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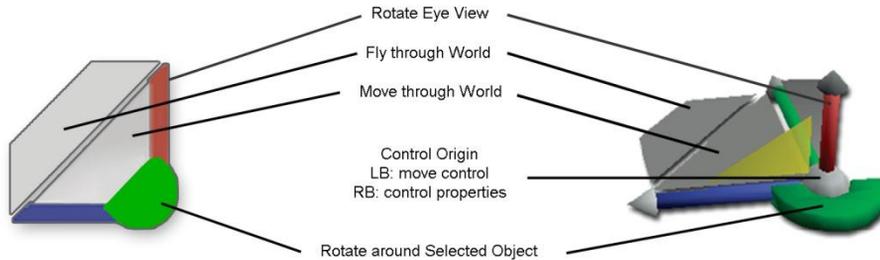
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## Workspace

## View Navigation Controls

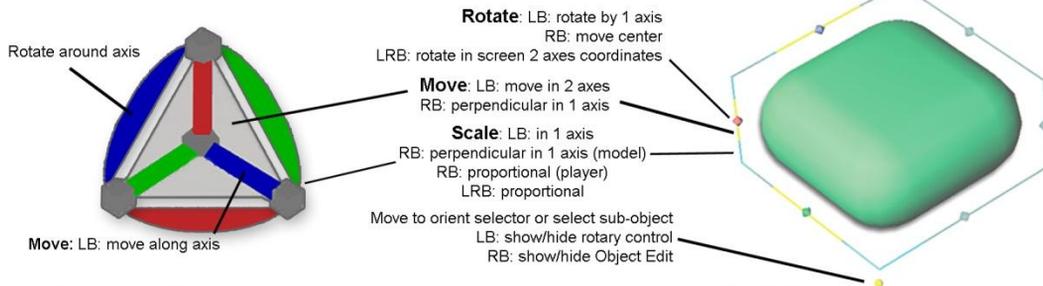
## Model



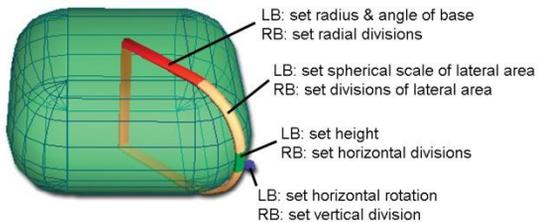
## Workspace

## Object Navigation Controls

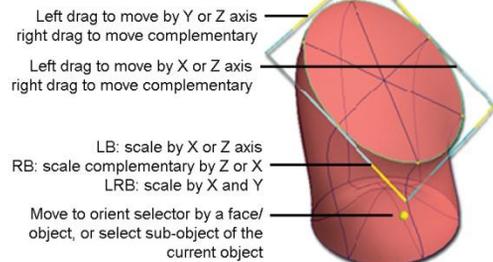
## Model



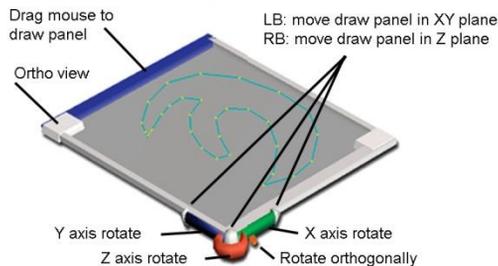
## Magic Ring



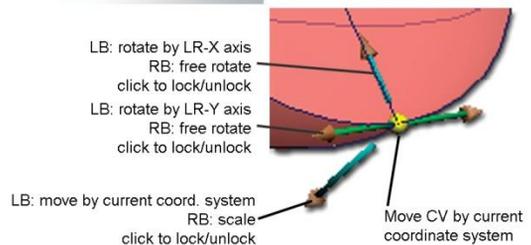
## Isocurve Selector



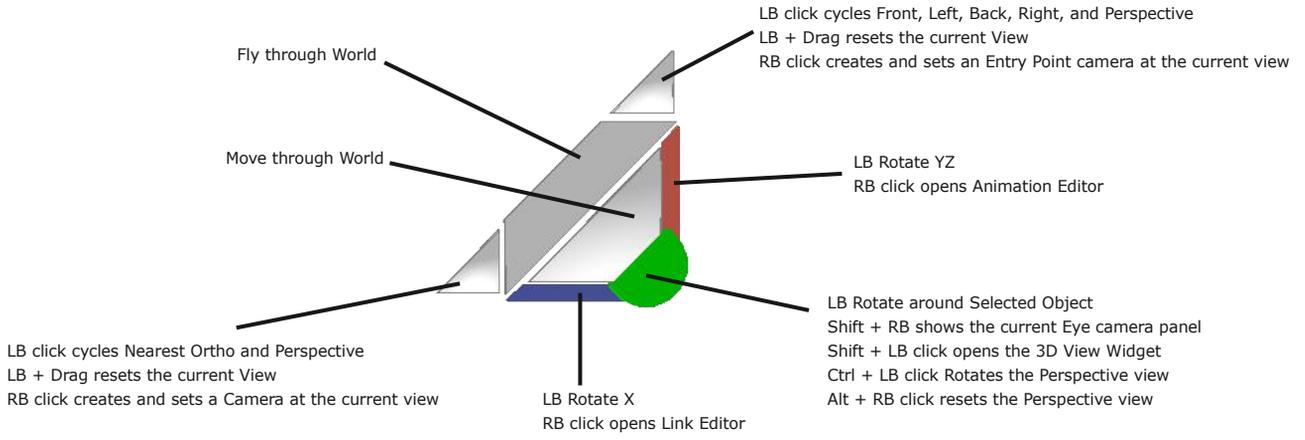
## Draw Panel



## CV Handles



## View Navigation Controls



i + mouse move any surface = Opens the widget's Additional Shortcuts Help floating panel

## Object Navigation Controls

Alt + MB click toggle the Object Scale widget

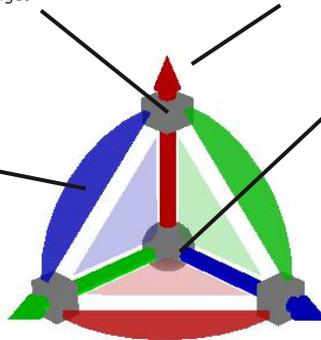
Alt + LB click toggles the X, Y, and Z Axis locks.

Alt + MB click toggle the Object Move widget

LB + Drag rotates from the Axis

RB + Drag rotates from object center/origin

Alt + MB click toggle the Object Rotate widget



LB + Drag - Moves selected object in X and Y

MB + Drag - Moves the widget

MB click activates the Object Move widget

RB click closes the widget

Ctrl + RB click opens the Object Navigation Widget's Preferences

Ctrl + LB click opens the selected object in the Link Editor

Alt + LB first click navigates to the Object in the Link Editor

Alt + LB second click navigates to the inside of the Object in the Link Editor

P + LB click opens the Axis widget 'Toggles On/Off'

letter O + LB - opens the Mesh Origin tool

Alt + MB click toggle the Object Move widget

Ctrl + LB click any surface opens their Mouse settings

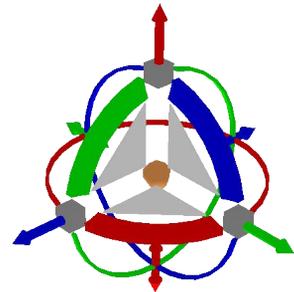
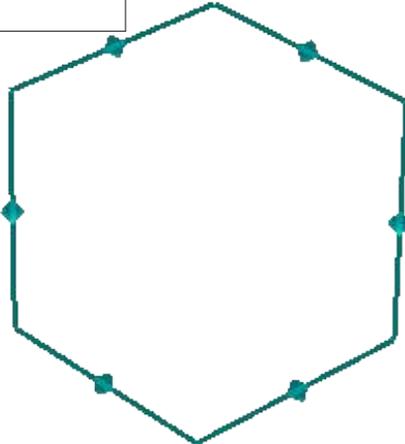
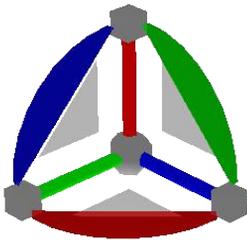
Shift + LB click in empty 3D Space deactivates Object widgets - Move, Rotate, Scale

## Bars, Triangles, Cubes and Arcs

Shift + LB click = switch to the other Object Navigation Widgets

H + LB click = switch to/from the Selector Cage Widget

J + LB click = add/remove cage widget to the current widget



i + mouse move any surface = Opens the widget's Additional Shortcuts Help floating panel

## Point Edit Navigation Controls

LB to rotate about the selection center

RB to rotate about the Axis

Alt + MB click toggle the Object Rotate widget

Alt + LB click toggle X, Y, and Z Axis locking

Alt + MB click toggle the Object Move widget

LB + Drag - Moves selected element in X and Y

MB + Drag - Moves the widget

Alt + LB click - Opens the Quad Menu

Ctrl + LB click - Closes the Quad Menu

Ctrl + RB click - Opens the Point Edit Widget's Preferences

Alt + MB click toggle the Object Move widget

Alt + LB click open quaf menu

Ctrl + LB close quad menu

Alt + MB click toggle the Object Scale widget

### Bars, Triangles, Cubes and Arcs

Ctrl + LB click opens their Mouse settings

P + LB click sets the Axis to the selected Face, Edge, or Vertex

P + RB click moves and rotates the Axis to the selected Face

P + MB click moves the Axis to object center and rotates the Axis to the selected Face

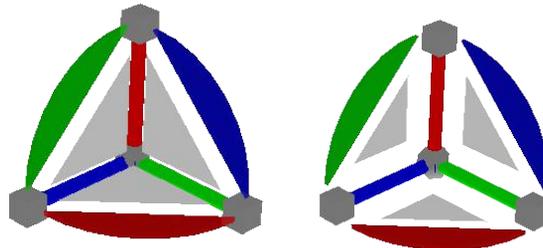
Period + LB click - Hides UnSelected elements

Comma + LB click - UnHides All elements

O + LB click Toggles - Mesh Object Coordinate Mode

Shift + LB click in empty 3D Space deactivates Object widgets - Move, Rotate, Scale

Shift + LB click any surface = switch to other Point Edit Widgets



i + drag any surface = Opens the widget's Additional Shortcuts Help floating panel

## Camera Controls

LB = Spin Left & Right

ALT + LB = Rotate Left/Right Up/Down

RB - Tilt Up & Down

ALT + RB = Tilt Left & Right

RB select = Camera floating panel

LB = Move X & Y

LB + Alt = Forward & Reverse

RB = Move X & Z

FOV

LB + Drag = Adjust FOV

LB = View from Camera

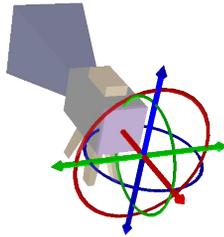
RB = Reset FOV

LB = Move Left & Right

LB + Alt = Move X & Z

RB = Move Up & Down

Shift + LB click any surface = switch camera widget



## Background Controls

b + i + mouse move = help

Wheel - Moves In and Out

Shift + Wheel - Zooms (FOV) and Moves In and Out

Ctrl + Shift + MB Drag - Zooms (FOV)

MB Drag - Rotate in X and Y

Ctrl + MB Drag - Move in X, Y, and Z

Shift + MB Drag - Look around

Ctrl + MB click - Looks At Selection

MB click - Moves the view to show the current selection or Point Edit selection

Shift + MB click - Moves the view to show all objects in the scene

Comma + LB Drag - Shows All hidden items

Period + LB Drag - Hides All Except the selected items

## Default Context Controls

N + LB - 3D View - Auto Select NURBS On/Off

Ctrl + X + LB - Cut selected object

Ctrl + V + LB - 3D View - Paste last Cut object

L + LB - Lock selection

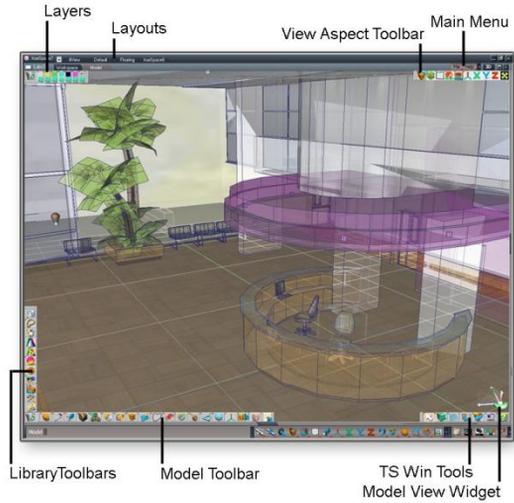
U + LB - Unlock selection

ALT + LB - Select Locked objects

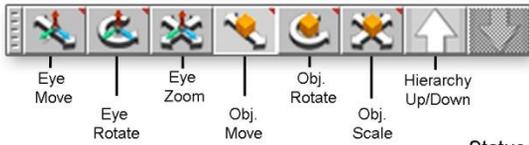
## Workspace View



## Model View

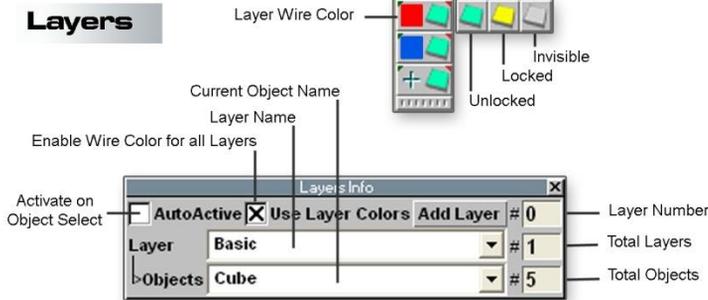


## Nav Tools



## Status

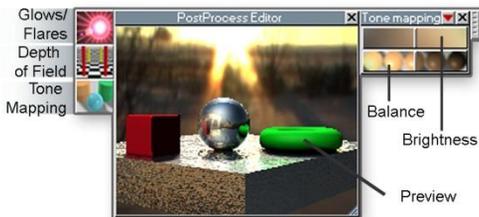
## Layers



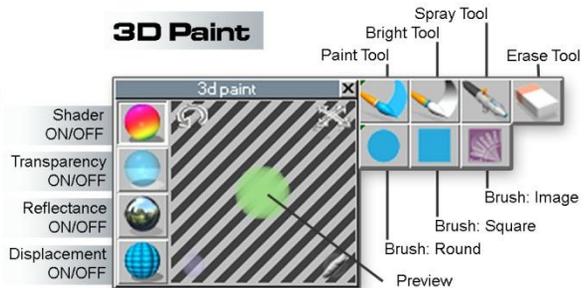
## Icon Helper



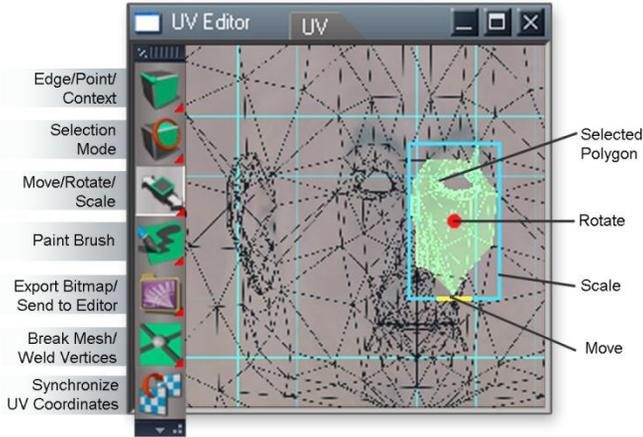
## Post Process Editor



## 3D Paint



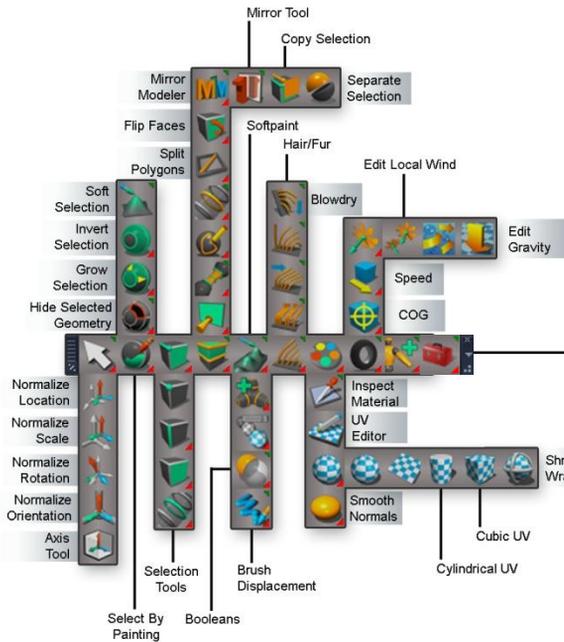
## Workspace UV Mapping Editor



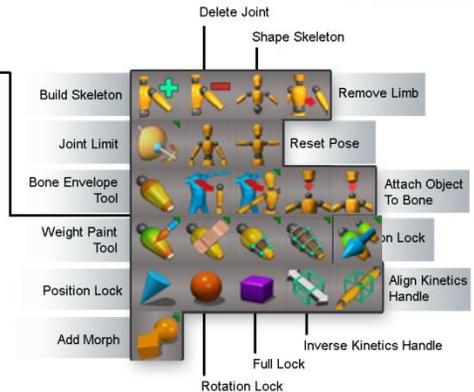
## Preferences



## Workspace Toolbar

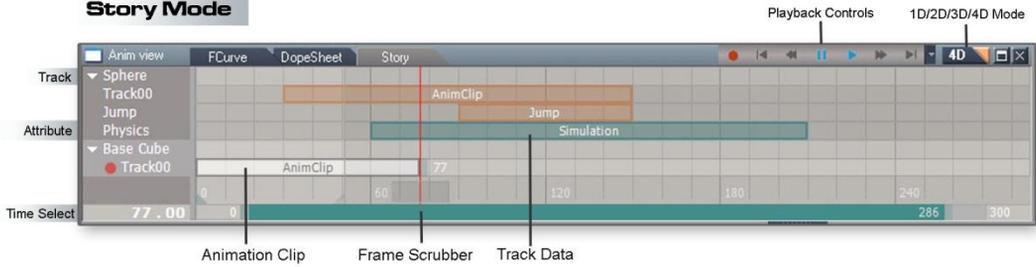


## Character Animator



# Animation Editor

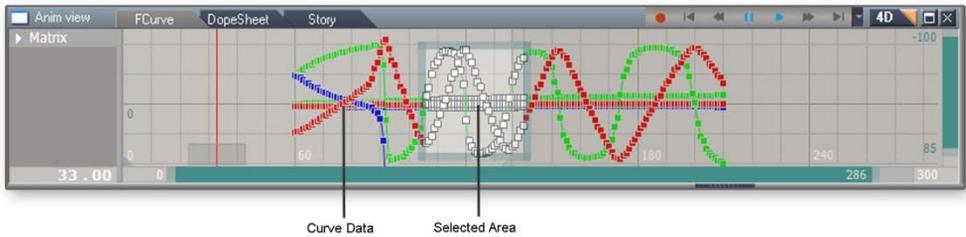
## Story Mode



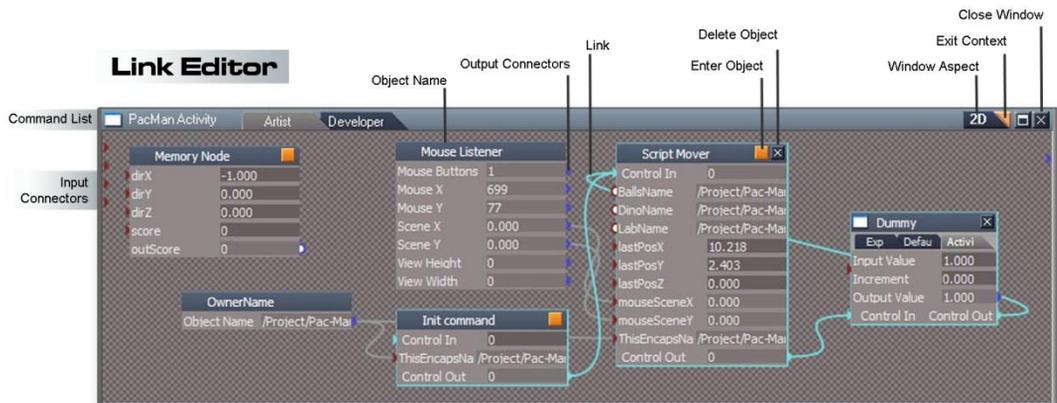
## DopeSheet Mode

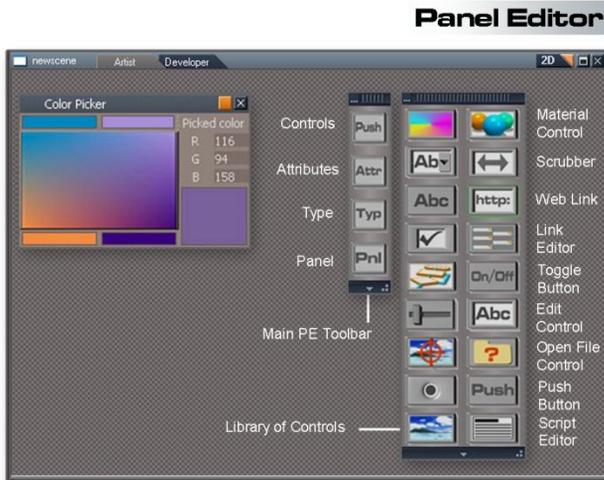
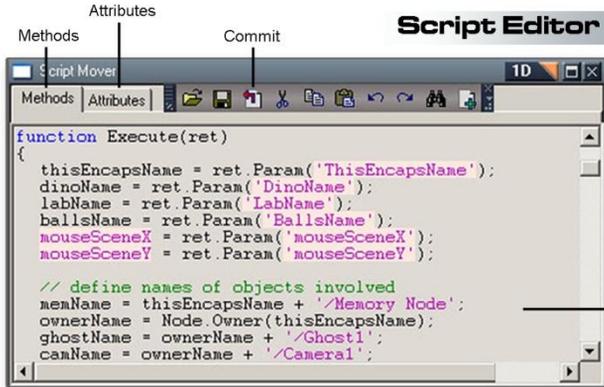


## FCurve Mode

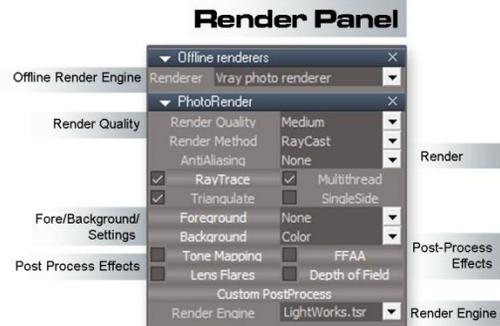
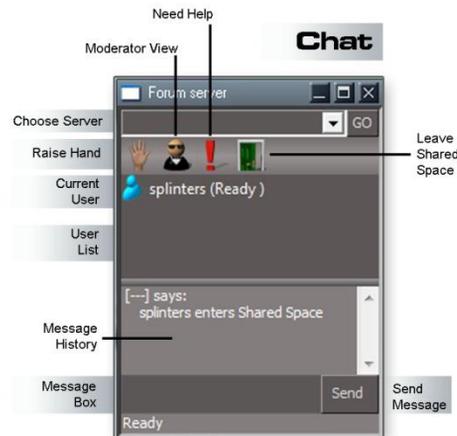
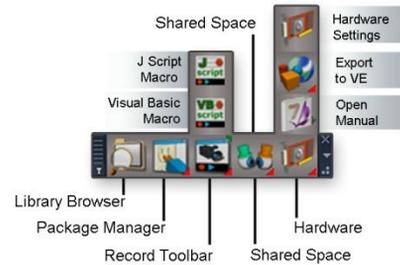


## Link Editor





### Options Toolbar



# Model Material Editor

Material Light Emission  
 Reflectance  
 Displacement  
 Color  
 Layers  
 Transparency  
 Expand Component  
 Delete Shader

Material Animation  
 Paint Object  
 Replace Material  
 Inspect  
 Auto Facet  
 Preview Mode  
 Material List

Material Preview

Color  
 Bump  
 Reflectance  
 Material Emission

Ground color  
 Vein color  
 Scale 1  
 Detail 4  
 /ein kontras 1  
 Grain 1

Scale 1  
 Amplitude 0.1  
 Detail 3  
 Sharpness 1

Specular color

Use material light  
 Intensity 1  
 Shadow Type  
 Sh.Transparency  
 Falloff  
 Min. subdiv. 0.3  
 Max. subdiv. 0.5

Lum  
 Dif  
 Shn  
 Spc  
 Rfl  
 Trn  
 Rfc

Luminance  
 Diffusion  
 Shininess  
 Specularity  
 Reflection  
 Transmission  
 Refraction

## Libraries

Images  
 Paths  
 Lights  
 Materials  
 Shaders  
 Objects  
 Primitives  
 Scenes  
 Configs.  
 Projects  
 Trash

Curves  
 Displacement  
 Transparency  
 Reflectance  
 Support  
 Scene Effects

Set Transparency

## Nurbs

Loft  
 Bi-Rail  
 Skin  
 Blend/Stitch/Cap  
 Curve to Patch  
 Draw Trimming Curve  
 NURBS to Poly

## Draw Panel

Regular Polygon  
 Circle Three Points  
 Circle Two Points  
 Freehand Curve  
 Add Polyline  
 Elliptical Arc  
 Horizontal Text  
 Vertical Text

## trueSpace 6 Toolbar

Render Output  
 Render Quality  
 Rendering Visibility  
 Antialiasing  
 Render Options  
 Render Foreground  
 Render Background  
 Render Postprocess

Fillet/Chamfer  
 Tip  
 Lathe Tool  
 Macro/Sweep  
 Bevel  
 SDS Tools  
 Deform Object  
 Arrays  
 Draw Panel  
 Nurbs  
 3D Paint  
 Object Intersection  
 ObjectUnion  
 Shell Tool  
 Bend  
 Skew  
 Taper  
 Start/Stop Deformation  
 Sculpt Surface

Regular Polygon  
 Circle Three Points  
 Circle Two Points  
 Freehand Curve  
 Add Polyline  
 Elliptical Arc  
 Ellipse Tool  
 Polygon Reduction  
 Split Hierarchy  
 Axes/ Location  
 Decompose Into Objects  
 Flip Faces  
 Flip Normals  
 Fix Bad Geometry  
 Dimension  
 Smooth Divide  
 trueSpace Extensions  
 Facial Animator

Material Editor  
 Geometry Paint  
 UV Editor/ Mapping  
 Unwrapper  
 UV Slice  
 UV Shrink Wrap

## Render Toolbar

# Chapter 1 Introduction

manual best viewed in browser setup to open pdf documents

unofficial update additions

corrections to the original manual

diagrams of where things have moved or duplicated



*Stack Toolbar New Scene and Context Unofficial Update*



*Bottom Toolbar New Scene and Context*



### **New Scene**

This removes all objects from your Workspace and starts you off with a fresh scene. It will first prompt you to save your work by pressing no and saving it to a library or to continue and clear the scene.

RMB open link editor to the scene



### **Reset to Default Context**

Opens a dialog to confirm the reset to default context. System reset operation.

RMB old behavior resets to default context without any warning or dialog choice.



### **Save current state**

same as file menu save using the ctx extension

Save Context file and or as a Backup

## 2.4.5 Preset Shortcuts

trueSpace comes with a set of predefined shortcuts for Workspace, Link Editor, and some that work in every view. The following table shows the list of these predefined shortcuts.

### Global Shortcuts

Key	Description
CTRL F1	3D window
CTRL F2	Link Editor
CTRL F3	Command Prompt
CTRL F4	Command History
CTRL F5	Output Console
CTRL F6	Status View
CTRL F7	Animation View
CTRL F8	Package Manager
CTRL F9	Scene View
CTRL F11	Library Browser
CTRL F12	Shared Space
SHIFT CTRL R	Reset to Default Context
SHIFT CTRL N	Generate New Space
LEFT	Select Previous object
RIGHT	Select Next object
DOWN	Select first Child object
UP	Select Parent object
SHIFT CTRL LEFT	Select Previous object & Look At
SHIFT CTRL RIGHT	Select Next object & Look At

### Global Shortcuts

Key	Description
Z	Object Move tool
X	Object Rotate tool
C	Object Scale tool
A	Camera Move tool
S	Camera Rotate tool
D	Camera FOV tool
SHIFT X	X lock - On/Off
SHIFT Y	Y lock - On/Off
SHIFT Z	Z lock - On/Off
F1	World Coordinates
F2	Object Coordinates
F3	Screen Coordinates
F4	Tangent Coordinates
F5	X lock - On/Off
F6	Y lock - On/Off
F7	Z lock - On/Off
F8	Reset View

**3D Window Shortcuts**

Key	Description
DELETE	Delete selected object
CTRL K	Delete selected object
CTRL I	Inspect Material
CTRL R	Render to file
CTRL ~	Set the selected camera as active
CTRL 1	Switch to Perspective Eye view
CTRL 2	Switch to Top orthogonal view
CTRL 3	Switch to Bottom orthogonal view
CTRL 4	Switch to Front orthogonal view
CTRL 5	Switch to Back orthogonal view
CTRL 6	Switch to Left orthogonal view
CTRL 7	Switch to Right orthogonal view
CTRL 8	Switch Nearest Orthogonal view
CTRL 9	Switch to Isometric view
CTRL 0	Reset View
CTRL Z	Undo
CTRL SHIFT Z	Redo
CTRL C	Copy object
4	Object Move Left -X
6	Object Move Right +X
8	Object Move Forward -Y
2	Object Move Reverse +Y
Page Up	Object Move UP +Z
Page Down	Object Move Down -Z
HOME	Object Normalize Location

**3D Window Shortcuts**

Key	Description
7	Object Rotate Left +Z
9	Object Rotate Right -Z
1	Object Rotate Forward -X
3	Object Rotate Reverse +X
0	Object Rotate Left +Y
.	Object Rotate Right -Y
CTRL 7	Object Rotate Left +Z +45
CTRL 9	Object Rotate Right -Z -45
CTRL 1	Object Rotate Forward -X -45
CTRL 3	Object Rotate Forward +X +45
CTRL 0	Object Rotate Left + Y
CTRL .	Object Rotate Right -Y
END	Object Normalize Rotation
SHIFT LEFT	Previous Key frame
SHIFT RIGHT	Next Key frame
CTRL LEFT	Previous Frame
CTRL RIGHT	Next Frame
SHIFT HOME	Start Frame
SHIFT END	End Frame
CTRL HOME	Play
CTRL END	Pause
ESC	Unselect
TAB	Object Navigation Widget - On/Off
SHIFT + L	Workspace Layers

**Point Edit Shortcuts**

<b>Key</b>	<b>Description</b>
ESC	Clear selection
DELETE	Delete selected Elements
SHIFT DELETE	Collapse Loop
CTRL K	Delete
CTRL C	Copy selection
CTRL F	Form Face
TAB	Point Edit Widget On/Off
V	Select Vertices
F	Select Faces
E	Select Edges
L	Select Face Loops
T	Select Context
SHIFT I	Invert Selection
SHIFT A	Select Connected
SHIFT C	Convert Selection
SHIFT S	Smooth Selection
SHIFT O	Outline Selection
Q	Quad Divide Selection
SHIFT Q	Smooth Quad Divide
CTRL Q	Quadrify Selected polygons
M	Mirror Selection
CTRL M	Mirror Modeler
SHIFT B	Form Polygonal Bridge
/	Split polygons
SHIFT /	Merge polygons
H	Hide Selected geometry
SHIFT H	Hide Unselected geometry
U	Show All hidden geometry

**Point Edit Shortcuts**

<b>Key</b>	<b>Description</b>
ADD	Add SDS
SUBTRACT	Remove SDS
CTRL D	Dynamic Sweep
CTRL S	Sweep selected Face
CTRL B	Bevel tool
CTRL T	Tip selected Face
CTRL P	Add Polygons
CTRL E	Add Edges
CTRL V	Add Vertices
CTRL L	Add Loop
CTRL W	Weld geometry together
CTRL H	Heal Vertices
CTRL O	Optimize Triangulation
SPACEBAR	Open Quad toolbars
~	Default selection settings
1	Select by Painting
2	Select by Rectangle
3	Select by Lasso
4	Select by Move
5	Soft Selection
6	Select by Material
7	Select Edge Loops
8	Select Face Loops
9	Select Visible Geometry
0	Select All Geometry
-	Shrink selection
+	Grow selection

**Animation Editor**

Key	Description
DELETE	Delete object
CTRL C	Copy object
CTRL X	Cut object
CTRL V	Paste object
CTRL A	Select All
CTRL Z	Undo
CTRL SHIFT Z	Redo
SHIFT LEFT	Previous Key frame
SHIFT RIGHT	Next Key frame
K	Set Key frame
CTRL LEFT	Previous Frame
CTRL RIGHT	Next Frame
SHIFT HOME	Start Frame
SHIFT END	End Frame
CTRL HOME	Play
CTRL END	Pause
ESC	Stop & Start Frame

**UV Editor**

Key	Description
CTRL Z	Undo
CTRL SHIFT Z	REDO

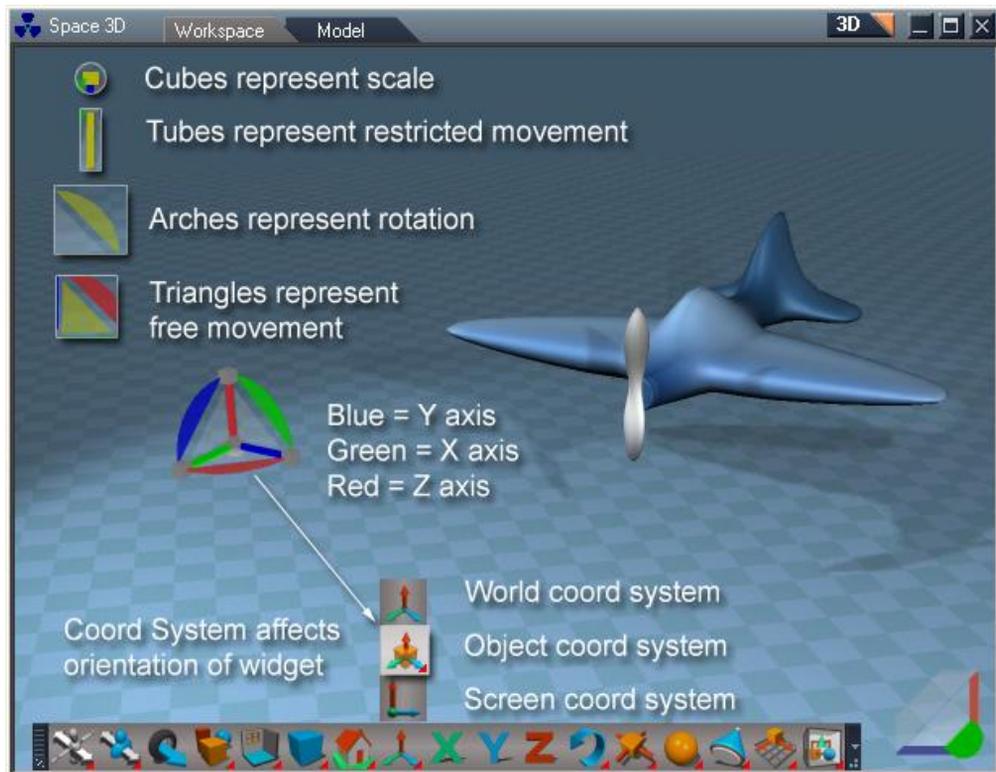
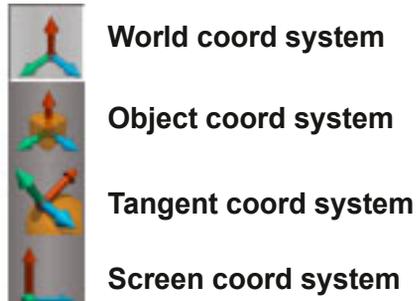
**Info panel**

Key	Description
CTRL Z	Undo
CTRL SHIFT Z	REDO

**Link Editor**

Key	Description
DELETE	Delete selected node
CTRL	Undo
CTRL SHIFT Z	Redo
CTRL Drag	Copy selected object
LEFT	Select Previous object
RIGHT	Select Next object
DOWN	Select first Child
UP	Select Parent
CTRL SHIFT LEFT	Select Previous & Center
CTRL SHIFT RIGHT	Select Next & Center
HOME	Current scene in Link Editor
<b>NUM KEYS</b>	
9	Maximize & Arrange All
3	Minimize & Arrange All
5	Center All
1	Zoom All
*	Iconize All
-	Minimize All
+	Maximize All
/	Arrange All
<b>Mouse buttons</b>	
RMB	Zoom ALL/Move to Top Left
RMB + Drag	Zoom In/Out
MMB	Center selection
MMB + Drag	Move
CTRL + MMB	Up one level
MMW	Scroll Up and Down

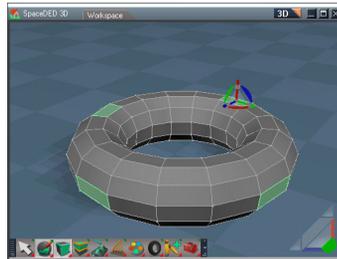
## 2.5.1 Using Widgets



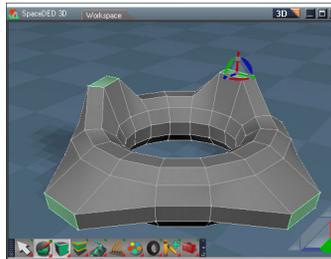


**Tangent Coordinate System** is useful for point edit modeling. The object navigation widget in tangent mode behaves the same as in world coord mode.

*The tangent Coordinate system is not documented in the original manual.*



*Before move*



*After move*

When 2 or more unconnected elements are selected the widget will be centered on one of the elements and each of the elements will move as if they each have an individual widget with the z handle aligned with the normal direction of the element and that moves with the visible widget. The elements will each move, rotate and scale individually instead of from a shared central location.

When 2 or more meshes are in point edit mode together and the selection has elements from two or more of the meshes, the rotation and scale will be centered on the widget and the elements do not move as individuals.

When a single edge or point is selected the tangent coordinate behaves the same as the object coord system.

When a single face is selected it behaves almost identically to the object coord. At some angles the widget will be slightly rotated on the z axis.

If 2 adjacent elements are selected the tangent widget is the same as object widget. This includes two points joined by an invisible triangle edge.

The object navigation widget will line up with the first selected object when in object coord mode.

## 2.6 Info Panel

math expressions can be used in the numeric input fields:

$+$ ,  $-$ ,  $*$ ,  $/$ ,  $\sin$ ,  $\cos$ ,  $\arcsin$ ,  $\arccos$ ,  $\ln$ ,  $\log$ ,  $\exp$ ,  $\sqrt{x}$ ,  $\pi$

## 2.7 3D View – Workspace

### 2.7.1 Object Navigation Tools



**Object Move** - RMB to exit tool.



**Object Rotate** - RMB to exit tool.



**Object Scale** - RMB to exit tool.



**Object Look At**



**Object UnLook At**

To use UnLook At, select the object that is to be freed then click the button to remove the Look At constraint.



*will clear undo history*

## 2.7.2 View Navigation Tools



*Unofficial Update Bottom Toolbar*



*Unofficial Update Stack Toolbar*



**First Person Navigation**

**Camera Move**

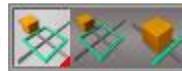
**Camera Rotate**

**Camera FOV**

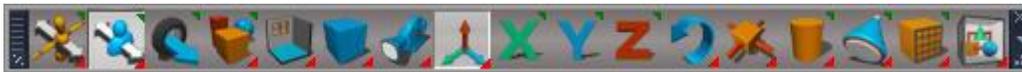
**Rectangle Zoom**



**Look At Selection**



**Reset View**



**Camera Move** - RMB to exit tool



**Camera Rotate** - RMB to exit tool



**Camera FOV** - RMB to exit tool

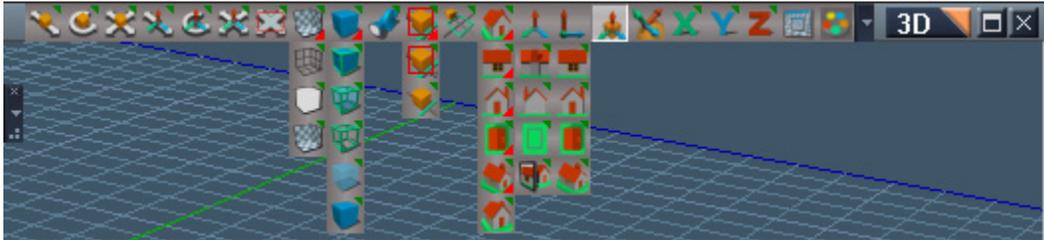


**Look At Selection** - RMB select and look at next object.



**Zoom To Selection** - LMB = Zoom to Selection / RMB = Zoom to next object

## 3D Mini Toolbar



*Unofficial Update 3D Mini Toolbar*



**Perspective View**



**Isometric**

Perspective and Isometric include a RMB action to rotate the view in 90 degree increments. The view positions and orientations are relative to the default view position not the current view position and orientation.

