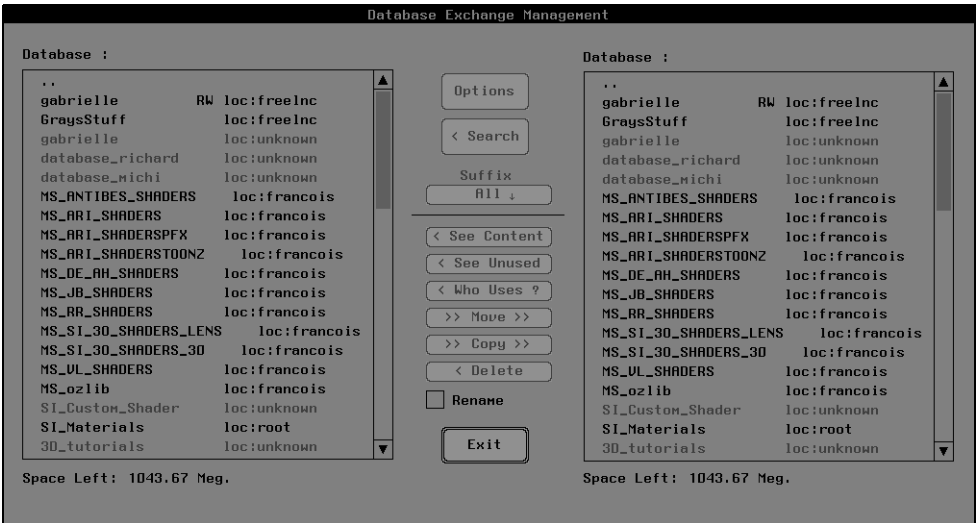
You can name your scene when you are saving it, or edit it when you choose the **Info → Scene** command.

For more information on the **Info** menu cell commands, see their descriptions starting on page 856 in the *Reference Guide*.

Copying Files

You can copy files from a location inside or outside a database, however, you can only copy files to and from chapters of the same type. For example, you cannot copy a file from the **MODEL** chapter to the **MATTER** chapter, but you can copy files between **PICTURE** and **RENDER_PICTURES** chapters.

1. Choose the Get → DB Exchange command.



2. In the Source scroll box, select the file you want to copy. You can also select multiple files by pressing the Shift key while selecting.
3. In the Destination scroll box, display the directory or chapter into which you are copying a file.
4. If you want to rename the file as it is copied, select the **Rename** option. Type in the new prefix and file name in the Rename dialogue box, then click Ok to confirm the name change and exit the dialogue box.

Note Pictures from the PICTURES and RENDER_PICTURES chapters cannot be renamed from within the Get → DB Exchange command.

5. Click the Copy button.

A confirmation message is displayed beneath the Source scroll box. If the copy function cannot be completed, a warning message appears.

Moving Files

Similar to copying files, you can move files from inside or outside a database, however, you can only move files to and from chapters of the same type. For example, you cannot move a file from the MODEL chapter to the MATTER chapter, but you can move files between PICTURE and RENDER_PICTURES chapters.

1. Choose the **Get → DB Exchange** command.
2. In the **Source** scroll box, select the file you want to move. You can also select multiple files by pressing the Shift key while selecting.
3. In the **Destination** scroll box, display the directory or chapter into which you are moving a file.
4. If you want to rename the file as it is moved, select the **Rename** option. Type in the new prefix and file name in the Rename dialogue box, then click Ok to confirm the name change and exit the dialogue box.



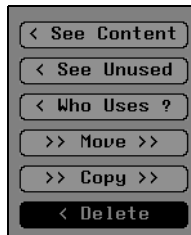
Pictures from the PICTURES and RENDER_PICTURES chapters cannot be renamed from within the **Get → DB Exchange** command.

5. Click the **Move** button.

A confirmation message is displayed beneath the Source scroll box. If the move function cannot be completed, a warning message appears.

Deleting Files

You can permanently remove files that are not currently used in a scene. If you delete a scene, you can delete the scene file only, or all of its contents (if not used in any other scene).



This process *cannot* be undone!

1. Choose the **Get → DB Exchange** command.
2. Select a file name to select it. You can also select multiple files by pressing the Shift key while selecting.
3. Click the **Delete** button.

If the file (or files) is currently used in a scene, a warning message box is displayed listing the scene(s) in which the file is used and informing you that it cannot complete the operation.

If you delete a scene file, the message box prompts you to specify whether to delete just the scene file, or to continue and delete the scene file *as well as* any of its components that are not used in other scenes.

A second message box is then displayed, confirming the number of files that will be deleted and the number that will be kept.

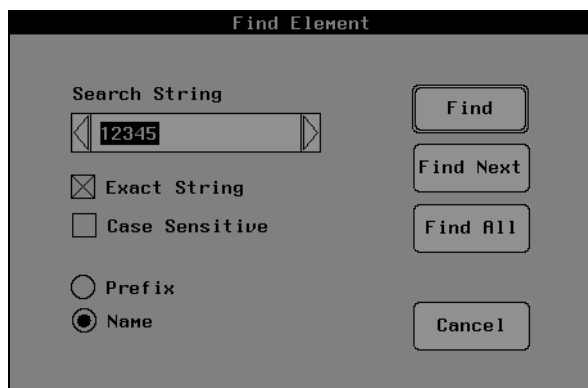
Before an unused file is deleted, a warning message box is displayed to allow you to cancel or confirm the deletion.

Searching for Files

You can search for specified file names and prefixes when you are outside the database or at the File level of the database. However, the search command works only for the files that are already displayed in the browser.

1. Choose the **Get → DB Manager** or the **Get → DB Exchange** command.
2. In the Database Manager window, display the file or outside database level.
3. Click the **Search** button.

The Find Element dialogue box is displayed.



4. Modify the dialogue box settings as desired, then click one of the Find buttons on the right side of the dialogue box.

The appropriate file(s) are highlighted in the Database Manager window.

For details about Search parameters, see *Search* on page 782 in the *Reference Guide*.

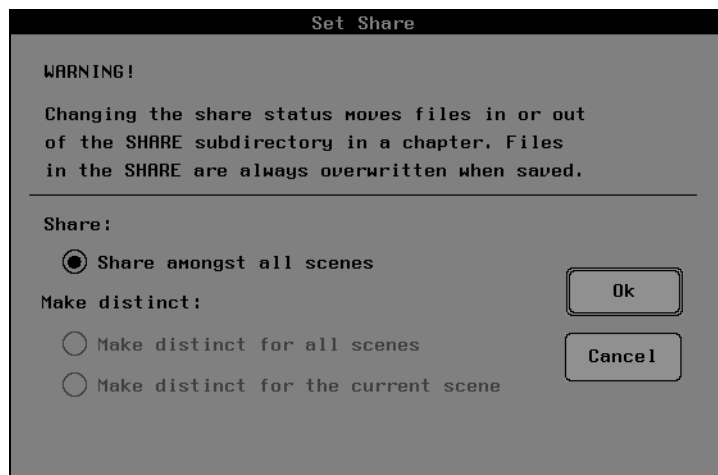
Sharing Files

You can save elements of your scene to a share directory which allows you to reuse components of your scene and work more efficiently. When you use a shared element in many scenes and modify the element, the changes are reflected in all the scenes that use that element. This feature also helps you manage disk space, since there is only one version of the shared element. The shared files are placed in a **SHARE** subdirectory within specific chapters.

In the Database Manager, the **Set Share** button allows you to share any file that is in a chapter. The shared element is always overwritten, and is placed in the **SHARE** subdirectory of its chapter.

1. Choose the **Get → DB Manager** command.
2. Select a file name.
3. Click the **Set Share** button.

The Set Share dialogue box is displayed warning you that changing the share status of an object moves the file in or out of the **SHARE** subdirectory in a chapter and that the files in the **SHARE** chapter are always overwritten.



The file is moved into a **SHARE** subdirectory of a chapter. For example, if you share a model, then the model is placed into the **SHARE** subdirectory of the **MODEL** chapter.



You can also set shared files manually by creating the **SHARE** subdirectory using the operating system commands and moving files into it.

You can have several elements in a scene that have exactly the same name and prefix as a result of sharing files.

You can also set the share status of an element using **Info → Element**. When you set the share for the element, it is saved to a **SHARE** subdirectory and is reflected in the Database Manager the next time you save your scene.

Making Shared Files Distinct

If you no longer want to share a file, you can use the **Set Share** button to make the file distinct.

1. Select the shared file name.
2. Click the **Set Share** button. The Set Share dialogue box is displayed.
3. Select the appropriate **Make distinct** option to either make the file distinct for all scenes, or only for the current scene.
4. Click Ok to remove the object from the **SHARE** subdirectory.

When you make the file distinct, a copy of the shared file is made and is moved out of the **SHARE** directory and into the main directory in which it belongs. For example, a distinct model file is placed directly in the **MODEL** chapter. This file is referenced only by the current scene. Any other scenes continue to share the original shared file.



If you are making the file distinct from the Database Manager, you can make it distinct only for all scenes. If you use **Info → Elements** to make a file distinct, you have the choice to set it for all the scenes or only the current scene.

Changing Shared Objects

On large collaborative projects, you can model all of your objects first, then place them in **SHARE** subdirectories. This way, you can use the shared objects without worrying that new versions of the shared objects will appear.

If you need to change the shared object, go to the **SHARE** subdirectory and get the shared object, change it, and save it back

into the shared directory. All your scenes containing this shared object automatically reflect the changes made.

Note

Be careful about the types of changes you do to the shared object since all scenes are modified as a result.

This feature is especially useful for model hierarchies, materials, and animation. If you use a shared material for all the walls in a house, then you need only change the shared material and the change appears in all scenes in which the house appears.

Tip

In the Database browser, shared files are listed with an “s” beside their names. Shared files have an “Sh” symbol in the Schematic window.

Sharing Files between Databases

Within SOFTIMAGE 3D, you cannot share files between databases. However, you can create a **SHARE** directory in one database and use the operating system links to have share directories from other databases point to it.

Locking Shared Files

You can lock shared files in two ways: with the **Set Lock** option in the Database Manager, or by setting the permissions from the operating system.

If you want to store the shared files in someone’s account and allow only them access to edit the shared file, then you would set the permissions using the operating system commands.

To lock the file for everyone, use the **Set Lock** option in the Database Manager. See *Locking and Unlocking Files* on page 150 for more information.

Sorting Files

You can change the way your file lists are sorted at any time.

1. Choose the **Get → DB Manager** or the **Get → DB Exchange** command.
2. Go to either the File level or to a level outside the database.
3. Click the **Options** button.

The List Options dialogue box is displayed.



4. Modify the options as desired, and click to confirm the settings. You can sort by name, date, prefix, and many other attributes. You can also specify that the file list is displayed in increasing or decreasing order.

The settings are applied immediately.

Note The **Options** settings must be reset each time SOFTIMAGE 3D is started: they are not saved with the scene.

Locking and Unlocking Files

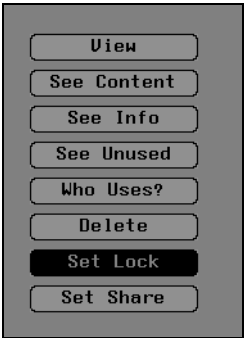
You can lock and unlock a file and its contents. This is particularly useful if you want to keep a file with a version number beyond the number of versions that you have specified

Tip You can also lock all the components in a scene by using the **chmod** command from a shell.

1. Choose the **Get → DB Manager** command.
2. Select a file name.
3. Click the **Set Lock** button.

A lock icon appears to the left of the file name.

To unlock a locked file, select the file and click **Set Lock** again. The lock icon is removed.





Viewing a Scene and Its Information

There are a number of ways to view different types of information about a scene: you can view the scene itself, a list of contents, detailed information, unused files and where a file is used.

Viewing a Scene, Pictures, or Models

To view a scene's contents, the viewer must be accessible from your PATH variable.

1. Choose the **Get → DB Manager** command.
2. At the Chapter level of the Database Manager, select one of these chapters: **SCENE**, **MODELS**, **PICTURES**, or **RENDER_PICTURES**.

The File level of the selected chapter is displayed.

3. Select a file name, then click the **View** button.
4. If you are viewing a picture file, the **imgshow** standalone is used. If you are viewing a scene or model, the **viewer** standalone is used.

For more information about the **imgshow** and **viewer** standalones, see the *Standalones HTML* file on the *On-Line Documentation CD*.

Viewing a List of Contents

You can display a list of everything contained in a selected file (such as models, elements, or materials). You can also view the contents of ASCII files, and binary files are converted to temporary ASCII files before being displayed. To view these temporary files, you must have access to the standalone converter programs **bin2ascii** and **hrcConvert**. The temporary files are removed after the operation is completed.

1. Choose the **Get → DB Manager** command.
2. Select a file name.
3. Click the **See Content** button.

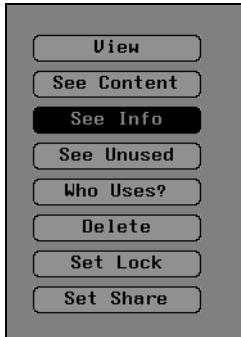
The **See Content** button is not available for files in the following chapter types: **CLUSTER**, **PICTURES**, **PALETTES**, **RENDER_PICTURES**, and **SHAPES**.

The See Contents dialogue box is displayed, listing the contents of the selected file.



You can use the **dbtools** standalone program (**more** or **edit** commands) to see or edit a binary file from its ASCII version. This is a quick way to edit a value from a file if you know exactly what you want to do. See the *dbtools* HTML file on the *On-Line Documentation CD* for more information.

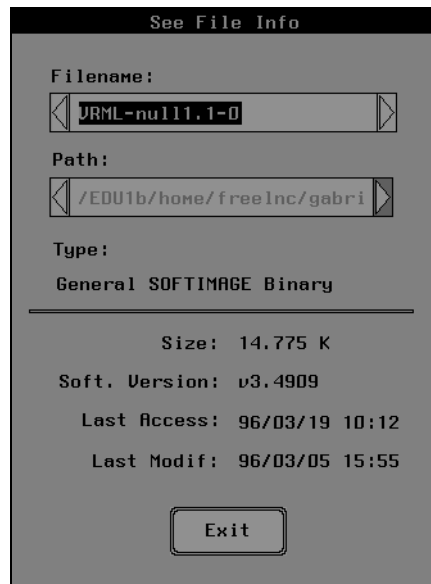
Viewing General Information



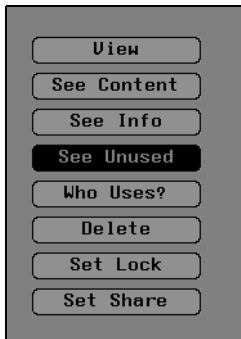
You can view more general information about a selected file, including its size, the version of SOFTIMAGE 3D with which it was created, and when it was last accessed and modified. You can also see information about files outside the database.