**(i)** Each RMB press will use up about 7 undo steps



**Open New 3D View**



**Open Material Editor**



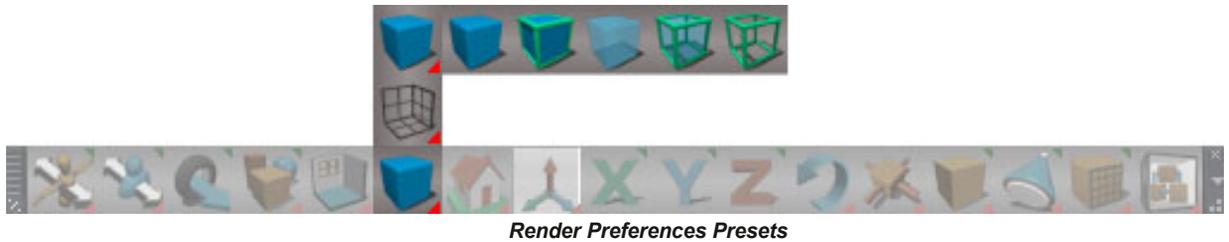
**Set Camera** - RMB switch to perspective view.



**Zoom To Selection** - RMB reset view.

## 2.7.4 Render Preferences Presets

With this icon group you can set the real-time render modes.



*Render Preferences Presets*



*Unofficial Update Render Preferences Presets*

All the buttons in the render preferences and ground display preferences change the active 3D window.

RMB will change all 3D windows.

**Draw as Solid**

trueSpace will render all objects in your scene as completely opaque, shaded, and preview rendered.

**Draw as Solid Outline**

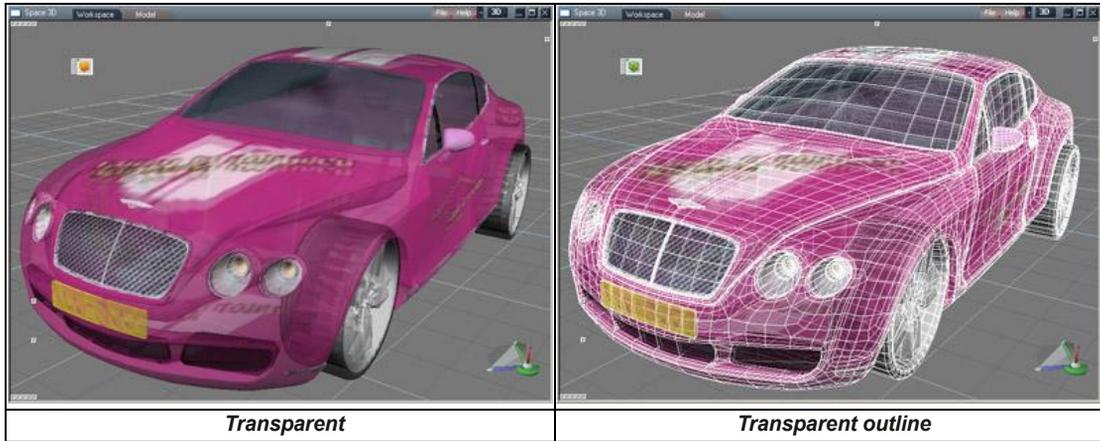
trueSpace will render the objects just as in solid mode and also outline the edges and vertices of the objects.

**Draw as Transparent**

This will allow you to partially see through objects.

**Draw Transparent Outline**

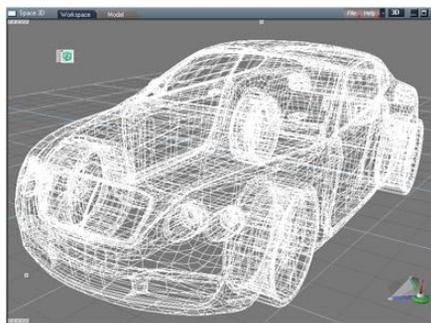
This is similar to Draw as Transparent, with the added function of highlighting all vertices and edges.



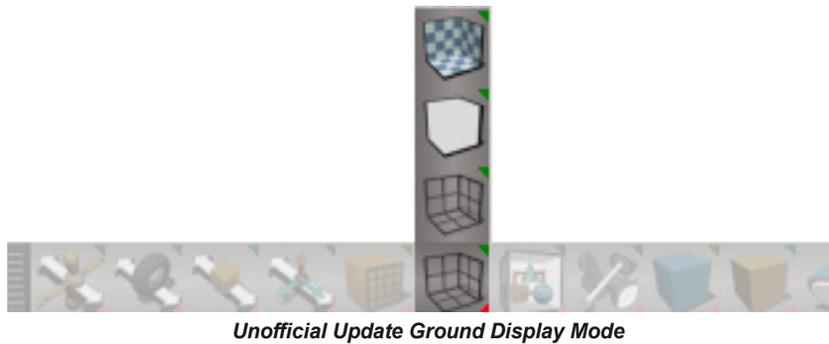
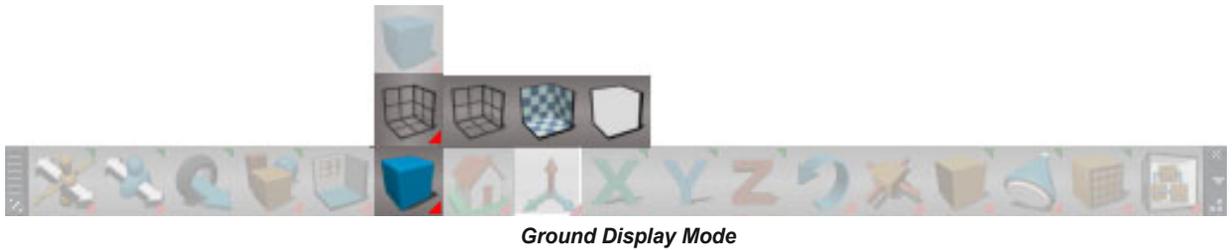
### Draw as Wireframe



This will not give you a preview render of what your object will look like in the final render, but it will speed up navigation in the interface because there is less information on screen for the video card to update.



*Wireframe*



**Ground Solid**



**Ground None**



**Ground Wire**

The Render Preferences Ground settings also has a **TwoSided** ground which is the same as solid but with a visible bottom surface.

All the buttons in the render preferences and ground display preferences change the active 3D window.  
RMB will change all 3D windows.



**Show Selected**



**Hide Selected**



**Show Cameras and Lights** - show all cameras and lights



**Hide Cameras and Lights** - hide all cameras and lights



**Show All**



**Hide All**

RClick on the buttons opens the object render attributes panel for the first selected object.

To isolate the selected objects Hide All then Show Selected. There is no isolate selected icon button. The link editor mini toolbar has a button, "H", that has that function.



Background shortcuts

Period + LB Drag - Hide Unselected (Isolate Selected)

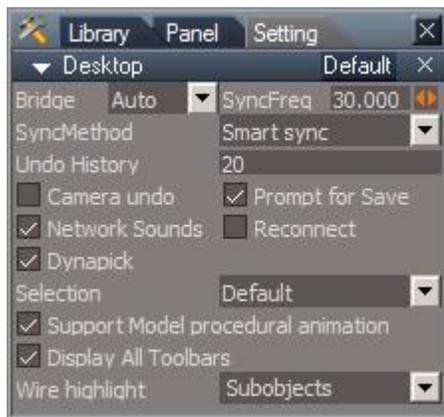
Comma + LB Drag - Shows All

[More Information](#)

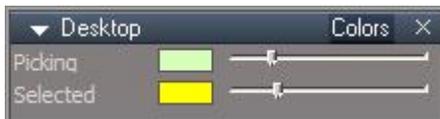


Show All, Hide All, Hide and Show Cameras and Lights can eat up many undo steps

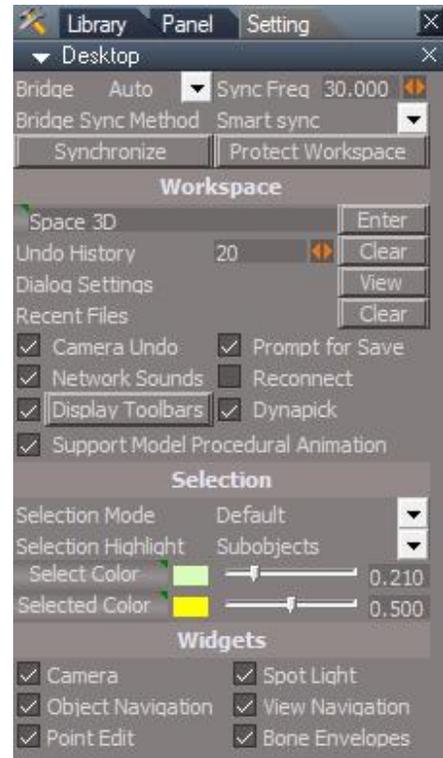
## 2.7.6 Desktop Preferences



*Desktop Default*



*Colors Aspect.*



*Unofficial Desktop Combined Default*

**Synchronize** - open the Synchronize panel.

**Protect Workspace** - open the Protect Workspace panel

Scene naming - small button LMB copies the scene name into the text input field, RMB sets the text input field to "Space 3D",

**Enter** - rename the scene based on the text input field.

**Clear** – clear undo history

**View** - open the dialog settings panel

**Clear** – clear recent files list

**Display Toolbars** button and checkbox – uncheck to only show the 3D toolbars in the active 3D window. Press the button to restore normal behavior.

**Picking Select and Selected Color** reset buttons – RMB to reset, LMB no effect

**Picking Select:** Double click to Set the selected object wire color.

**Selected:** Double click to Set selected object wire color.

## Protect Workspace



The Protect Workspace script saves and restores workspace attributes to protect them against modelspace changes. It protects materials, object names, matrix transforms, camera fov and spotlight angle.

**Backup** - save data and materials nodes to temporary stores in the scene

**Restore** - restore the data and material nodes

### Protection Options

**Name** - backup object names

**Materials** - backup object materials

**Matrix** - backup object transformation values

**Lights/Camera** - backup spotlight angle and camera fov

**Remove Backup Scene Data** - optionally delete the backup data when the restore is run

### Usage:

Push the Backup button to backup the nodes and values

Open modelspace and do modelspace work

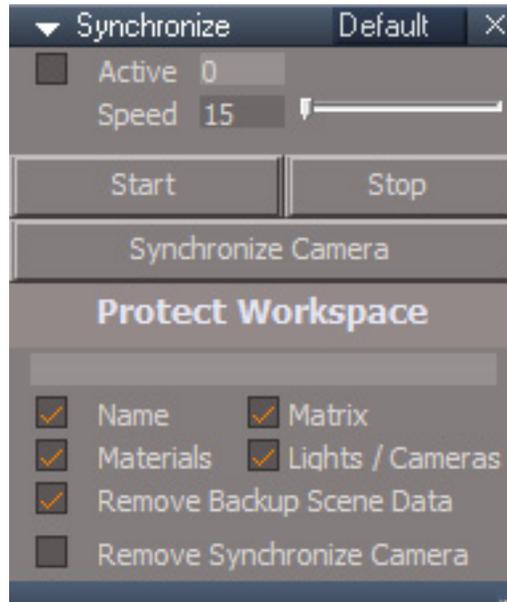
Close the modelspace window

Push the Restore button to retrieve the previous workspace state



*Protecting materials will destroy modelspace standalone deformations*

## Synchronize - Default aspect



**Active** - indicates that the synchronize process is active

**Speed** - controls how often the synchronization occurs, number of syncs per second

**Start** - opens a model view, shrinks the play range to keyframes of all the scene items, adds a SynchronizeCamera to the scene and sets the model and workspace to use the synchronize camera. The model view must not be open when pressing the start button.

**Stop** - will open a dialog with a yes/no question. You must answer Yes or the process will not stop.

**Synchronize Camera** - adds a Synchronize camera to the scene, matches the camera to the active workspace 3D view and sets the open model view and the active workspace 3D view to use the camera.

The Protect Workspace settings section values will override the Protect Workspace node values while the synchronize process is active.

*[Jump to Protect Workspace](#)*

**Remove Synchronize Camera** - deletes the camera named Synchronize Camera from the scene during the protection backup step.

## Synchronize - Bridge aspect



**Synchronize from Model** is the same as turning the bridge Off then to Auto and automatically pressing the Content synchronization dialog button labelled "Sync from Model".

**Synchronize from Workspace** is the same as turning the bridge Off then to Auto and automatically pressing the Content synchronization dialog button labelled "Sync from Workspace". This script also fixes a bug in the trueSpace synchronize commands that causes objects to be renamed if more than one object is selected.

**Off, On, Auto** sets bridge switch value using buttons instead of the desktop panel dropdown. The operation is the same as the desktop panel versions except it will not run if more than one object is selected in order to bypass the trueSpace synchronize bug.

**Cycle** is the same as setting the bridge switch value to Off and then Auto. This will not run if more than one object is selected.

**i** The trueSpace synchronize bug presents itself if more than 1 object is selected when the bridge synchronize from workspace is run. The selected objects will be renamed to include a comma and number postfix. Each time the synchronize is run the number will increment. The reason for the bug is that when more than 1 object is selected in modelspace it will create a temporary Selection group object to hold the objects. Workspace cannot see the modelspace Selection object.

*Workspace copy, erase, undo and redo are missing from the workspace portion of the original manual.*



## 2.7.6a Copy and Erase



**Copy** LMB creates a copy of the selected object(s) and arrange the new nodes in the link editor.  
RMB old behavior of only copy the first selected item



**Erase** LMB will erase the currently selected object(s) and compensates for NURBS objects. It also formally deselects to fix a ghost selection bug (tS thinks the objects still exist).  
RMB old behavior, no compensation for NURBS objects or ghost selection fix

## 2.7.6b Undo and Redo



**Undo**



**Redo**

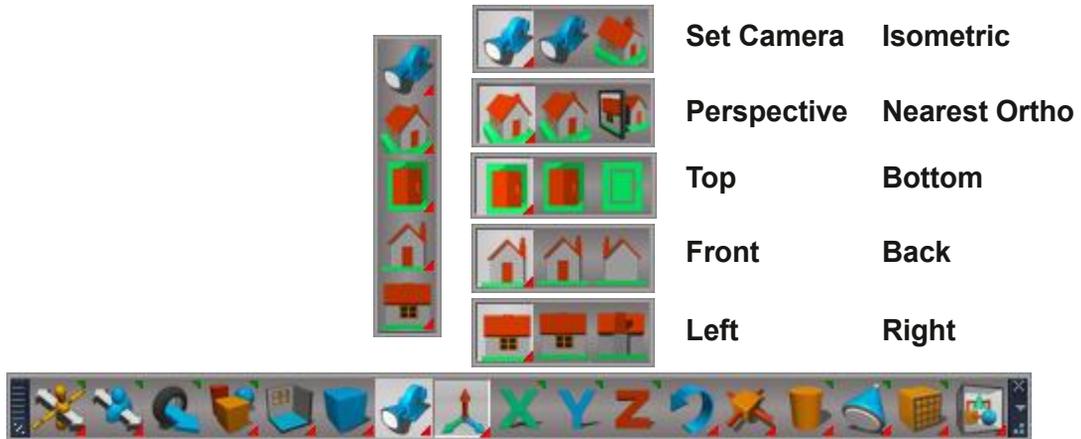
The Undo tool (CTRL+Z keyboard shortcut) reverses the last operation performed on an object. This makes it easy to try things out in trueSpace and quickly undo something that did not work out the way you planned.

If you Undo something and then change your mind, you can use the Redo icon.

Each of these tools can store multiple levels of actions. If you wish to undo the last 4 actions you performed on your object, selecting Undo 4 times will bring you back to where you were prior to those actions. If you wish to redo the changes you just made, 4 clicks on the Redo icon will restore all the changes.

## 2.7.7 Perspective and Orthogonal Views

You can switch the view type from perspective projection to special orthogonal projections like top-view and front-view by clicking on the appropriate icons on the Workspace tool bar.



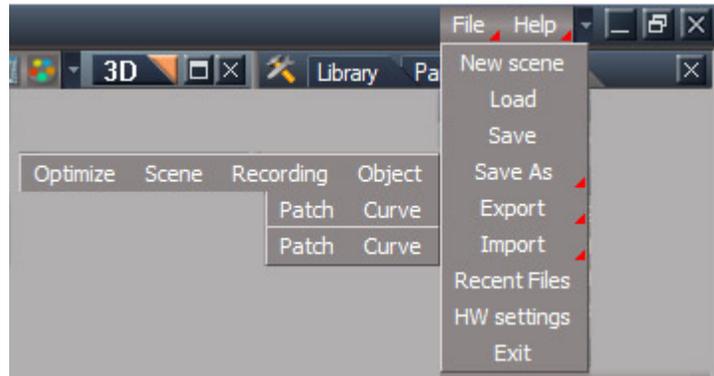
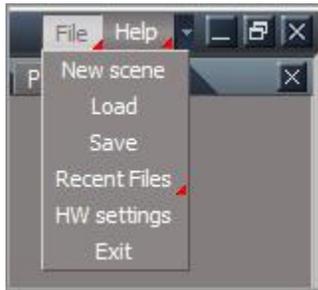
*Switching the view to a different type*



*Unofficial Update Bottom Toolbar*

In the Unofficial Update the camera view is separate from the other views.

## 2.7.9 Workspace File and Help Menu



*Unofficial Update File Menu*

### Save As > Optimize

Opens the Optimize Workspace Scene panel used to clean the scene before saving as a recording file.

**Model Attributes** - setup to remove connectors added to the scene and scene objects from modelspace, also setup to remove Layer Info and PhotoRender nodes from the scene.

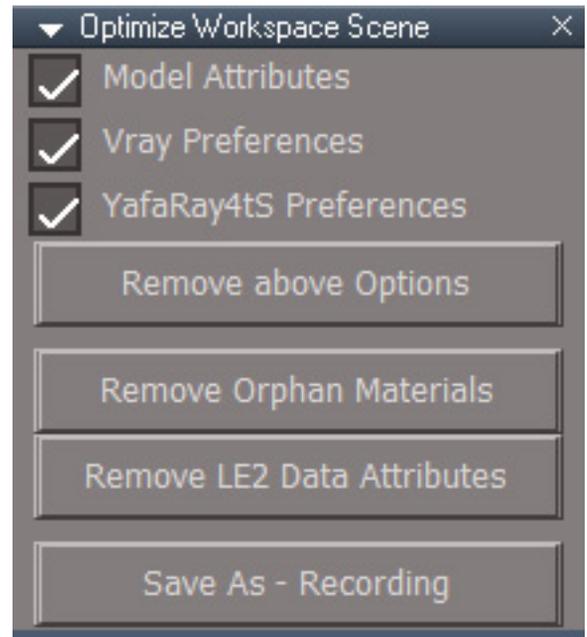
**Vray Preferences** - setup to remove Vray and PhotoRender nodes from the scene. Safe to use if you did not use Vray rendering for your scene.

**YafaRay4tS Preferences** - setup to remove the YafaRay4tS node from the scene. Safe to use if you did not use YafaRay rendering for your scene.

**Remove above Options** - executes the removal setup in the previous checkboxes

**Remove Orphan Materials** - If a mesh has multiple materials applied to it and the Separate Selection tool is used all the materials are copied which can result in orphan material nodes and connections.

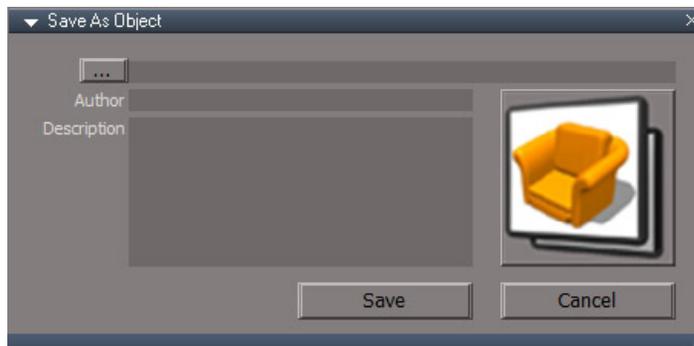
**Remove LE2 Data Attributes** - some scene items seem to have excessive numbers of LE2 Data connectors.



**Save As - Recording** - save the scene as an RsRcd file type. This has all the same information as a scene file but takes up much less file space

**Save As > Scene** - file save as dialog with RsScn file extension as the only choice. More direct and convenient than using Save.

**Save As > Recording** - save the scene as an RsRcd file. This format has a smaller file size than the default RsScn file format without any apparent lose of data.

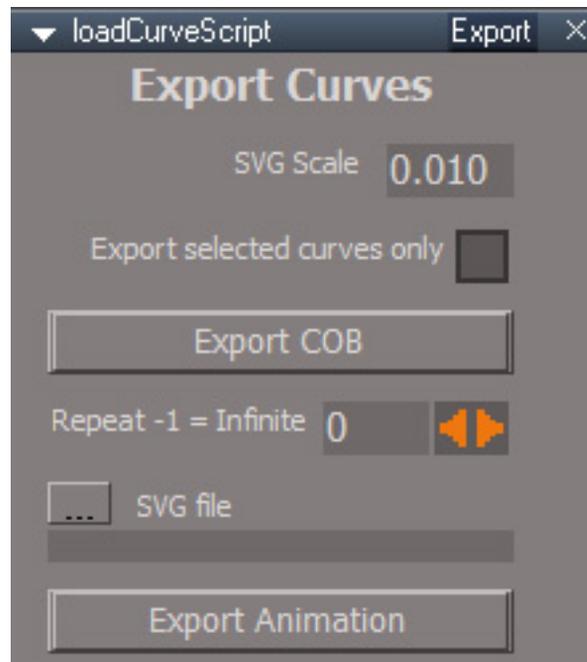


**Save As > Object** - save object file, RsObj, with extra information

... button to choose a file name

**Author** and **Description** optional information to add to the file

**Save** button to write the file to disc



## Export > Curve

**SVG Scale** - default of 0.01 corresponds to 1cm in trueSpace translates to 1pixel in the svg file

**Export selected curves only** - don't export a curve unless it is part of the selection. All curves in the scene will export when unchecked.

**Export COB** - save in truespace modelside compatible ascii format(COB). Only curves will be exported.

**Repeat** - how many times to play the animation in the html file. A value of -1 means infinite repeats.

**SVG file** - input file to use when generating the sample html file

**Export Animation** - save html and CSS animation files to be used with the SVG file. Saves translation, rotation, scale and opacity(transparency) animations. Only animated items will export.

Open the html file in a browser to see the animation. The html file will have the same name as the css file created.

## Import > Curve

Load curves from trueSpace scn and cob files generated from the modelside or earlier truespace versions. It also reads bezier curves from turbocad dxf files and svg format files. Most of the import options are for svg format files.

**SVG Scale** - default of 0.01 corresponds to 1cm in trueSpace translates to 1pixel in the svg file

**Z Offset** - each curve will be offset in the z direction by this amount

**Import svg ellipse as polygon** - imports ellipses or circles and converts them polygon meshes

**Import svg line as polygon** - lines and polylines imported as triangles each with only 1 edge visible

**Import svg path as polygon** - import curves and convert them to polygon meshes

**Import svg rectangle as polygon** - import rectangles as curves and convert them to polygon meshes

**Close svg curve with a line** - add a line from the end to the beginning of closed curves - option is only valid with non-polygon import

**Seperate svg sub-paths** - splits compound paths into distinct curves

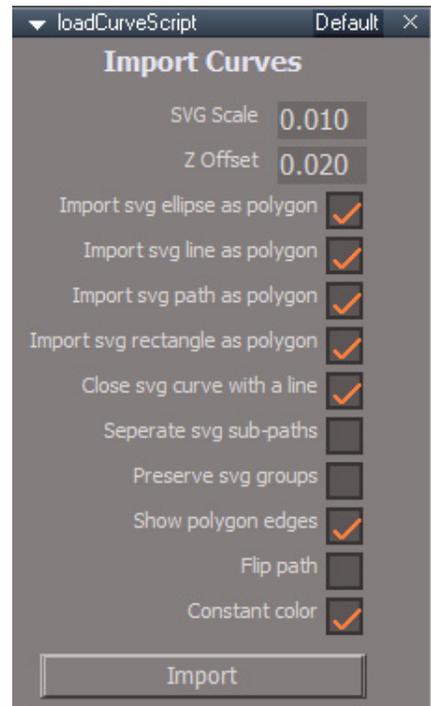
**Preserve svg groups** - if unchecked will ignore groups that have no transform values

**Show polygon edges** - items converted to polygon meshes will have edge visibility turned on

**Flip path** - reverses the direction of the curve resulting in a flipped normal for the polygons. not very useful since curves can go either way

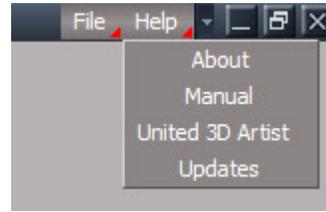
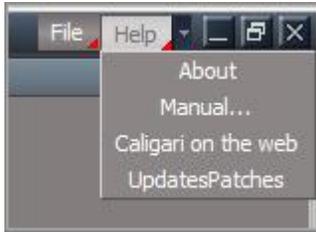
**Constant color** - use a constant color material for curves imported as polygons

**Import** - press to load a curve file.



**Export > Patch** save a NURBS patch as an ascii format cob file, the first selected object will export.

**Import > Patch** load a trueSpace cob ascii format file that contains NURBS patches



*Unofficial Update Help Menu*

### **Help: About**

This displays the trueSpace splash screen with the programming credits, the version information, and the display mode in which trueSpace is running. The Unofficial Update version first shows a popup dialog with version information.

### **Help: Manual**

This will take you to the contents page of the PDF version of the manual you are reading now.

### **Help: United 3D Artist**

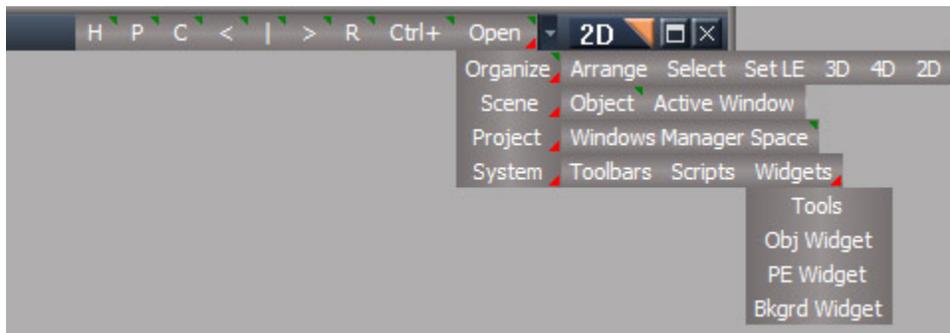
Open a web browser to the United3DArtists forum.

### **Help: Updates**

Open a web browser to the United3DArtists trueSpace Unofficial Updates sub forum.

## 2.8 2D View – Link Editor

### 2.8.1 Link Editor Description



*Unofficial Update Link Editor Mini Toolbar*

### Link Editor Navigator Toolbar

**H** : (3D View) LMB hide unselected, RMB show all

**P** : LMB select parent(owner) node, RMB open selected node in the link editor

**C** : LMB select first renderable child node, RMB open selected node in the link editor

**<** : LMB select previous renderable sibling node, RMB open selected node in the link editor

**|** : LMB center the selected node in the view, RMB select next renderable sibling node in the link editor and center it

**>** : LMB select next renderable sibling node, RMB open selected node in the link editor

**R** : (3D View) LMB start rectangle select tool, RMB open options panel

**Ctrl+** : LMB simulate ctrl button press and hold, LMB again to end ctrl button behavior, RMB deselect

**Open** : RMB open the link editor to the scene

**Organize** : LMB minimize nodes and arrange, RMB maximize nodes and arrange

**Arrange** :

**Select** : open the Select and Alphabetize panel (see next page)

**Set LE** : set the currently active link editor window as the window to receive link editor commands

 *will clear the undo history.*

**3D** : switch active window to a 3D aspect

**4D** : switch active window to a 4D animation aspect

**2D** : switch active window to a 2D link editor aspect

**Scene** : open link editor to the scene

**Object** : open link editor to the selected object

**Active Window** : open link editor to the active window

**Project** : open link editor to the project

**Windows Manager Space** : open link editor to the windows manager space

**System** : open link editor to the top level root

**Toolbars** : open link editor to the toolbar prototypes encapsulator

**Scripts** : open link editor to the scripts

**Widgets** : open link editor to the active widgets

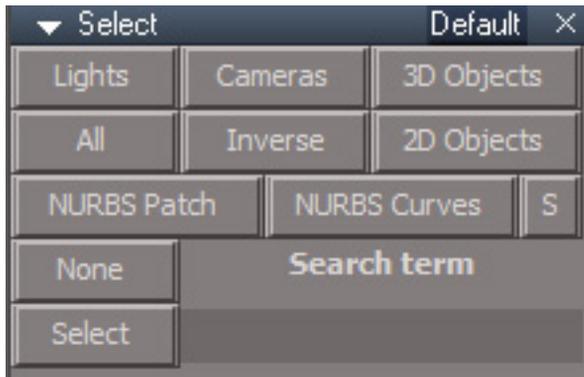
**Tools** : open link editor to the widgets tools

**Obj Widget** : open link editor to the active object navigation widget

**PE Widget** : open link editor to the active point edit navigation widget

**Bkgrd Widget** : open link editor to the background widget

## Select



### Default aspect

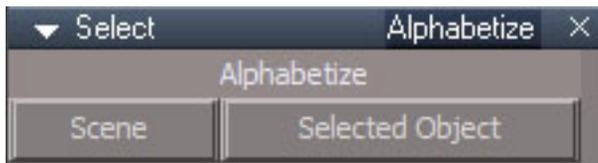
Select items based on their common characteristics.

By object type: Lights, Cameras, 3D Objects, 2D Objects, NURBS Patches and Curves.

Modify selection: All, None, Inverse. S=NURBS control point mesh.

Name matching: Enter a search term in the text input field and press the Select button. The search is case insensitive and the search term will be found at the start, end or in the middle of the object name..

 The 3D Objects button does not include NURBS Patches and Curves



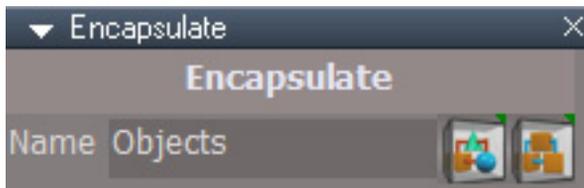
### Alphabetize aspect

Place the objects in alphabetical order by a delete and restore process.

Scene : Alphabetize the scene.

Selected Object : Alphabetize the nodes inside the selected object.





**Encapsulate Objects** - RMB open the Encapsulate panel



**Encapsulate in 3D** - RMB open the UnEncapsulate panel

The RMB panel buttons allow you to name the new group before creating it.



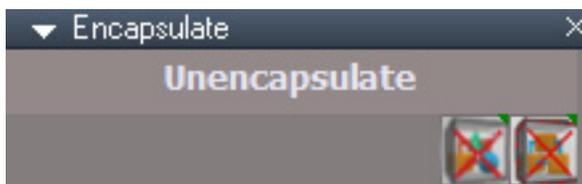
**Unencapsulate Objects**

The Unencapsulate tool, breaks a group apart. RMB open the UnEncapsulate panel



**Unencapsulate in 3D**

The UnEncapsulate In 3D tool breaks a group apart and cleans up extra nodes that were used by the 3D group. RMB open the UnEncapsulate panel



RMB panel buttons seem to be identical to the toolbar buttons

## 2.12 Other Views



Stack Toolbar



Make copy of Window



3D Window



Link Editor



Command Prompt



Command History



Output Console



Status View



Stack View



Anim View



Package Manager



Scene View



Unofficial Update Stack Toolbar



**Stack View** - (bug) will close the stack view, not open it. The stack view can be reopened by layout change or reset default context.

*This button has been removed from the Unofficial Updates.*



**Make copy of Window** - LMB runs original command and then cleans up the result  
RMB original command



*LMB will clear the undo history when run on 3D and 2D windows.*



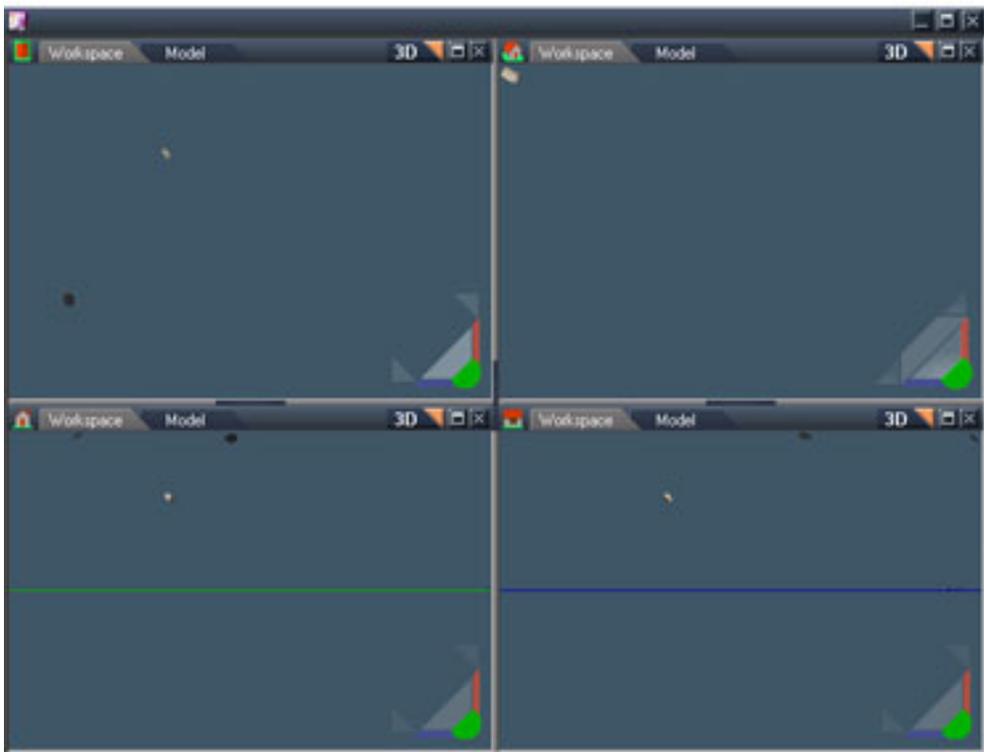
**3D Window** - RMB - original command plus adds Scene & Postprocess nodes



**Link Editor** - RMB - original command plus adds Link Editor toolbar and sets the window as the active LE window for the toolbar.



*3D Window RMB and Link Editor RMB will erase undo history.*



**Quad Window**

Opens a viewport composed of 4 3D windows in a 2 by 2 arrangement. RMB Saves Quad Window user modifications

## 2.13 Macro Recording and 3D Recording

### 2.13.1 Macro Record



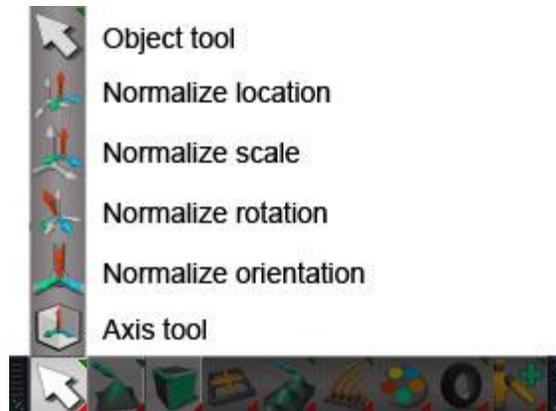
**Macro Record – jScript.** RMB create a blank javascript command node in the scene.



**Macro Record - VBScript** RMB create a blank vbscript command node in the scene.

# Chapter 3 MODELING - Workspace

## 3.1 Object Tools



### 3.1.1 Object



The Object tool is used to select an object. Once an object has been selected, the remaining object tools can be used. Choose the Object tool and left click on an object in the Workspace to select it.

If a subobject at any level of a scene object is currently selected, the top most scene level object will be selected.

RMB open the Info Panel in a floating window.

### 3.1.6 Axis Tool



RMB toggles showing the axis in front and in back of the object.

### 3.2.0 Mesh Editor Settings

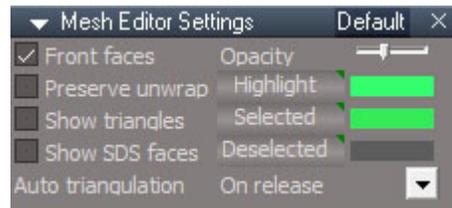
There are many options and settings that will control how Point Edit works, adjusting everything from the colors used in making a selection, to how certain tools work. This section details those options before we get into looking at the tools themselves. Where the options apply to a particular tool, you will find them repeated under that tool's description.

#### The Default aspect

This aspect is shown on activating Point Edit mode.



*The Default aspect of the Mesh Editor Settings panel.*



*Unofficial Update Default aspect*

**Highlighted, Selected, Deselected** – RMB reset buttons.

#### The Soft aspect

This aspect must be selected manually. This section is repeated under the Soft Selection tool write up.



*The Soft aspect of the Mesh Editor Settings panel.*

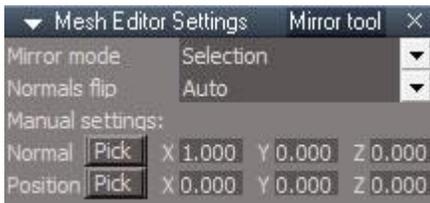


*Unofficial Update Soft aspect.*

**Soft Selection Gradient** – RMB reset gradient colors

## The Mirror Tool aspect

This aspect can be selected manually, or opened with a right click on the Mirror Tool. This section is repeated under the Mirror Tool write up. Note that these settings apply solely to the Mirror Tool, and not the Mirror Modeler.

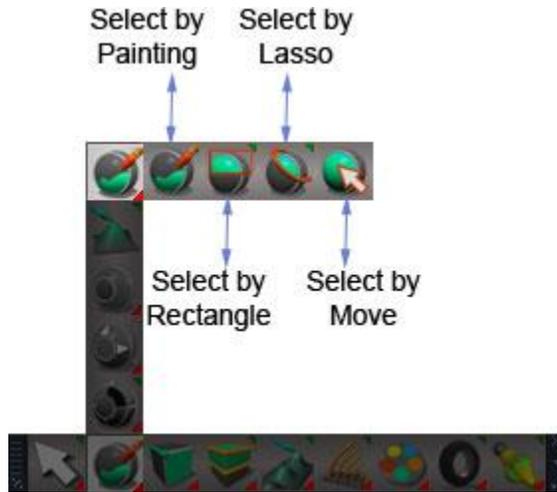


*The Mirror Tool aspect of the Mesh Editor Settings panel.*



*Unofficial Update Mirror Tool aspect.*

- **X Manual** – Sets mode to Manual, sets Normal to 1,0,0, sets Position to 0,0,0
- **Y Manual** – Sets mode to Manual, sets Normal to 0,1,0, sets Position to 0,0,0
- **Z Manual** – Sets mode to Manual, sets Normal to 0,0,1, sets Position to 0,0,0
- **Mirror** – run the mirror on the selection
- **Copy and Mirror** – copy the selection and then mirror



The basic selection tools for Point Editing.

### 3.2.1 Select By Painting



RMB sets to context mode and front faces.

### 3.2.2 Select By Rectangle

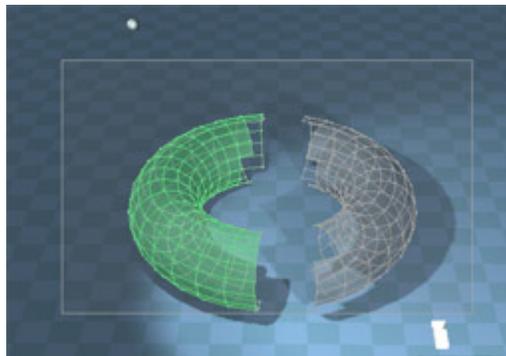


Connected – RMB panel, This checkbox determines if the selection is allowed to select other object's elements or not.

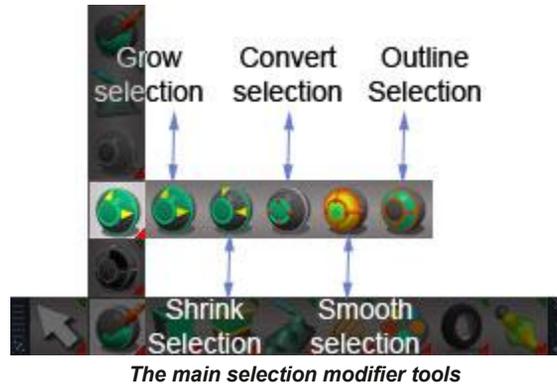
### 3.2.3 Select By Lasso



Connected – RMB panel, This checkbox determines if the selection is allowed to select other object's elements or not.



*Connected active, only 1 part can be selected at a time.*



### 3.2.11 Grow Selection



The Grow Selection tool first converts the current selection to vertices, and then expands the selection to include surrounding neighbor vertices and finally converts the selection to use the current point edit selection mode.

*The original version of the tool did not convert the vertex selection back to the point edit selection mode.*

### 3.2.12 Shrink Selection



The Shrink Selection tool first converts the current selection to vertices, and then shrinks that selection by removing the outer vertices and finally converts the selection to use the current point edit selection mode.

*The original version of the tool did not convert the vertex selection back to the point edit selection mode.*



### Select Plane Loop

[More Information](#)



### Select by Normals

[More Information](#)

### 3.2.17 Hide Unselected Geometry

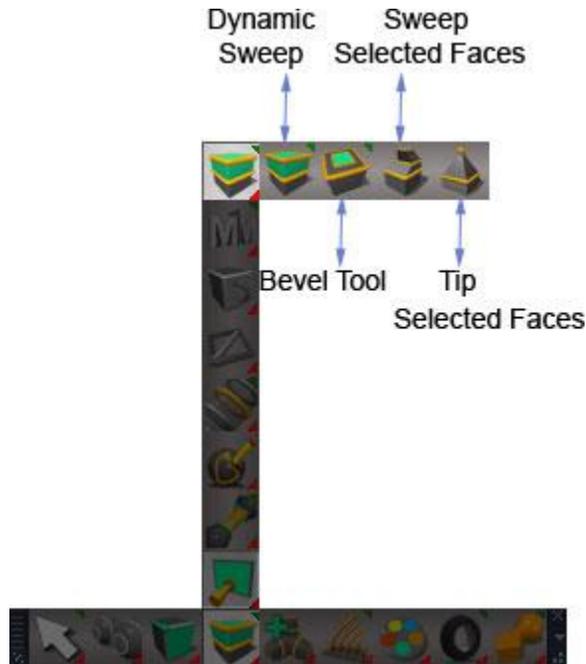


This hides the unselected elements, so that the selected elements are the only ones that remain visible, and are the only ones that can be selected and edited. This is useful for focusing work on a particular area of an object, without the distraction of other elements being visible in the scene.

*The original manual has the wrong button image*

### 3.4 Sweep, Draw, Topology Tools

The Point Edit tools allow you to perform tasks on your mesh to change the geometry. These tools are used in conjunction with the Select and Context Point Edit tools to provide you with essential mesh-editing tools. The Point Edit Operations tools are as follows:



The sweep, bevel and tip tools, are explained below.



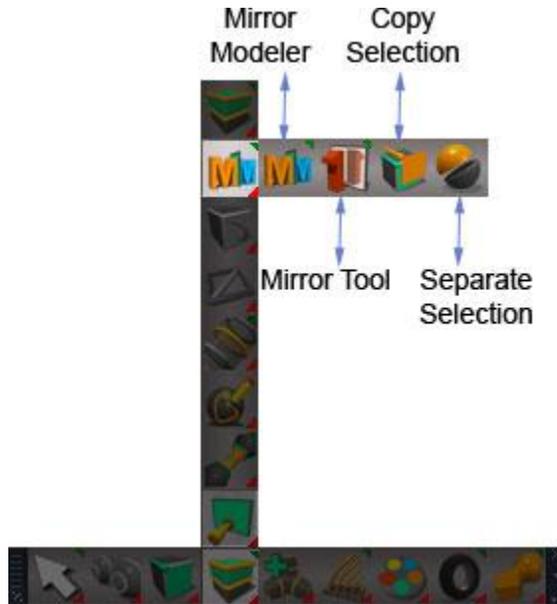
**Lathe** [↻ More Information ↻](#)



**Static Sweep** [↻ More Information ↻](#)



**True Bevel** [↻ More Information ↻](#)



### 3.4.5 Mirror Modeler

#### Mirror Matrix



**Mirror Matrix** - opens the mirror matrix panel

[↻ More Information ↻](#)

### 3.4.6 Mirror Tool



The Mirror Tool allows you to make a selection of elements on an object and Mirror that selection. If no selection of elements is made, the entire object is mirrored across the x-axis.

The Mirror Tool has some options associated with it. These can be selected manually in the Mirror Tool aspect of the Mesh Editor Settings option panel in the stack, or opened with a right click on the Mirror Tool.



***The Mirror Tool aspect of the Mesh Editor Settings panel.***



***Unofficial Update Mirror Tool aspect.***

***jump to Mirror Tool panel***

### 3.4.21 Add Polygons



The Add Polygons tool allows you to create a polygon on existing geometry. You can begin on an existing edge or vertex, or start in the middle of an existing face.

#### ***Information missing from the original manual***

To modify the position of a previous drawn vertex simply drag it to the desired location.

To remove a vertex while drawing, move it to another vertex. This looks slightly cleaner when the other vertex does not share a line segment with the point being removed.

The tool will snap to edges and vertices even when snapping is disabled.

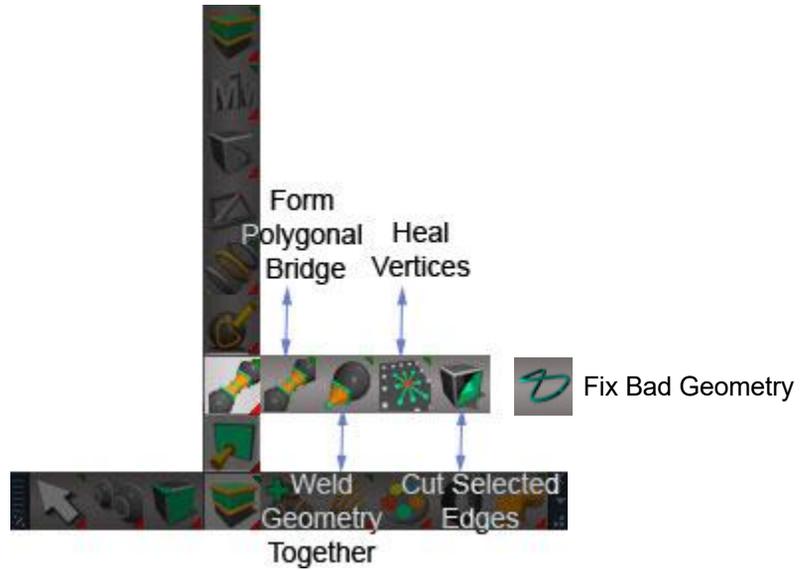
The regular snapping and constraint tools can be used with the add polygon/edge/point tools.

The snapping can be locked to an edge by holding the shift key. To lock movement perpendicular to the current snap location on the edge hold the shift and ctrl keys.

### 3.4.25.a Target Weld



[↪ More Information ↪](#)



### 3.4.27.a Fix Bad Geometry



This is a collection of tools to help fix bad geometry. It can be used for example to create a selection based on mesh characteristics such as side count, planarity and whether it has non-manifold edges. The only direct fixing tool is used to remove corrupt SDS geometry that can occur inside trueSpace. It also includes some random selection tools that can be used for artistic purposes.

**Triangles** - select 3 sided polygons

**Quads** - Select 4 sided polygons

**Ngons** - select polygons with more than 4 sides

**Non-Manifold Edges** - select edges that joins more than 2 polygons

**Lamina Polygons** - select polygons that share all the same vertices

**Concave** - select concave polygons

**Floating Points** - delete points that have no edge connections

**Random Point Weight** - selected points will have a random weight value

**Random Threshold** - percentage of elements to select, 0.5 would be 50%, 0.9 would be 90%, note that the slider goes with the Random Threshold value, not the Random Point Weight

**Random Points** - select random points

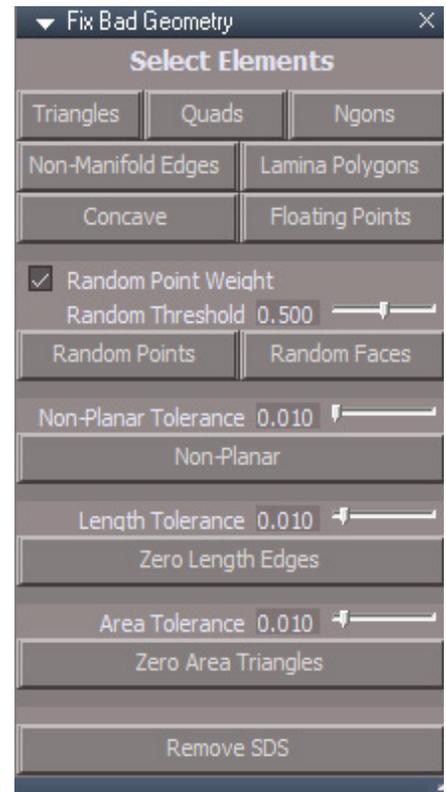
**Random Faces** - select random faces

**Non-Planar** - select polygons that are not flat using the **Non-Planar Tolerance** to determine maximum polygon bending

**Zero Length Edges** - select triangles that have a zero length side with the zero being defined by the **Length Tolerance**

**Zero Area Triangles** - select triangles that are very small with small defined by the **Area Tolerance** value

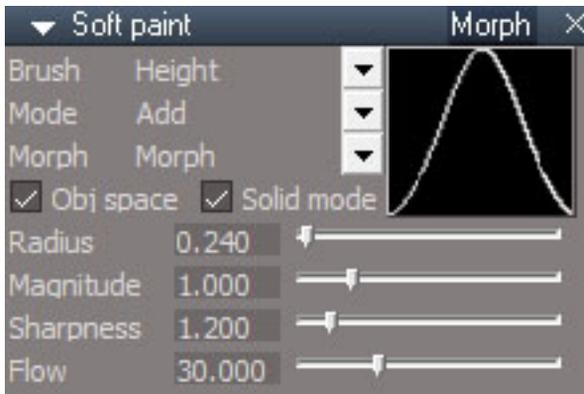
**Remove SDS** - removes a bad SDS from a mesh so it can be reapplied



### 3.5 Soft Paint



#### *Information missing from the original manual*



Soft paint has a morph mode to paint one morph into another. Once the morphs for the mesh are created, activate a morph, then start the soft paint and choose Morph aspect of the panel. Choose the source morph in the Morph dropdown list and start painting. The source shape will be used to alter the current morph.

### 3.11 Flatten History



*The location of the Flatten History tool*



*Unofficial Update location of the Flatten History tool*

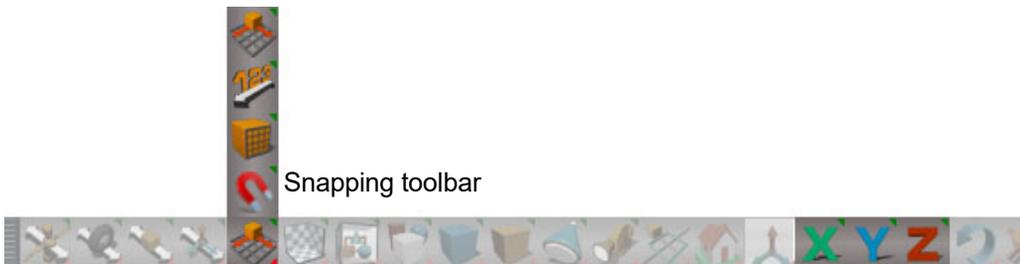


RMB flattens history and removes UV connectors

### 3.12 Snapping and Distance Tools



The location of the snapping tools



Unofficial Update location of the snapping tools

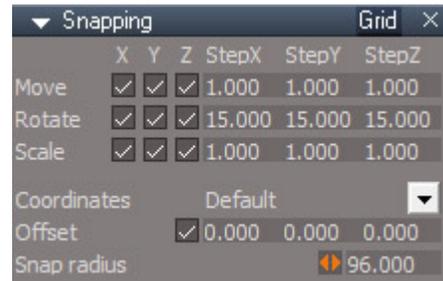
#### 3.12.1 Grid Snapping



Grid Snapping lets you control whether edits to an object’s position, rotation or size happen smoothly, or whether they snap to preset values and amounts.



The Grid Snapping options panel.



Unofficial Update Grid Snapping options panel.

**Snap radius** – This value controls how close to a snapping grid location you need to move before snapping will take place

### 3.12.2 Other Snapping Options

The Snapping panel has other aspects that let you control other options for snapping. These are listed below (except Dimensions, which is listed under the Distance Feedback Display section).

#### **Axes Lock Aspect**

This lets you lock out movement in certain directions, and control movement in the orthogonal views. Note that these settings affect movement even when Grid Snap is NOT enabled.



The Axes Lock aspect of the Snapping options panel.

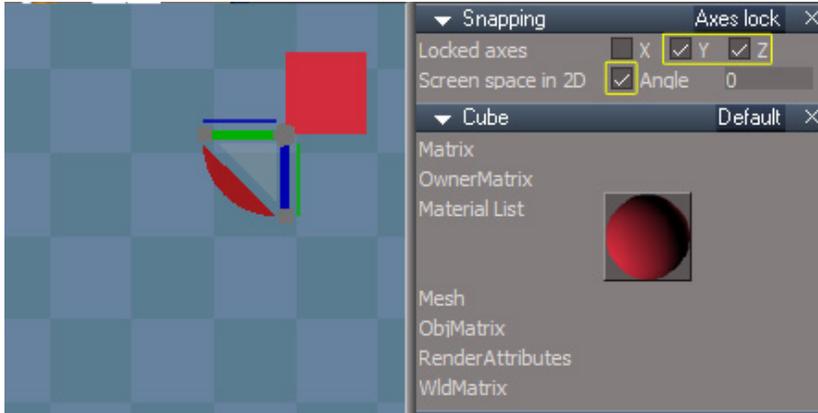
- **Locked Axes** – This locks changes in the X, Y or Z directions, and is the same as activating or deactivating the X, Y and Z locks on the main toolbar. Activating or deactivating these checkboxes will highlight or un-highlight the icon on the main toolbar, and using the icons on the main toolbar will check or un-check these parameters.



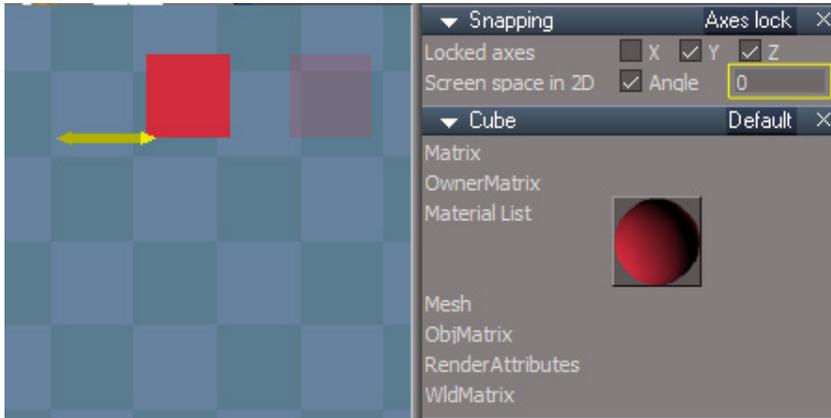
RMB open the Snapping Panel

- **Screen Space in 2D** – This has an effect in the orthogonal views (top, front, side) only. When unchecked, the X and Y constraints apply to the world X and Y, meaning you may not be able to move the object in the X direction on screen from the angle you are looking at even if the constraint for X is not checked. When checked, then the X and Y constraints apply to the on-screen X and Y, irrespective of world X and Y, so that you would be able to move the object in the X direction on screen if it is not locked, even if that is the Y or Z direction in World space.
- **Angle** – When Screen Space In 2D is checked, this allows you to rotate the axis by an angle so that movement along an axis occurs at that angle.

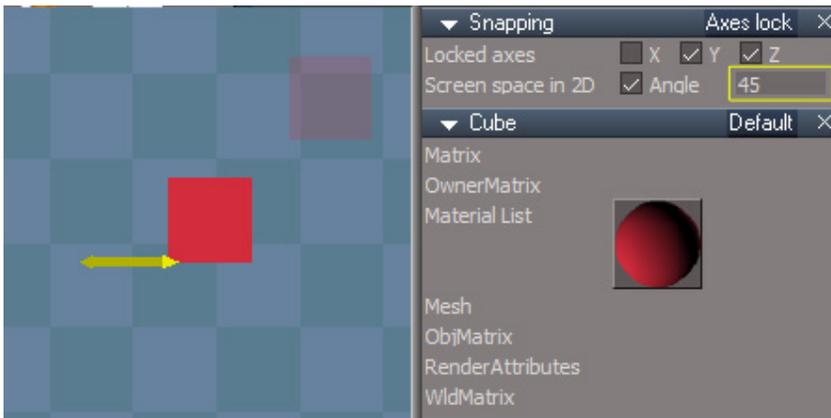
*Images and text on next page have been altered for clarity in this manual*



A cube viewed from the Top view, ready to move. Screen Space In 2D is checked, and all movement is constrained except along the X axis.



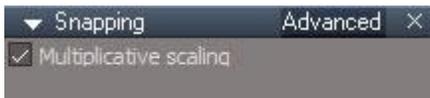
With an Angle of 0, movement occurs directly along the screen X axis, irrespective of what direction this might be in the World axis.



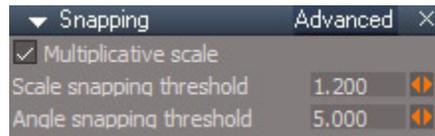
By setting the Angle to 45, clicking on the X movement axis of the widget this time moves the object along a line rotated 45 degrees.

## Advanced Aspect

This aspect lets you control snapping with the Scale tool.



*The Advanced aspect of the Snapping options panel.*



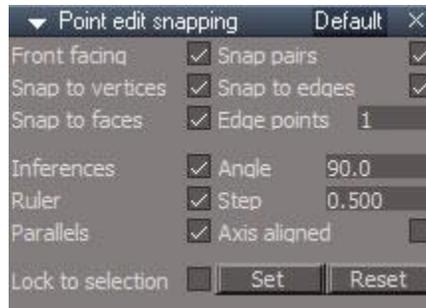
*Unofficial Update Advanced aspect of the Snapping options panel.*

- **Scale snapping threshold** – This value controls how much you must move before snapping will take place for scaling.
- **Angle snapping threshold** – This value controls how close to a snapping angle you need to be before snapping will take place

### 3.12.4 Point Edit Snapping



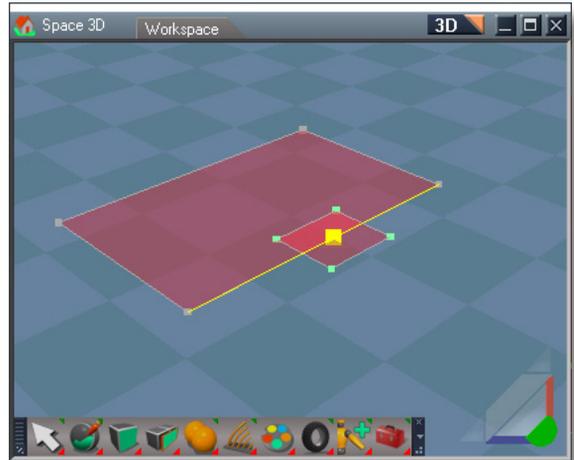
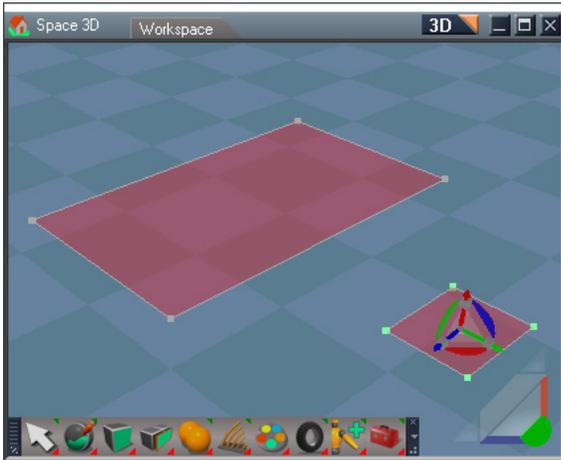
Point Edit Snapping works when in Point Edit mode, and allows snapping when you are moving vertices, adding edges and loops, etc.



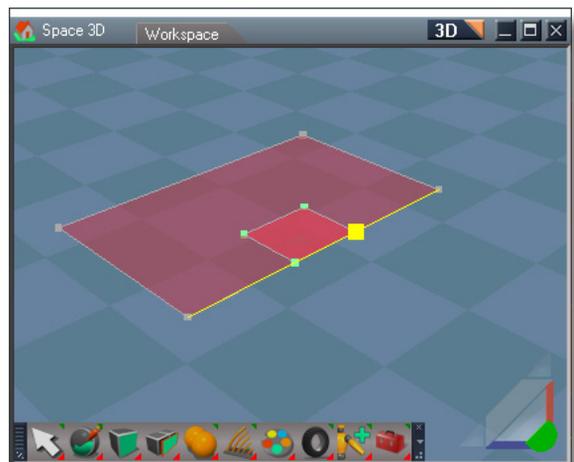
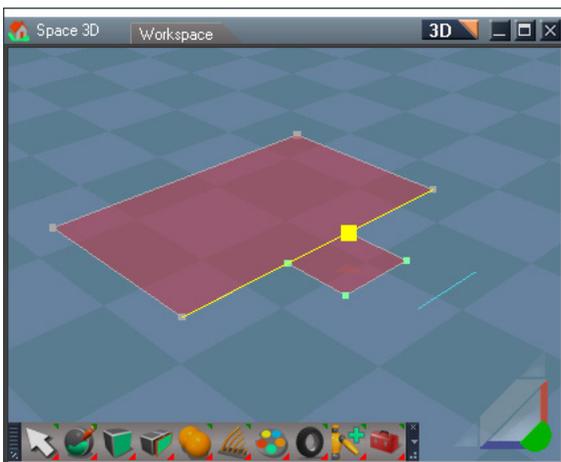
*The Default aspect of the Point Edit Snapping options panel.*

- **Front Facing** – Controls whether snapping is only done to front facing edges and faces (note that Snap To Vertices will be unaffected by this setting). When checked, snapping will only be to front facing elements, limiting snapping to visible elements facing the camera. When un-checked, snapping will work on elements that are not facing the current view, allowing snapping to faces and edges to apply to back faces on an object, etc.
- **Snap Pairs** – This parameter takes effect when you are working with selections of more than one element. If this is checked, then snapping occurs when any of the vertices in that selection gets close to a snapping point. If this is unchecked, then snapping only occurs when the widget for the selection gets close to a snapping point.

An example is shown below. The snapping point shows as the yellow spot which snaps to the edge which is also yellow when snapped to.



The initial set up has four vertices selected for moving (left). With Snap Pairs disabled, only the widget will snap, as can be seen clearly when we cross over the existing edge – the first two vertices do not cause a snap, only when the widget near the snapping point does snapping take place (right).



When Snap Pairs is enabled, the vertices themselves snap to the edge, resulting in two different snaps. The first occurs when the first set of vertices near the snapping point (left), and then the selection snaps again when the other vertices near the snapping point (right).

**Lock to Selection** –This option lets you constrain editing in Point Editing to particular directions. For example, if you set a lock based on a polygon, then you will only be able to move points in the plane defined by that polygon (ie, in 2 directions), or if you set a lock based on an edge, you would only be able to move points in the direction defined by that edge.

Once you have checked this option, you will need to make a selection on your object, and then use the Set button to define the lock (or you can use the Set button first, and then check this box).

### Lock to selection - extra information

To use the tool, in point edit mode select a face, two faces or an edge.

- o When selecting a face, movement will be constrained to a direction parallel to that face. This will be visualized by showing 2 arrows from the face center.
- o When selecting two faces, movement will be constrained to the edge defined by the intersection of the two planes. If the 2 planes are parallel then 1 plane will be ignored for the locking.

### *Vertex Aspect*



Error from the original manual

*2D Snap – When checked, snapping will only occur to snapping points on the current face beneath the mouse pointer. When unchecked, snapping can occur to any snapping points beneath the mouse pointer, even those on a back face, so long as it is within the Snap Distance. This parameter is checked by default.*

**2D Snap** means that the 3D arrangement of the elements are ignored for snapping and only their distance in screen space is used. Unchecked and items have to be near each other in 3D space to snap.

### *Missing from the original manual*

The snapping can be locked to an edge by holding the shift key. This also displays a guide line. When the guideline is active you can lock movement perpendicular to the current snap location on the edge by holding the shift and ctrl keys. This perpendicular locking only works when moving along an edge connected to the vertex that is moving. If you have enabled edge points and you snap to edge, snapping positions will also be evaluated outside that edges end points.

If you snap to a face not connected to the selected element and hold the shift key the snapping will lock to the face. This can be most easily be seen when using the Select by Move tool instead using of the point edit widget. When using the point edit widget it will constrain to a line on the plane. Shift and control together do not move perpendicular to the face.

Inferences only work on perfectly flat faces.

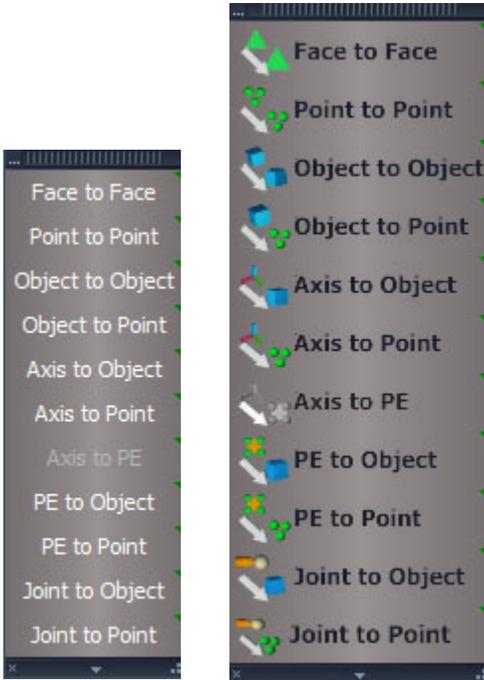
Inferences are useful when used with the drawing tools for polygons and lines and also may be useful for moving some elements around on a flat surface like after a bevel insert.



**Snapping Toolbar** - Open Snapping Toolbar.



*Snapping Toolbar – standard style*

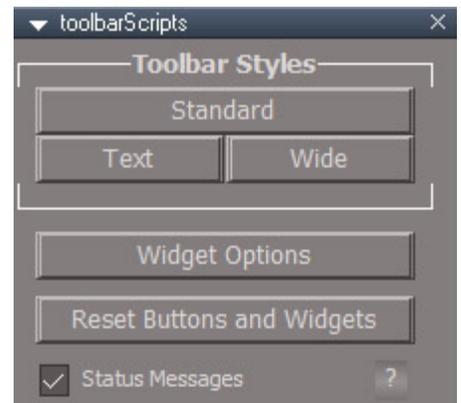


*Snapping Toolbar – text and wide styles*

**Standard** - square icon buttons

**Text** - text based buttons

**Wide** - icon plus text



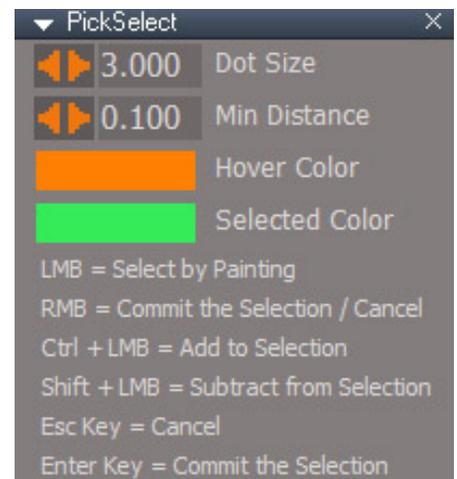
*Snapping Toolbar Options*

**Widget Options** - set hover and selected colors and dot size

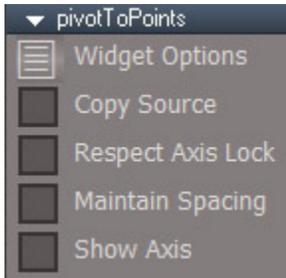
**Reset Buttons and Widgets** - clean out of sync widgets

**Status Messages** - if unchecked status messages do not show. Recommend leaving this checked.

The Reset Buttons and Widgets is used as a safety net to clean the user interface. It will deactivate any picking widget, clear the button highlighting, clear mesh highlighting effects and clear the status line.



*Widget Options*



*Snapping Tools Options*

**Widget Options** is the same thing as the Pick Widget Options of the toolbar button.

**Copy Source** makes a copy and snaps it to the target selection and the widget stays active to continue copying to new target selections.

**Respect Axis Lock** uses the state of axis locking to restrict the movement of the snapped selection.

**Maintain Spacing** will snap the selected items as a fixed group instead of individually snapping each to the target selection

**Show Axis** option to flash the axis after it has been snapped

### General Usage:

Select the objects/elements to be snapped

Press one of the snapping buttons

Select the destination objects/elements

RMB to commit the selection and move the original selection to the center of the target selection

The Face to Face and Point to Point snap tools do not use the current selection and start by deselecting everything.

If the Copy Source option is active RMB will snap move then reselect the source and wait for another target selection.

The Copy Source option can be confusing when used with axis snapping because no visible change occurs.

Object picking selections process uses 2 widgets so there are 2 cancel processes. Before any selection RMB will cancel. After an object is selected RMB the center sphere of the widget to cancel.

Joints should be in Shape Skeleton mode for selection.



**Face to Face** - Move and rotates one object to another based on triangle face selections.



**Point to Point** - Move one object to another based on point selections.



**Object to Object** - Move an object selection to the center of a target object selection.



**Object to Points** - Move an object selection to a target vertex selection center.



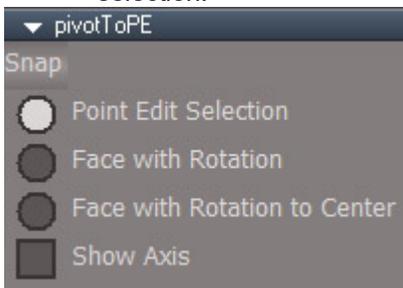
**Axis to Object** - Move the axes of an object selection to the center of a target object selection.



**Axis to Points** - Move the axes of an object selection to a target vertex selection center.



**Axis to PE selection** - Moves the axis of the current point edit object to the center of the point edit selection.



**Snap** – same as pressing the toolbar button

**Point Edit Selection** - move the pivot to selection

**Face with Rotation** - orient the pivot to the face selection then move the pivot to the selection center

**Face with Rotation to Center** - orient the pivot to the face selection then move the pivot to the geometry center

**Show Axis** - will flash the axis for a short time after the snap is complete



**PE to Object** - Moves the current point edit selection to the center of a target object selection.



**PE to Points** - Moves the current point edit selection to a target vertex selection center



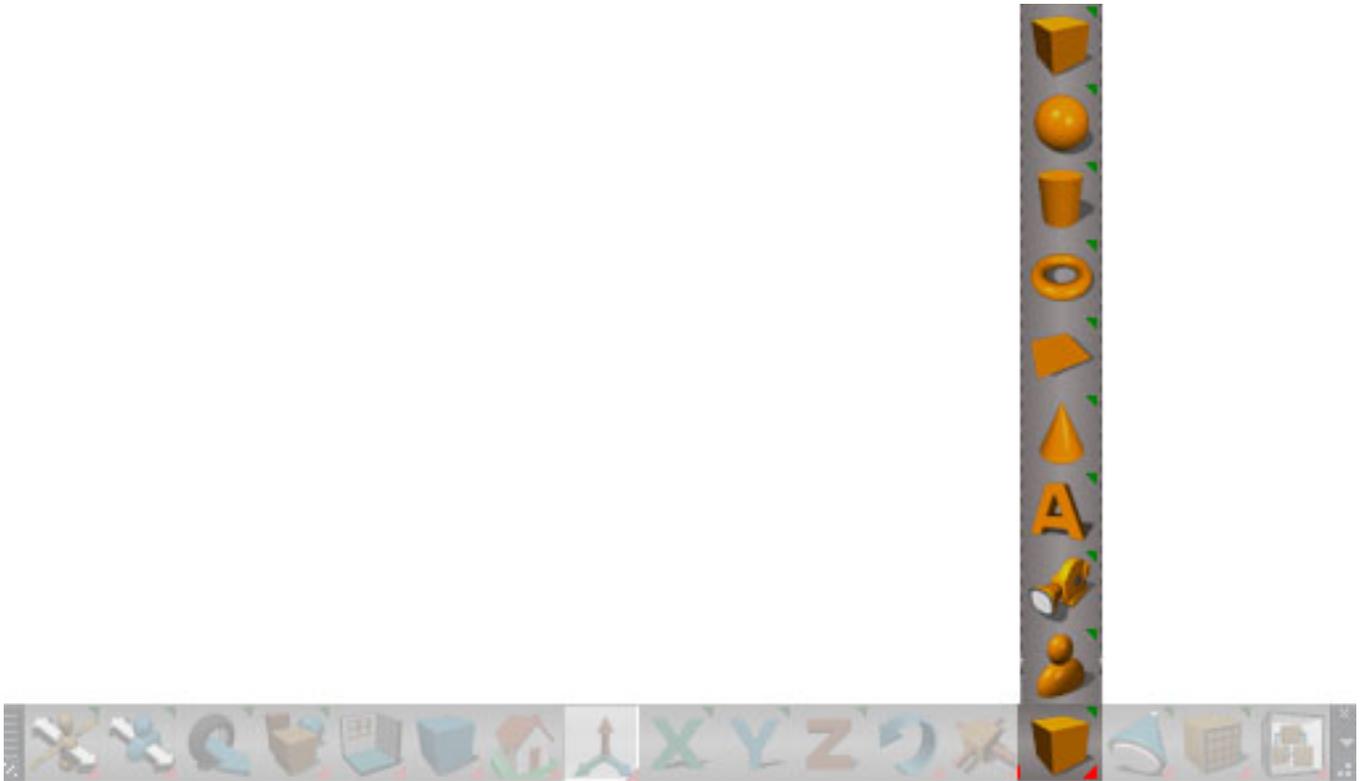
**Joint to Object** - Move a joint selection to the center of a target object selection



**Joint to Points** - Move a joint selection to a target vertex selection center.

### 3.13 Primitives

*Primitives information missing from original manual*



*Primitives in the bottom toolbar*

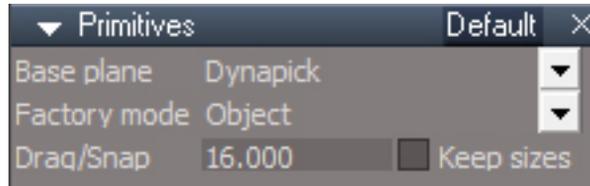


*Unofficial Update Primitives in the bottom toolbar*

Location of the camera and entry point buttons have been changed for the Unofficial Updates

## RMB panels

**Default Aspect** - primitive tool preferences panel



### Base plane

**Dynapick** - will create primitives aligned to and touching the face of a preexisting object, if no object is below the cursor it will behave the same as Ground

**Ground** - create primitive on the ground plane, isometric view create on the perpendicular plane of the view

**Screen** - will create primitives aligned with the view and located behind the view mirrored relative to the object location under the cursor. This is a bug, it should be centered on the object, not behind the view. Move object in local space along it's z axis to reposition. If no object is under the cursor, screen behaves the same as Ground.

**i** *To work around the screen space bug, use vertex snapping with 2D snap enabled.*

### Factory mode

**Add** - boolean add to the selected item

**Cut** - boolean cut the selected item, lines need to be visible to see the result

**Intersect** - boolean intersection

**Merge** - boolean merge

**Object** - create a new stand alone primitive object

**Sibling** - create a grouped relationship with the selected item as children of the same group object

**Subtract** - boolean subtraction

**Union** - boolean union

Cameras and lights only have Object and Sibling modes.

**Drag/Snap** - sets a radius where snapping cannot occur when creating primitives with snapping enabled. To override and force snapping press the ALT key.

**Keep sizes** - will remember and for single click creation will use the last size that a primitive is created while the tool is active. Dropping the tool will reset to the default size. When unchecked will use the size parameters from the individual primitive preferences panels.

### Boolean factory modes

Before the boolean modes, add, cut, intersect, merge, subtract and union set the primitive preferences before drawing or clicking to create the next instance.

Boolean modes are applied with a flatten mode of operation. Other modes are not supported.

Text primitive with cut can be slow and unstable.

Wireframe solid draw mode is needed to see the cut boolean properly.

Plane and sphere primitives will not boolean cut the face that they are drawn on.

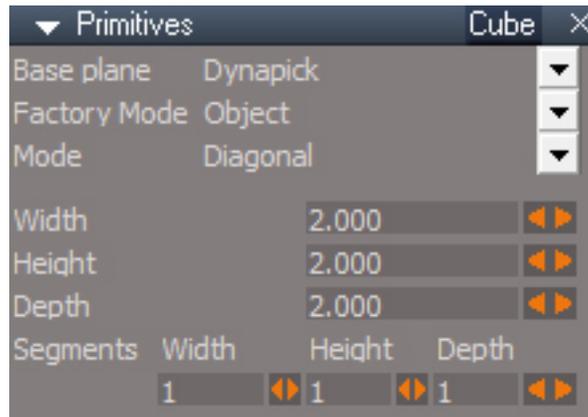
"Primitive employs extensive snapping."

Can set the height by snapping to other objects in the scene when RMB dragging during creation of the primitive. Snapping can also be done during the LMB phase of primitive creation.