1. Choose the **Get → DB Manager** command.
2. Select a file name.
3. Click the **See Info** button.

The See Info dialogue box is displayed.



The full file name is displayed in the **Filename** text box. The **Path** text box displays the path name of the file. Beneath it is the type of file (for example, General SOFTIMAGE Binary), its size, and the version of SOFTIMAGE 3D in which it was created. The date and time the file was last accessed and last modified are also displayed.



Viewing Unused Files

You can highlight files which are not currently used in any scene. This is useful for identifying unused files that you might want to delete (see *Deleting Files* on page 145).

1. Choose the **Get → DB Manager** command.
2. At the Chapter level, select a chapter name.
The files in the selected chapter are displayed.
3. Click the **See Unused** button.

The **See Unused** button is not available for files in the following chapters: **SCENES**, **PICTURES**, and **RENDER_PICTURES**.

The files which are not currently used in any scene are highlighted.

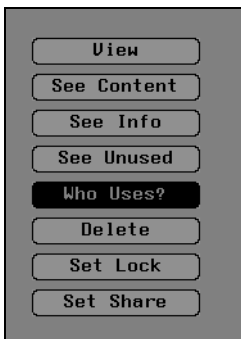
Viewing Where a File is Used

You can also find out the name of any scene in which a selected file is used.

1. Choose the **Get → DB Manager** command.
2. At the File level, select a file name.
3. Click the **Who Uses?** button.

It is not available for files in the following chapters: **SCENES**, **PICTURES**, and **RENDER_PICTURES**.

The **Who Uses?** dialogue box is displayed, listing the name of the scene(s) in which the selected file is used, as well as its version number and the date and time of its creation.



Adding and Extracting File Icons

Icons are created automatically for picture files. For other files, you can assign an icon to a file in two ways:

- Save a picture file with the same file name and an **.icn** suffix and deposit it in the same directory as the scene you want to represent. If you do not specify the version and substitution numbers for the file, the same icon is used for all versions of the file. Each saved version of a scene will be represented by the same icon.
- Use the **addicon** standalone program to put an icon in the desired file (binary files only). This standalone program adds an icon to a SOFTIMAGE 3D file so that in icon mode, the browser displays this

icon instead of the default. For example, you can add the **mosaic.icn** file as an icon by typing:

```
addicon mosaic
```

- Use the **extracticon** standalone to verify whether a file has an icon in it. If an icon is found, it is saved as a picture file. For example, to see if the **jojo.pic** file already has an icon, and to call that icon **fish** if it is found, type:

```
extracticon jojo fish
```

For more information about these standalones, see the *Standalones* HTML file on the *On-Line Documentation CD*.

C H A P T E R S E V E N

Glossary of Terms

Glossary

The following is a glossary of terms used in SOFTIMAGE 3D.

2D textures See *Textures*.

3D Three dimensional. A concept used in modelling and animation in which shapes are defined in terms of three axes (x, y, and z) used to represent width, height, and depth, respectively.

3D textures See *Procedural textures*.

Actor A term often used for an animated character.

OR

Actor is also the module in SOFTIMAGE 3D that lets you create characters made from articulated chains. See *Articulated chains* and *Inverse kinematics*.

Adaptive supersampling A way of antialiasing the surface of an object by decreasing the oversampling rate for those pixels that do not require the oversampling. Compare to *Barlett filter*. The results of adaptive supersampling are slightly more localized than a Barlett filter, and the computing time is often shorter.

Algorithm A rule or procedure for solving a mathematical problem that usually involves repeating an operation.

Aliasing “Jagged” images created by unfiltered angled lines being presented upon the raster lines. These effects include staircasing along diagonal lines, moire effects in checkerboards, and temporal aliasing (strobing) in animated scenes. Aliasing is caused by limited display resolution.

Alpha channel The alpha channel is one of the four channels (or components) of information with each pixel of an image. It specifies the transparency of each pixel, allowing portions of one image to show through another when they are overlaid. The alpha component is typically output as a separate component signal. Other channels or components are Red, Green, and Blue.

Ambient A term used to describe the lighting or illumination in a scene which is assumed to come from any direction and is thus independent of the presence of objects, the viewer position, or the actual light sources in the scene.

Amplitude Typically describes the strength of an electronic signal, measured by its waveform's height. Also used to describe the strength of deformation (envelope) in the Actor module.

Animatics Preliminary animated versions of a final video or film presentation.

Animation The movement of elements through time and space. Also, the process of creating and recording images that change over time. In SOFTIMAGE 3D, almost any element or parameter can be animated.

Antialiasing A method of smoothing out and sharpening rough or fuzzy edges of graphics to produce a more polished look. This is done by a mathematical process that subsamples pixels.

Articulated chain A hierarchy composed of a chain root, a number of joints, and an end effector. It is also called a kinematic chain because it uses *inverse kinematics*. Articulated chains are used to animate objects and are invisible to the renderer.

Aspect ratio The ratio of height to width of a rectangular area such as a screen, window, or pixels. Images become distorted if forced into a different aspect ratio during enlargement, reduction, or transfers.

Axis, axes A straight line indicating the origin and direction of an object in space. By using two axes, a plane is determined: for example, the xy plane is defined by placing the x and y axes so that they intersect at the global centre (point of origin). Three dimensions are determined by using three axes: x, y, and z.

Background image In compositing, the background image is the one on top of which other images are placed. In 3D environments, this is an image, colour, or environment rendered behind all objects in a scene.

Bartlett filter A way of antialiasing the surface of an object using a static oversampling algorithm based on a variable width box filter. As you increase the filter level, more of the adjacent subpixels samples are taken into account while filtering a pixel. Compare with *Adaptive supersampling*. The results of a Bartlett filter is a slightly softer looking image than adaptive supersampling.

Bitmap A computerized picture made up of dots (pixels). The images are mapped onto the screen directly from the corresponding bits in memory (hence the name). Each pixel in a bitmap is converted into data representing the xy position of the pixel, as well as its colour.

Blending The amount that the materials and 2D or 3D textures are combined together on an image to change its surface appearance.

Blinn shading A method of computing the shading of three-dimensional surfaces developed by James Blinn. It uses four characteristics: diffusion, specularity, eccentricity, and refractive index. It is similar to Phong shading, except that it creates a slightly different highlight that is useful for rough or sharp edges. See also *Lambert* and *Phong shading*.

Blurring Image manipulation effect which smooths the appearance of an image by decreasing its sharp edges. You can also create motion blur for a moving object in SOFTIMAGE 3D, in which it is blurred to create the appearance of movement.

Brightness The degree of overall visual intensity provided by a reproduced visual image.

B-Spline A particularly smooth class of approximating curves. B-Splines are fully approximating: such a curve generally passes through its control points if several of them are in the same location.

BSP tree Binary Space Partitioning tree. A technique for subdividing 3D space to reduce the number of computations required for intersection computation during rendering.

Buffer A memory area in which information is stored and then retrieved later.

Bump mapping The process of creating and displaying a texture during modelling or animation where the values of the texture are used to simulate the bumpiness of an objects' surface. You can also change the actual geometry of an object by using *displacement mapping* if you render with the mental ray renderer.