## RMB - primitive preferences panels



**Cube Primitive**



### Mode

**Diagonal** - define base plane by LDrag, RDrag to define the height

**Edges** - define first edge by LDrag, release the button and move mouse to finish defining the base then RDrag to define the height or LClick to use the current height

**Points** - LClick define first point of the edge, LClick to define the last point of the edge, LClick to define the base, LClick to define the height

**Width** - size in the local X direction

**Height** - size in the local Z direction

**Depth** - size in the local Y direction

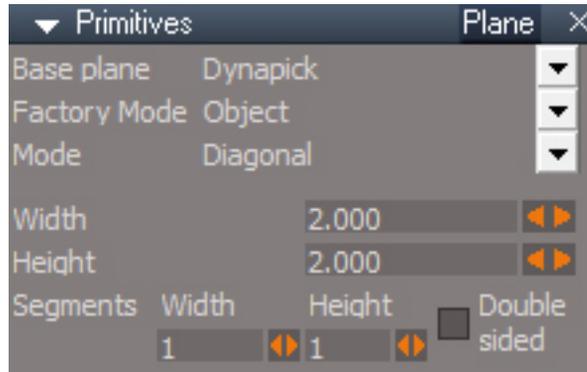
**Width Segments** - number of edges in the X direction

**Height Segments** - number of edges in the Z direction

**Depth Segments** - number of edges in the Y direction



## Plane Primitive



### Mode

**Diagonal** – LDrag to define first corner and the opposing corner of the plane.

**Edges** – define first edge by LDrag, LClick to finish the plane

**Points** – LClick 3 times to define 3 corners of the plane

**Width** - size in the local X direction

**Height** - size in the local Y direction

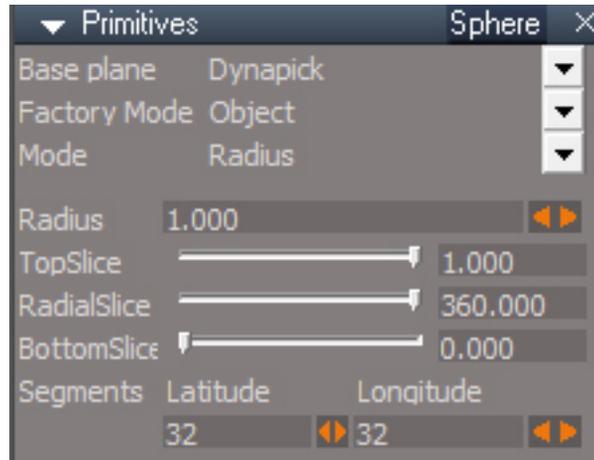
**Width Segments** - number of edges in the X direction

**Height Segments** - number of edges in the Y direction

**Double sided** - number of edges in the Y direction



## Sphere Primitive



### Mode

**Diameter** – define diameter for base by LDrag or RDrag defines height.

**Radius** - define center + radius for base by LDrag or RDrag defines height.

**Radius** - size of the sphere as measured from its center

**TopSlice** - percentage of the top portion to keep after slicing 1.0=100%=keep all of the top

**RadialSlice** - number of degrees in the radial direction

**BottomSlice** - percentage of the bottom portion be sliced 0=0%=no slice

**Latitude Segments** - number of edges in the radial direction

**Longitude Segments** - number of edges in the axial direction



## Cylinder Primitive



### Mode

**Diameter** – define diameter for base by LDrag, RDrag defines height.

**Radius** - define center + radius for base by LDrag, RDrag defines height.

When switching between LDrag and RDrag do not release the held button until after the switch.

**Radius** - size of the circle cross section as measured from its center

**Height** - height

**Shell** - remove the geometry in the center of the circular cross section to create a hole

**Thickness** - shell thickness

**RadialSlice** - number of degrees in the radial direction

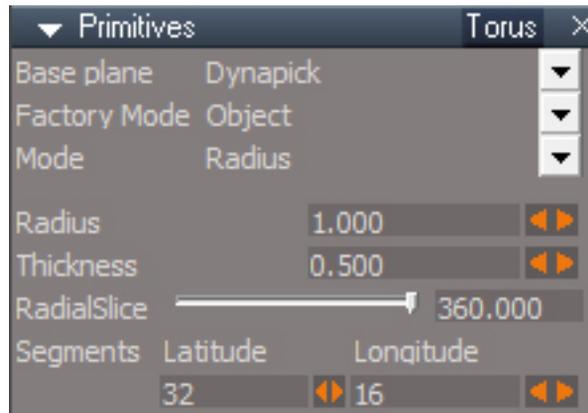
**Radial Segments** - number of edges in the radial direction

**Height Segments** - number of edges in the local Z direction

**Cap Segments** - number of edges at the top and bottom of the mesh, the first edge is invisible



## Torus Primitive



Mode

**Diameter** – define diameter for base by LDrag

**Radius** - define center + radius for base by LDrag

RDrag does not work for the Torus primitive.

**Radius** - size of the torus as measured from its center, not measured to the center of the cross section

**Thickness** - diameter of the circular cross section of the torus

**RadialSlice** - number of degrees in the axial direction

**Latitude Segments** - number of edges around the major axis

**Longitude Segments** - number of edges around the minor axis or cross section



## Cone Primitive



### Mode

**Diameter** – define diameter for base by LDrag, RDrag defines height.

**Radius** - define center + radius for base by LDrag, RDrag defines height.

When switching between LDrag and RDrag do not release the held button until after the switch.

**RadiusTop** - size of the circle cross section at the top

**RadiusBottom** - size of the circle cross section at the bottom

**Height** - height

**RadialSlice** - number of degrees in the radial direction

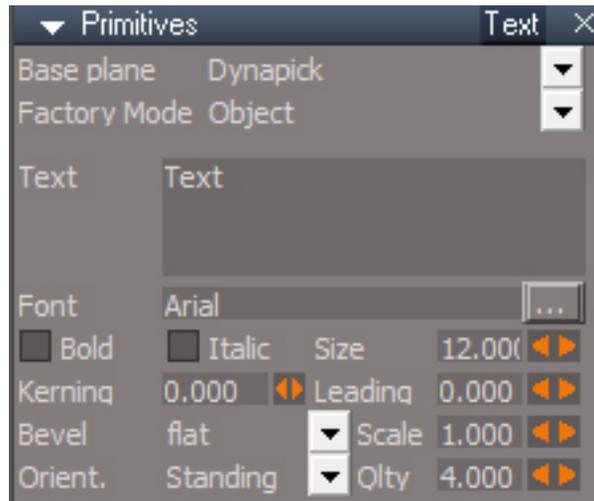
**Radial Segments** - number of edges in the radial direction

**Height Segments** - number of edges in the local Z direction

**Cap Segments** - number of edges at the bottom of the mesh, the first edge is invisible



## Text Primitive



LDrag to control orientation about the local Z axis, RDrag to scale along the local Z axis.

**Text** -

**Font** -

**Bold** -

**Italic** -

**Size** - width/height of a character where a value of 4 translates to about 1 meter for TrueType fonts

**Kerning** - adjust spacing between letters

**Leading** - adjust spacing between lines of text

**Bevel** - type of bevel, **base** has no bevel and **2D** has zero thickness

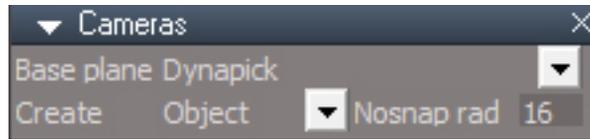
**Scale** - bevel scale, positive values effect the bevel and negative values effect the base(more or less)

**Orient** - **Lying** against the base plane or **Standing** up on it

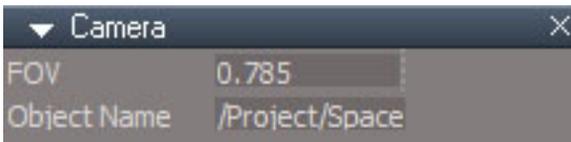
**Qty** - controls the number of vertices used to create the text

The thickness of the text depends on the bevel type.

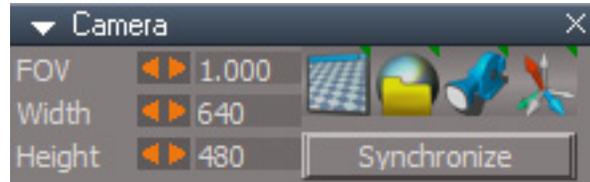
Large values for Qty will reduce the characters smoothing. Values of the form "X.1" like 4.1, 5.1, 6.1 seem to work best in reproducing the shape defined by the chosen font.



**Nosnap rad** - sets a radius where snapping cannot occur when creating primitives with snapping enabled. To override and force snapping press the ALT key. **This setting does not seem to be working.**



**Camera panel**



**Unofficial Update Camera panel**



**Camera** - Create a camera in the scene facing in the negative Y direction. The camera has a FOV of 0.785 by default.

The Unofficial Update version of the camera has a default FOV of 1.000, extra buttons and the Object Name is not shown in the panel.

## Camera Panel buttons



**Camera Window** - Switch the first floating 3D window or open a new 3D window to the camera view and move it to the upper right of the tS screen with the size of the window taken from the Width and Height parameters. Window includes the view toolbar.

RClick selects the camera

*Same icon as 3D Window*

If the first floating 3D window is closed, any other floating 3D windows will not take its place, so a new window will be opened. If all 3D windows are closed then the first becomes eligible for conversion.

This is incorrect, it opens it's own Camera Window



LMB press after opening a window with the Camera Window or Camera Render to File will close the previous window and reopen it.



**Camera Render to File** - Same as the Camera Window button except it also opens the Render to file dialog. Note that the size in the Render to file dialog may need to be manually updated to match the Width and Height set on the camera.

RClick opens windows explorer to the render folder set in the Render to file dialog.

*Same icon as Render to File*



This will stop the View synchronization before rendering.



**View** - Switch the active 3D Window to this Camera's view.

RClick -Switch the active 3D Window to the previous view

*Same icon as Camera*



Do not press this button except in a floating panel. This button does not work from the stack view.

*submitted a check and alert version, same for the spotlight view button  
tB has other changes pending as well?*

**Synchronize** - when active the modelspace camera will follow the transform and FOV of this workspace camera



**Normalize Rotation** orients the camera to point in the negative Y direction. RClick orient and position the camera to values of the default perspective view.

*Same icon as Normalize rotation for axes*



**Entry point** is the same as a camera except it has no Object name connector and the FOV is set to 0.5 by default.



The entry point camera has the special name "EntryPoint". Any object at the root level of the scene with the name "EntryPoint" will have it's transform and FOV values copied to the 3D view when loading the scene. The view is not tied/set to the EntryPoint. So if the entry point camera moves the view does not move with it and if the view moves the camera is left behind.



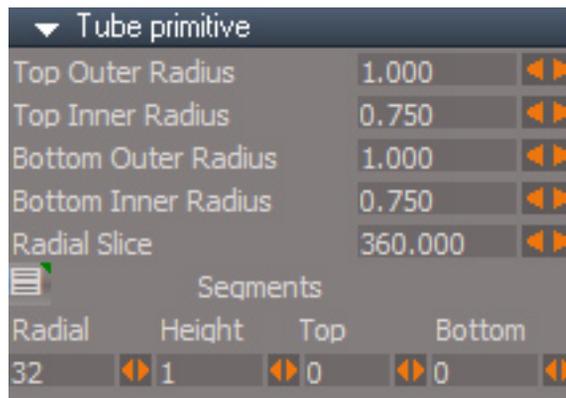
Do not use the "EntryPoint" name with a non-camera object unless you have a specific reason for doing so.

If the object does not have a transform value then the value will not be copied to the view. If it does not have a FOV value then the value will not be copied.

## New for the Unofficial Updates



### Tube Primitive



**Top Outer Radius** - size of the circle cross section at the top

**Top Inner Radius** - top inner radius

**Bottom Outer Radius** - size of the circle cross section at the bottom

**Bottom Inner Radius** - bottom inner radius

**Radial slice** - number of degrees in the radial direction

Blank Button - LClick open Keying panel and select the internal primitive node, RClick select the full mesh object

**Radial Segments** - number of edges in the radial direction

**Height Segments** - number of edges in the local Z direction

**Top Segments** - number of edges at the top of the mesh

**Bottom Segments** - number of edges at the bottom of the mesh



**Gear Primitive** - makes a star shaped mesh



**Height** - size local Z direction

**Inner Radius** - size of the central hub

**Longitude** - number of gear teeth or star points

**Outer Radius** - length of the teeth

Blank Button - LClick open Keying panel and select the internal primitive node, RClick select the full mesh object

**Flatten** - flattens the mesh and fixes the normals - do not use if animating the gear attributes

Tube and Gear primitives are not created with widgets and do not have their own Preference options. They do use the **Base plane** and **Factory Mode** defined by the other primitives preference panels.

blank page

# Chapter 5 SURFACING - Workspace

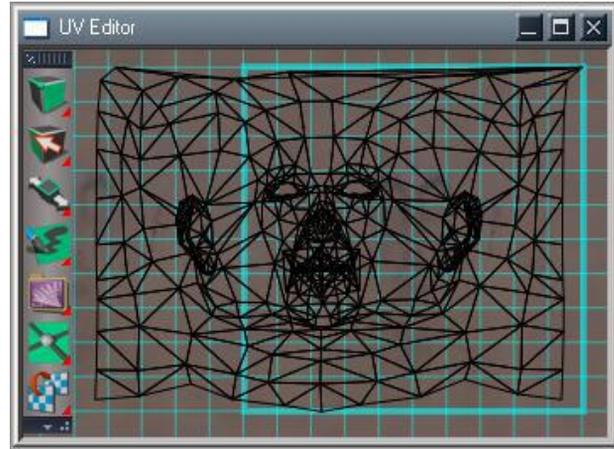
---

## 5.1 UV Projections

## 5.2.1 UV Mapping Editor Tools



### UV Mapping Editor



*UV Mapping Editor*



*Unofficial Update UV Mapping Toolbar*



**Hide selected geometry.**



**Select by material**



**Hide unselected geometry.**



**Show all hidden geometry**



**Material editor**



**UV Editor preferences**



**LMB Next Material, RMB Previous Material**

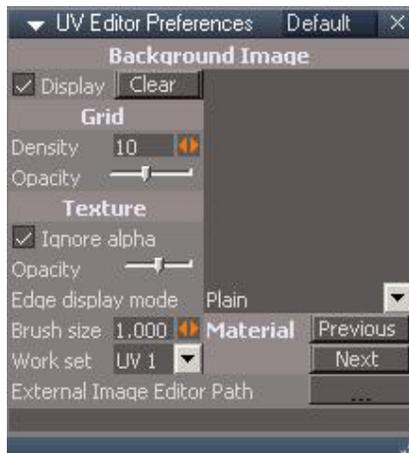


**Undo**

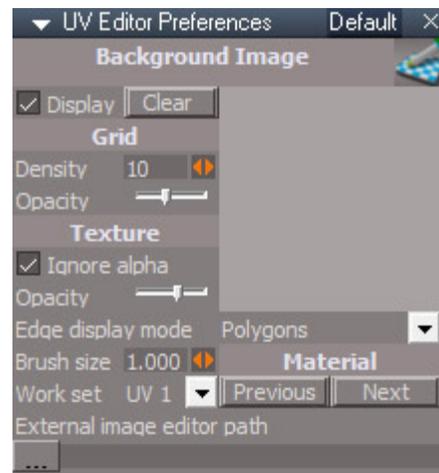


**Redo**

## 5.2.5 UV Mapping Editor Options



*Default Aspect*



*Unofficial Update Default Aspect*



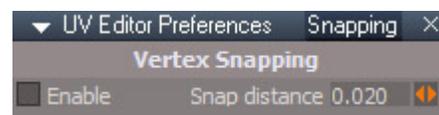
*Color Aspect*



*Unofficial Update Color Aspect*



*Export Aspect*



*Snapping Aspect*



LMB open the uv editor, RMB open preferences in a floating window

**Vertex Snapping** – when Enabled moving any element will snap it's vertices to other points in the UV map.

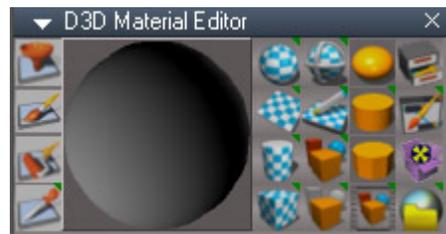
## 5.3 Workspace Material Editor

### D3D Material Editor

#### Basic Painting Tools:



*Material Editor*



*Unofficial Update Material Editor*



**Spherical UV Projection**



**Planar UV Projection**



**Cylindrical UV Projection**



**Cubic UV Projection**



**Shrink Wrap UV Projection**



**UV Editor**



**Render Scene**



**Render Object**



**Smooth Normals**



**Autofacet Normals**



**Facet Normals**



**Render Animation**



**Update Library Places**



**Edit DX Material in Link Editor**



**Convert Direct3D Materials**



**Render to File**

-  **Inspect:** Right-click Edit DX Material in the link editor.

*Right click same as the left click Edit DX Material in Link Editor button above.*

## Advanced Editing Tools:

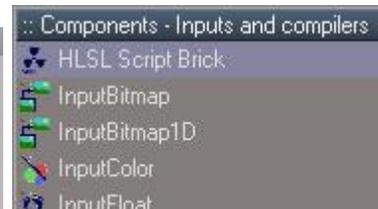
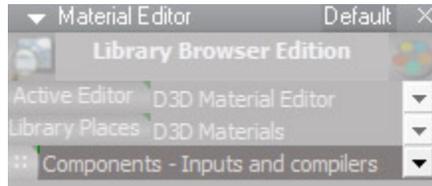
- DX Edit.



*Edit DX Materials in the Link Editor*

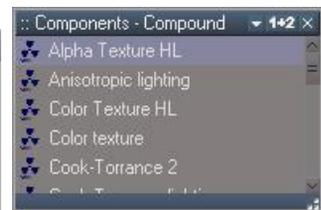


- DX Components Inputs and Compilers.



*Opens DX Components Inputs and Compilers bricks library*

- DX Components Compound.



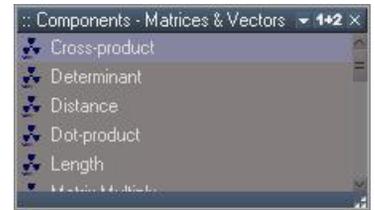
*Opens DX Components Compound bricks library*

- DX Components Texturing.



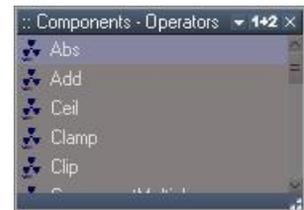
*Opens DX Components Texturing bricks library*

o DX Components Vectors.



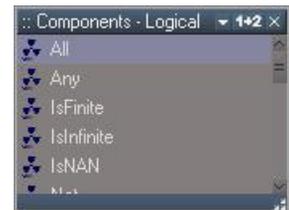
*Opens DX Components Vectors bricks library*

o DX Components Operators.



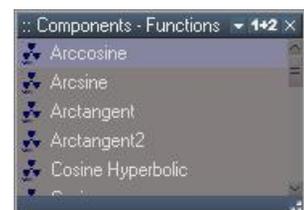
*Opens DX Components Operators bricks library*

o DX Components Logic.



*Opens DX Components Logic bricks library*

o DX Components Functions.



*Opens DX Components Functions bricks library*

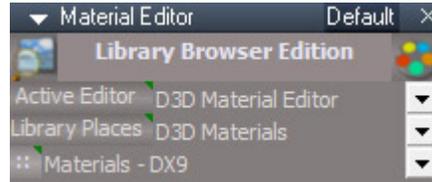
## Material Editor Settings:

- **Default Aspect:**

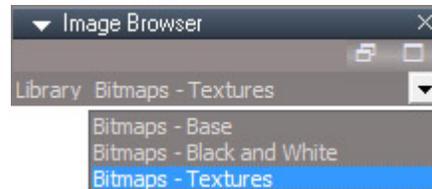
Shows available pick methods , the choices will depend on if there are other offline renderers installed , e.g. V-Ray



*Default Aspect*



*Unofficial Update Default Aspect*



**Image Browser** – open image browser. Open a library by selecting one of the options in the dropdown.



**Material Editor** – re opens the D3D Material Editor which disappears when opening other preference panels in the Stack/Panel

**Active Editor** button – RClick reset - This fixes a bug in tS in with which the Vray Material Editor can disappear from the combo control

**Library Places** button – RClick loads a preset list of libraries into the Library Selection list and places "D3D materials" plus all defined library places into the Library Places selection list. LClick - nothing

**Library Places Selection** – the contents of the chosen library place will be used to populate the Library Selection list. "D3D materials" is a special item that will populate the library list with bitmap, component, material and shader libraries.

:: – LMB open the library as 2D aspect, all subsequent library selections will open as 2D, RMB open the library as 1D+2D aspect, all subsequent library selections will open as 1D+2D aspect.  
LMB and RMB also save the vertical position of the library panel

**Library Selection** – drop down list of libraries, click to select and load a library.



### D3D Material Converter:

**D3D Compiled → D3D Shader** –converts materials from a closed compiled format to an open shader node based style. This is useful as a first step in converting compiled or lightworks materials from modelside to Yafaray or Indigo materials.

**D3D Material Instancing** → Converts to the 3 styles of workspace material instancing: None, Object and Scene.

**D3D Shader → YafaRay4tS** – converts a shader style material to a Yafaray material. Choose the type of Yafaray material from the drop down list. "YafaRay Library" is the name of the folder that

**D3D Shader → Indigo** – converts a shader style material to an Indigo material. Choose the type of Indigo material from the drop down list. "Indigo Library" is the name of the folder that contains the Indigo materials within the Main Library Place, Rs Main Libraries. Indigo materials use scene instancing and this script will not convert "object" or "none" type instanced materials.

**Selected Only** option is to convert selected objects only, otherwise all objects in the scene are converted. Indigo conversion only works with a single selected item.

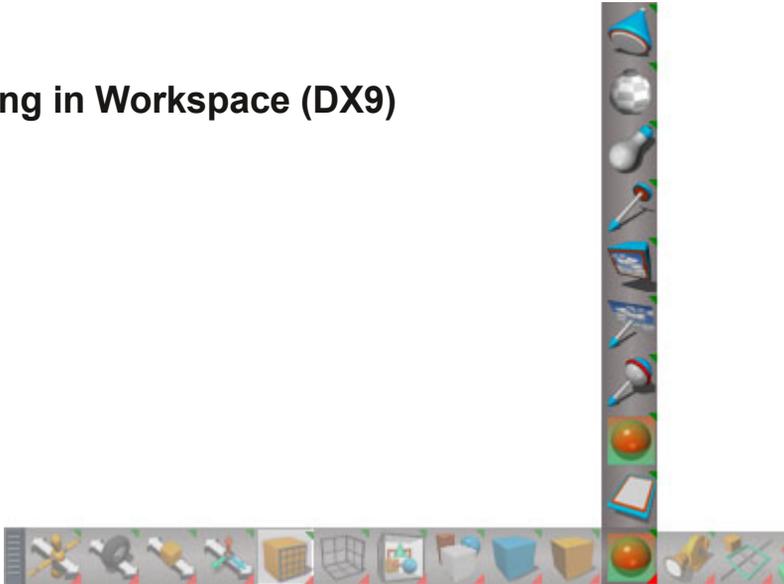
To convert a scene instanced compiled material to D3D, Yafaray or Indigo for a selected object:

- 1.Set the material editor to edit picked materials
- 2.Pick the material on the object and edit it in the link editor
- 3.Select the material node
- 4.Run the conversion

**Remove Orphan Materials** -If a mesh has multiple materials applied to it and the Separate Selection tool is used all the materials are copied which can result in orphan material nodes and connections. Run this tool to remove all the orphans in a scene

# Chapter7 Lighting and Rendering

## 7.1 Lighting in Workspace (DX9)



the fancy  
color pickers  
eat undos like  
crazy

## Common Settings and Functions

**No Falloff** button – preset Linear=0, Quadratic=0

**Linear Falloff** button – preset Linear=0.05, Quadratic=0

**Inverse Square** button – preset Linear=0, Quadratic=0.05

The presets have no effect on the Constant attenuation value. Mathematically it should have a value that is not zero when Linear and Quadratic are both zero.

**Intensity** – top scrubber range 1.0 and up, bottom scrubber range 0.0 to 1.0

**Preferences** – open the preferences panel for the light

**Synchronize** – when active sends information across the bridge when the color or matrix values change also when attenuation and some other values change.

**Quick Color Picker (HSL)** – Hue horizontal, saturation vertical, luminance slider

If you RClick the lights mesh shape it will open it's preferences in a floating window. To get to the shape of the omni light and directional light zoom in, select something else or hide the widget first.

## 7.1.1 Real-time Light Types

The new color pickers have interactive update, so the color of the light in the scene changes as the picker is manipulated.



**Ambient light** Ambient light provides equal lighting conditions for every pixel of the scene.



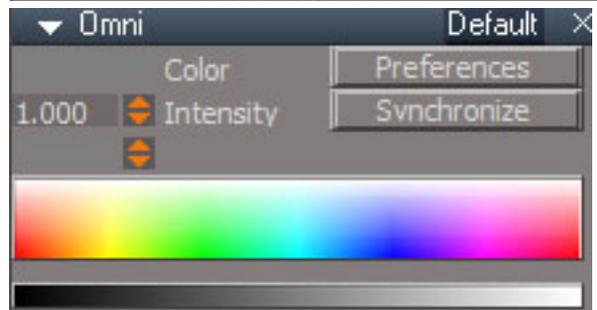
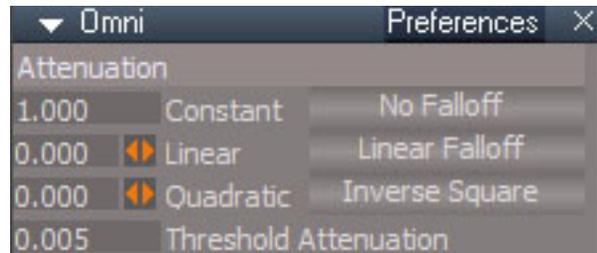
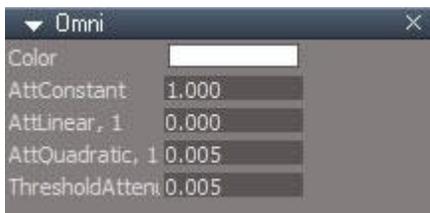
*Unofficial Update Ambient Light*

- **Color** – Controls the color (and intensity) of the light.

**Set Vray GI Color** – copy the color of the light to the vray environment color and activate the global illumination



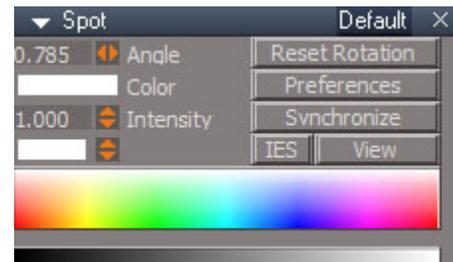
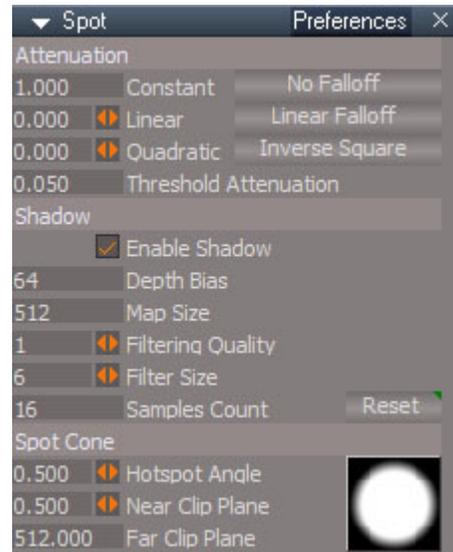
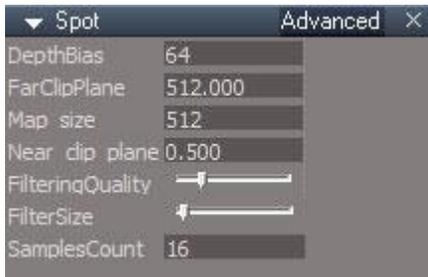
**Omnidirectional light**



*Unofficial Update Omni Light*



## Spotlight



*Unofficial Update Spot Light*

**Reset** - resets Attenuation and Shadow values. RClick resets the values under the Spot Cone section

**Reset Rotation** – sets the X rotation to -180 degrees and Y and Z to 0 degrees, light is facing downward with the top of the image in the negative X direction.

**Synchronize** – responds to extra information unique to the light type in addition to the standard color and matrix changes.

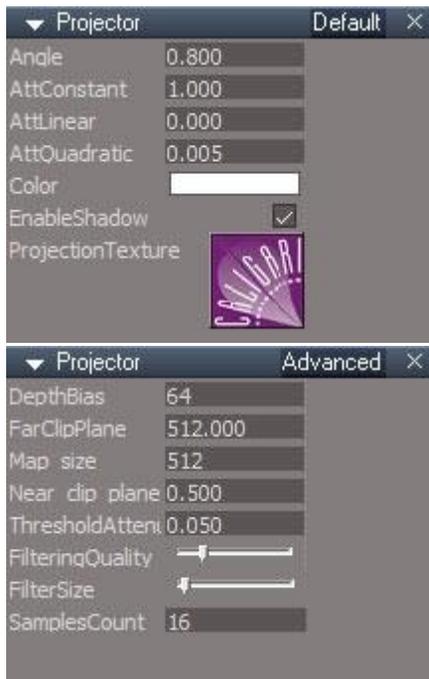
**IES** – opens the Convert Spot to IES panel, TODO link to IES page

**View** – the light has a camera inside of it. This button will set the active 3D window to a camera view using this camera. Click again to switch back to the previous view.

**i** Do not press this button except in a floating panel. This button does not work from the stack view. Do not switch to another 3D views while active or the button will change both 3d windows the next time it is used. So press View, do what you need to do and then disable it.



## Projector light



**Reset** - resets Attenuation and Shadow values. RClick resets the values under the Spot Cone section

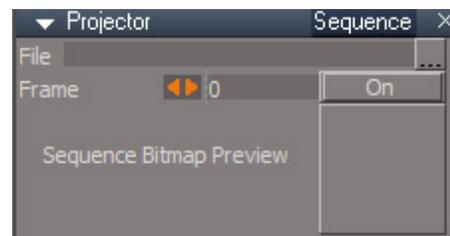
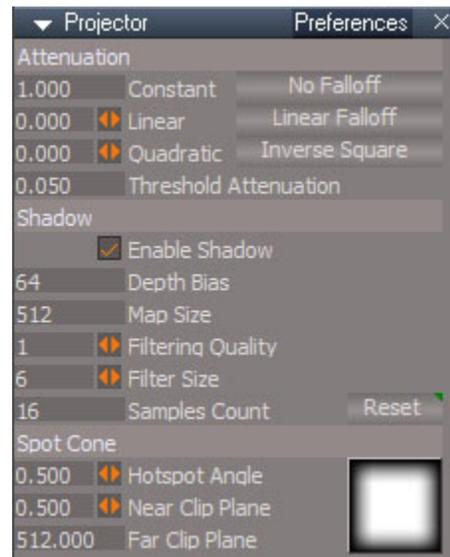
**Reset Rotation** – sets the X rotation to -180 degrees and Y and Z to 0 degrees, light is facing downward with the top of the image in the negative X direction.

**Synchronize** – responds to extra information unique to the light type in addition to the standard color and matrix changes.

**IES** – opens the Convert Spot to IES panel, TODO link to IES page

**View** – the light has a camera inside of it. This button will set the default main 3D window to a camera view using this camera. Click again to switch back to the previous view.

**Square** – switch the projection between a square and circular shape.



*Unofficial Update Projector Light*

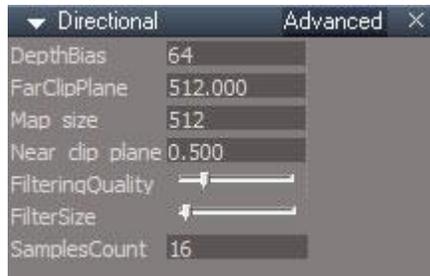
**File** – choose a set of image files to be played back by selecting 1 image in the sequence.

**Frame** – current frame number for the image sequence. The Frame value can be animated in the timeline.

**On** – activates the image sequence



## Directional light



*Unofficial Update Directional Light*

**Synchronize** – responds to extra information unique to the light type in addition to the standard color and matrix changes.

**Light Beam Diameter** – renamed from “Size” in the original light, is the width of the circular beam

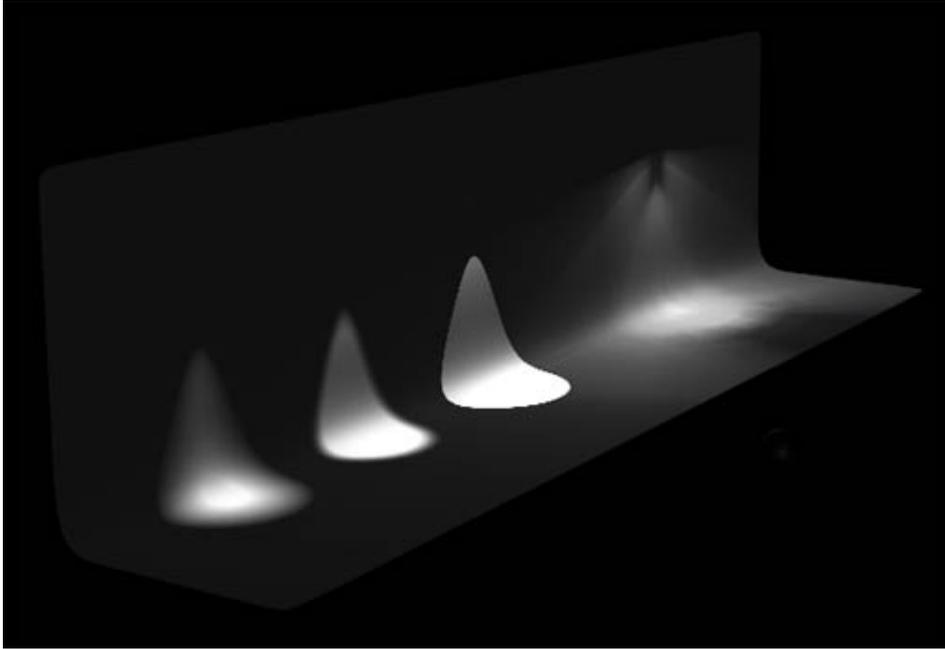


## Infinite light



*Unofficial Update Infinite Light*

 **IES Profile / Spot Cone**  
 Alter spot and projector lights in workspace to give the appearance of a light defined by an IES file.  
 RMB set general falloff for default spotlights so the hotspot angle will have an effect in the 3D viewport.



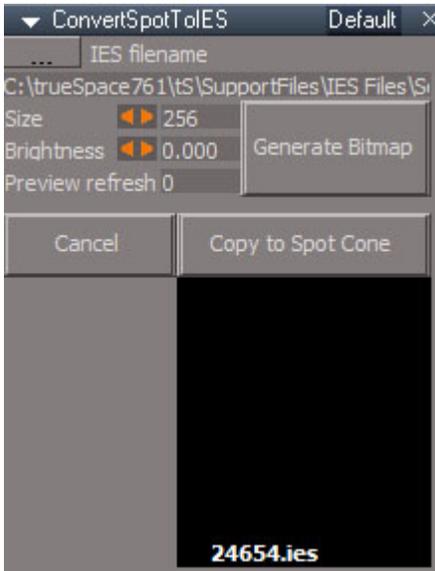
*from left to right - soft/small hotspot, truespace default, hard/large hotspot, ies profile light*

Both the IES Profile and Spot Cone alter the mask used by a spotlight that gives the light its circular shape. The Spot Cone alters the mask so that the spotlight angle and hotspot angle are used to generate the mask. This mask only effects how the spotlight looks in a D3D viewport.

The IES Profile works the same way in that it takes the lighting data defined by a real world light and applies it to the spotlight mask. The limitation is that the IES file defines how bright the light is and the mask just applies a 256 level image to the mask, so it replicates the general look but not the actual brightness of the light definition and results in a dimmer looking light. The IES file is read directly by the YafaRay renderer to generate IES lights for the render. It does not use the mask so there is no loss of brightness data.

IES files generally come in 2 flavors, 180 and 360 degrees. The 180 fills light in a hemisphere shape and the 360 fills light in a full sphere shape. The preview generated is compatible with 180 degree type of file. The angle for the spotlight is maxed out to match the 180 degree file defined by the IES light.

 truespace bug: in the 3D viewport under some circumstances spot lights will shine in 2 directions instead of 1 when shadow is enabled, a workaround is to turn off hardware shadow filtering.



Select a spotlight or projector light in the scene and press the IES button to open the panel.

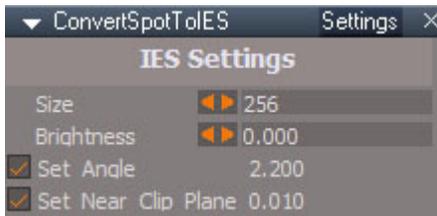
Push the **IES filename(...)** button to choose an IES file

Set value for the **Size** of one side of the square image mask in pixels

**Brightness** increase the brightness of the image ( 1 = twice as bright )

Press the **Generate Bitmap** button to create the mask image

Select one or more spotlights and press **Copy to Spot Cone** to apply the mask profile to the selected spotlight(s)



**Size** - same as Default aspect

**Brightness** - same as Default aspect

**Set Angle** – when checked the spotlight angle will be set to 180 degrees to match the IES light definition.

When unchecked the profile will be compressed compared to the real world light.

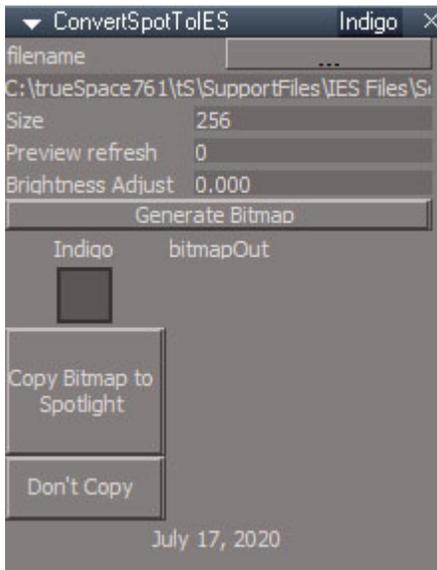
**Set Near Clip Plane** – small value results in better lighting of nearby surfaces parallel to the light orientation



**Size** - of the square image mask in pixels

**Falloff Exponent** – control how quickly the brightness changes between the cone angle and the hotspot

**Generate Spot Cone Falloff** – create and apply to the selected light(s)



*Indigo compatible IES generator panel*

The Indigo panel will generate the IES profile and add an IES data node to the light that is read by the Indigo renderer.

*Area light and sky light are not documented in the original documentation*



**Sky**

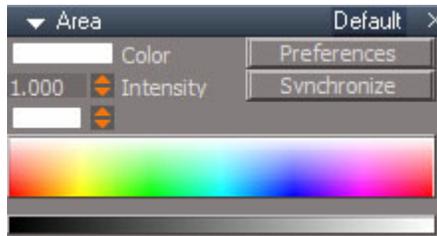
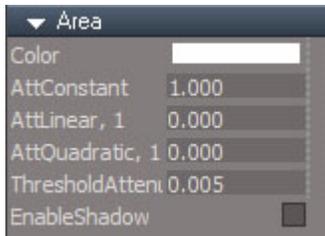


The Sky light is identical to the infinite light type in its lighting behavior. The mesh has a different appearance.

? any vray indigo yafaray differences ?

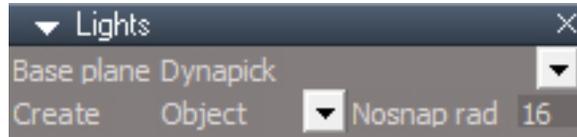


**Area**



Area Samples – ? used by YafaRay renderer ?

*Lights RMB creation options - information not in the original documentation*



## Base plane

**Dynapick** - will create primitives aligned to and touching the face of a preexisting object, if no object is below the cursor it will behave the same as Ground

**Ground** - create primitive on the ground plane, isometric view create on the perpendicular plane of the view

**Screen** - will not create lights aligned with the view They will be created behind the view mirrored relative to the object location under the cursor. *Looks like a bug, should be centered on the object, not behind the view.* If no object is under the cursor behaves the same as Ground.



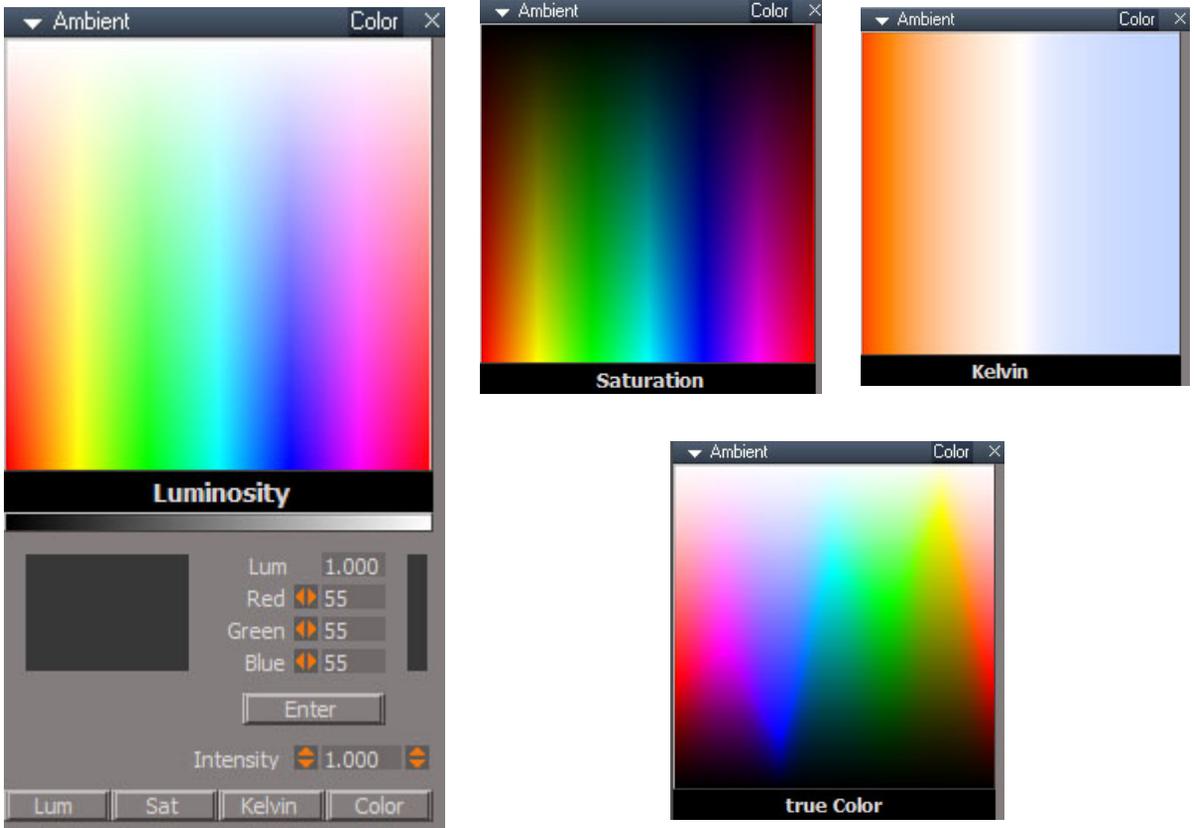
*To work around the screen space bug, use vertex snapping with 2D snap enabled, this will fix the placement problem, but will not align the light to the view so the final result will be identical to the Dynapick base plane.*

## Create mode

**Object** - create a new stand alone primitive object

**Sibling** - create a grouped relationship with the selected item as children of the same group object

## Light Color Pickers



**Luminosity** - Color Picker (HSL) – Hue horizontal, saturation vertical, luminance slider

**Saturation** - Color Picker (HSB) – Hue horizontal, brightness vertical, saturation slider

**Kelvin** - Color Picker (Kelvin) – color temperature scale horizontal, vertical has no meaning, brightness slider.

**true Color** - Color Picker (Random) – random color picker.

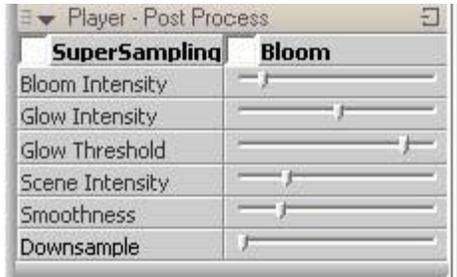
**Enter** – press to set the color based on manual RGB color entry.

**Intensity** – left scrubber for values greater than 1.0, right scrubber for values less than 1.0.

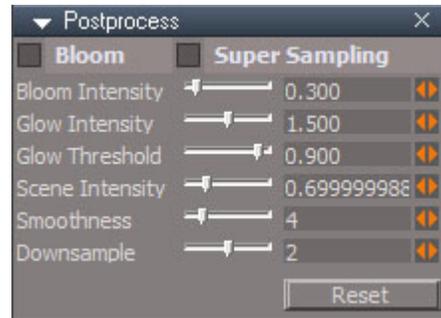
**Lum, Sat, Kelvin, Color** – press switch between the different color pickers

## 7.1.5 Real-time Post Processing

Workspace supports real-time post-processing of rendered images to achieve better and more atmospheric images. The post-processing settings panel can be displayed by switching to the Preferences aspect  of the Stack View while the workspace window is active. The following image shows the post-processing settings panel in its default state.



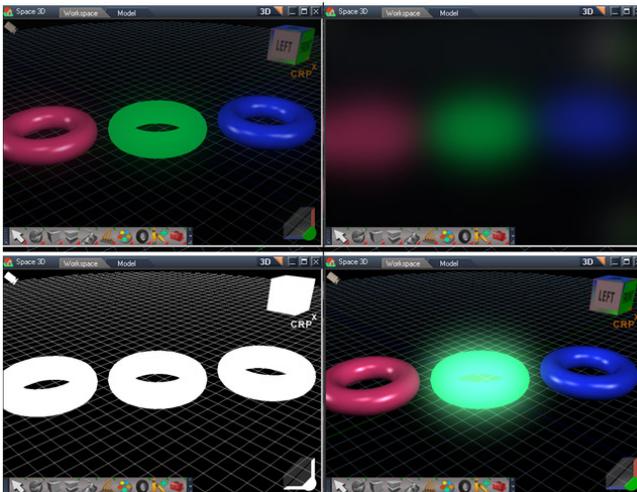
*Post-processing panel in the default state.*



*Post-processing panel in the default state.*

**Reset** – global reset of all postprocess values

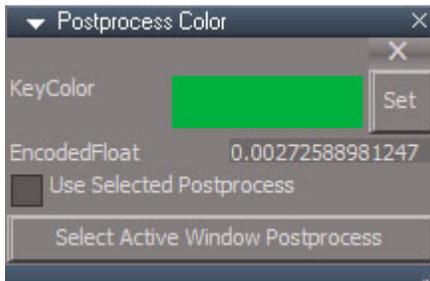
- Scene Intensity value below 100 will behave the same as before
- Scene Intensity 100 to 199 to get only the bloom, which is really a blur
- Scene Intensity = 200 to get alpha values as gray color
- Scene Intensity = 300 to get a color key based glow
- Scene Intensity = 301 to get a color key based glow plus scene



*top left - default post process  
top right - blur  
bottom left - alpha  
bottom right - glow based on color key*

The alpha option, Scene intensity=200, needs a mesh background with an alpha material  
 A large inside out sphere centered in the scene works well for the background mesh  
 assign a blank d3d material with a Constant Color shader  
 constant alpha = 0  
 alpha test set to opaque  
 alpha test value = 0

The postprocess library has a script to help set values for the glow color key.



lower **X** - deletes the Postprocess Color node, the post process settings are left intact

**KeyColor** - color for the matching process

**Set** - turn on glow for the active 3d window using the KeyColor.

**Use Selected Postprocess** - option for the Set button where the postprocess node is manually selected and used instead of using the post process on the active 3d window

**Select Active Window Postprocess** - after selecting the active window's post process node, it opens the Postprocess Color panel in the stack view, turns on the glow color for the window using the KeyColor.

Usage:

1. Choose a key color
2. Select the border of the desired 3D window
3. Press the Set button

The Set button will copy the EncodedFloat value, the color key, into the post process Glow Threshold and set the Scene Intensity to 301 to get the glow and the original scene together and then turn on Bloom to show the final effect.

### 7.1.7 Real-time Render To File



RMB opens an explorer window to the render file path

Place rendering stuff here or move it into additions with links from here  
skip to the next chapter and decide later  
pages here, not in orphan pages at the end of this document



**D3D Render** [↻](#) *More Information* [↻](#)

## Offline Render Engines

TODO Mention getting started with yafaray and vray render engines

### YafaRay Information January 31, 2021

<https://github.com/YafaRay/libYafaRay>  
Is the where new development for YafaRay can be found

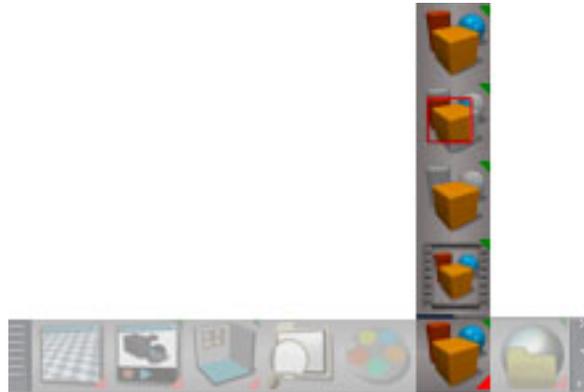
<https://github.com/YafaRay/Core/releases>  
Is where the final release, v3.5.1, can be found

Place rendering stuff here or move it into additions with links from here

skip to the next chapter and decide later



*Bottom Toolbar Rendering*



*Unofficial Update Stack Toolbar Rendering*

Place rendering stuff here or move it into additions with links from here

skip to the next chapter and decide later



## 8.2 The Tools

### 8.2.3 Controlling How the Skin Reacts



#### Convert Soft Selection to Skin Weights

*Original manual shows the wrong button icon.*

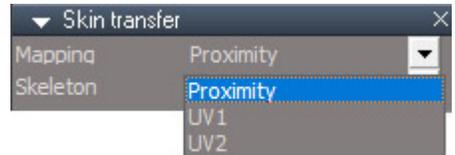


**Transfer Skinning Weights** Transfer skin tool – structure, names, distances skeleton matching algorithms; uv1,uv2; proximity skin transfer algorithms

**Mapping** – match points between characters

**Proximity** – match points by their positions in 3D space

**UV1, UV2** – match points by their positions in 2D UV space

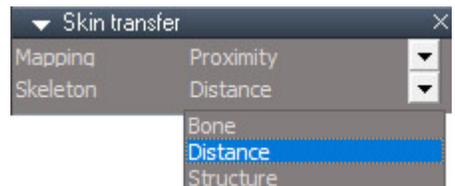


**Skeleton** – match bones between characters

**Bone** – match bones by their names

**Distance** – match bones by their distance in 3D space

**Structure** – match bones by their positions in their hierarchy



idea - mixamo import and do xfer with it  
test was a bust - mixamo characters are made of several meshes  
need some sample use cases

link to the beta video here

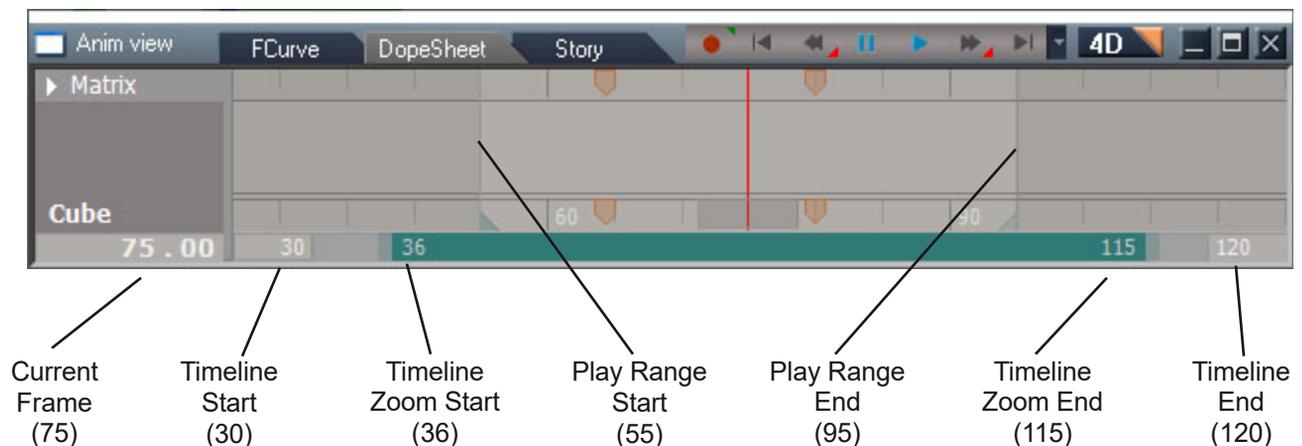
# Chapter 9 – Animation

## 9.1 Animation Introduction

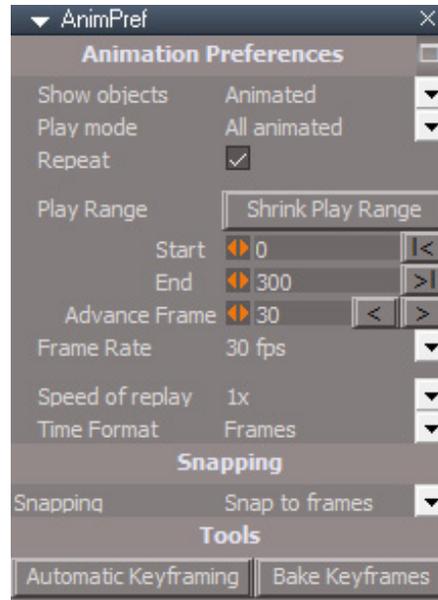
This chapter documents the new animation tools found in the Workspace (it does not cover the animation tools such as the KFE and similar that are found in the Model side). The Workspace features a powerful range of tools for creating animation which will let you work with physics simulation, skeletons, keyframed animation, and imported motion capture via BVH. You can in fact flexibly combine all of these different types of animation, giving you many different ways to achieve exactly what you are looking for.

The chapter begins with a look through each of the tools associated with this process, and then moves on to some introductory tutorials that take you through some ways of creating animation in trueSpace.

## 9.2 The Animation Editor in detail



## 9.2.7 Animation Preferences Panel



### Chapter 9.2.7 Error

**"Play Range Start and End** – This defines the start and end of the animation. Note that this is the same as setting the start and end points using the numeric fields at the bottom of the Animation Editor window. Updating those fields in the Animation Editor window will update the fields here on this panel. Note however that updating the fields on this panel will not redraw the Animation Editor window."

It is not the same as setting the start and end points using the numeric fields at the bottom of the Animation Editor window. It is the same as dragging on the play range handles and it does redraw in the Animation Editor window when updating the fields.

Note that the Play Range is limited to values within the min and max values of the animation range start and end.

By default the Animation Range are the set of frames that get rendered. Play Range is for previews.

The small button upper right next to the title will open the Animation Preferences in a floating window.

**Shrink Play Range** : set the timeline start and end to match the current preview play range

|< : set timeline start to 0, does not effect the play range

>| : set timeline end to 300, does not effect the play range

**Advance Frame** : number of frames to move the current time with each press of the arrow buttons



**Automatic Keyframing** : open the Automatic Keyframing panel

Move, rotate or scale an object or dynapose an actor to get automatic keyframe generation.

IK handles don't create a key, but the act of just selecting a joint after adjusting a handle is enough to make it reevaluate causing a small motion in the joint and create a key for the skeleton.

If a joint is already selected just touching the transform widget is enough to get a key.

**Bake Keyframes** : open the Bake keyframes panel

Set the animation play range to determine what keys get baked

Adjust the Period value to give scripts time to run before a key is set

Select the item to bake and push the Bake Selected Object button

Alternative workflow:

Uncheck Use timeline play range

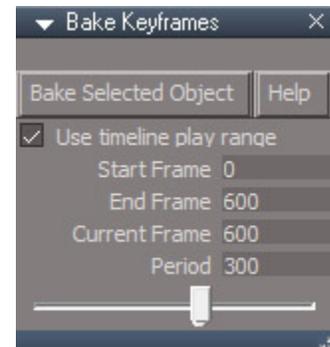
Start Frame – set first frame to key

End Frame – set last frame to key

Current Frame -

Period – delay between keyframe times

Select the item to bake and push the Bake Selected Object button



A keyframe will be created at every time frame for the object.

If the object is controlled by a script, remove the command script before rendering. Command scripts do not render. Baking the keys makes it possible to render an animation created by command scripts.

## 9.4 Morphs

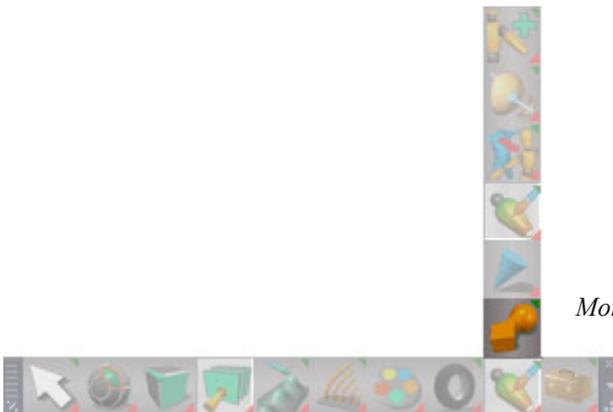
Morphs give you the ability to store and blend between different states of a model. These different states are created using the regular Point Editing tools - for example, you could use point editing to create a smile on a character, storing it as a morph. Then you create a new morph, point editing to make a frown. Then you can blend between those two expressions (and many more of course), either creating the perfect expression for your character in a still image, or recording your results in an animation.

### 9.4.1 The Morph Panel



To begin working with morphs, you will need to create the first morph for an object. To do this, click on the Add Morph icon in the character editor tools, and this will open the morph panel, create a new morph for the object, and take you into edit mode on that morph.

Once you have at least one morph added to an object, then the morph panel will open automatically when you click on that object, without the need to click on the Add Morph icon again.



*Morph icon is wrong in the original manual*

[link to soft paint morph mode pg 62](#) [More Information](#)



**Interpolation Toolbar** [More Information](#)

# Chapter 10 – Physics

## 10.1.1 Physics: Space and Engine

## 10.2 Physics Toolbar



*Main Physics Tools*



*Physics Move and Start/Stop simulation tools*

The unofficial update main physics tools can also be found on the bottom toolbar in the same area as the physics move and start/stop simulation tools.



## 10.2.7 Centre of Gravity and Fixation



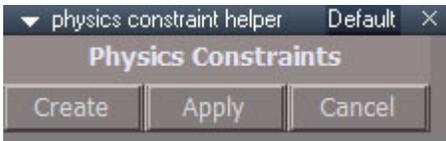
**Center Of Gravity:**



**Fixation point 1:**



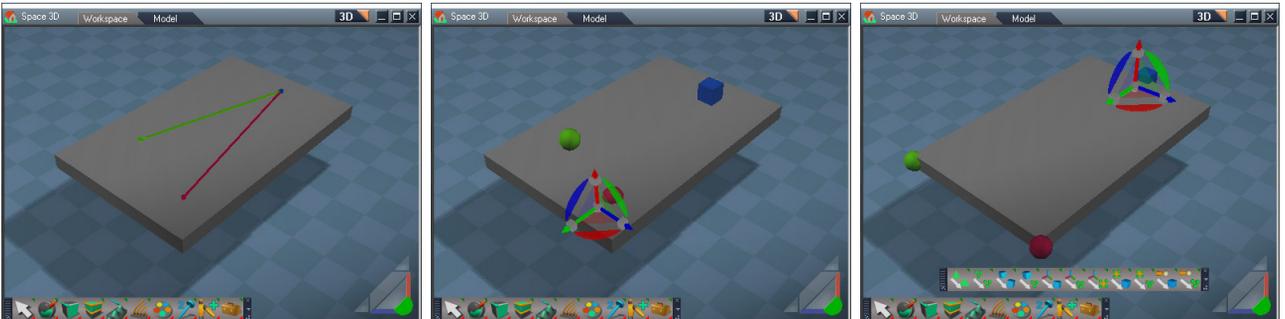
**Fixation point**



**Physics Constraint Helper:** creates helper objects in the scene for positioning the center of gravity and fixation points

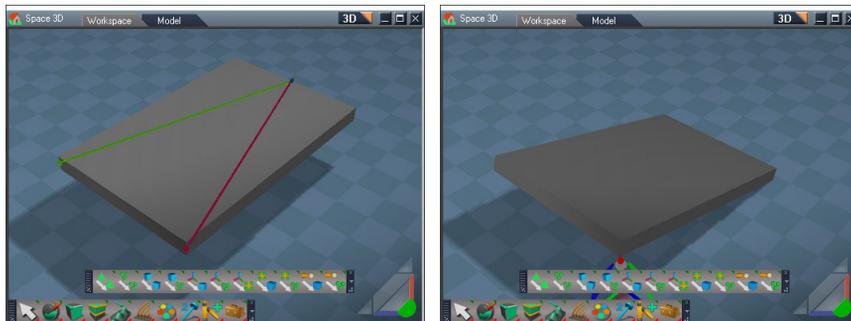
**Create:** create helpers for the object center of gravity and fixation points

**Apply:** copy the helper transform values to the object center of gravity and fixation points



Fixation point 1 is green, fixation point 2 is red and the center of gravity is blue.

Sequence of images shows 2 fixation points on the object, next the helpers are created, then snapping tools are used to precisely position the physics points.

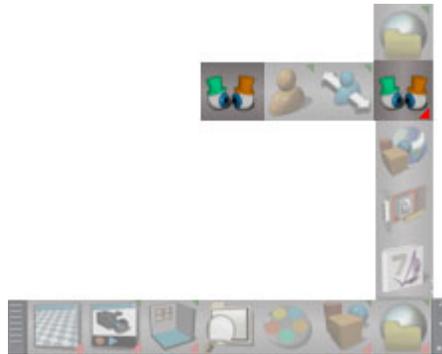


Next the positions of the helpers are applied to the physics points and the final image shows the result of a physics simulation.

## Chapter 12 Collaboration



*Toolbar with SharedSpace icon*



*Unofficial Update Toolbar with SharedSpace icon*

## 12.1.6 Basics of Navigation



### First Person Navigation



*FPN Tool*



*Unofficial Update FPN Tool*

First Person Navigation is found in the stack toolbar.

## Chapter 40 Unofficial Update Additions



**Open** - opens the corresponding toolbar in a new link editor window and resets all the toolbars and clears the recent files list.

 This can be a long process.

**Save** - will save all built in toolbars.



 *Be sure to follow the sequence, Open, make changes and immedietly Save using the corresponding save button. If any other toolbar is altered it will be saved in that configuration permanently.*

## Red Toolbar



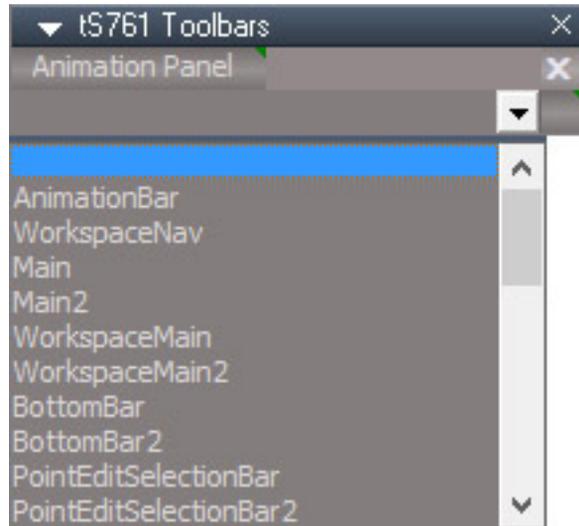
**Cut** - select an item to use with the Paste. Saves the selected object to a file and then deletes the original.



**Copy** - same as the copy button on the bottom toolbar



**Paste** - loads the file saved by the Cut into the active link editor window.



**trueSpace Toolbars** - loads the tS761 Toolbars node into the scene and opens the panel  
 RMB "close all toolbars", actually closes some specific toolbars and removes the tS761  
 Toolbars node from the scene

*Same icon as the Red Toolbar button*

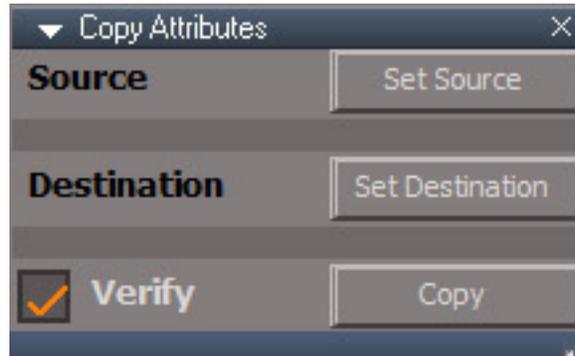
**Animation Panel** - opens the Animation Panel, Right Click closes the Animation panel

[↻ More Information ↻](#)

upper X - closes the panel

lower **X** - Deletes the tS761 Toolbars.RsObj from the scene

The dropdown list can be used to open 2 separate toolbars. Select a toolbar then use the small button to the right of the dropdown to load the toolbar. Select a second toolbar and Right Click on the small button to open it



**Copy Attributes** - copy the common attributes from the source node to the destination node. Verify will ask before copying each connector value.

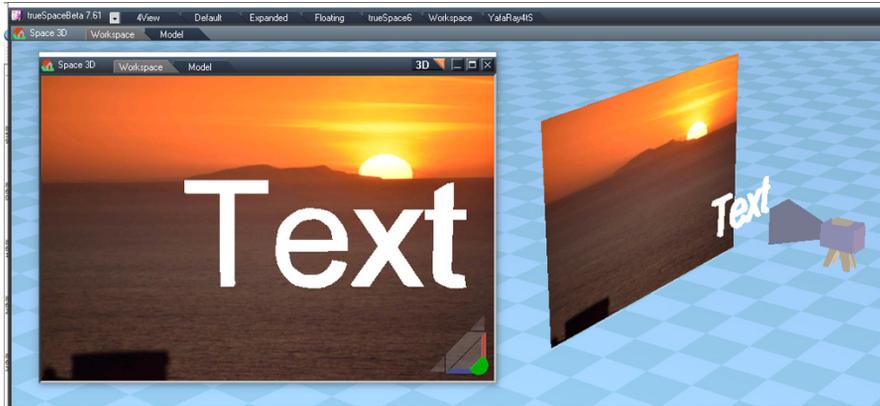
*Same icon as Make Copy of Window button*

1. Select the source node which has the attributes to be copied
2. Press the **Set Source** button
3. Select the destination node which will receive the attribute values
4. Press the **Set Destination** button
5. Press the **Copy** button

One use for this tool would be to convert an existing light to a different kind of light. Add the desired type of light to the scene and set it as the destination. Set the source light and when the script is run it's color, location and other attributes will be copied to the new light.



A node can have a lot of attributes, so this tool can potentially eat up many undos.



**Background Image Camera** - a camera with a projection plane attached that displays an image or image sequence that fills the camera's field of view.

#### Basic usage:

1. load an image from an image sequence
2. press the Open Camera Window
3. set display to no grid or press the Insert Grid button to force an invisible grid for the scene
4. the image sequence can be scrubbed using the Frame control
5. set frame to the first numbered image of the sequence
6. press the Set Timeline button
7. right click the Set Timeline button and choose "Frame" in the attribute browser
8. press R to create the first keyframe
9. set Frame to the last numbered image of the sequence
10. press the Set Timeline button
11. press R to create the last keyframe
12. right click the >| button to go to the first frame in the timeline
13. press P to play, right click P to stop playback

note that it's not required to use the animation controls on the Background Image Camera, the Anim view can be used to set the time and keys and control the animation



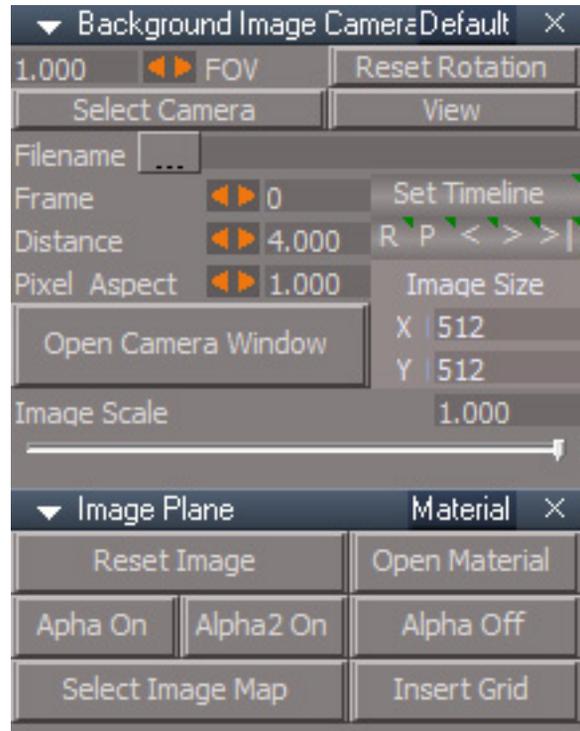
Do not press the button more than once or the Background Image Camera will be deleted and replaced with a new one. To get more than 1 in the scene rename the existing object first.

**Reset Rotation** - rotate the camera to point in the negative Y direction.

**Select Camera** - select the camera inside the Background Image Camera group

**View** - switch the main 3D view to view from the camera. Press again to restore the view to it's previous state. Works in all layouts using the main 3D view only.

When you press the Select Camera or View buttons the panel will close, so it may be a good idea to drag the panel out of the stack view.



**Filename ...** - choose an image or any image from a sequence of images

**Frame** - set the Frame value for the Background Image Camera. The corresponding image from the sequence will load in. If a single image name ends with a number that number will need to be entered here even if it is not part of a sequence.

**Distance** - set the distance from the projection plane to the camera.

**Pixel Aspect** - pixel aspect ratio.

**Open Camera Window** - Opens a new window using the the Image Size XY values to set the dimensions of the window and the projection plane. If the image is large it may cover the entire workspace. The window opens without any toolbar.

**Set Timeline** - set animation time to the Frame value

Right click opens the Attribute Browser so the "Frame" attribute can be selected for animation.

**R** - Set keyframe/Open keying panel - same as the animation view record button

**P** - play animation, Right Click to stop playback

**<** - previous frame, Right Click previous keyframe

**>** - next frame, Right Click next keyframe

**>|** - last frame, Right Click first frame

**Image Size XY** - shows the original image size

**Image Scale** - used to change the creation size of the camera window. You can type in values to make the image larger but the image may be degraded.

## Image Plane Material Aspect

**Reset Image** - clears the Filename, resets the projection image and sets Frame to 0.

**Open Material** - open the projection material in the link editor

**Alpha On** - use the red channel of the image as an alpha mask

**Alpha2 On** - use the alpha value of the image as a mask

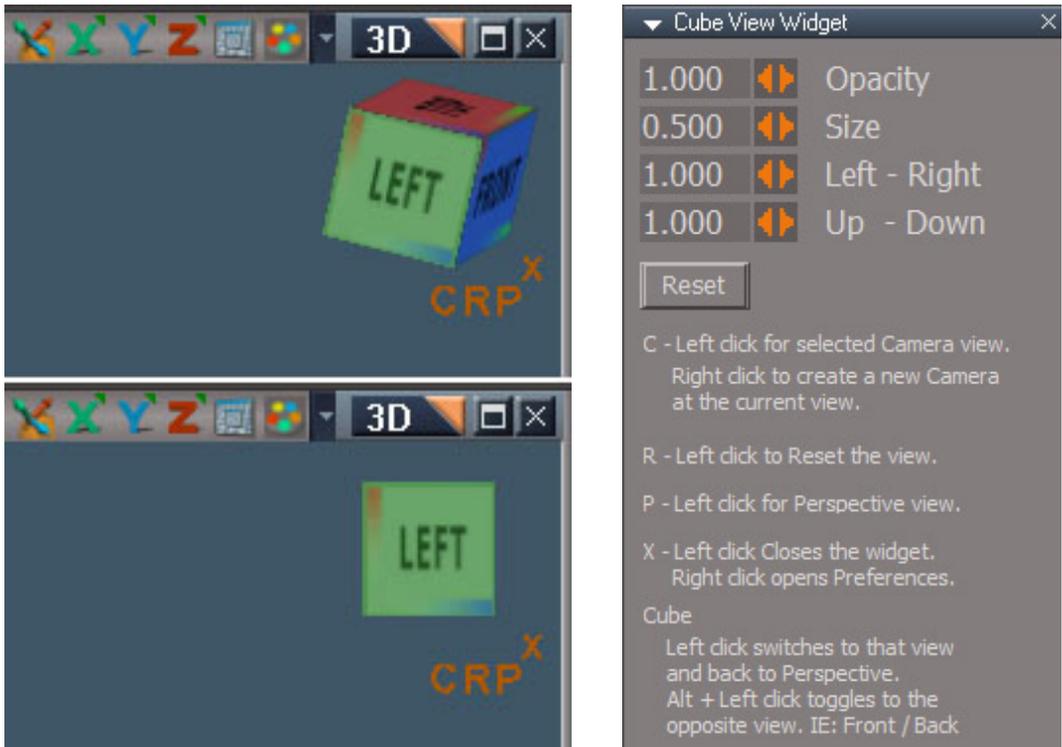
**Alpha Off** - this turns off the alpha masking

**Select Image Map** - open the ConstantTextureMap in the stack view "For Animation (Adding attributes to the Keying panel) and or changing the attributes. You can adjust and or Keyframe Ambient Intensity, Ambient Color, Move X,Y, Scale X,Y"

**Insert Grid** - adds a grid object to the scene. By default this seems to have the effect of turning off the grid visibility. Any changes to this grid will only appear after the mouse is moved into the 3D view.



## Cube View Widget



The Cube View Widget is used to control and visualize the 3D viewport. The colors correspond to the 3 directions:

X - green

Y - blue

Z - red

Saturated colors are in the positive directions and the lighter desaturated colors are in the negative direction.

The color gradients on the two edges of each face show the direction to positive direction neighbors of the face. The LEFT face is desaturated green, so it points in the negative X direction. It has a red gradient pointing to the TOP/positive Z and a blue gradient pointing towards the FRONT/positive Y.

# Blue Toolbar



**Eye Camera View**



**Camera View**

*same icon as Set Camera view*



**Perspective view from camera**



**Create camera from perspective view**



**Camera Views 1 - 6**

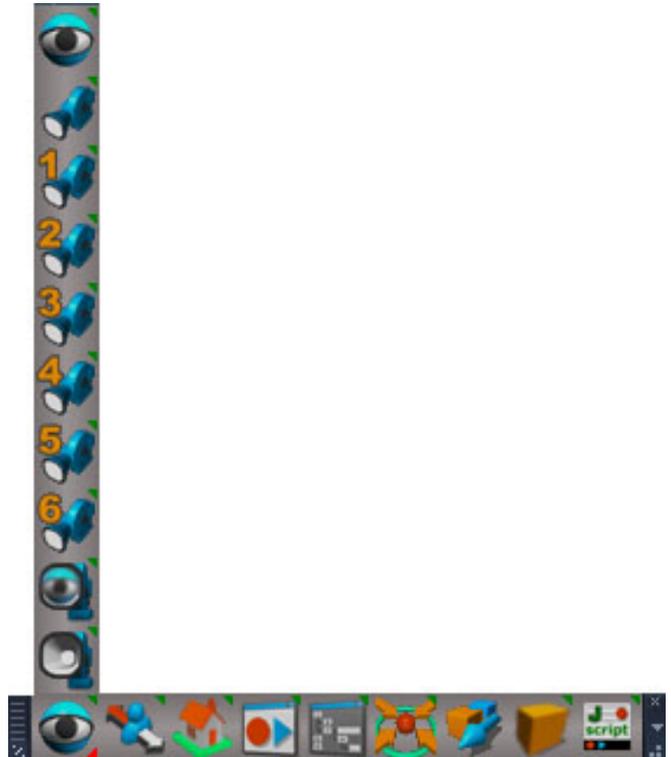


**Custom First Person Navigator**



**3D View Widget**

*same icon as Isometric view*



**Animation Panel**

*same icon as the Anim View button*



**Scene Animator FX**

*same icon as Scene View*



**Transform Object**



**Replace Objects**

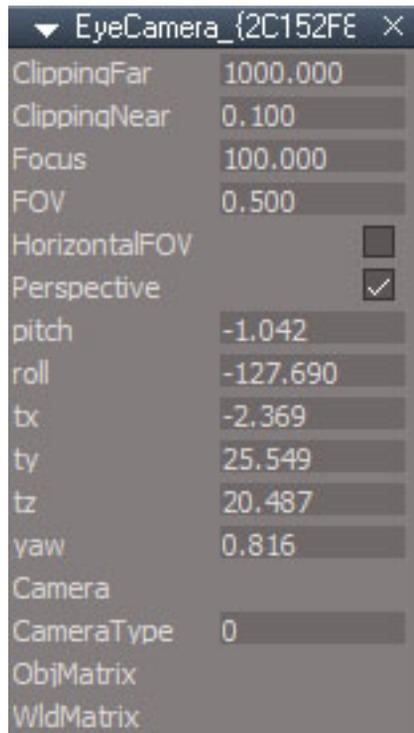


**Shear Transform**



**JScript Create and Autoload**

The **EyeCamera** nodes are used inside trueSpace to display 3D views without using a camera. It is used to display Front, Back, Left, Right, Top, Bottom, Isometric, and Perspective views.



**Eye Camera View** - is for switching the active 3D view from a Camera View to the Eye Camera View (Previous View).

RMB - open the EyeCamera node for the active 3D view.

LB - Switch the window that has focus to the current Eye Camera

RB - Show the current window that has focus Camera's Preferences panel in the Stack/Panel



**Camera View** - will switch the active 3D view to a camera view using the camera in the scene named "Camera".  
RMB will show Camera panels for the "Camera". The first Camera panel is from the internal Camera node

The scene must have a camera named "Camera"



**Camera Views 1 - 6** - same as Camera View above except only works with a cameras in the scene named

"Camera, 1" or "Camera,1"  
"Camera, 2" or "Camera,2"

...

"Camera, 6" or "Camera,6"

RMB opens the corresponding camera panel in a floating panel.



**Perspective view from camera** - the first 3D view must be a perspective view. Select a camera and press the button. The camera transform and FOV values will be copied from the camera to the first 3D view. The camera will be deselected so it does not interfere with the updated view.

RMB - same as LMB but works with any renderable item, it does not set any FOV values and does not deselect the item. Also does not erase undo history.

One good use is to position and orient a light based on the 3D view.



**Camera from perspective view** - the active 3D view must be a perspective view. Creates a camera and then copies the 3D view attributes to the new camera and sets the camera as the view.

RMB - same as RMB "Perspective view from camera" above. It does not create a camera.

The original First Person Navigation is documented in Chapter 12 Collaboration, 12.1.6 Basics of Navigation. Also documented in Chapter 2, User Interface, 2.7.2 View Navigation Tools. The Fp navigation tool node panel is the only panel mentioned in the original manual.



**First Person Navigator** - node is a version of the Default navigation properties node that includes an EyeCamera, FP properties and a Trigger. After pressing the button the node is created in the scene but does not enter FPN navigation automatically.

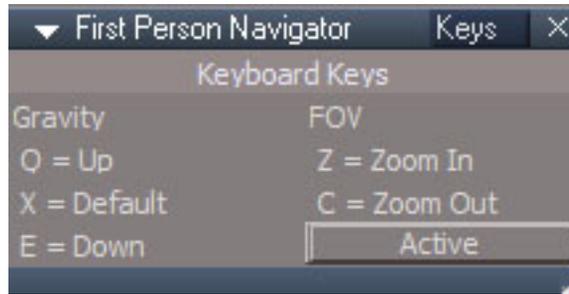
**View** - set the active 3D view to the FPN camera

**X** - close and remove from the scene

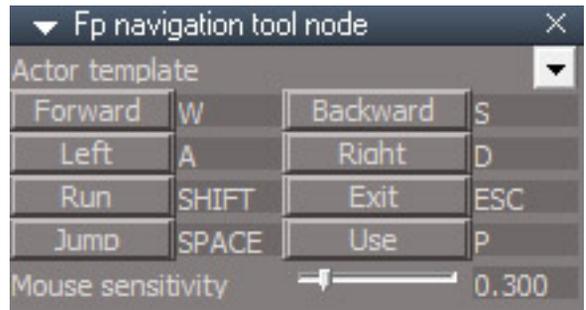
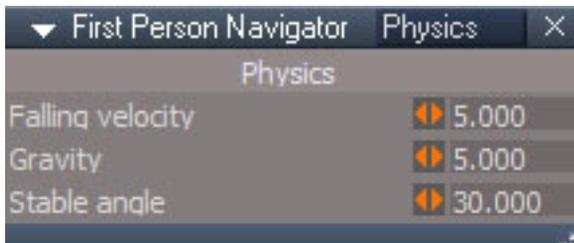
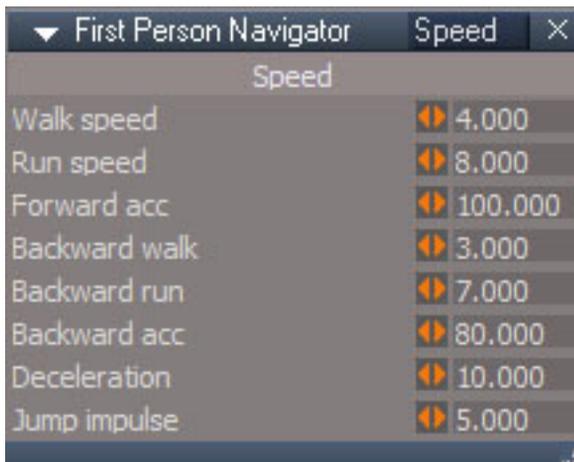
Benefits:

- 1.) You can set your FP properties separate from the Global Fp properties that are shared with everyone in Shared Space.
- 2.) Your FP properties can be saved as defaults.
- 3.) The trigger could be set up to use the Use Key. For instance you could make a FPN crouch key command.