Camera The position from which a scene is viewed and rendered. A camera is a combination of its position, direction, rotation, and field of view. The camera's point of view is represented in the Perspective window.

Cartesian space A two-dimensional grid used to represent three-dimensional space. It is the Euclidean/Cartesian mathematical representation of space using a coordinate system based on three perpendicular axes (x, y, z) intersecting at one point. This point is called the *origin*. See also *XYZ Axes*.

CD-ROM Compact Disc-Read Only Memory. A format for storing and distributing digital media.

Chain See *Articulated chain*.

Channels The drivers that allow you translate the movement created with connected input devices (such as a mouse, joystick, or receptors attached to somebody's body) to function curves in SOFTIMAGE 3D.

Chapters Directories within a database in which your files are stored. In SOFTIMAGE 3D, these are predefined chapters sorted by the types of elements in a scene, such as MODELS, PICTURES, RENDERED_PICTURES, LIGHTS, CAMERA, etc.

Clicking The act of quickly pressing and releasing a mouse button.

Cluster A defined group of points for the purpose of being manipulated. A cluster has no geometry of its own, but refers to other geometry. It can have a centre to make for easier manipulation.

Colour A property of light defined by the frequency of the radiation detected by the eye. The magnitude of each frequency component of the light determines the exact hue detected by the eye.

Colour value The relative lightness or darkness of a colour.

Composite To form an image by combining two or more images.

Compression A process where information content is reduced to a smaller quantity of information for processing and storage. The information must be decompressed or expanded in order to be recovered. Data that has been compressed suffers some loss or degradation from the original source.

Constant shading This type of shading considers the object as being evenly lit. Only the diffuse shading area is used to colour the object. Reflectivity, transparency, refraction, and texture can be applied to an object shaded with Constant.

Constraints A way of animating one object by using the animation of another to which it is constrained. There are predefined constraints in SOFTIMAGE 3D, such as to constrain by position, direction, rotation, tangent, up vector, etc. You can also create your own constraints between object's using mathematical *expressions*.

Contiguous Being in contact with or adjacent to one another. For example, a surface is contiguous with another surface when it shares an edge.

Contrast The degree of definition between lit and shadowed areas in a visual image.

Coordinate system A way of describing the placement of a point in space. In SOFTIMAGE 3D, this system defines placement using three intersecting axes. See *Cartesian space*.

Cursor An arrow, I-beam, cross-hair, or other shape on the screen showing the current location of the mouse cursor.

Curve A collection of straight or curved line segments attached by their ends, or knots, to make a curve. The look of the resulting curve varies depending on the manner of interpolating the control points. In this document, the term *curve* refers to Linear, Bezier, Cardinal, B-Spline, and NURBS curves.

Cycle A short series of frames which may be played over and over to create the illusion of continuing, repeated action.

Database A large directory in which subdirectories called *chapters* are stored. Chapters contain *files*. Databases typically contain similar types of information, such as a database of textures, materials, rendered pictures, or scenes.

Data rate The speed at which a device can provide information (measured in kilobytes per second). Faster data rates permit larger frames of information and more frames per second.

Decompression Restoration of an image to its original size after it has been compressed.

Default The initial setting of a menu command or dialogue box parameter: the setting you get when you first start using the system.

Deformation A way of deforming objects by associating another object (curve, surface, lattice, shape) with it that is used as a deforming tool. The deformation depends on two factors: the shape of the deforming tool and the scaling, rotation, or translation of the deformed object.

Depth cueing The process of reducing the apparent sharpness of an object the further away it is from the viewer. This often enhances the perception of depth.

Depth fading The process of varying colours in a scene depending on the distance from the camera.

Dialogue box A box containing options (parameters) that can be set to perform a specific action.

Diffusion A modelling term to describe light which is reflected equally in all directions from a point on the surface of an object. It does not depend on the observer's position relative to the surface point. This can be thought of as the “unshiny” property of a surface. The diffuse component carries the colour of the surface; the specular component appears as a highlight.

OR

The decreasing of the sharpness of an image without changing its focus. Diffused images seem softer, less clearly defined, and farther away. Diffusion is often used to create a better blending of images.

Directory A “folder” for grouping files. In SOFTIMAGE 3D, these are known as *chapters* within a larger directory called a *database*. In operating systems, directories are presented as file folders in which files are stored.

Dodecahedron An 3D object having 12 plane faces. A regular dodecahedron has pentagon faces, and a rhombic dodecahedron has rhombus faces.

Dolly To move the camera forward (dolly in) or backward (dolly out).

DopeSheet Similar to an exposure sheet in traditional animation, it is used to manage animation sequences. Frames are displayed as a sequence of “cells” with keyframes marked in a different colour for easy identification. The DopeSheet makes it simple to cut, copy, and paste sequences of animation, play only a section of an animation sequence, and activate or deactivate an animation sequence.

Dragging To click and hold down the mouse button while moving the mouse. A common use for dragging is moving an object from one location to another.

Easing (Ease-in, Ease-out) The reduction in the acceleration or deceleration of motion to present a smoother, more continuous movement. The shape of a function curve can reflect this when it is set to a Spline interpolation type.

Effector The last point in an articulated chain displayed as a null. When effectors are moved on inverse kinematics chains, the orientation of joints are automatically adjusted.

Envelope An object or hierarchy that is assigned as a “skin” to one or more articulated chains to create a model that can be rendered.

Envelopes can be flexible or rigid; they can be the parent or the child of the chain (or a joint of a chain); they may or may not be weighted to specified joint according to a percentage weighting.

Expressions Mathematical expressions which allow you to change the animation of an object. You can also create constraints between objects using expressions, or create conditional animation.

Expressions are very powerful for creating precise animations.

Extrude To make a three-dimensional surface or shape by giving a two-dimensional object depth in space. The extrusion will have the curve or face as its cross-section.

Face A planar object made from a closed curve. Faces can be any shape and can contain holes.

Faceted In modelling, the appearance of roughness or texture to an otherwise smooth surface. More specifically, the use of line segments to represent the model boundaries of curved objects. This saves time in modelling, but reduces image quality when flat or Phong shading is used. Advanced rendering techniques can usually overcome these problems.

File Information stored on with a name in a chapter (directory). A file can contain any sort of information, such as text, or information about a scene, textures, or animation.

Flexible envelope. See *Envelope*.

Flipbook A utility that displays a rendered frame or sequence of rendered frames on the screen.

Font type Characters (letters, numbers and symbols) belonging to a specific type face in a given weight, style, and size (for example, Helvetica bold).

Foreground image The image closest to the camera.

Fractals A type of shapes that are created by fractal geometry, which applies recursive subdivisions to a basic form while introducing a random factor at each subdivision.

Frame A single complete picture of animation. A frame is a static image which, when combined with other static images sequentially, gives the illusion of motion. For example, two video fields make up one video frame, and one film frame is 1/24th of a film second.

Frame buffer The memory a computer uses to hold one or more frames for later use.

Function curve A graphic representation of the relationship between time and the parameter values. Function curves are represented as a curve with points in an xy grid and allow you to edit different parameters, such as animation.

Global coordinates A coordinate system that is used to locate an object in relation to a world origin. See also *Cartesian space*.

Hidden Any element that is not shown in the current rendering of the scene, but still exists.

Hierarchy A graphical way of defining the elements in relationship to each other (usually using a parent-child or tree analogy). For example, this relationship means that the movement of a “parent” affects the movement of the “child,” but you can move the child by itself as well.

HLS Hue, Luminance, Saturation, three components of the HLS colour model. Hue describes the tint of the colour (red, yellow, etc.), saturation describes the amount of pigment in a hue (red vs. pink), and luminance describes the brightness of the colour (cherry red vs. burgundy).

HSV Hue, Saturation, Value. Same as HLS, except Value describes the brightness, or amount of white included.

Hue One component of colour. Hue describes the tone or tint of a colour (red, yellow, blue, etc.).

Icon A graphical element or image used to represent an object or action.

Icosahedron A 3D object that has 20 sides whose faces are triangular.

Image resolution The number of pixels in the horizontal and vertical directions.

In-betweening See *Interpolation* and *Keyframe*.

Instance A “virtual replicate” of an object or hierarchy which references the master from any location on the screen. Modifications to the master are immediately reflected in all its instances. Contrast with a *duplicate* of an object.

Interpolation Generally, the process used to estimate an unknown value bracketed by two or more known values. In animation,

interpolation is the process of synthesizing frames between two keyframes of a sequence.

Inverse kinematics The movement and rotation of an articulated chain in accordance to the location of the end-effector of a chain. See *Articulated chains*.

Joint A link in an articulated chain. It is composed of a point of articulation and a stretched octahedron. Joints are connected end to end with the local x-axis pointing toward the next joint. They can be rotated at the point of articulation about the three axes. See *Articulated chains* and *Inverse kinematics*.

Joint model An object that is parented to a single joint of an articulated chain. Once assigned to a joint, the joint model follows the movement of the joint.

Keyframe A particular frame used as a guide for creating subsequent actions. The state (size, location, etc.) of an item at a point in time is specified by a keyframe in an animation. In-between frames are then created by the system by interpolation. See also *Interpolation*.

Lambert shading One of the first shading models used in computer graphics, based on the application Lambert's cosine law, which deals with the intensity of reflected light, discovered in the 16th century by Johann Lambert, a physicist and astronomer. This shading type shades the object smoothly, creating a matte surface with no specular highlights. Two illumination areas are defined on the object's surface: ambient and diffuse. Lambert allows reflectivity, transparency, refraction and texture to be applied to the object. See also *Blinn* and *Phong shading*.

Lattice A bounding box made up of points. Lattices let you deform an object or a group of objects linked in a hierarchy when the lattice surrounds the object. Every point on a lattice is associated with a number of points on the object: when a point on the lattice is moved, the points on the object are also moved thus changing the object's shape.

Light A source of illumination in a scene. A light can be assigned an intensity, colour, position, etc. These are the different types of light: infinite, point, spot, and sun.

Local coordinates An object's own reference point or origin, which is its own centre, as compared to global coordinates which includes an origin for all objects in the world space. See also *World*.

Loop A continuous playback of an animation segment.

Luminance The black and white information (brightness, sharpness, and contrast) encoded in a colour. The amount of luminance contained in a colour is directly proportional to the amount of light intensity.

Manipulation modes Allow you to perform transformation on different types of elements in a scene: objects (OBJ), tagged points (TAG), centres (CTR), 2D texture supports (TXT), or polygons on a polygon mesh object (POL). These modes are found in the lower-right corner of the SOFTIMAGE 3D display.

Map Making one image conform to the size, shape, and/or texture of another image.

Material Attributes of the object that define its surface qualities, such as colour, areas of illumination, transparency, reflectivity, refraction, etc. You can add a 2D or 3D texture “on top” of the object’s material and blend them together.

mental ray A renderer type that allows you to do sophisticated rendering of a scene. Many attributes of a scene can be defined during the rendering process with mental ray. See also *Shaders*.

Menu bar Located on either side of the display windows, the menu bars contain the menu cells.

Menu cell A menu cell contains different commands for actions which can be performed in the software.

Message box A box generated by SOFTIMAGE 3D that appears when a choice must be made, or an error or other condition must be acknowledged. A message box contains an explanatory message and one or more selections.

Meta-clay An object defined by density. It is a field of matter that comprises a solid core surrounded by a semi-solid influence zone that decreases in density with distance from the centre until it reaches a defined edge.

Modelling Geometric representation in three dimensions.

Module Different parts of the SOFTIMAGE 3D interface that reflect certain types of actions that you perform, such as modelling, animating, creating characters, defining and rendering the surface, and using tools related to the animation process. The modules available are Model, Motion, Actor, Matter, and Tools.

Monochrome An image with a single hue. All variation in the image is based on the value, or luminosity. Typically, a monochrome image is in grey-scale only.

Normals Vectors at right angles to the plane or surface of an object. Normals indicate the visible side of the object, its orientation to the viewer. In SOFTIMAGE 3D, an object's normals are represented by thin blue lines. By default, the renderer shows only the side with the normals.

NTSC National Television Standards Committee. The organization that originally defined what a standard video signal is. It is now usually used in reference to a video signal that conforms to the NTSC guidelines. The NTSC signal is a composite video signal of 525 scan lines, interlaced, 60 fields per second (30 frames per second) with a bandwidth limited to 4.2MHz so that it will fit into a 6MHz broadcast television channel without interfering with adjacent channels. This standard is used in North America and some countries abroad. See also *PAL* and *SECAM*.

Null An object with only a centre and no geometry (control points), meaning that it is invisible in a rendered scene. Typically it is used as a “dummy” object, such as a parent of a hierarchy, or as a constraint. By default, a null is displayed in the windows as three intersecting lines.

NURBS Non-Uniform Rational B-spline. A type of curve for which the delta (difference) between successive knots need not be expressed in uniform increments of one. This non-uniformity, and the presence of an extra parameter “weight” for each control point, distinguish NURBS from other curve types.

Object Basic building block in modelling. An object is a mathematical description of a two- or three-dimensional shape, such as a sphere, cone, cube, torus, circle, curve, etc. Primitive objects are predefined objects that you can use to adapt and manipulate.

Octahedron A 3D object with eight sides.

Origin In Cartesian coordinates, this is the point in which the x, y, and z axes intersect. See also *Cartesian Space* and *XYZ Axes*.

Orthographic window A parallel projection window to show a scene from any plane. The Ortho window in SOFTIMAGE 3D lets you orbit the camera to see a scene from any angle while maintaining its parallel projection view so that depth is not perceived.

PAL Phase Alternate Line. The video signal standard used in Western Europe and the United Kingdom. Video products destined for that area must be compatible with this standard as opposed to NTSC standards. PAL is based on the 50Hz power system and displays 625 scan lines interlaced at 50 fields per second (25 frames per second). Conversion between PAL and NTSC or SECAM is possible, but the standards are incompatible. See also *NTSC* and *SECAM*.

Palette A collection of colours available for materials and textures. You can use predefined palettes or create your own.

Pan A camera technique in which the focal point is adjusted by pivoting the camera direction, usually slowly across a scene.

Parameter A property whose values determine the behaviour of something. Parameters are set in dialogue boxes in SOFTIMAGE 3D.

Parenting See *Hierarchy*.

Patch An object made of parametric cubic curves. A patch is formed by joining points using curves to create a curved, free-form surface.

Path The prescribed path along which an object is animated.

OR

The directory path to a certain file in the operating system's directory structure. Path names begin with a slash character (/) to signify the top or root of the file system.