Adding a unique name to the Actor attribute will keep your settings separate from other users. In truePlay2 open the Stack to set your First Person Navigator preferences.



You can use your keyboard keys to control Gravity & FOV. Jump does not work like the standard FPN because it is not using the Default Gravity. If you disable the Keys it acts like the standard trueSpace FPN.



**RMB Panel - same as standard**



**3D View Widget** - a graphical representation of the orientation of a 3D view. RMB panel to control the positioning and size of the widget and to close it.

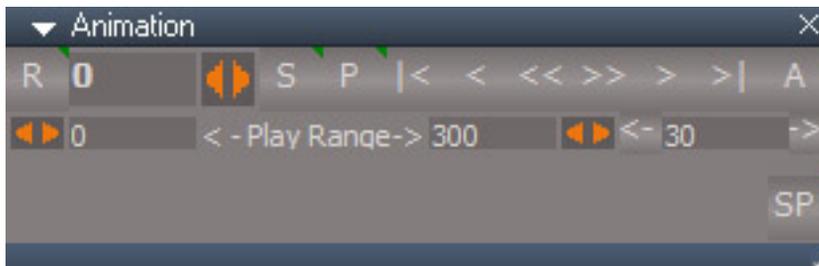
*same icon as Isometric view*



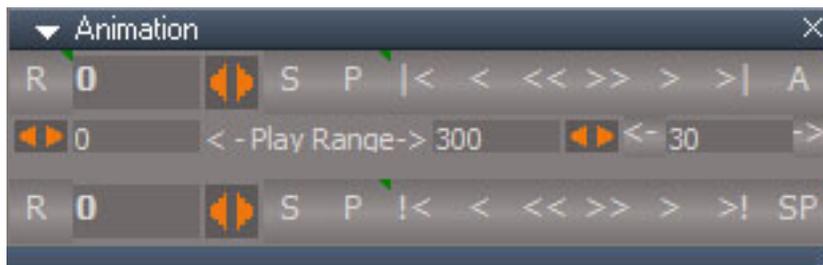
**Animation Panel** - load animation panel node into the scene if it does not already exist and then opens the panel. Does nothing if the panel already exists. If the panel is closed then you must use RMB to open it again.

RMB open the panel if it exists in the scene.

*same icon as the Anim View button*



*Workspace Only Animation Panel*



*Animation Panel Workspace top and Modelspace bottom*

Top Row - Workspace left to right

**R** - set keyframe, Right Click open keying panel

Current frame number and scrubber

**S** - stop animation

**P** - play animation, Right Click "shrink play range" which means to copy the play range start and end values into the animation range start and end

|< - set current frame to the beginning start frame

< - set current frame to the previous frame

<< - set current frame to the previous keyframe

>> - set current frame to the next keyframe

> - set current frame to the next frame

>| - set current frame to the end frame

**A** - open Automatic Keyframing panel, Right Click open Animation Preferences in a floating panel (9.2.7)



[More Information](#) [also see section 9.2.7](#)

Middle Row left to right

Start frame scrubber and input

"<-Play Range->" is a label, not a button

End frame input and scrubber

<- skip backward button, subtract the skip frame step value from the current frame

Skip frame step value

-> skip forward button, add the skip frame step value to the current frame

Bottom Row - Modelspace left to right

**R** - record a keyframe

Current frame number and scrubber

**S** - *non functioning button*, use ESC key to stop playback

**P** - play animation, Right Click open animation preferences panel

|< - set current frame to the beginning start frame

< - set current frame to the previous frame

<< - set current frame to the previous keyframe

>> - set current frame to the next keyframe

> - set current frame to the next frame

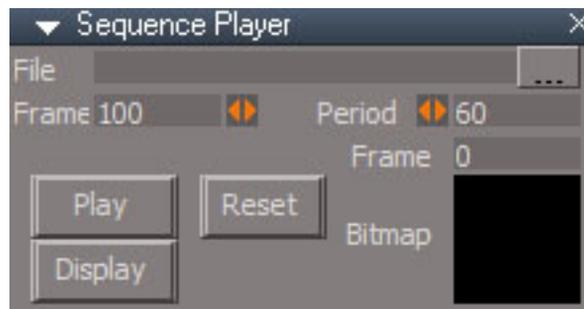
>| - set current frame to the end frame

Bottom Row Far Right - Modelspace and Workspace

**SP** - load the Sequence Player into the scene and open it's panel and display view, Right Click to delete the Sequence Player from the scene.

The display has a size of 322 x 268

The sequence player is for playing back a rendered numerical sequence of images. To work well the numbers need to start with 0 or some other low number. If the sequence starts with 100 it will have to go through the motions of loading 99 blank frames before the actual sequence begins.



**File ...** - load an image sequence

**Frame** - number of images to play in the sequence

**Period** - delay time in milliseconds between frames

Frame - current image frame

**Play** - play and pause the sequence

**Reset** - set current image to the first frame

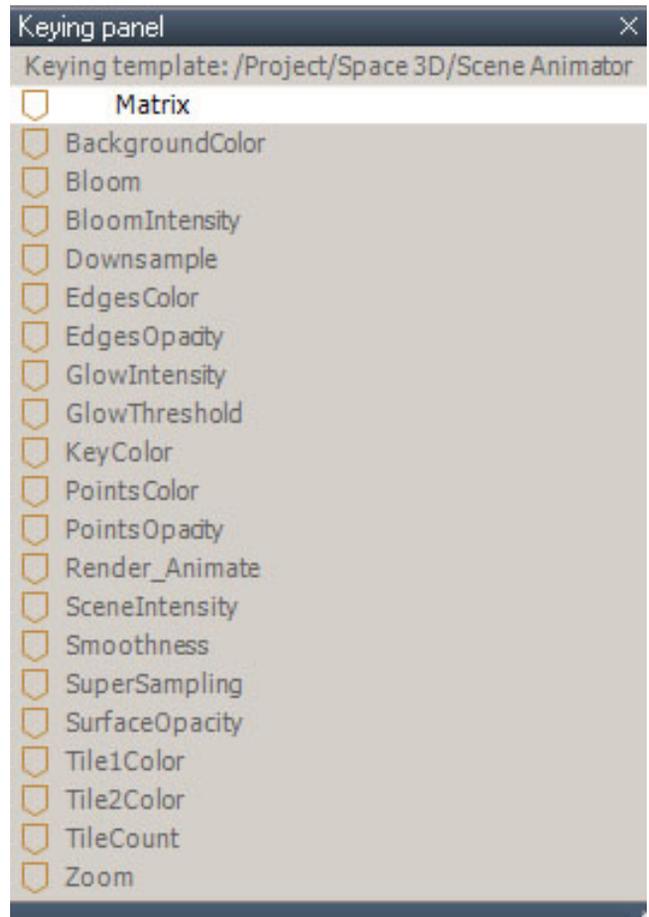
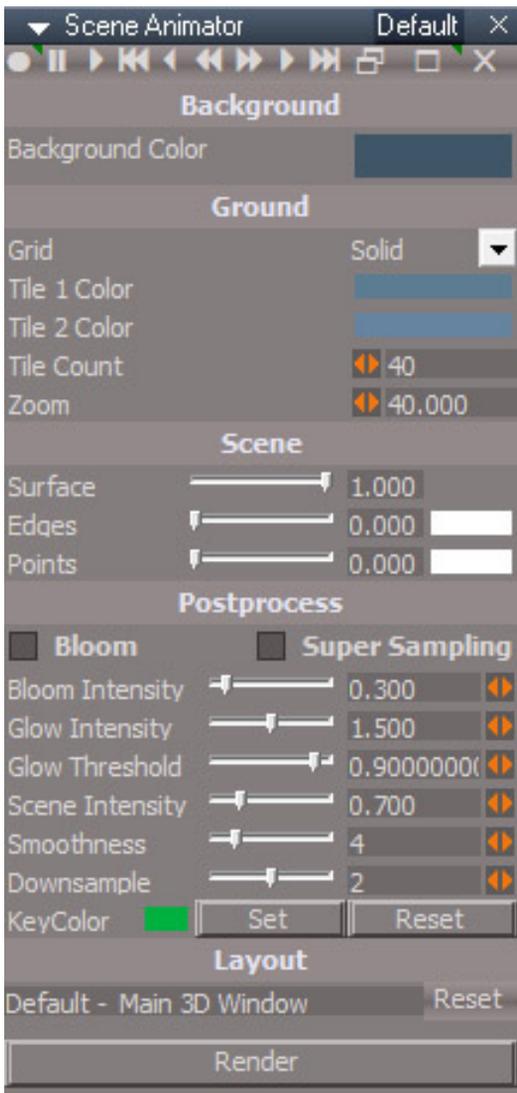
**Display** - re-open the playback window

Bitmap - tiny display of the sequence



**Scene Animator FX** - load scene animator into the scene, RMB opens a floating panel for the scene animator that exists in the scene. RMB does nothing if the scene animator is not already in the scene.

The Scene Animator is used to animate various aspects of the 3D view into D3D renders. Scene Animator supports animating Background color, Ground settings, Scene mesh element display and Postprocess effects. The scene animator works with the main 3D view.



**The Record button does not do anything until the desired attributes in the Keying panel have been set to record.**

The Scene Animator will not have any effect on the appearance of the display until the Postprocess Bloom or Super Sampling is checked. This seems to "wake up" or "link" the Scene Animator to the Main 3D window of the layout.

### Top Row Buttons left to right

- - **Record** - set keyframe, RMB open Keying panel
- II - **Pause**
- ▶ - **Play**
- ⏪ - **Start frame**
- ◀ - **Previous frame**
- ⏪ - **Previous keyframe**
- ▶▶ - **Next keyframe**
- ▶ - **Next frame**
- ▶▶ - **End frame**
- 📏 - **Save panel position** - drag floating panel to a new location and press to save the location
- ☐ - **Open in floating panel** - select and open the panel, RMB closes the panel
- ✕ - **Lower X** - Remove the Scene Animator from the scene

## Post Process and Render

**KeyColor** - color used to control where post process glow effects are applied to the rendered image when Bloom is checked.

**Set** - sets up the post process values for glow effects. Scene Intensity is set to 301, 300 for glow + 1 for regular scene intensity. Glow threshold will be set to a value that corresponds to the KeyColor.

**Reset** - return post process values back to their initial state

**Reset** - return 3D view appearance to it's default

**Render/Deactivate** - opens an alert dialog with a long list of instructions, opens the Render to file dialog, and opens the D3D Render panel.

## How to use the Scene Animator

Press the button to load the Scene Animator into the scene

RClick the record button to open the Keying panel

RClick the lines of interest in the Keying panel and choose "Add to keying template"

Now change the values and record keyframes

When animation is complete press the Render button

check "Save sequence starting with" and set the first frame to render

uncheck "Save animation from frame"

choose a file name and location or use the default value

press the Save Settings button

close the dialog ( **do not press the Render button** )

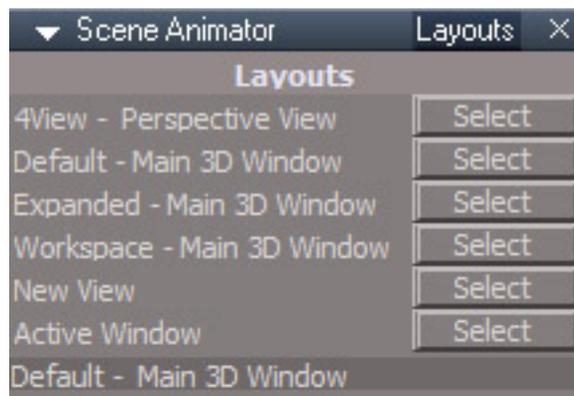
the D3D Render panel will open

Press the Start button

finally at the end press the Deactivate/Render button on the Scene animator.

See Chapter 2.7.4 and 2.7.5 for more information on the Render preferences and Ground preferences.

Because the node exists in the scene, any settings will be saved with the scene.



*Layouts panel - see end of this document for notes*



**Transform Object** - select a source item, press the button and select an object. The object will move to the source item.  
RMB open the panel

**Source** - set item to get transforms from

**Object** - set item that will receive the source transforms  
RClick on either Source or Object clears all the inputs

**Location** - lock object location values

**Rotation** - lock object rotation values

**Scale** - lock object scale values

Default behavior moves object item to the source location with no change to the rotation or scale.

**Auto ON** - used to interactively transform object items as they are selected. Press again to stop. Must set the Source item before turning on.

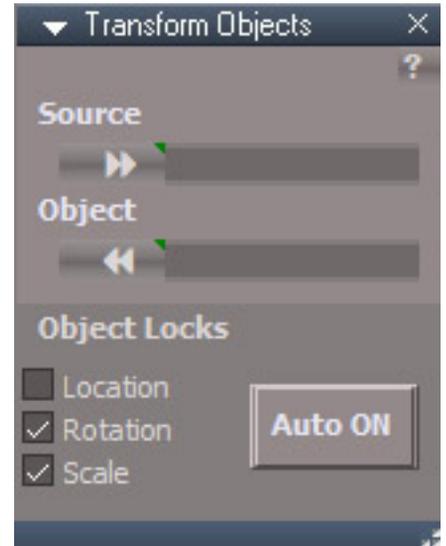
Run from the panel:

Select the source object

press the Source button

Select another object

press the Object button to transform the object



**Replace Objects** - open the replace objects panel, the Object item will be replaced by the Source item

**Source** - set item that will be copied

**Object** - set item that will be deleted

RClick on either Source or Object clears all the inputs

**Location** - lock object location values

**Rotation** - lock object rotation values

**Scale** - lock object scale values

Default behavior is the same as copy the source item and delete the object item.

**Auto ON** - used to interactively relace object items as they are selected. Press again to stop. Must set the Source item before turning on.

Select the source object

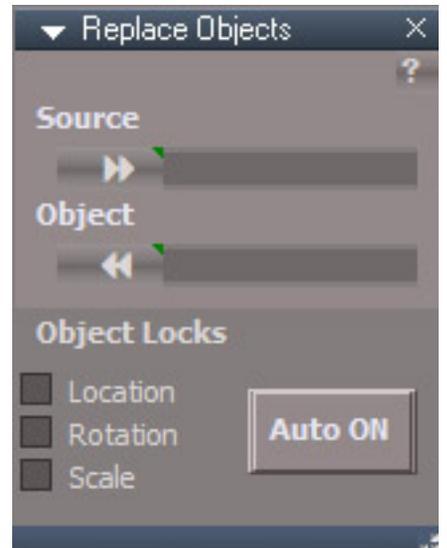
press the Source button

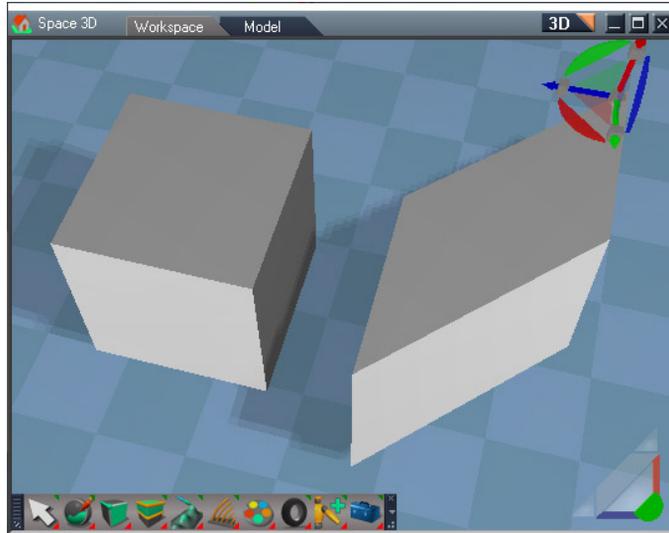
Select another object

press the Object button to copy the source and delete the object item

Uncheck Location to place the source copy at the same location as the selected object item

Does not retain the original object name.





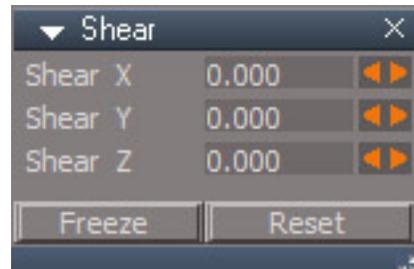
*Right box has had a shear value of 1.0 applied in the X direction.*



**Shear** - open the Shear panel  
RMB freeze the shear value of the object



*will erase undo history.*



Select an object and open the panel.

Drag the scrubbers to interactively change the shear value of the transform.

Press the Freeze button to bake the shear transformation into the mesh and flatten the axis..

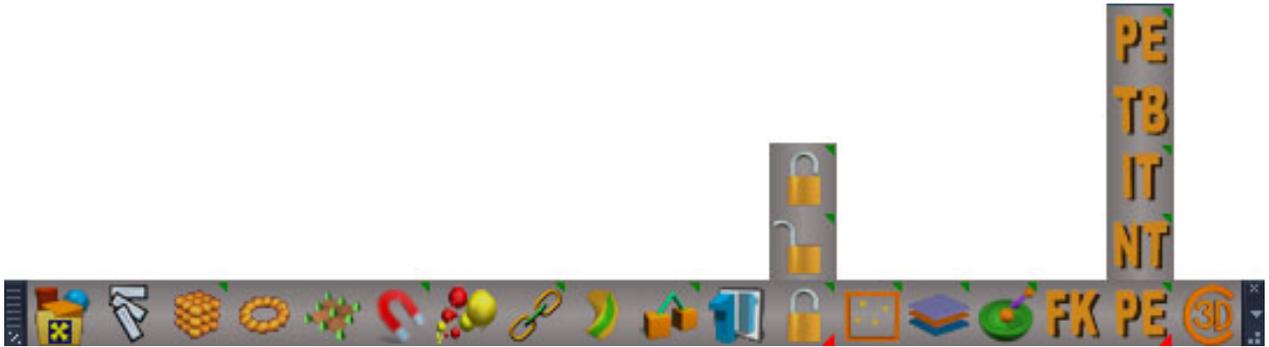
The transform location, rotation and scale will be unchanged.

If you close the Shear panel before freezing the shear values it will reset all values to zero when the tool is reactivated. The values will also reset to zero after pressing the Freeze button.



**Create JScript** command node and open it in the script editor  
RMB create a JScript object node and open it in the script editor

# Gold Toolbar



Gold/Clintons Toolbar



D3D Render



Constraints



Mesh Origin



Align



Deformers



Character FK



Grid Array



Parenting  
same icon as Glue as Child



Point Edit Toolbar



Radial Array



Mirror Matrix



Toolbar Toolbar



Point Clone



Locking



Interpolation Toolbar



Constraints Toolbar



Rectangle Select



NURBS Toolbar



Particles



Layers

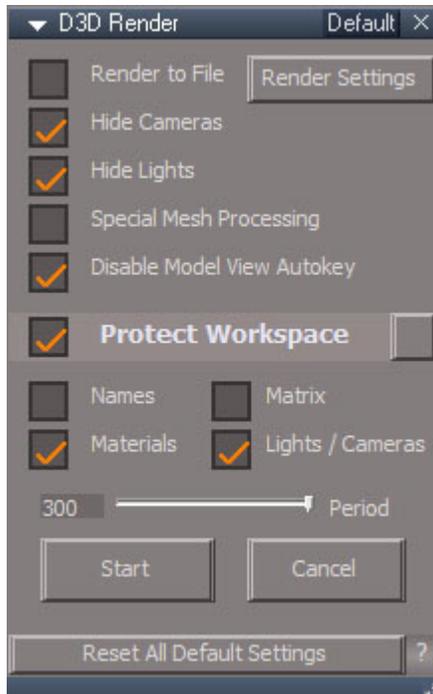


Restore Custom  
Scripts



## D3D Render

Combines modelspace and workspace animations into one D3D workspace render sequence. Can also be used to bake workspace animations to modelspace animation via the autokey setting in modelspace and for rendering command script based animations.



### Preview:

uncheck the Render to File  
check Disable Model View Autokey  
press the Start button

### Bake Model view keyframes:

turn on AutoRecord in Model view  
uncheck the Render to File  
uncheck Disable Model View Autokey  
press the Start button

### Render a sequence to files:

Check the Render to File  
Press the Render Settings button and  
uncheck "Save animation from frame"  
check "Save sequence starting with"  
enter a starting frame number  
set the file name  
press the "Save settings" button and close the dialog  
check Disable Model View Autokey  
Press the Start button

### General Usage:

Set the animation playback range in workspace

Use the main 3D view for model

Have both model and workspace 3D views open and visible

Disable modelspace autokey setting, unless specifically transferring workspace animations to modelspace

Protect Workspace to prevent model view from changing values in workspace

Press the Start button to begin the render.

 *Open Model view in the main window instead of a floating window for maximum stability - crash avoidance*

 *Changing layouts after a render causes instability and crashes. If you plan to change layouts after the render, first exit truespace*

## Options:

**Render to File** - render an animation sequence to files

**Render settings** - open the D3D Render to File dialog

**Hide Cameras** - hide cameras during the render

**Hide Lights** - hide lights during the render

**Special Mesh Processing** - get NURBS, deformation and metaball shape animations from modelspace

**Disable Model View Autokey** - prevent model space from baking keyframes

**Protect Workspace** - activate the protection

blank button - open the Protect Workspace panel

**Period** - delay used before restoring the protected workspace values

**Start** - start the render/preview

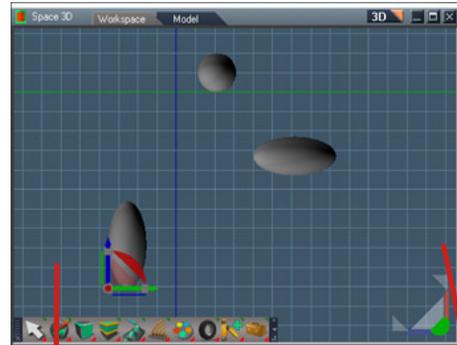
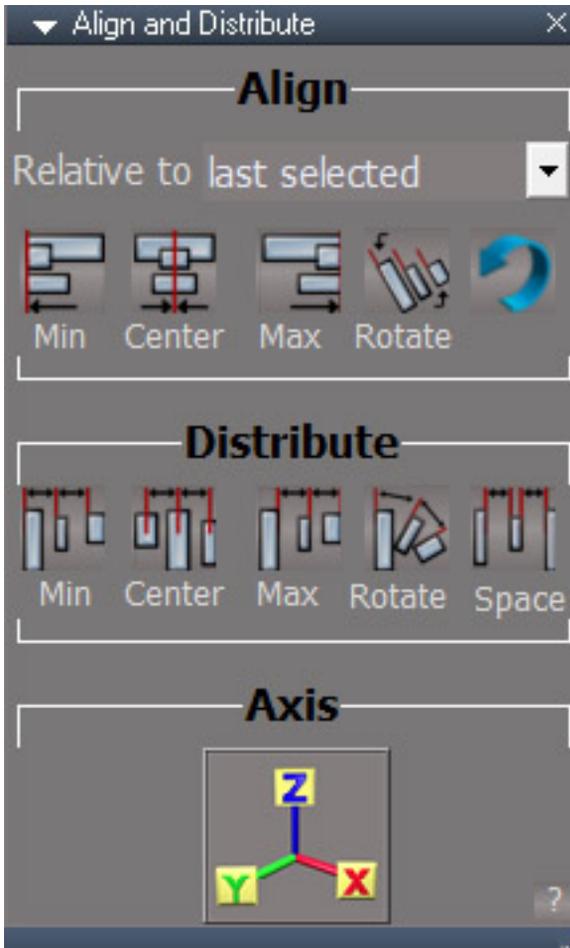
**Cancel** - stop the render/preview

## Workspace Protection [↪ More Information ↪](#)

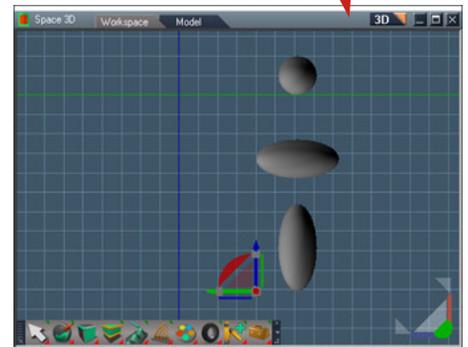
The Matrix option will interfere with workspace transform animations. A keyframe can be used to protect workspace matrix values from modelspace changes. A keyframe can also be used to protect workspace light angle and camera fov values from modelspace changes.



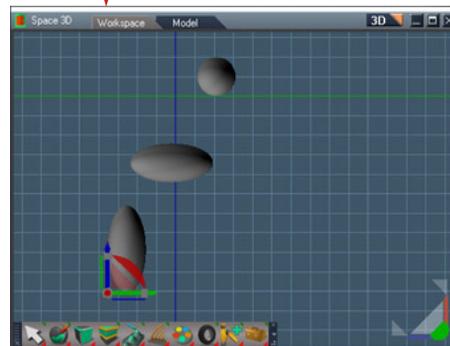
**Restore Custom Scripts** - if the scripts in this toolbar stop working, press to restore them to a working state.



*before alignment and distribution*



*after alignment in X*



*after distribution in X,Y,Z*



**Align and Distribute** selected objects in 3D space.



Does not work with encapsulated group objects

## Align:

positions the objects relative to some reference point

**last selected**

**first selected**

**middle of selection**

**world origin**

**Min** - move objects so that their minimum bounding box values are aligned

**Center** - move objects so that their centers are aligned

**Max** - move objects so that their maximum bounding box values are aligned

**Rotate** - rotate objects to match the reference. This option does not work with the middle of selection reference point

## Distribute:

positions objects evenly within a selection. the order is determined automatically based on the spread of selected objects in the x, y and z directions and on the active axes

**Min** - move objects so that their minimum bounding box values are evenly spaced

**Center** - move objects so that their centers are evenly spaced

**Max** - move objects so that their maximum bounding box values are evenly spaced

**Space** - move objects so that they have even space between them

**Rotate** - interpolate the rotation values of the objects between the most outer objects by location

## Axis:

Control which axes are active for a given action

Click the **X, Y or Z** buttons to toggle the corresponding axis

Some rotations may require all axes to be active because truespace may express rotation values as combinations of all axis values. This is especially true for the y axis rotations.

## Undo:

runs the undo command repeatedly the same number of steps it took to align the selection

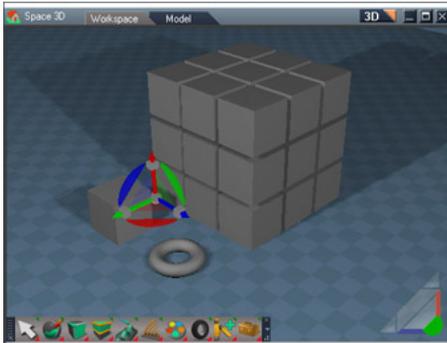
only 1 multiple undo

must be run immediately for best results



**Grid Array** - Distribute copies of an object into a 2 or 3-dimensional block in world coords. RMB create in local coordinates of the object

**i** will erase undo history.



*Grid created from the box and moved over for clarity*



*Select the torus and press Replace Array Element*



*Press the Select Array element and rotate it 90 degrees in X. Open in Link Editor also pressed for interactive update during the rotation.*

GridArray\_Cube, 1

---

**Spacing**

Width (X)	2.250	◀ ▶
Depth (Y)	2.250	◀ ▶
Height (Z)	2.250	◀ ▶

---

**Segment Count**

Width Count (X)	3	◀ ▶
Depth Count (Y)	3	◀ ▶
Height Count (Z)	3	◀ ▶

Replace Array Element

Select Array Element

Open in Link Editor

Select Array Rotator

Reset Array Rotation

Select all but one

Disband Array

Grid Array 2 September 24, 2019 ?

Use **Spacing** values for **Width, Depth and Height** to control the size of the array. The value is the space between each array element. These values can go negative to reverse the direction of the array.

Use **Segment Counts** for **Width, Depth and Height** to control the number of array elements in the XYZ directions.

**Replace Array Element** - copy the selected item in to the array

**Select Array Element** - select the array element for transformation

**Open in Link Editor** - open a link editor window for interactive update when rotating the array element and for unsticking controls if needed. Click again to return the link editor to the scene view.

**Select Array Rotator** - used to select the invisible box that defines the transformation locations for the grid elements. The rotation handles of the widget can be used to change the orientation of the array without altering the orientations of its members.

**Reset Array Rotation** - set the Array Rotator rotation values to 0

**Select all but one** - selects all but one array elements after the Disband Array is run

**Disband Array** - convert the array to a plain group item

Convert to a single mesh object

Select all but one - enabled

Press the Disband Array button

The array will be converted to a simple group object and all the array elements will be selected except for one

Activate the boolean Merge geometry tool - set for Flatten result and do not Keep drill object

Select the final array element then exit the tool

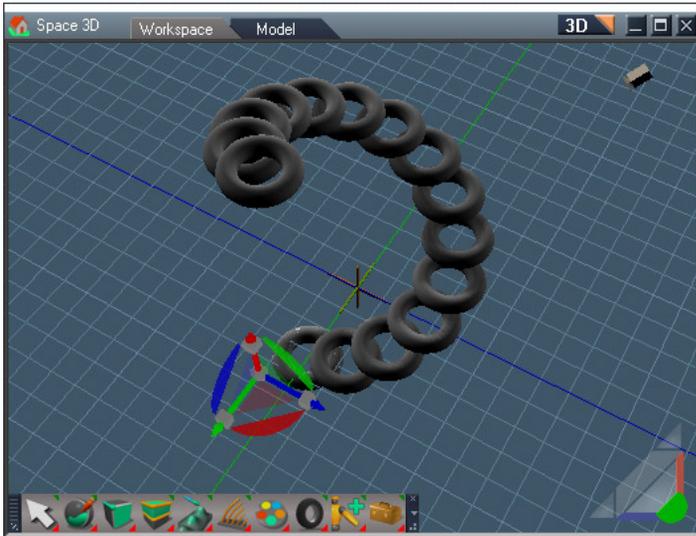
Run the 3D Unencapsulate tool



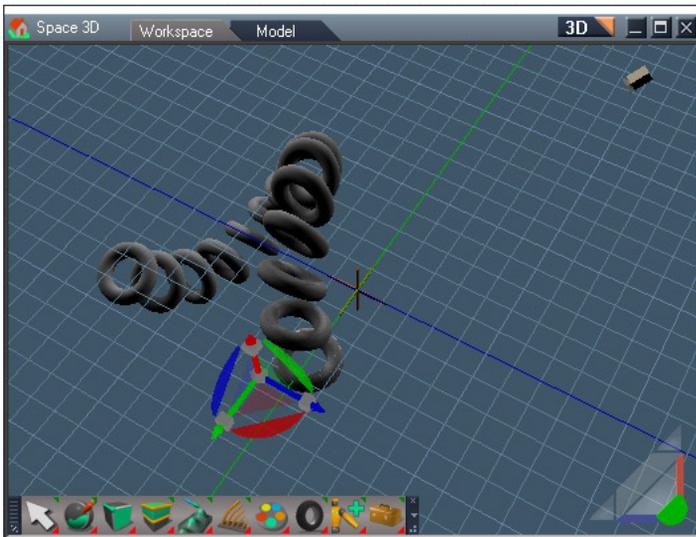
**Radial Array** - Distribute copies of an object on a circular arc or spiral



*will erase undo history.*



**Z axis with height**



**Y axis with height**

▼ RadialArray\_Cube.1

Axis

X Y Z

Num Copies	6	◀ ▶
Angle	360.000	◀ ▶
Radius	Get Set 4.125	◀ ▶
Top Radius	-1.000	◀ ▶
Height	0.000	◀ ▶

Keep Original Orientation

Replace Array Element

Select Array Element

Open Link Editor

Select Center Control

Select all but one

Disband Array

Radial Array 2 September 26, 2019 ?

**Axis buttons( X, Y, Z )** set the initial orientation of the array.

**Num Copies** determines the number of array elements

**Angle** determines the arc angle for the copies.

**Radius** - use to fine tune the radius value, use the Center Control for interactive update

**Get** - read the current radius value as a starting point

**Set** - apply the radius change to the Center Control

**Top Radius** is used to spiral the arc in or out from the center.

**Height** controls the offset from the plane of the array for spiral effects

**Keep Original Orientation** - copies will have the same rotation values of the original mesh

**Replace Array Element** - copy the selected item in to the array replacing the base object

**Select Array Element** - select the array element for transformation

**Open in Link Editor** - open a link editor window for interactive update when rotating the array element and for unsticking controls if needed.

**Select Center Control** button will select the handle that controls the center and orientation of the array

**Select all but one** - selects all but one array elements after the Disband Array is run

**Disband Array** - convert the array to a plain group item

Setting the radius with precision is a 3 step process

Get - read the current radius value as a starting point

update the Radius value

Set - apply the radius change to the Center Control

Convert to a single mesh object

Select all but one - enabled

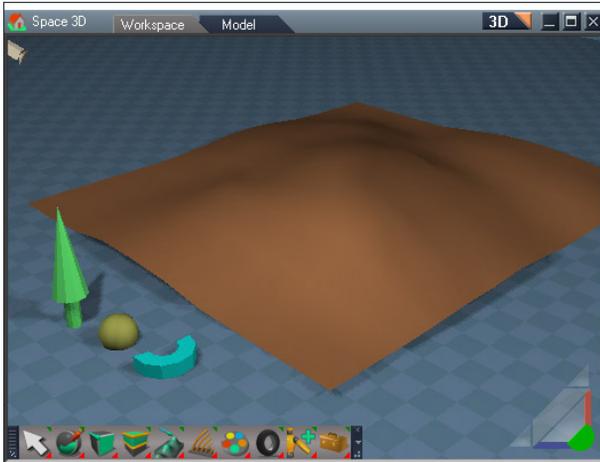
Press the Disband Array button

The array will be converted to a simple group object and all the array elements will be selected except for one

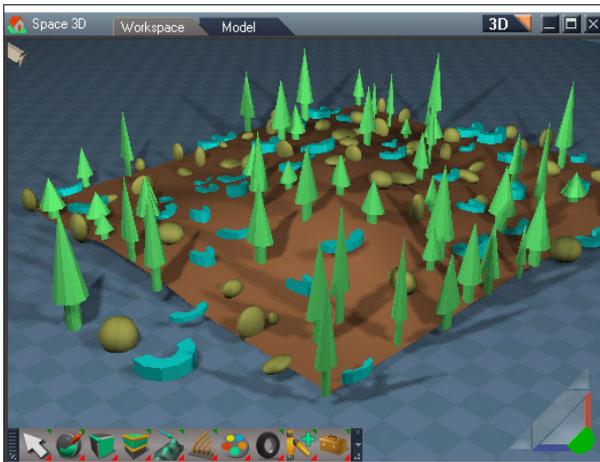
Activate the boolean Merge geometry tool - set for Flatten result and do not Keep drill object

Select the final array element then exit the tool

Run the 3D Unencapsulate tool



before



after

Push the button to open the panel  
 set the desired options  
 select one or more items to clone  
 click the "Start Clone" button  
 select the target item to receive the clones.



**Point Clone** - copies one or more objects to the vertex locations of a target object. The scale, rotation and location can all be randomized within a specified range.



*will erase undo history.*

submitted a version that does not clear history, but it can still use up a lot of undos.

## orient

**to target** - rotate clones to the same orientation as the target item z axis.

**maintain source** - don't change the source items orientation.

**source relative** - add target rotation to the source rotation

**point normal** - align the source z axis to the point normals of the target. for curves aligns source down the path

## Random Scale

**Min** and **Max** - sets XYZ values together

**Min X, Min Y, Min Z** - sets minimum scale values individually

**Max X, Max Y, Max Z** - sets maximum scale values individually

**Uniform Scale** - copies the Y and Z scale from the X scale values

## Random Rotation

top spinners - sets roll, pitch and yaw values together, min goes negative while max goes positive

**MinRoll, MinPitch, MinYaw** - sets minimum rotation values individually

**MaxRoll, MaxPitch, MaxYaw** - sets maximum rotation values individually

## Random Translation

top spinners - sets XYZ values together, min goes negative while max goes positive

**MinX, MinY, MinZ** - sets minimum translate values individually

**MaxX, MaxY, MaxZ** - sets maximum translation values individually

**Start Clone** - start the clone process using the selected nodes

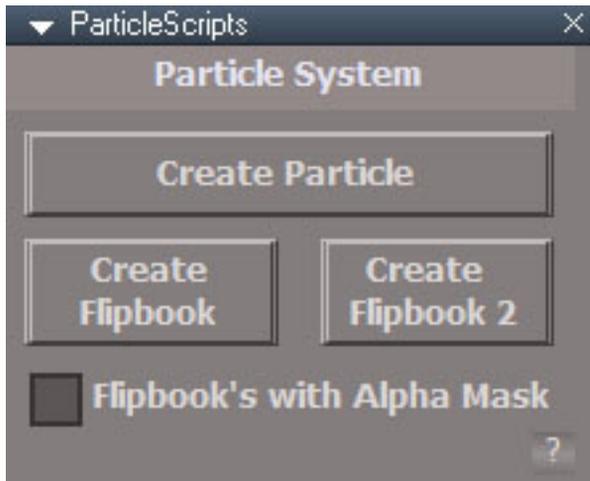
**Set Default Values** - reset the controls



**Constraints Toolbar** - [More Information](#)



**Particle System** - open the Particle System panel



**Flipbook's with Alpha Mask** - the flipbook texture file will use the color of the alpha texture to define the masking.

*Flipbook 2 Alpha and Flipbook 2 Alpha Mask are identical, checkbox has no effect*

Select a camera and a mesh object and press 1 of the 3 buttons  
The mesh will be the center of the emitter and the particles will turn to face the camera.

**Create Particle** to create a particle system

**Create Flipbook** to create a particle system based on an animated material that uses the alpha channel or color channel to define the transparency

**Create Flipbook 2** to create a particle system based on an animated material that uses color to define the transparency multiplied by the particle Fade In/Out

Switch to the camera view to see and render the particle system.

Particles are only practically visible from the camera view

Ground collision is an infinite flat plane, actual geometry is ignored

The ground is the only collision type supported.

If no ground mesh is attached the ground will be located at  $Z = 0$

The Point Emitters ignore mesh geometry and only read the WldMatrix location.

For mesh emitters if random is not checked then the particles are created in the order of the elements and for triangles will emit from the center of the triangles.

The Randomize option for triangles will emit from a random location within a random triangle.

Size of the mesh triangle are not taken into account. So just as many particles will emit from a small triangle as a large one.

Spread Angle only applies to the Directional emitter.

Fade Out results in transparent particle at the end of it's life. Scale Out results in a zero size particle at the end.

Flip Book Image Count = FlipBook TexCoordShader (Width Count \* Width Count)

Fade In/Out is controlled in the material via the second UV set U value - 0 at birth and 1 at death

Flipbook frames are controlled in material second UV set V value - 0 start frame 1 end frame

In theory the controll values can be changed while the simulation is running

Set animation Speed of replay to "All Frames" to calculate and see every frame of the simulation



**Active** - can be used to turn off the particle simulation

**Start Time** - begin frame for the simulation

**Frame Rate** - set to match the scene frame rate

 Note that the small unlabeled buttons will have different behavior in different panels.

Small button upper right will select this node.  
RMB selects the particle mesh object which in turn has a button for selecting it's material.

There are 2 main types of emitters, Point and Mesh. The Point emitter creates particles from a single point location or area. The Mesh emitter creates particles at it's triangle centers or vertices. These types are further broken down into subtypes of Directional, Omnidirectional, Triangles and Vertices.