Penumbra The secondary "fringe" area of a shadow. See *Shadow*.

Perspective A traditional art method of creating the illusion of three-dimensional form and distance on a two-dimensional surface. The *Perspective window* is a window type that provides a three-dimensional view of the scene that indicates depth.

Phong shading A method of shading used in modelling the surfaces of three-dimensional objects developed by Phong Bui-Tuong. The Phong model uses three characteristics – diffusion, specularity, and ambience – to create a smoothly curving surface with light-reflecting highlights. See also *Blinn shading* and *Lambert shading*.

Picking A way of selecting an object when in a certain mode of action. You click on an element without using the space bar as you do for selecting.

Pixel A discrete unit of picture information meaning *picture element*, the smallest unit of raster graphics. The resolution in a computer-

generated digital image is directly related to the density of the pixels that make up the image.

Point A fundamental building element of an object in 3D space with an xyz location. Point coordinates are the minimum information from which the geometry of an object can be calculated.

Polygon A modelling term describing a planar, non-intersecting set of contiguous line segments.

Polygon mesh An object made of polygons, which are closed planar surfaces. Polygon mesh objects are versatile because polygons can be added to the shape and manipulate its points. They are also less “costly” in terms of rendering time.

Primitive One of several predefined 2D or 3D objects available in SOFTIMAGE 3D in the **Get** menu cell. These include the 2D arc, circle and square, and the 3D sphere, cube, tetrahedron, torus, and so on. Primitives can be used “as is”, or modified.

Procedural texture A texture created by a computer procedure with a set of parameters instead of a picture file. This can be either a 2D or 3D texture, but in SOFTIMAGE 3D, these are always 3D textures.

Quick Stretch A method of deforming an object’s shape by using its velocity or acceleration. This method of deformation is especially useful to created cartoon-like actions, such as squash-and-stretch actions.

RAM Random Access Memory. A computer’s source of accessible memory to run applications and process data. Not to be confused with ROM (Read Only Memory) which is a computer’s storage space, such as a hard disk or CD-ROM.

Raytracing A computation-intensive rendering method that plots a view of every pixel in a scene through a virtual camera’s lens. It takes into account the location, strength, and quality of all light sources, along with the surface characteristics of each object in the scene. Shiny objects reflect other objects, and realistic shadows are cast. Raytracing bounces the light through the model rather than terminating light values when they first intersect an object. The colour and direction of light is changed by the reflective and spectral properties of the object.

Reflected light Light which strikes an object and is thrown back instead of being absorbed by a surface.

Reflection map A method of mapping an image onto an object in which the image is a rendering of the object's environment. The resulting mirror effect adds realism and takes much less time to calculate than ray tracing.

Reflectivity A surface characteristic used to determine colour intensity in lighting models which therefore helps determine how the surface looks.

Refraction The bending of light as it passes through a transparent or translucent object.

Refractive index The degree to which light bends when passing through a transparent or translucent object. For reference, the refractive index of a vacuum is 0.0, and water is 1.0.

Refresh To update information shown on the monitor.

Rendering The process of creating a final image or sequence of images from a scene description. The process of taking a geometric model, a lighting model, a camera view, and other image generation parameters such as maps and computing an image in raster. Rendering techniques such as shading, light source, or depth cueing are sometimes used to make the image look realistic. There are various types of renderers in SOFTIMAGE 3D including the default SOFTIMAGE renderer, mental ray, depth cue, wireframe, hidden line, ghost, hardware, and rotoscoping.

Resolution The number of horizontal versus the number of vertical pixels (as in 640 x 480 or 1024 x 768) that can be displayed on a monitor. In analog video (such as NTSC), resolution is described as the number of scan lines that can be displayed on a monitor. Horizontal and vertical resolution are not always equal.

RGB The abbreviation for red, green, and blue, the three additive colour components used to create any colour by mixing them. Computer monitors use this concept to create the various colours they display. The number of colours displayable is limited only by the number of graduations possible in each primary colour. In digital systems, there is a finite number limited by the bit depth of the image and the ability of the graphics adapter and monitor to differentiate the different colours.

Rigid envelope See *Envelope*.

Rolloff The rate at which apparent light intensity decreases as a function of angle away from a spotlight's direction. A value of zero

means that the light intensity is constant over the area illuminated. See also *Specular Rolloff*.

Root The parent node of any articulated chain. Action affecting the root affects the rest of the chain. See also *Inverse kinematics*.

OR

The root directory in the operating system's directory structure. Path names begin with a slash character (/) to signify the top or root of the file system.

Rotate A transformation turning an object around an axis (x, y, z, or any combination of them) to change its orientation.

Rotoscoping A technique in which individual frames of a video or film are imported into SOFTIMAGE 3D and "traced."

Saturation The degree to which a colour is diluted by luminance, or white light (for example, red is more saturated than pink). A colour that is 100 percent saturated contains no white light.

Scaling Changing of the size of an object without changing its location or orientation.

Scene A collection of objects, animation, lights, materials, a camera, etc. When you save a scene, you also save the particular attributes of each of these elements.

Schematic window Shows objects in a scene in their hierarchical structure. It also shows the relationship between elements such as lights, cameras, material, animation, etc. See *Hierarchy*.

SCSI Small Computer System Interface. The standard interface for computers and peripheral devices.

SECAM Sequential Couleur a Memoire. The television broadcast standard for France, the former USSR, and various eastern European countries. Like PAL, SECAM is based on 50Hz power system, but uses a different encoding process and displays 819 lines interlaced at 50 fields per second. SECAM is not compatible with NTSC or PAL, but conversion between the standards is possible. See also *NTSC* and *PAL*.

Segment A portion of a curve or an animation sequence.

Selecting A way of making a certain element in the scene an active one so that all subsequent actions are performed on it. More than

one element can be active at the same time. You can select an element by holding down the space bar and then clicking on it.

Sequence A series of images, usually in an animation.

Server Bar The horizontal bar located at the top of the display naming SOFTIMAGE 3D and the different modules: Model, Actor, Motion, Matter, and Tools.

Set A selection of objects that are grouped together, but do not have a hierarchy relationship.

Shader A set of parameters grouped together to define a surface in a certain way. These are to create effects during the rendering process using the mental ray renderer. There are different types of shaders for different things: light, lens, material, 2D texture, 3D texture, volume, and output.

Shading The difference in colour across a surface is due to different surface characteristics and lighting. This process gives objects a sense of depth. Most sophisticated shading techniques provide smooth transitions on curved objects and let objects cast shadows.

Shading model The method used to create the intensity and colour of objects in a scene. These are related to the areas of illumination on a surface: ambient, diffuse, and specular. The different shading models in SOFTIMAGE 3D include Phong, Blinn, Constant, and Shadow Object.

Shadow An area that is totally or partially obscured from light by an object. A shadow is composed of an *umbra* area (the main shadow when an object completely blocks the light) and a fringe *penumbra* area (when the object only partially blocks the light).

Skeleton A group of articulated chains grouped together in a hierarchy. See *Articulated chains*.

Skin A surface that fits or “envelopes” any number of articulated chains. See *Envelope*.

Smoothing The process of eliminating the “jaggies.” Also known as *antialiasing*.

Solid texture Also called a *3D texture*. A texture that gives the appearance of an object that has been carved from a block of a substance. Solid textures have no edges, but provide a continuous-looking appearance.

Specular The area of reflection of light off a shiny surface. Specular reflection depends on the position of the camera, whereas diffuse light does not.

Spreadsheet window A way of visualizing elements in a scene using rows and columns as in a spreadsheet. You can perform queries and sort elements in the Spreadsheet window. Queries help you sort through a scene's many elements because a query only displays the element type you requested.

Status bar The line at the bottom of the screen where mouse information, prompts, warnings, and the time line are displayed.

Supra keys These are keyboard shortcuts equivalent to specific operations in SOFTIMAGE 3D.

Surface A 2D parametric shape that defines the boundary or skin of an object in three dimensions. Examples of surfaces are patches and NURBS surface objects.

Surface of revolution A modelling term defining an object made by rotating a polygon or other shape around an axis. Also known as a *sweep*.

Swift keys These are keyboard shortcuts that you define to be equivalent to specific operations in SOFTIMAGE 3D.

Tangent A vector that determines the slope of a curve or a surface at a given point.

Tessellation The way that the surface of an object is divided into triangles for the purpose of rendering.

Tetrahedron A 3D object with four sides.

Texture A modelling term describing a 2D pattern that is applied to the object surface during the shading computation. The advantage to texture is that the complexity of appearance does not have to be modelled in the object geometry. In SOFTIMAGE 3D, these are called 2D textures.

Texture mapping The way a picture file is mapped onto an object to be used as a 2D texture. When a picture is mapped onto an object, the correspondence between the picture's pixels and points on the object's surface is calculated. You can map a picture file to the object's xy, yx, or yz coordinates. You can also map cylindrically, spherically, or by an object's uv coordinates.

Toggle A command or option that is active or inactive. Each time you select it, it inverses the current state.

Torus A doughnut-shaped 3D object. It is the locus of all points on a circle swept around a larger orthogonal circle.

Tracking To pan the camera to follow the movement of an object.

Transform To rotate, scale, and/or translate an object to transform its orientation, size, and location, respectively.

Transformation modes Allow you to transform (scale, rotate, or translate) different elements in different ways, such as uniformly, on each axis, locally, globally, etc. Depending on the *manipulation mode* you select, you can transform objects, tagged points, centres, 2D texture supports, or polygons on a polygon mesh object. Transformation modes are found above the manipulation modes in the lower-right corner of the SOFTIMAGE 3D interface.

Translation The changing position of an object without changing its shape, size, or orientation.

Transparency The amount of light that travels through a surface. Complete transparency allows all light through; no transparency makes the surface completely opaque.

Transparency map A texture map that varies the transparency and transparent colour across a surface.

Trimming Using any closed curve to “trim” a NURBS surface, an effect similar to using a cookie-cutter to cut out shapes. The trim region(s) can be kept or removed.

Umbra The main area of a shadow. See *Shadow*.

Value Lightness or darkness of a colour. A component of the HSV (Hue, Saturation, Value) colour model.

Vertex, vertices The point (or points) of a network that serves as a connection for another line. This is how polygon mesh object surfaces are described.

Viewing area This is the workspace of SOFTIMAGE 3D which uses four viewing windows. By default, three of the windows are parallel projection windows (Top, Right, and Front windows) and one window is a Perspective window. You can also change these windows to be Schematic, Fcurve, Ortho, Spreadsheet, or Dopesheet.

Wireframe An image made up of the edges of objects, and drawn as lines resembling a model made of wire. This image displays tracing features such as edges or contour lines without attempting to remove invisible or hidden parts, or to fill surfaces.

XYZ axes In Cartesian space, these are the three axes which represent three-dimensional space. The x-axis is horizontal space, the y-axis is vertical space, and the z-axis is depth. The point at which these three axes intersect is called the *origin*. All three axes have positive and negative values, depending on which side of the origin they are.

Zoom A zoom increases the length of the camera lens, magnifying an aspect of a scene. The results of a zoom and a dolly are different. A dolly physically moves the camera closer to the point of interest without changing the length of the lens; perspective distortions peculiar to the lens length may result at the edges of the scene. Zoom increases the size of the point of interest by increasing the lens length; depth is not as well perceived as with a shorter lens.

Index

Symbols

.pic files 136
 .rsrc files 109
 .sks files 116

A

Accelerator keys 109
 Activating menu cells 47
 addicon standalone 153
 Animation
 editing with the Spreadsheet window 94
 files 137
 playing 56
 preferences 120
 time line 56
 viewing 56
 Aspect ratio 70
 Automatic saving 103, 139
 Axes 38

B

Backup database 103
 Browsers 52
 Browsing outside databases 131

C

Camera 41, 66
 aspect ratio 70
 constraining up vector 69
 dollying 69
 framing elements 67
 interest 66
 memorizing settings 71
 orbiting 68
 orthographic 68
 resetting 67
 rolling 69
 selecting 66
 setting up 67
 showing 66

 tracking 69
 zooming 67
 Cartesian space 38
 origin 39
 transformations in 40
 Changing
 databases 125
 default database 128
 keyboard layout 117
 modules 46
 mouse setup 118
 window layout 104
 windows 62
 Chapter.rsrc file 133, 134
 Chapters 133, 134
 copying 133
 deleting 133
 files 135
 moving 133
 selecting 133
 Check boxes 50
 Choosing
 aspect ratio 70
 menu cell commands 47
 menu cells 47
 see also *Selecting*
 Clauses, see *Spreadsheet window* 86
 Cleaning up hierarchies 83
 Collapsing hierarchies 81
 Colour box 106
 Colours
 desktop 107
 Schematic window 82
 wireframe colour box 106
 Commands, menu cell 47
 Coordinates
 Cartesian space 38
 global and local 39
 system 38
 Copying
 chapters 133
 files 143
 Creating

- databases 126, 127
- Swift keys 114
- system databases 125

Customizing workspace, see *Preferences*

D

- DatabaseDir.rsrc file 124
- Databases 124
 - backup 103
 - browsers 52
 - browsing outside 131
 - changing 125
 - default 128
 - chapters 133
 - copying files 143
 - creating 126, 127
 - dbtools standalone 132
 - default 124, 128
 - deleting 128
 - deleting files 145
 - files 135
 - linking 129
 - moving files 144
 - quick access entries 131
 - searching for files 146
 - sharing files 147
 - sorting files 149
 - system 125
 - unlinking 130
- DatabaseSys.rsrc file 125
- dbtools standalone 132
- Default database 124, 128
 - changing 128
- Deleting
 - chapters 133
 - databases 128
 - files 145
 - Swift keys 116
- Depthcue view mode 76
- Desktop colours 107
- Dialogue boxes 49
 - browsers 52
 - options 50

- sliders 51
- text boxes 50

Display 35, 45

- browsers 52
- Cartesian space 38
- colour box 106
- colours 107
- dialogue boxes 49
- menu bars 47
- menu cells 47
- options 50
- planes 38
- playback box 56
- server bar 46
- sliders 51
- status bar 55
- text boxes 50
- windows 59
- XYZ coordinate system 38

Displaying

- camera 66
- elements in scene 77
- objects 77
- unused files 153
- window elements 105

Dolly camera 69

E

Editing

- Spreadsheet window 84
- Supra keys 111
- Swift keys 116

Elements

- camera 41, 66
- displaying 77
- hiding 78
- information 81
- light 42
- loading 142
- material and textures 42
- objects 41
- position in hierarchy 79
- renaming 143