### Point Emitter

**Directional** - emit from center or centered sphere in local +Z direction

**Omnidirectional** - emit from center or centered sphere in all directions

**Emission Radius** - size of sphere volume to emit from

**Spread Angle** - Directional cone shaped emission pattern

### Mesh Emitter

**Triangles** - emit from the emitter mesh triangle faces

**Vertices** - emit from the emitter mesh vertices

**Randomize** - when checked will emit from random vertices/triangles

**Use Mesh Normals** - emit along vertex or triangle normals

**Emission Rate** - number of particles per second

**Life** - how long a particles exists

**Life Range** - random variation in life span

**Alpha** - mature transparency of the particles, max opacity

**Fade In** - life percentage to achieve maximum mature alpha value for the particle

**Fade Out** - life percentage to change from mature to zero alpha value of the particle

## Motion

**Speed** - meters per second

**Speed Range** - random variation in speed

**Inherit Velocity** - match the animated straight line motion of the emitter mesh

**Spin Rate** - axial/face rotation of the particle

**Spin Rate Range** - random variation in spin rate of the particle

**Initial Spin Range** - random variation in spin value of the particle at birth

**Size** - mature size of the particle

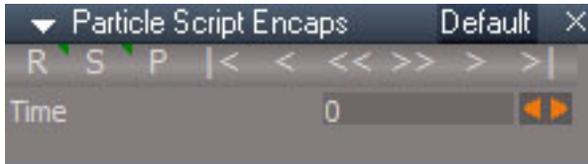
**Size Range** - random variation in the size of the particle at birth

**Initial Size** - size of the particle at birth

**ScaleIn** - life percentage to achieve the mature size of the particle

**ScaleOut** - life percentage to achieve size of zero

The motion scale controls seem to only work effectively when the initial size is less than the mature size for the particles.



**R** - set keyframe, Right Click open keying panel

Current frame number and scrubber

**S** - stop animation, Right Click open Anim Preferences

**P** - play animation

|< - set current frame to the beginning start frame

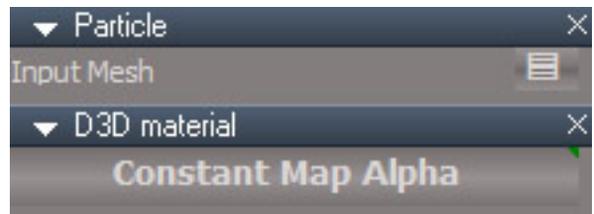
< - set current frame to the previous frame

<< - set current frame to the previous keyframe

>> - set current frame to the next keyframe

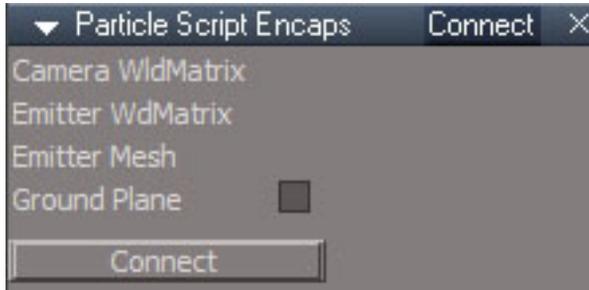
> - set current frame to the next frame

>| - set current frame to the end frame



The particle system object cannot be selected in the 3D view at the first simulation frame because it has no geometry to click on. After the first particle is visible you can select it and then click on the small button to open the particle system settings or click the large D3D material button to edit the material.

The Connect aspect is used to define a ground plane for the particle system. If no ground object is defined the system will use the Z=0 plane as the ground plane.



**Ground Plane** - set to create a ground plane, uncheck to delete the ground plane

**Connect** - create or delete a ground plane based on the checkbox value

As soon as you select the camera or emitter mesh the panel will close. So drag the panel out of the stack before making the selection.

If Ground Plane is checked, pressing the Connect button will create a Ground Plane in the scene and hook it up. If Ground Plane is unchecked pressing the Connect button will delete the Ground Plane. The Camera & Mesh must be selected before pressing the Connect button.

The selected camera and emitter mesh must be at the scene level to use the Connect button.

If the camera and mesh are part of a group you will need to create a ground plane manually. A plane is a good choice to use as a ground object.

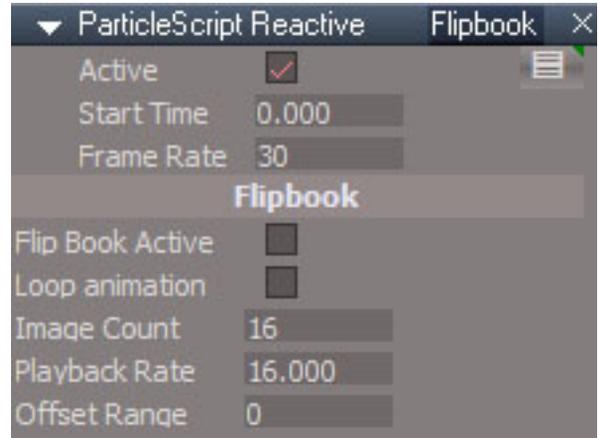
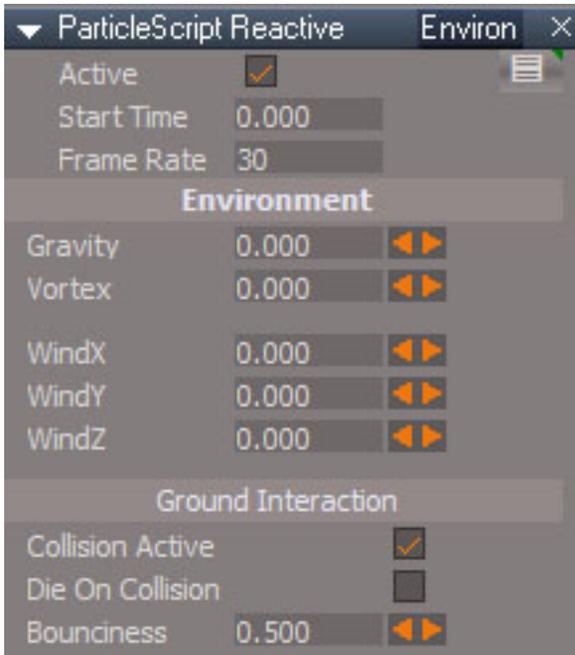
Go inside the group

Switch the Particle Script Encaps to the Exp aspect.

If the ground mesh is at the scene level, then export the ZPlaneNeg connector up to the scene level.

Connect the ground mesh WldMatrix connector to the ZPlaneNeg connector.

**i** Do not name any items in your scene as "Ground Plane". It will be deleted if the Connect button is pressed with the Ground Plane checkbox unchecked.



Small button upper right - select the Particle Script Encaps and then unselect it, Right Click - select the particle mesh. Button is the same for the Environ and Flipbook aspects of the panel.

## Environment Controls

**Gravity**  $m/s^2$  acceleration in the world -Z direction

**Vortex** spin rate for the particle system about the world Z axis

**WindX/Y/Z** wind speed

**Collision Active** enable ground interaction

**Die On Collision** particles die when touching the ground

**Bounciness** how much particle velocity is retained on rebound with the ground

## FlipBook Controls

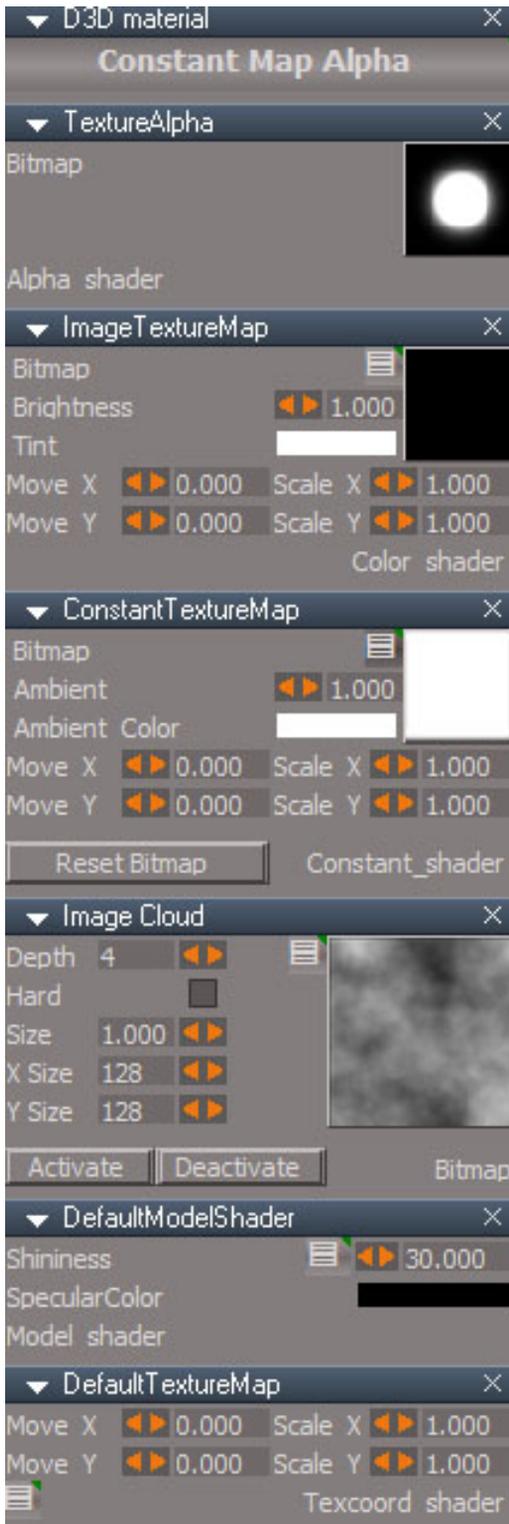
**Flip Book Active** enable flipbook

**Loop Animation** repeat animation or kill particle when flipbook is complete

**Image Count** total number of images in the flip book image

**Playback Rate** frames per second rate of flipbook animation

**Offset Range** random variation in start frame of the flipbook image



**TextureAlpha** - image used to apply a mask to the particle. The red channel is the source for the alpha values. UV2 coordinates U value is used for the particle Fade In/Out over time.

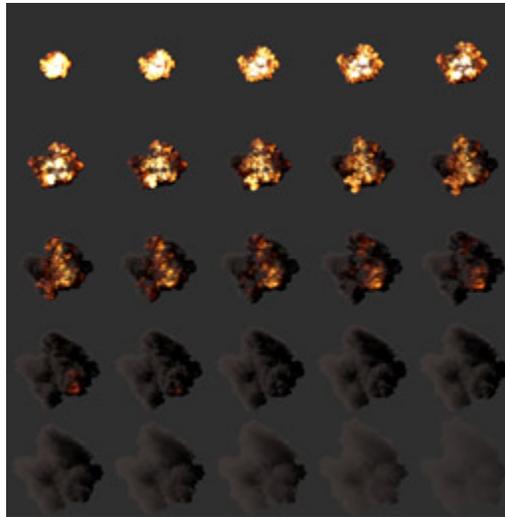
**ImageTextureMap** - image to apply to each particle. This aspect of the material will respond to scene lighting.

**ConstantTextureMap** - image applied to each particle but does not respond to scene lighting. Reset the bitmap or set Ambient Color to zero for a material that purely responds to lighting. The Reset Bitmap button will set the texture to white.

**Image Cloud Activate** will connect the cloud texture to the ConstantTextureMap. It does not respond to scene lighting.

Small buttons will isolate/solo their panel.  
Right Click will bring the other panels back into view.  
Right click while all the panels are open will not make any visible change.

Constant Map Alpha, Flipbook 2 Alpha, Flipbook Alpha, Flipbook Alpha Mask, Flipbook 2 Alpha Mask material buttons show when selecting the particle mesh.  
Press the button to show material settings.  
RMB will open the material in the link editor



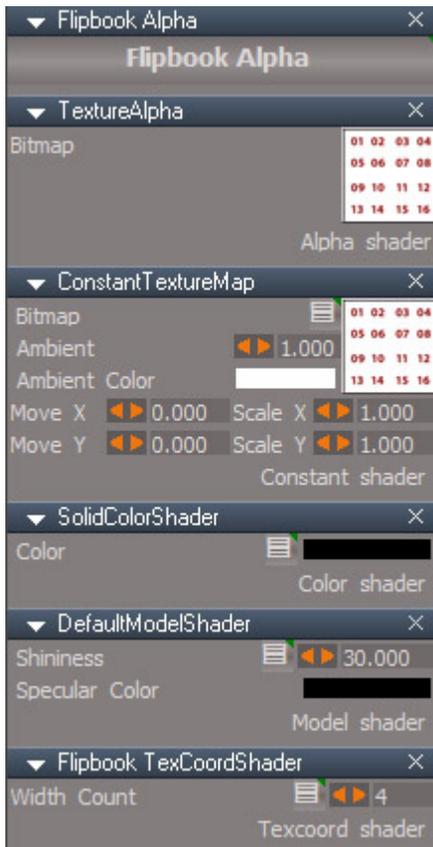
*5x5 animated sprite sheet*

<https://blogs.unity3d.com/2016/11/28/free-vfx-image-sequences-flipbooks/>

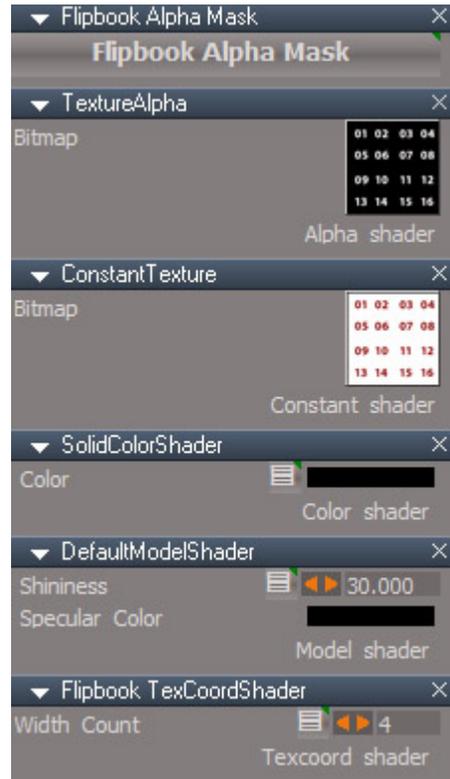
The flipbook is the sprite sheet that contains all the animation frames in order by column and rows. The flipbook image must have an equal number of rows and columns for the sprite animation frames. The number of columns will be entered into the `TexCoordShader Width Count` value. The particle system will animate the UV values of the `TexCoordShader` to create animation.

The materials used in the flipbooks is similar to the `Constant Map Alpha` material. The biggest difference is the **Flipbook TexCoordShader**.

**Width Count** - set to the number of frames in one row from left to right in the animated sprite sheet.



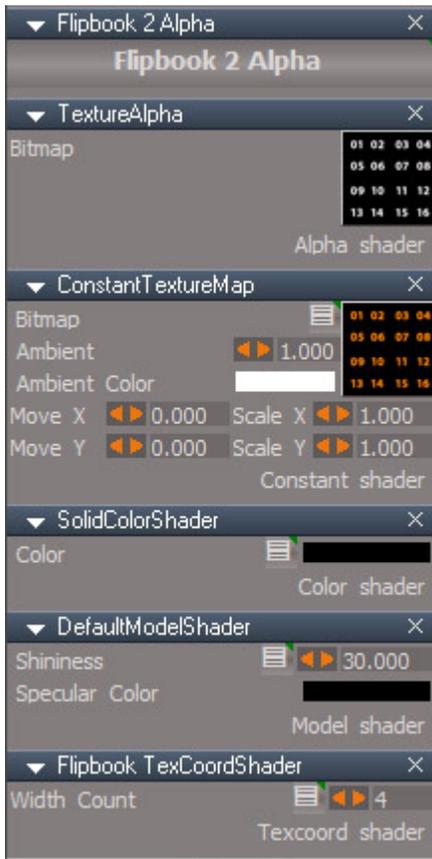
***Flipbook Alpha***  
 Use image alpha channel for the mask  
 Straight alpha nothing extra



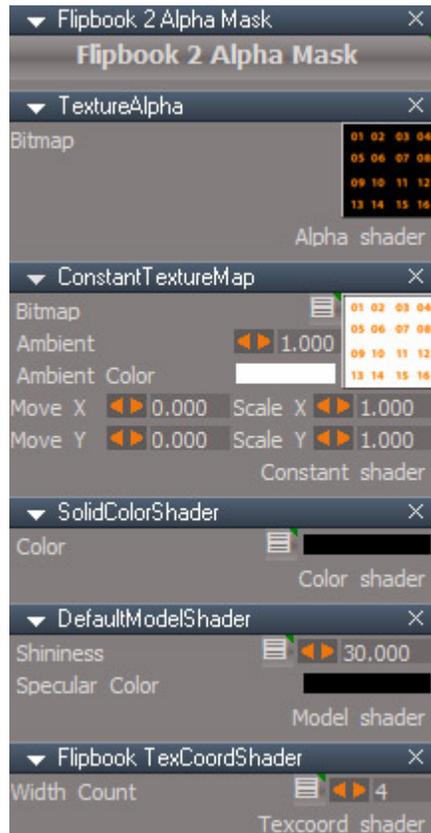
***Flipbook Alpha***  
 Flipbooks with Alpha Mask option  
 Use color(red channel) for the mask nothing extra

The Flipbook Alpha materials do not use the particle system Fade In and Fade Out.

Flipbook Alpha Mask material does not have the extra Move and Scale inputs that the other materials have.



**Flipbook 2 Alpha**  
 Use color(red channel) for the mask  
 multiplied by UV2 U Coord for Fade In/  
 Fade Out



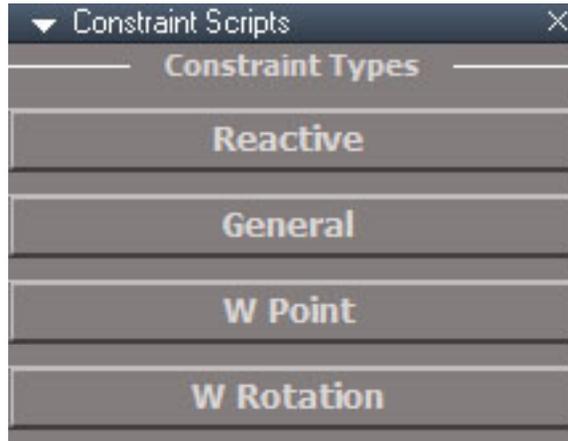
**Flipbook 2 Alpha**  
 Flipbooks with Alpha Mask option  
 Use color(red channel) for the mask  
 multiplied by UV2 U Coord for Fade In/  
 Fade Out

Maybe a bug, needs to use alpha channel  
 for mask not the color?

The Flipbook 2 Alpha materials use the particle system Fade In and Fade Out.



**Constraints** - reactive is the default type created by LMB which opens the Reactive Constraints panel, RMB shows the other options for opening other constraint panels. Constraints are used to control the motion of one object with another object's motion.



## Constraint Types

### Reactive

- Only works with scene level items. Does not work with grouped objects.
- Free axes are available for animation keys.
- No need to bake animation before rendering
- Limited to 8 constraints per object.

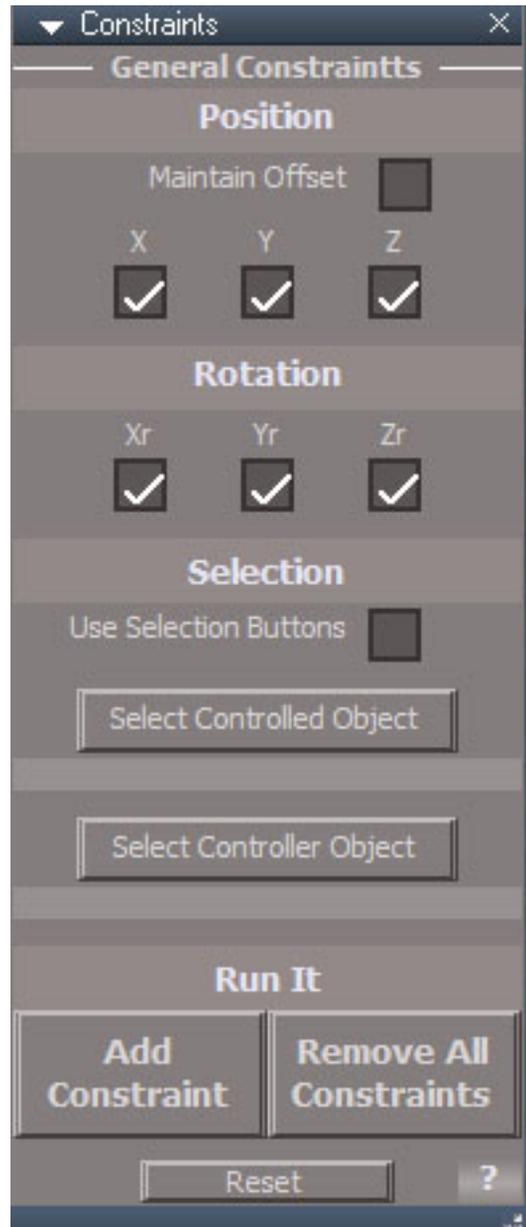
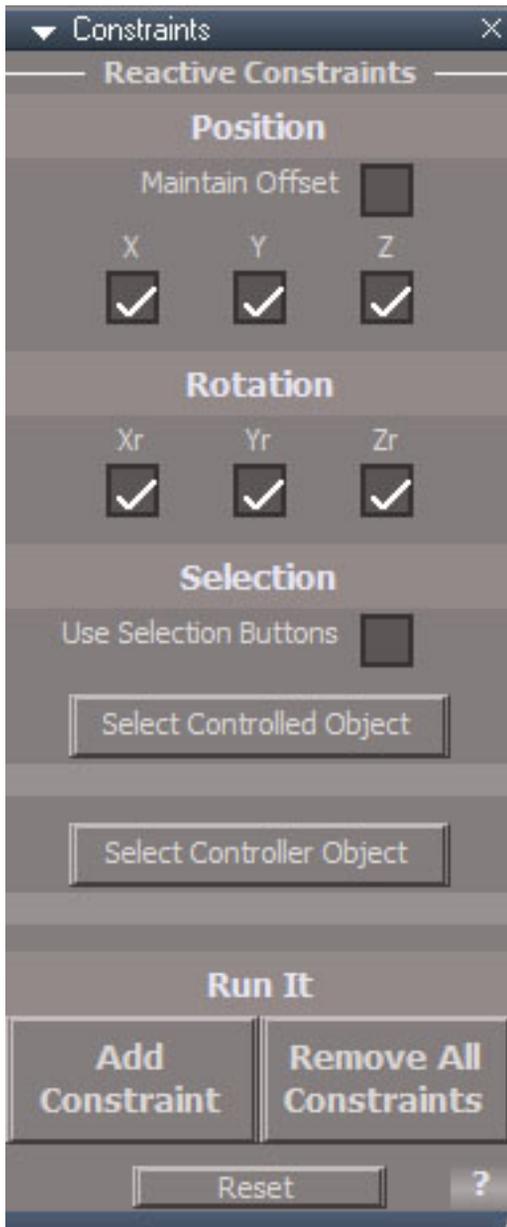
### General

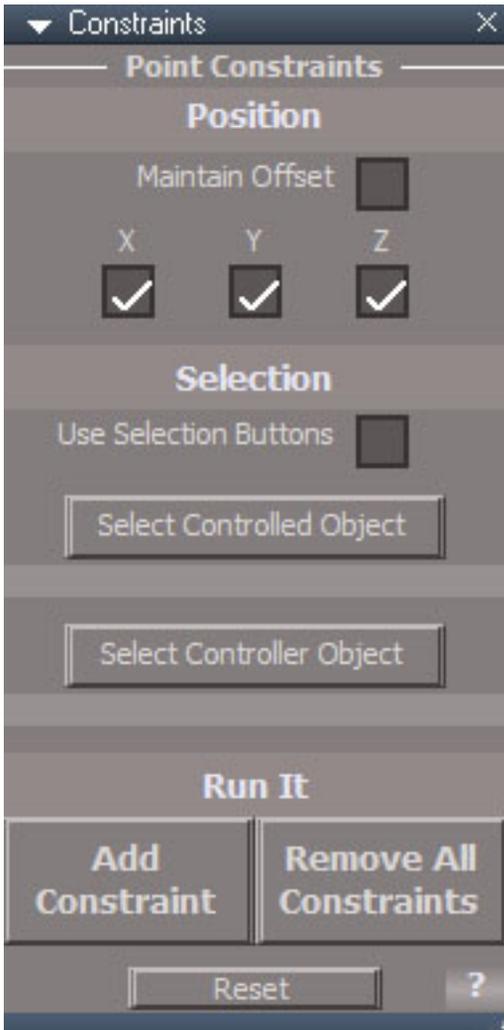
- Works with grouped objects.
- Must bake keyframes before rendering.
- No limit to the number of constraints.
- If key frame animation is applied to the controlled(constrained) object then specific key values will need to be deleted.

### Widget Based

- Works with grouped objects.
- Use with objects where their matrix values cannot be set directly, like IK handles
- Must bake keyframes before rendering.
- 2 subtypes: **W Point** and **W Rotation**
- W Point can be used with IK handles
- If key frame animation is applied to the controlled(constrained) object then specific key values will need to be deleted.
- Constraints are driven by widget motion commands instead of setting the matrix directly.

 Does not erase undos, but if you only partially undo this process, some nodes may be left in an indeterminate state. Recommend to not undo the setup of a constraint. Use the Remove All Constraints buttons.  
investigate: [does this need clear undo history?](#)





## Controls:

**Maintain Offset** - object won't jump the the controlled objects position when the constraint is applied

**X, Y, Z** - which axis will be position constrained

**Xr, Yr, Zr** - which axis will be rotation constrained

**Use Selection Buttons** - instead of pre-selecting objects before, use the buttons below to establish the selections

**Selection Controlled Object** - select the constrained object then press this button

**Selection Controller Object** - select the object that will do the constraining

**Add Constraint** - establish a constraint relationship

**Remove All Constraints** - remove the constraints that have been placed on the object

**Reset** - sets the default values for the panel

## Usage:

select a scene level object to be controlled

add the controller object from the scene level to the selection

press the button to open the Reactive Constraint floating panel

Maintain Offset to keep the relative location of the constrained object

select axis - X, Y, Z to determine what position aspect will be constrained

select axis - Xr, Yr, Zr to determine what rotation aspect will be constrained

press Add Constraint to create a constraint on the controlled object

select an object that is being constrained

press Remove All Constraints to remove all the constraint relationships assigned to the selected item

If the objects are not selected before pressing the button then the RMB panel will open with the options for creating different types of constraints. Select the object to be controlled and the controller object in that order and press one of the buttons.

When an object is constrained it will have a control node added to it. The type of node is determined by the type of constraint applied to the object. The values can be set on the node by looking at the controlled object in the stack view.



## Reactive Constraint Controls

**X, Y, Z** - which axis will be position constrained

**Xr, Yr, Zr** - which axis will be rotation constrained

**Weights** strength value assigned to each controller object

**Controller** node name for the corresponding weight

**Position Offsets** position of the constrained object relative to the first controller object attached to it

## General Constraint Controls

**active** - enables/disables constraint processing.

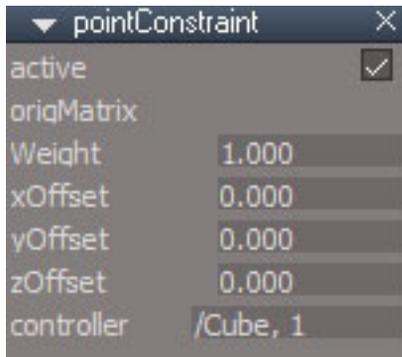
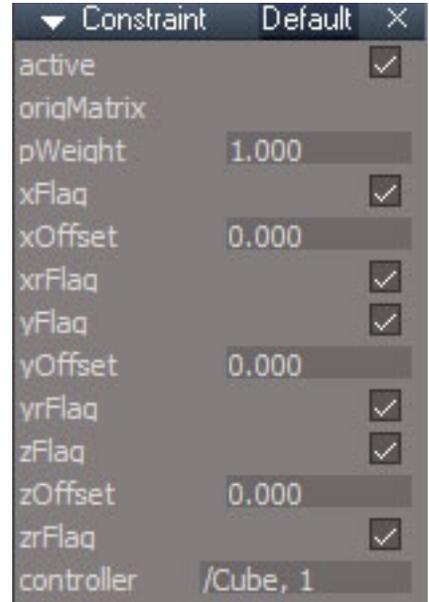
**xFlag, yFlag, zFlag** - axis position constrained

**xrFlag, yrFlag, zrFlag** - axis rotation constrained

**xOffset, yOffset, zOffset** - position offsets

**"pWeight" "pWeight, 1" "pWeight, 2" ...** - Weights

**"controller" "controller, 1" "controller, 2" ...** - controller node names



## Widget based Constraint Controls

**active** - enables/disables constraint processing.

**xFlag, yFlag, zFlag** - not exposed, found inside the "pointConstraint" node

**xrFlag, yrFlag, zrFlag** - not exposed, found inside the "rotateConstraint" node

**xOffset, yOffset, zOffset** - position offsets

**"Weight" "Weight, 1" "Weight, 2" ...** - Weights

**"controller" "controller, 1" "controller, 2" ...** - controller node names

Use the link editor or scene view to look inside the controlled object for the dataCalc node which has the unexposed values.



**Deformers** - change the shape of a mesh

**i** will erase undo history.



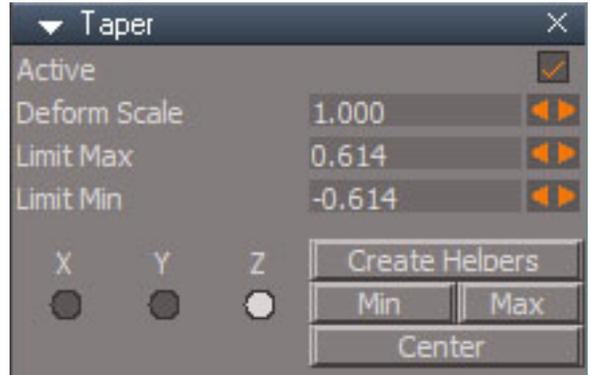
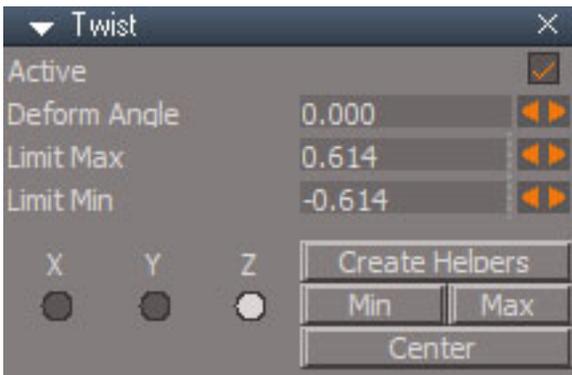
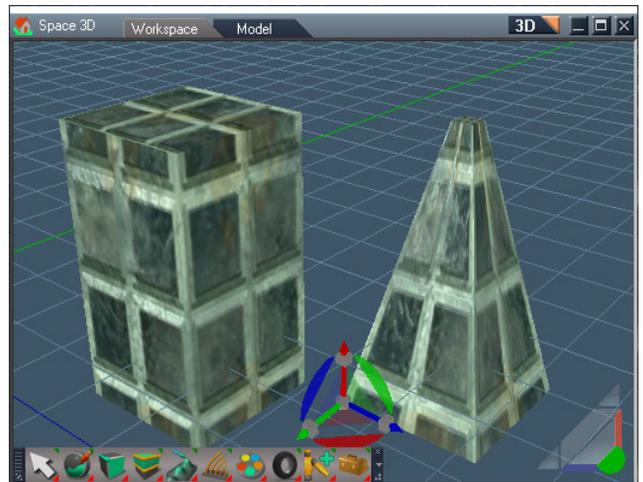
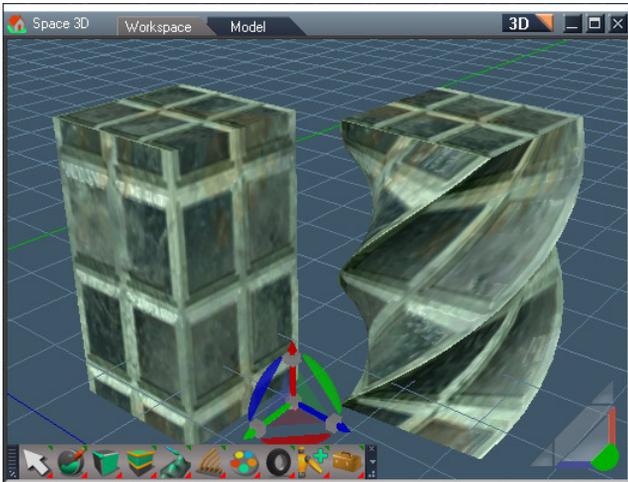
select a well divided mesh

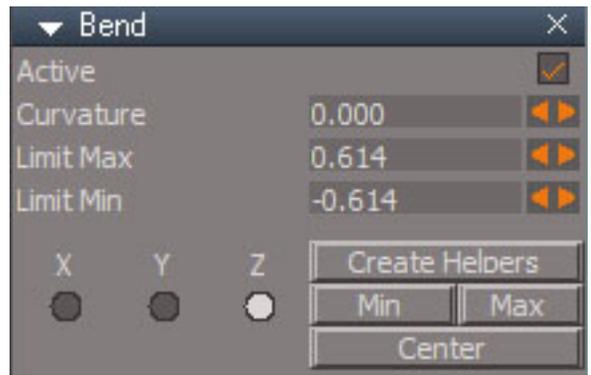
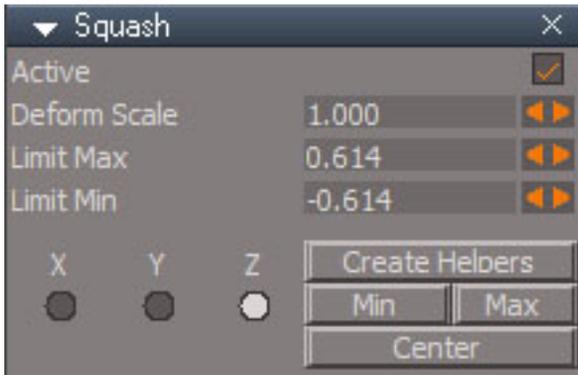
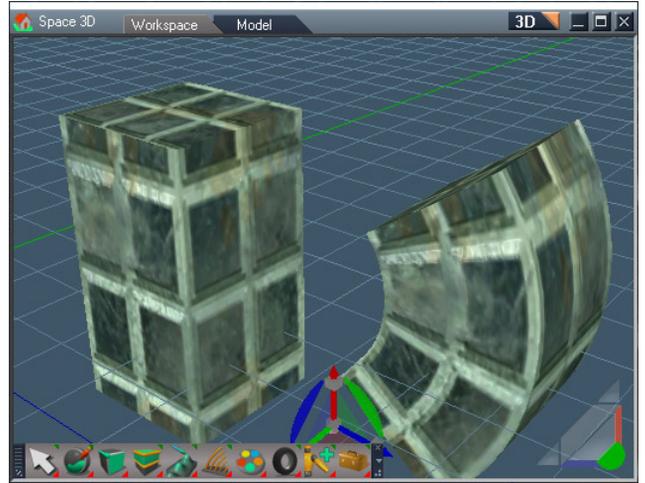
press the button to open the selection panel

choose Bend, Squash, Taper or Twist

select an axis - X, Y or Z

press Add to add the deformer to the mesh object





## Node Controls:

**active** - can be used to turn off the deformation

**Bend:** Curvature of the bend

**Taper:** DeformScale - control amount of taper

**Squash:** DeformScale - control amount of squash and stretch

**Twist:** DeformAngle - control amount of twisting

**Limit Max** - control maximum of the region of influence on the original mesh

**Limit Min** - control minimum of the region of influence on the original mesh

**X Y Z** - change the axis for the deform

**Create Helpers** - used to change the center, min and max visually

**Min** - select the Limit Min helper

**Max** - select the Limit Max helper

**Center** - select the deform center helper

Set the strength of the deform with the Curvature, DeformScale or DeformAngle controls depending on the deformer.

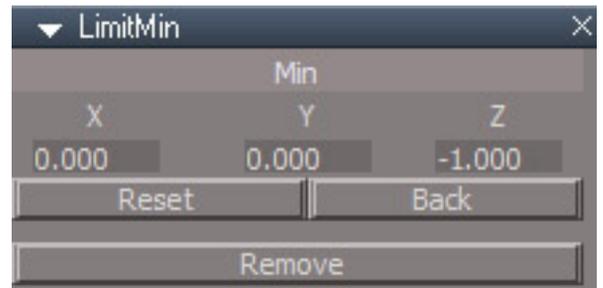
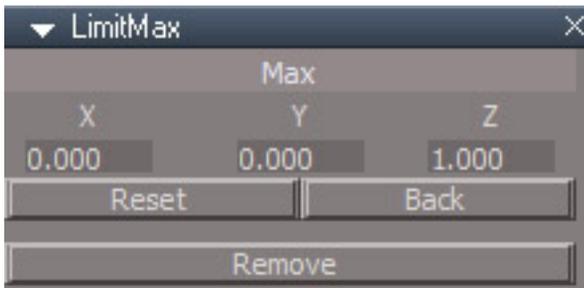
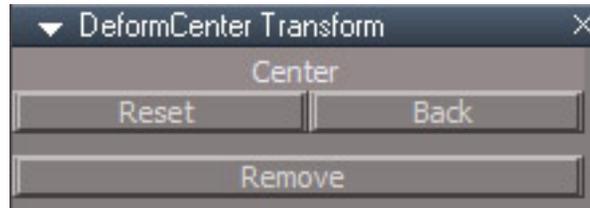
The active region will default to the mesh size. Set the region of influence with the Limit Min and Limit Max controls.

Do not change the axis while using the helpers.

Deformers can be chained together by just adding another deformer.

There is no function to remove Deformers.

The deformed mesh must have enough detail to show the deformation properly.



**Reset** - sets the maximum, minimum or center based on the object bounding box

**Back** - selects the deform node and associated with the helper

**Remove** - removes the corresponding helper

If you remove an individual helper the corresponding selection button on the deform node will not do anything.



**Parenting** - creates a parent child relationship between objects.

Select the child objects then add the parent object to the selection and press the button  
 Choose the children and RMB to unparent them.  
 Parenting structures do not export to non-trueSpace formats like Collada(dae) and X.



**Mirror Matrix** - opens the mirror matrix panel

The Mirror Matrix tool effects the object matrix values. It is similar to the built in modeling mirror tool but mirrors the matrix values as well as the vertices of the mesh. This tool is also compatible with cameras and lights.



Set the options as desired, select a scene object then press one of the X,Y,Z buttons.

**Mirror Copy** - make a copy and mirror it

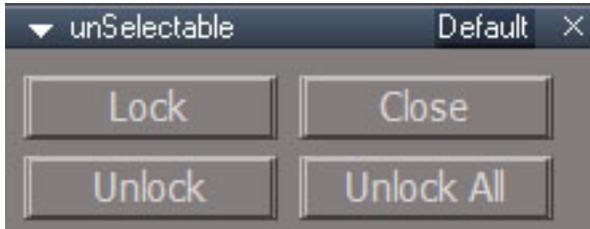
**Mirror Mesh Vertices** - a mesh requires that the vertices are updated for a full mirror effect. Can be disabled to only mirror the matrix values. This option is ignored for cameras and lights.



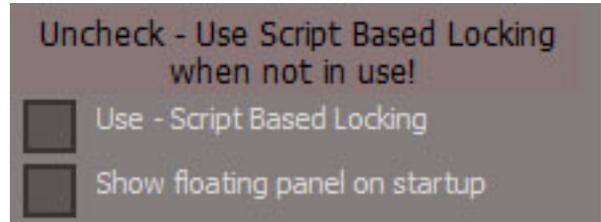
**Lock** - add an unSelectable node to the scene and locks the current selection from basic 3D viewport selection



**Unlock** - unlocks the current selection for 3D viewport selection



*RMB panel for Lock and Unlock*



### Panel Usage:

**Lock** - lock the selected nodes, use the link editor or scene view to select locked objects

**Unlock** - unlock the selected nodes

**Unlock All** - unlock all locked items

**Close** - remove the panel from the scene

**Use - Script Based Locking** uses the Undo process to deselect locked items. It will lock objects from selection in the link editor and scene view as well as the 3d view

**Show floating panel on startup** - open the floating popup panel when loading the scene

*script based locking may need to clear history - uses selection change node*

The checkbox options are found in the Help aspect of the panel.