- saving 138
- selecting and deselecting 85
- window 105

Emergency reset 37

Emergency saves 103, 140

Environment variables, emergency save feature 103

Exiting SOFTIMAGE 3D 37

Expressions, queries 90

extracticon standalone 154

F

Field guide 105

File management

- chapters 133
- databases 124
- see also *Databases*
- see also *Files*

Files

- .pic 136
- .rsrc 109
- .sks 116
- adding icons 153
- animation 137
- Chapter.rsrc 133, 134
- copying 143
- DatabaseDir.rsrc 124
- DatabaseSys.rsrc 125
- deleting 145
- extracting icons 154
- information 152
- keyboard setup 116
 - loading 117
- locking 150
- making distinct 148
- managing 123
- moving 144
- names 135, 143
- picture 136
- prefixes 135
- saving 137
- searching for 146
- selecting 135

- setup 102
- sharing 147
- sorting 149
- suffix 135
- unlocking 150
- unused 153
- version numbers 135

Flipbook 56

Framing elements in windows 67

Freezing windows 72

G

Ghost view mode 76

Ghosting objects in scene 78

Global coordinates 39

Glossary 157

Grid in windows 105

H

Hardware shading 75

Hiding

- elements in scene 78
- window elements 105

Hierarchies

- collapsing 81
- links 80
- positioning elements 79
- Schematic window 79

I

Icons 153

- adding 153
- extracting 154
- window resizing 64

Information

- elements 81
- files 152
- scene, see *Status bar*

Interest, camera 66

K

Keyboard 108
 accelerator keys 109
 layout 117
 setup files 116
 loading 117
 shortcuts 108
 Supra keys 110
 Swift keys 113

L

Layout
 keyboard 117
 window 104
Letter identifiers in windows 59
Light 42
Linking databases 129
Links in hierarchy 80
Loading
 elements 142
 keyboard setup file 117
 scenes 141
 setup files 102
 SOFTIMAGE 3D 36
 Spreadsheet queries 94
Local coordinates 39
Locking files 150

M

Magnet option 105
Main query *see Spreadsheet window* 86
Managing files 123
 chapters 133
 databases 124
 see Files
Manipulation modes 53
Material
 file icons 153
 in a scene 42
Math operations in text boxes 51
Matte view mode 76
Memo Camera option 71

Memory

 camera settings 71
 menu cell 48
Menu bars 47
Menu cells 47
 choosing 47
 commands 47
 keyboard shortcuts 109
 memory 48
 menu bars 47
 repeating previous command 48
 subcommands 48
Models, saving 139
Modes
 Schematic window 82
 view 74
Modules
 selecting 46
 server bar 46
Mouse
 changing setup 118
 information line 55
 selecting 118
Moving
 chapters 133
 files 144

N

Naming element and scene files 143
Number of saved versions 133

O

Objects 41
 displaying 77
 hiding 78
Opening
 menu cells 47
 SOFTIMAGE 3D 36
Operations, undoing and redoing 54
Options
 check boxes 50
 radio button 50
Orbiting camera 68

Origin, global and local 39

Orthographic camera 68

P

Parallel projection windows 60

 orthographic camera 68

Perspective window 60

Picking 118

Picture files 136

Planes, XYZ 38

Playback box 56

Playing an animation 56

PostScript, selecting a window for output 73

Predefined query, see *Spreadsheet window*

Preferences

 animation 120

 desktop colours 107

 saving 103

 setup files 102

 Spreadsheet window 93

Prefixes 135

Q

Query, see *Spreadsheet window*

Quick access entries, databases 131

R

Radio button 50

Redoing operations 54

Relations 87

Renaming elements or scenes 143

Rendering, selecting a window for 73

Repeating the previous command 48

Resetting

 camera 67

 SOFTIMAGE 3D 37

Resizing windows 64

Resource files 109

Rolling camera 69

Rotation 40

Rotoscope view modes 75

Rulers 105

S

Safe action area 105

Safe projection area 105

Saving

 automatic 103, 139

 elements 138

 emergency 103, 140

 files 137

 models 139

 number of versions 133

 scenes 138

 Spreadsheet queries 93

Scaling 40

Scenes

 camera 41

 displaying elements 77

 ghosting elements 78

 hiding elements 78

 light 42

 loading 141

 materials and textures 42

 objects in 41

 renaming 143

 saving 138

 updating quickly 72

 viewing 151

Schematic window 79

 cleaning up 83

 colours 82

 position of elements 79

 view modes 82

 viewing hierarchies 81

Searching for files 146

Selecting 118

 camera 66

 camera interest 66

 chapters 133

 dialogue box options 50

 files 135

 modules 46

 using the Spreadsheet 85

 window for output and rendering 73

- Server bar 46
- Setting up camera 67
- Setup files 102
 - keyboard 116
- Shade view mode 75
- Sharing files 147
 - changing shared objects 148
 - making distinct 148
- Showing
 - camera 66
 - see also *Displaying*
- Sizing windows 64
- Sliders 51
- Snapping to a grid 105
- SOFTIMAGE 3D
 - Cartesian space 38
 - command line options 36
 - exiting 37
 - file management 123
 - interface, see *Display*
 - keyboard 108
 - loading 36
 - mouse 118
 - running in background 36
 - starting 36
 - Supra keys 110
 - Swift keys 113
- Sorting files 149
- Space, Cartesian 38
- Spreadsheet window 84
 - adding subqueries 89
 - clauses 86
 - creating a query 87
 - deselecting elements 85
 - displaying query results 92
 - editing animation 94
 - examples 90, 96
 - loading a query 94
 - main query 86
 - moving in 84
 - queries 86
 - saving a query 93
 - selecting elements 85

- setting up 93
- sorting query results 93
- subqueries 87
- using expressions in queries 90
- Starting SOFTIMAGE 3D 36
- Status bar 55
 - mouse line 55
 - status line 55
 - time line 56
- Subcommands, menu cell 48
- Subquery, see *Spreadsheet window* 87
- Suffixes 135
- Supra keys 110
 - editing 111
- Swift keys 113
 - creating 114
 - deleting 116
 - editing 116
- System databases 125

T

- Text boxes 50
 - math operations 51
- Textures in a scene 42
- Time line 56
- Tracking camera 69
- Transformations
 - Cartesian space 40
 - modes 53
 - rotation 40
 - scaling 40
 - translation 40
- Translation 40
- TurnTable option 68

U

- Underlined menu cell names, see *Accelerator keys*
- Undoing operations 54
- Unlinking databases 130
- Unlocking files 150
- Unused files 153
- Updating

scene 72
Spreadsheet window 93

V

View modes 74
 depthcue 76
 ghost 76
 matte 76
 rotoscope (wireframe and shade) 75
 Schematic window 82
 shade 75
 wireframe 75
Viewing
 animation
 flipbook 56
 time line 56
 area, see *Windows*
 scene information 151

W

Windows 59
 changing 62
 elements 105
 field guide 105
 framing elements in 67
 freezing 72
 grid and magnet 105
 layout 104
 letter identifiers 59
 parallel projection 60
 Perspective 60
 resizing 64
 rulers 105
 Schematic 79
 selecting for output and rendering 73
 snapping to a grid 105
 Spreadsheet 84
 types 60
 view modes 74
Wireframe
 colour box 106
 view mode 75

X

XY planes 38
XYZ
 axes 38
 coordinates 38
XZ planes 38

Y

YZ planes 38

Z

Zooming with camera 67