**i** Alt + LMB will temporarily override widget based locking in the 3D view.

The selection will be lost after unlocking.

Does not lock when tools handle their own selections like boolean and the material picker.

Child nodes do not inherit the parent groups locking, they must be locked separately.

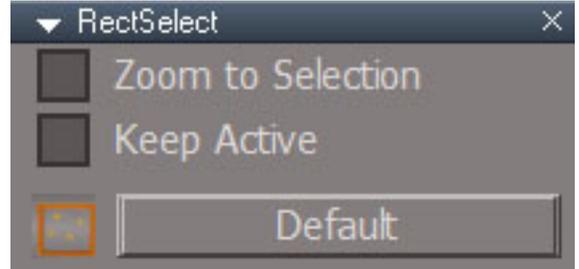
For script based locking if you select several items and one is locked the entire selection will be undone, not just the locked item.



**Rectangle Select** - rectangle style object selection via ray tracing  
RMB to open default aspect of the panel



*Rectangle Select Panel Default aspect*



*Rectangle Select Panel Rectangle Zoom aspect*

### Default Aspect

**Respect Locking** - if an object has been marked as unselectable it will not be selected.

**Divisions** - the number of vertical and horizontal ray traces used to find objects.

**Rectangle Zoom** - prepare and open the rectangle aspect of the panel

### Rectangle Zoom Aspect

**Zoom to Selection** - will fill the view with the resulting selection

**Keep Active** - tool stays valid until RMB click in space.

**Default** - prepare and open the default aspect of the panel

Small icon button is the same as the toolbar button except no Right Click to open the panel

### Usage:

Left click the button to run with current options

Right click to open the options panel.

drag in the viewport to make a selection - the rectangle will be invisible

### Notes:

The rectangle widget is invisible.

Small items can be missed - increase the Divisions

High division values may run slowly

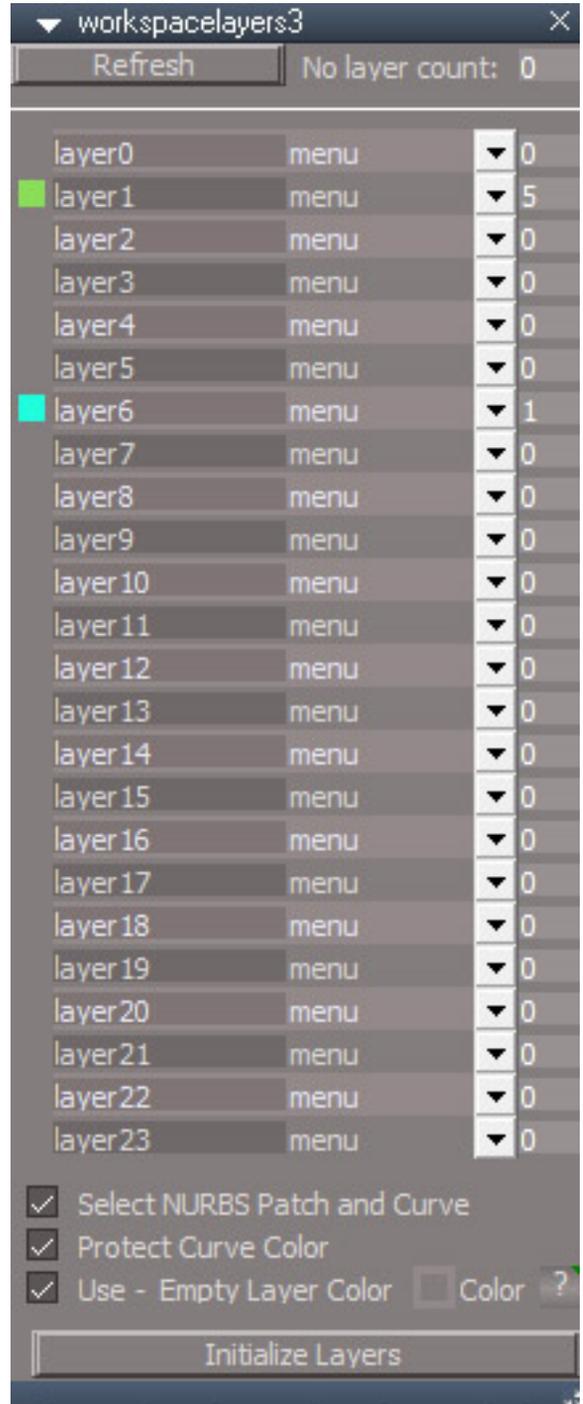
Only visible non-occluded objects will be selected.



**Layers** - add layers control to the scene, or open a preexisting layers panel  
 RMB open preexisting layer panel



erases undo history



**Refresh** button is for updating the display after creating or loading new items into the scene.

**No layer count** number of renderable objects that do not belong to any layer. This count includes child nodes of objects that are assigned to a layer.

The color control is for setting the wireframe color of a layer.

The next field is for the layer name.

The **menu** has options for:

**Select** - select all the objects in the layer.

**Add to layer** - add selected objects to the layer.

**Empty** - remove objects from the layer by removing the render attributes node. Cameras and lights will move to layer 1

**Visible,**

**Locked** - visibility and selection locking. shows in the menu name as "menu H L" with H=hidden and L=Locked

**Global,**

**Solid,**

**Solid Wire,**

**Transp,**

**Transp Wire,**

**Wireframe** - layer display modes - object mode off, solid wire, transparent, transparent wireframe, wireframe.

**Backfaces,**

**Hidden Lines** - additional display options to show back faces and hidden lines in transparent and transparent wire display modes.

The number to the far right of each row is a count of all the objects in a layer.

**Select NURBS Patch and Curve** when active will automatically select the control point mesh for NURBS objects when using the Select menu option

**Protect Curve Color** the color of a NURBS curve will not be changed by layer assignment.

**Use Empty Layer Color** use the Color value for empty layers, otherwise use a random color.

**Color** default empty layer color

The **Initialize Layers** button is the same as the Refresh button with the exception that it also resets the layer names and all layer colors. This is also run when the layers object is added to the scene.

The script will read modelspace layer numbers, but not the wireframe color.



**Mesh Origin** - Tool for changing the location of the center of a mesh by moving it's vertices

The origin is the "center" of the mesh located in local space ( 0, 0, 0 )

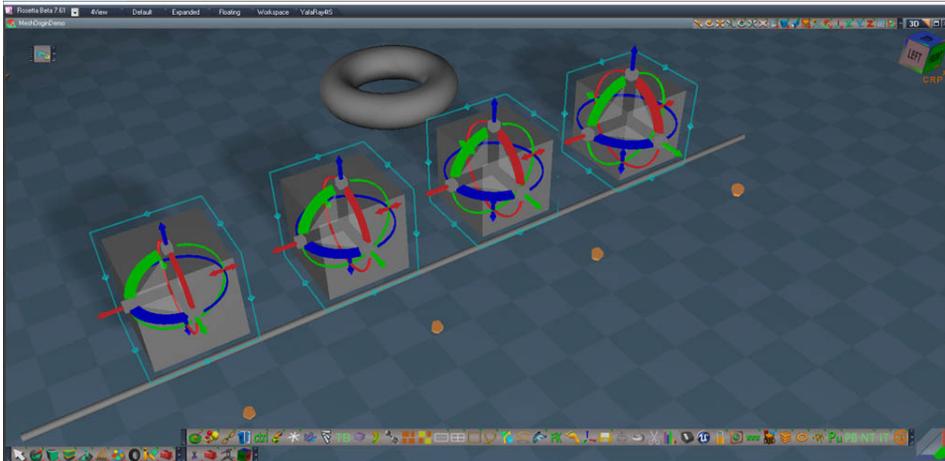
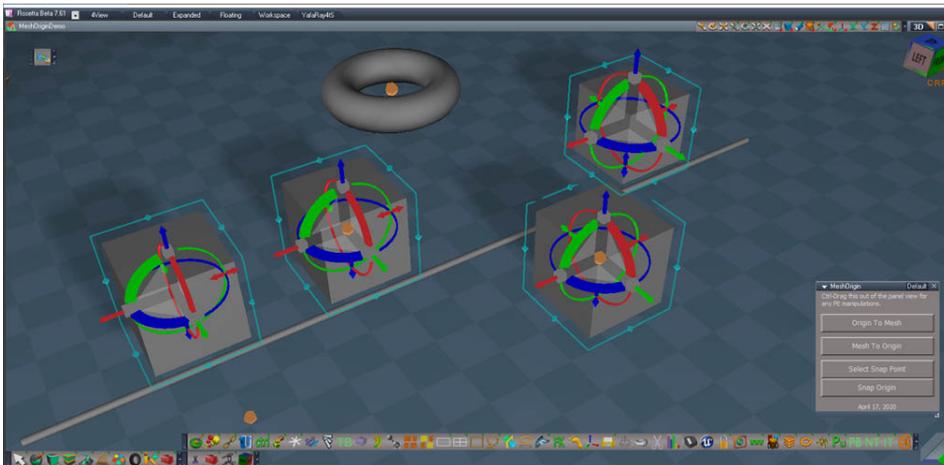


Image shows 4 identical boxes that have been point edited to move the origin away from the center of the mesh vertices.

The vertices were moved back in the negative Y direction leaving the origin/center behind.  
The widget shows the origin as an orange dot.



From left to right:

Box #1 no action taken

Box #2 Origin To Mesh - origin moves to the geometric center of the box vertices

Box #3 Mesh To Origin - mesh vertices move to the location of the origin

Box #4 Select Snap Point was run on the Torus and then Snap Origin was run on the box



Usage:

**Origin To Mesh** - move the origin to the center of the mesh vertices.

**Mesh To Origin** - move the mesh vertices so they are centered around the origin

**Set Snap Point Widget** - use a widget to select the point for snapping

**Set Snap Point** - save the object location or point edit selection for snapping

**Snap Origin** - move the origin to the previously selected point.

The origin can only be seen with the modified centered object navigation widget

The mesh origin is not visible in the standard object navigation widget.

The Snap Origin will remove all transformations from the object. So scale and rotation will be baked into the vertices.



**Character FK** - setup forward kinematic controls for joints

Setup control:

**Start Dynamic Pose** - mode for the actor

**Clear** - clear the joint list

Select joints and press the **Add Joint** button

Press **Remove** if needed to remove the selected joint from the list

Press the **List** button to display the selection list in the log view - it opens automatically

**ControlName** - the name to be used for the fk control

**Copy Control** - copies the fx control nodes into position in the heirarchy graph - there will be no indication that the copy was succes  this step will erases undo history

Rotate the joints into their start positions and press **Set Start Positions**

Rotate the joints into their end positions and press **Set End Positions**. This will end dynamic pose mode and reset the actors pose.

**Expose Control** - links up all the nodes and makes the control value available at the top level of the actor.

Only press once, there is no validation or error checking.  this step will erases undo history

**Start Watch Dog** does final initializations to make the input value active and sets the text for the ButtonScript

**Panel ID Reset button text** - sets the command text for creating the ui elements of the control

Manually create a "panel" button on the actor, just a simple push button control and copy the text from the

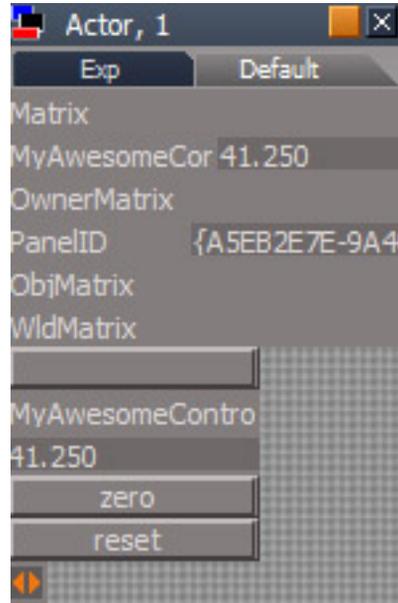
**Make UI Button Script** in to it

Press the button to create the text, number, a "zero" button, a "reset" button and a scrubber control. The resulting panel must be edited or it will be lost.

Copy the text from the **Zero Button Script** into the zero button, one of the new blank buttons

Copy the text from the **Reset ButtonScript** into the reset button, the other button

The **Joint Select/Default Pose Button Text** is used to create script text for selecting a specific joint or setting the joint and it's children back to the default pose independent of the rest of the skeleton. Select a joint and press the button to update the text. Copy the text to their own buttons on the actor. This is good for imported skeletons that may have overlapping and difficult to select joints or a heirarchy that doesn't work well with trueSpace IK.

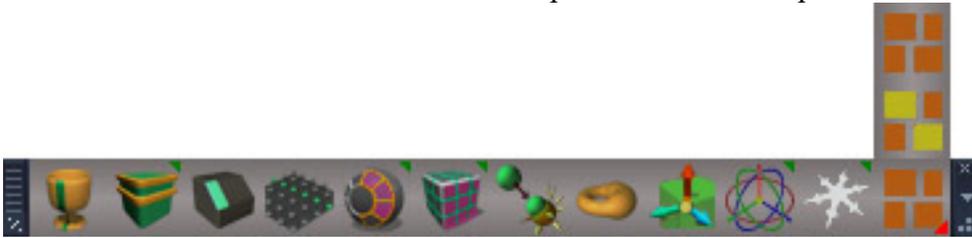


*blank "panel" button  
input value for the FK control  
zero button  
reset button  
scrubber for the FK control*

To use the controls:

press the zero button - this will zero the control value and will also unstick a stuck control  
scrub the scrubber to move the joints  
repeat

press the reset button to set the current pose as the zero value



*Point Edit toolbar.*



**Point Edit Toolbar** open toolbar



**Lathe**



**Static Sweep**



**True Bevel**



**Plane Loop Select**



**Selection by Normals**



**Quadrify by Normals**



**Target Weld**



**Normal Move**



**Toggle Object Coordinate Mode**



**Axis to Selection**



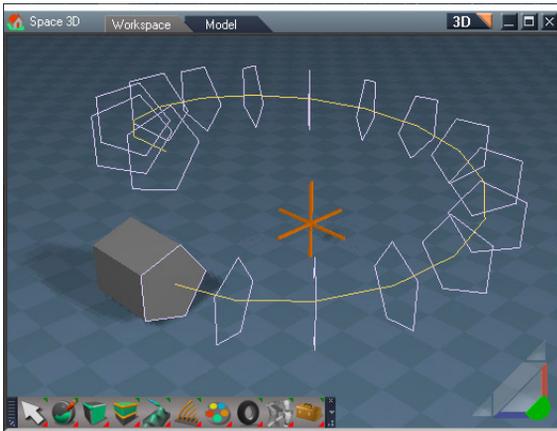
**Freeze Transform .**



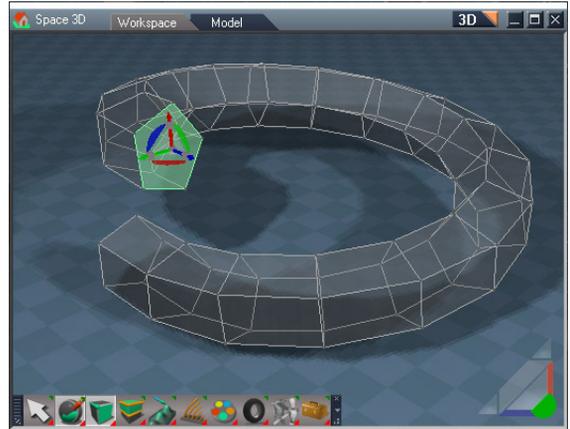
**Quad Toolbar .**



**Quad Menu .**



*lathe array*



*lathe complete*



**Lathe** - based on the radial array tool, LMB start the process

**i** Can potentially eat up a large number of undos

The lathe tool works by taking a face selection and creating a radial array from it. when complete the array is transformed into a series of dynamic sweeps that follows the path defined by the radial array.

### Usage:

Make a polygon selection and push the button to get a preview of the lathe.  
Adjust the controls and press Commit Lathe

X and Y axis, works best with face selection in the z direction  
 X and Y axis can have some twisting in the cross sections

A Top Radius negative value means "Off"

A Height of 0 combined with 360 degree Angle will result in the shape closing in on itself.

Closed lathe happens via heal vertices with a merge distance of 0.01, for extremely small objects make lathe just short of 360 degrees to avoid over merging of vertices

Set radius with precision is a 3 step process

Get - read the current radius value as a starting point  
 update the Radius value

Set - apply the radius change to the Center Control

**Axis buttons( X, Y, Z )** set the orientation of the array.

**Num Copies** determines the number of array elements

**Angle** determines the arc angle for the copies.

**Radius** - use to fine tune the radius value, use the Center Control for interactive update

**Get** - read the current radius value as a starting point

**Set** - apply the radius change to the Center Control

**Top Radius** is used to spiral the arc in or out from the center.

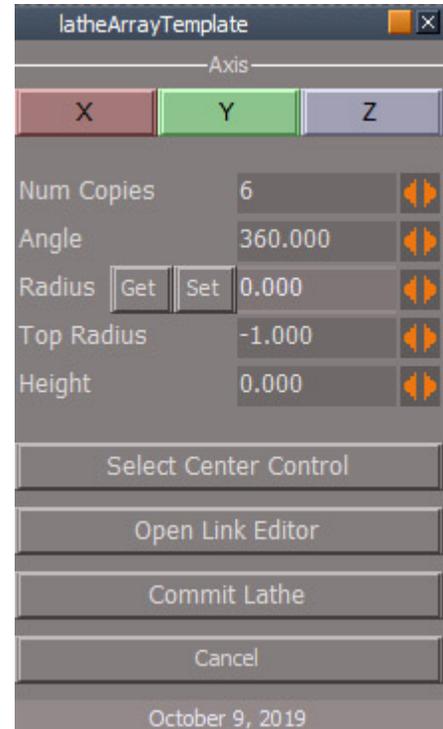
**Height** controls the offset from the plane of the array for spiral effects

**Select Center Control** button will select the handle that controls the center and orientation of the array

**Open Link Editor** - open a link editor window for interactive update when rotating the array element and for unsticking controls if needed.

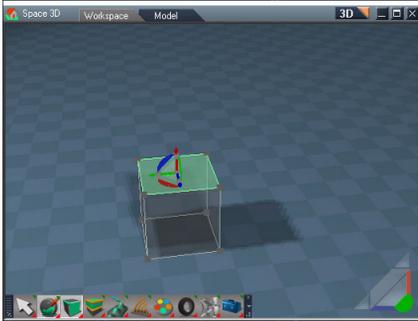
**Commit Lathe** - extrude the face along the array path

**Cancel** Stop lathe and remove working geometry.

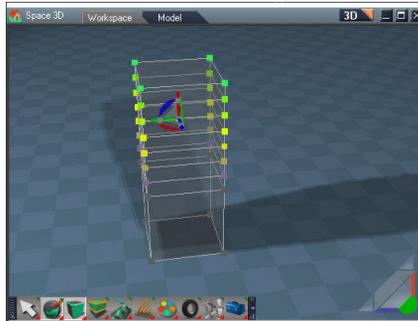




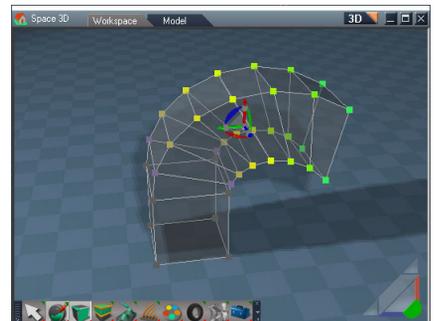
**Static Sweep Plus** is based on the Dynamic sweep tool except that it is not interactive and will have a soft selection when the number of segments is greater than one.



*before sweep*



*after sweep and move*



*rotation and more move*

### Usage:

Select faces or edges

Push the button and the selection is swept by a tiny amount, too small to be seen.

Use the point edit widget to move the new swept geometry.

It will use the values previously set in the panel.



**Segments** - number of sweep segments

**Group selection** - sweep selection as a single unit

**Average normals** - sweep in the average normal direction

**Boolean mode** - disable or shell, 1 and 2 behavior is the same as disable

**Sweep** - perform sweep

Static Sweep is good for edge selections that sweep in unpredictable ways or even cause truespace to crash.

When more than one sweep level segments are used a soft selection is created. When this soft selection is combined with the enhanced PE widget behavior included in the unofficial updates it can be made to simulate a lathe type action.

A large number of sweep segments can take a while to complete.

Do not use with the mesh editor preserve unwrap option with a large number of sweep segments since the uv values can get a little crazy.

This tool inherits a bug from the base trueSpace Dynamic sweep. If you make a loop selection and have the average normals option checked the result will not be good.



**True Bevel** is an edge bevel tool



will erase undo history



Make an edge or face selection

Press the button to open the panel

Drag the Offset control back and forth to see a preview of the bevel.

The selection can be changed at any time before pressing the Bevel button

Press the Bevel button to commit

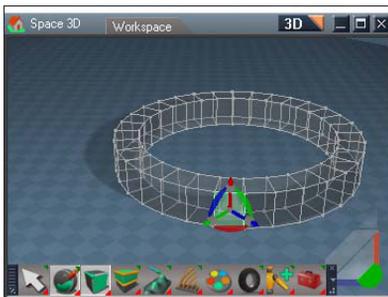
Cleanup any bad geometry created



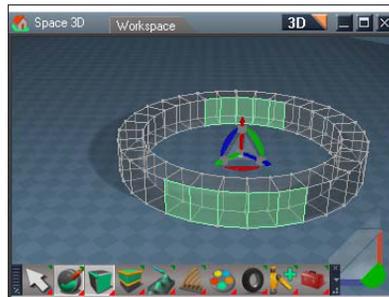
**Plane Loop Select** is like a point loop selection tool that works with objects based on Plane primitives. Select 2 adjacent points and press the button to get a loop style selection. This tool was made because the built in loop select tool does not work with plane based meshes.



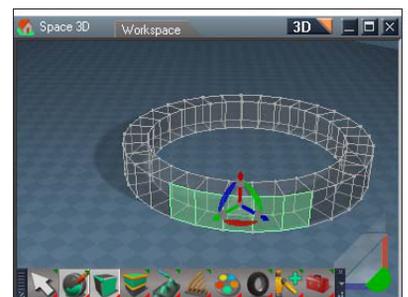
**Selection by Normals** - expand face selection to faces that have a common normal direction



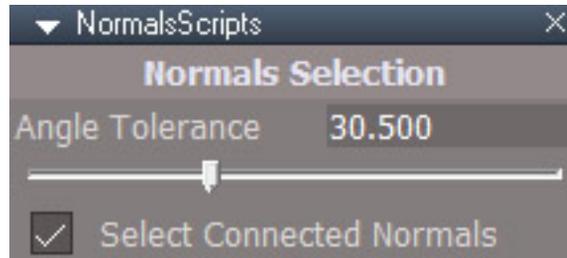
*initial selection*



*select by normal, 30 degree tolerance*



*select by normal, 30 degree tolerance, Select Connected Normals*



**Angle Tolerance** - the maximum angle for comparison of normals

**Select Connected** - selection will be limited to neighboring mesh faces

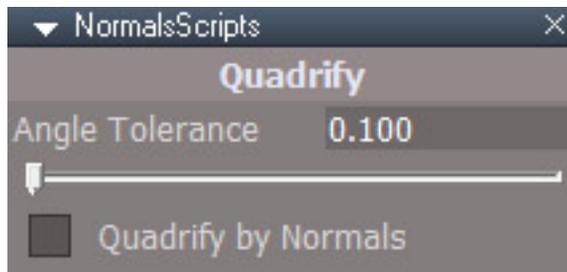


**Quadrify** - either combine all selected faces and then quadrify or quadrify based on the face normals



*will erases undo history if Quadrify by Normals is unchecked*

dont see any reason for this



**Angle Tolerance** - the maximum angle for comparison of normals

**Quadrify by Normals** - use face normals and angle tolerance to control the quadrify, if unchecked then the selection will be combined into a single face and then that face is quadrified by the built in trueSpace quadrify command

The first face of the selection is used for the comparison normal  
 Angle Tolerance can have values between 0.1 degrees and 90 degrees.  
 Quadrify by normals can be limited to a selection, instead of running on the entire mesh.  
 Quadrify by normals may not give you the quads you are expecting to get. Small tolerance values and selection based limiting can help with this.

## Quadrify - recommended procedure

Quadrify By Normals off

Make a selection and run the quadrify tool - this runs very quickly

If good result, stop here, otherwise

Press undo 3 times

Quadrify By Normals on

Make a selection and run the quadrify tool - this may take a while to finish

The result may be a little better, but no worse than before

## Quadrify - not by normals ( the default, fast )

Uncheck the Quadrify By Normals option

Select faces or triangles

Run the tool

## Quadrify - by normals (automatic, slow)

Check the Quadrify By Normals option

mesh does not need to be in point edit mode to run

set the Angle Tolerance to a low value

run the tool

if triangles still exists steadily increase the tolerance between runs to get a clean mesh



**Target Weld** weld one vertex to another by clicking on them one by one. RMB to exit the



each weld will eat up about 4 or 5 undos.

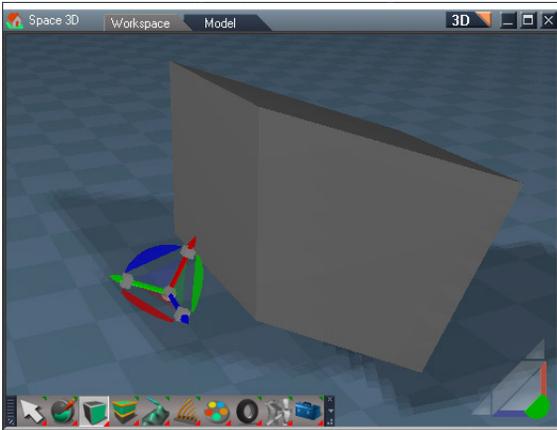


**Normal Move** will move a vertex selection in the direction of their normals.

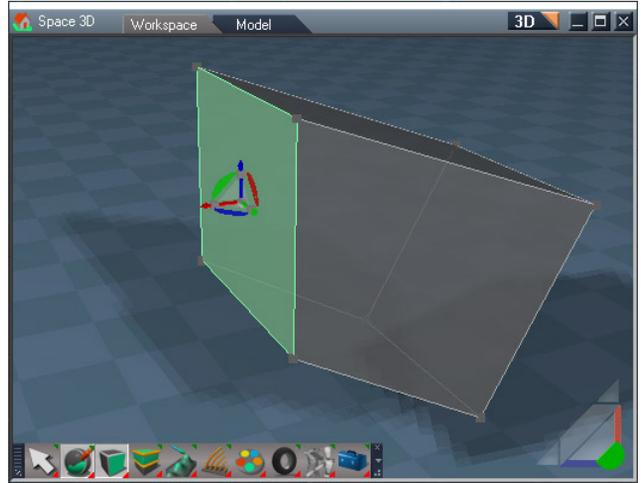
Left button drag the mouse in the 3D view to increase or decrease the offset value. RMB to exit the tool



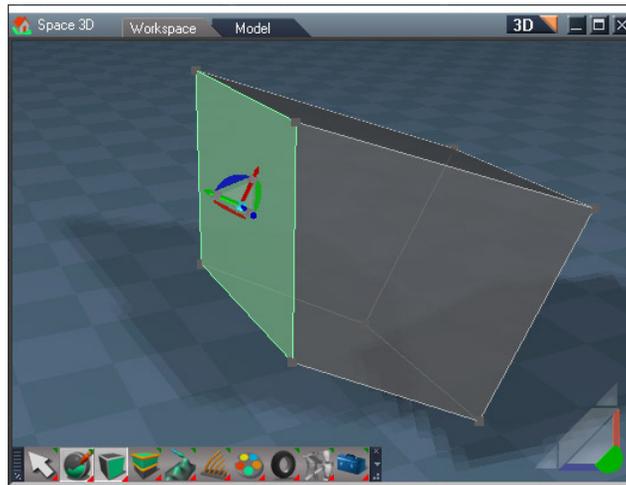
eats up undos.



*object rotated in Y, object coord nav widget*



*face selected point edit widget normal object mode aligned to the selection*



*mesh object coord mode, widget same orientation as in object nav widget object mode*

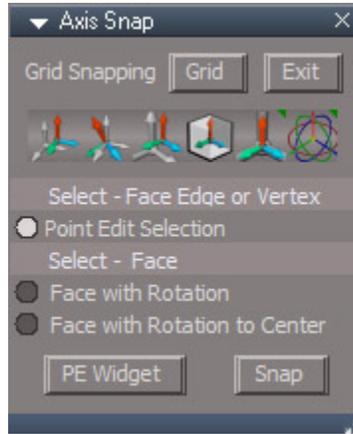


**Toggle Object Coordinate Mode** between normal point edit selection orientation and object local space orientation. The point edit widget center will turn light blue to indicate object local space orientation mode.

 clears undo history



Note that this should be toggled off before using tangent coordinate mode.



note: "Face Edge" is Face or Edge

*Axis to Selection Panel*



**Axis to Selection** move pivot to the selection  
RMB open axis snap panel

**Grid** - turns on grid snapping, click again to turn off

**Exit** - turns off grid snapping and exists point edit mode

5 generic axis buttons and axis appearance control

**Show Axis/Show Pivot** - controls the appearance of the pivot when it is shown, normal or as an orange dot

3 options for the Snap button:

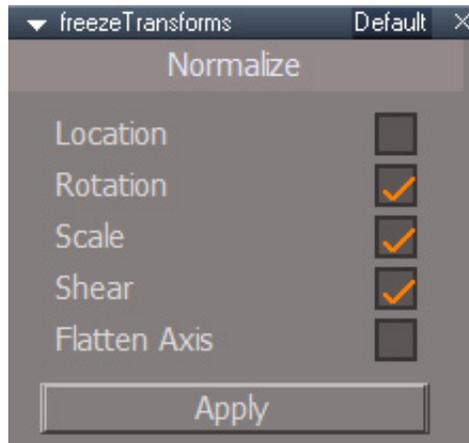
**Point Edit Selection** - move the pivot to the selection

**Face with Rotation** - move the pivot to the face and orient to the selected face

**Face with Rotation to Center** - move to the center and orient to the face selection

**PE Widget** - toggles the pe widget off and on

**Snap** - snap the axis based on the previous options



*Freeze Transform Panel*



**Freeze Transform** .Set rotation to (0,0,0), set translation to (0,0,0) and set scale to (1,1,1) and set shear to (0,0,0) without changing the appearance of the object. RMB to open the panel to choose what transform attributes get frozen.



The Flatten Axis option will erase undo history

Freezing a group only freezes the group object.

To freeze the elements of a group select them and then run the script.

The Shear option only operates on single mesh objects. Groups,lights and cameras are ignored.



*Quad Toolbar*

*Quad Menu*



**Quad Toolbar .**



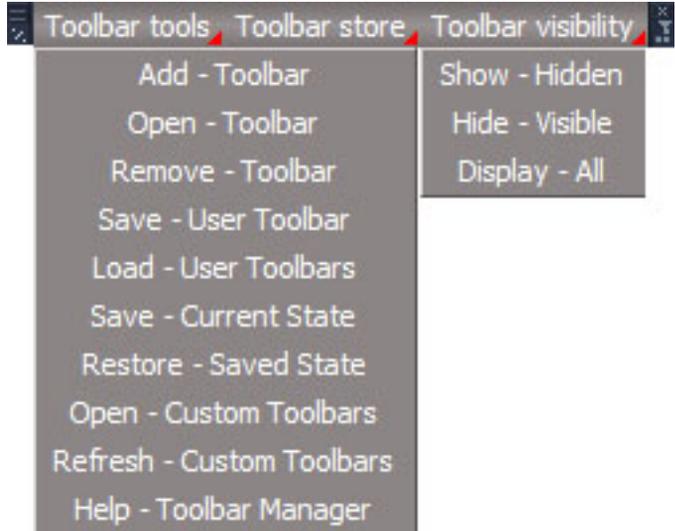
**Quad Menu .**

The Quads are used to quickly select modeling tools via a shortcut. After a tool is selected the Quad closes automatically. It can also be closed by clicking on one of the blank buttons.

When used with shortcuts the Quad Toolbar opens centered on the mouse position and the Quad Menu opens to the right of the mouse position. There is also a slight variation in the toolbar buttons included.



**ToolbarToolbar**

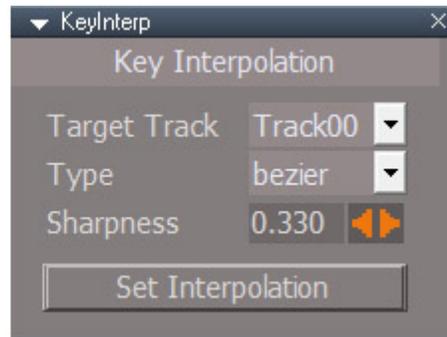


For more information use the **Help - Toolbar Manager** menu option



**Interpolation Toolbar**

## Keyframe Interpolation



### Interpolation toolbar

**record** - button will create a new keyframe using the chosen interpolation type. right click opens the keying panel

other buttons from left to right are **bezier**, **linear**, **flat**, **start and end**. These buttons change the interpolation of selected keys

right click to open the interpolation panel

### interpolation panel

**Target Track** - the destination track for new keyframes. Not used when both type is bezier and sharpness is 0.33 (the trueSpace defaults for new keyframes). This setting can also be ignored if the item has only one animation track.

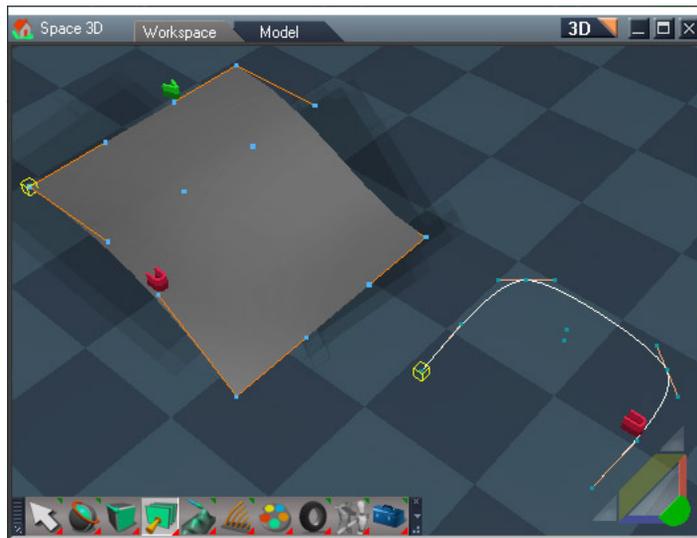
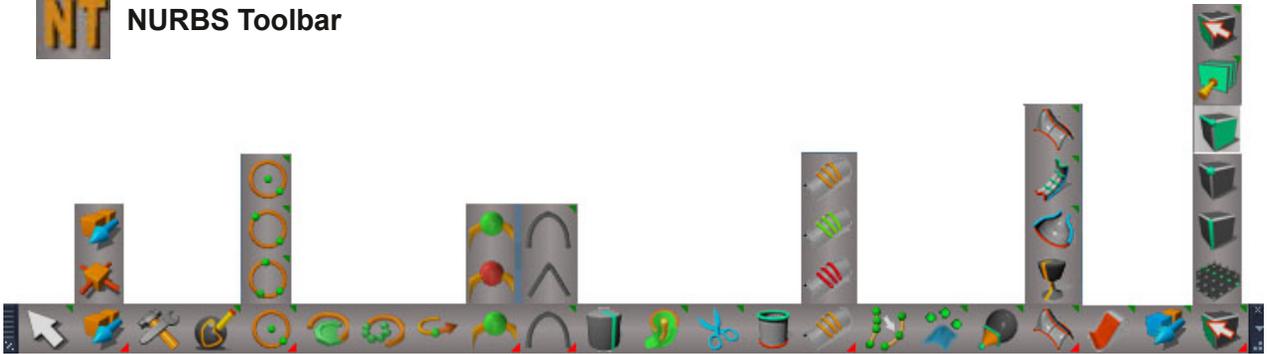
**Type** - interpolator options match the buttons bezier, linear, flat, start and end

**Sharpness** - smaller values make a sharper curve - no effect in linear, start and end modes

**Set Interpolation** - button will set the interpolation type for the selected keyframe(s)



## NURBS Toolbar

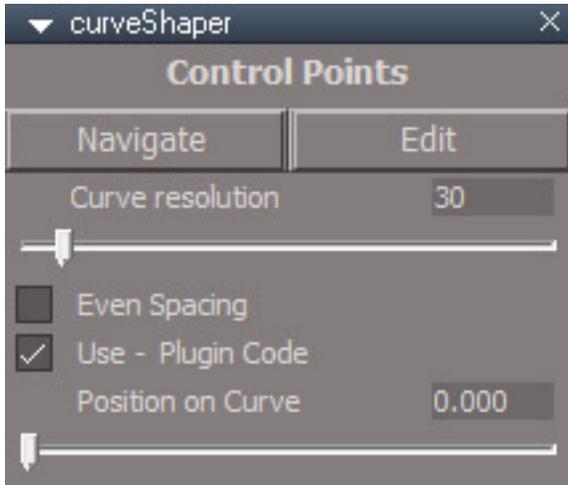
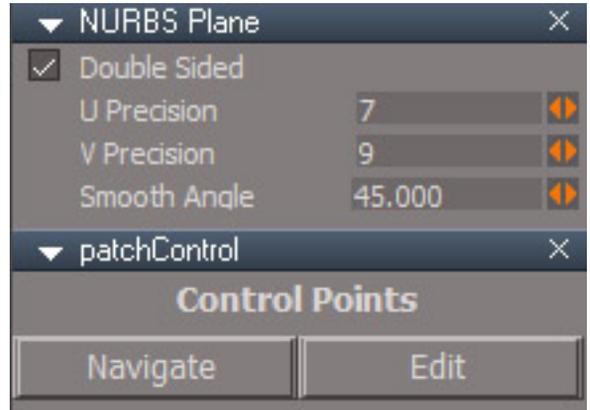


*NURBS patch and curve with UV indicators and control mesh visible*

The control point is the point at the center of the 2 edges that form the control handles. The points without handles on the patch are the "floaters". The head of the NURBS shape is indicated by the yellow box and the U and V directions of the NURBS are indicated by the red U and green V shapes.



For point edit rectangle and lasso selection, do not enable select connected option for NURBS patch selections

*NURBS Curve Panel**NURBS Patch Panel**NURBS Control Point Mesh Panel*

need control for cp mesh visibility on patches and probably curves too

patch needs export the object render attributes default aspect 1 level

curve need to see invisible control on the controlPointMesh

**Navigate** - select the control point mesh for transformation or editing

**Edit** - select the control point mesh and start point edit mode, also removes the uv indicators

**Select** - select the NURBS object

**Curve resolution** - number of points used to render the curve to the viewport

**Even Spacing** - the curve points will have equal distance between them

**Position on Curve** - used for animation, 0 is the start of the curve and 1 is the end point. A scene object can be connected to the curve PositionMatrix and the scene object will follow the curve dependent on the value of 0 to 1.

**Double Sided** - the back side of the patch will be generated/visible

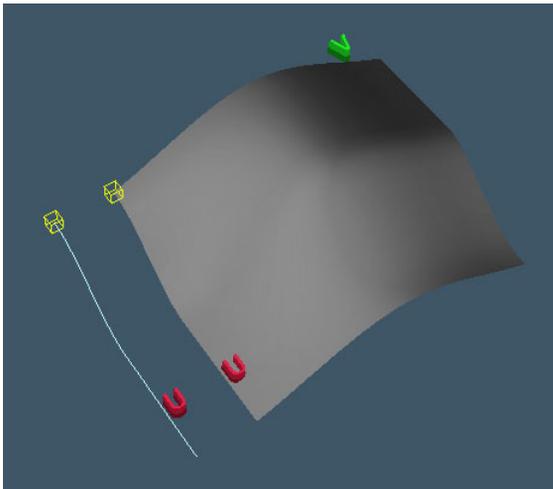
**U Precision, V Precision** - maximum detail level of the patch object. A flat shape will not have detail added.

**Smooth Angle** - minimum angle between faces for smoothing to occur

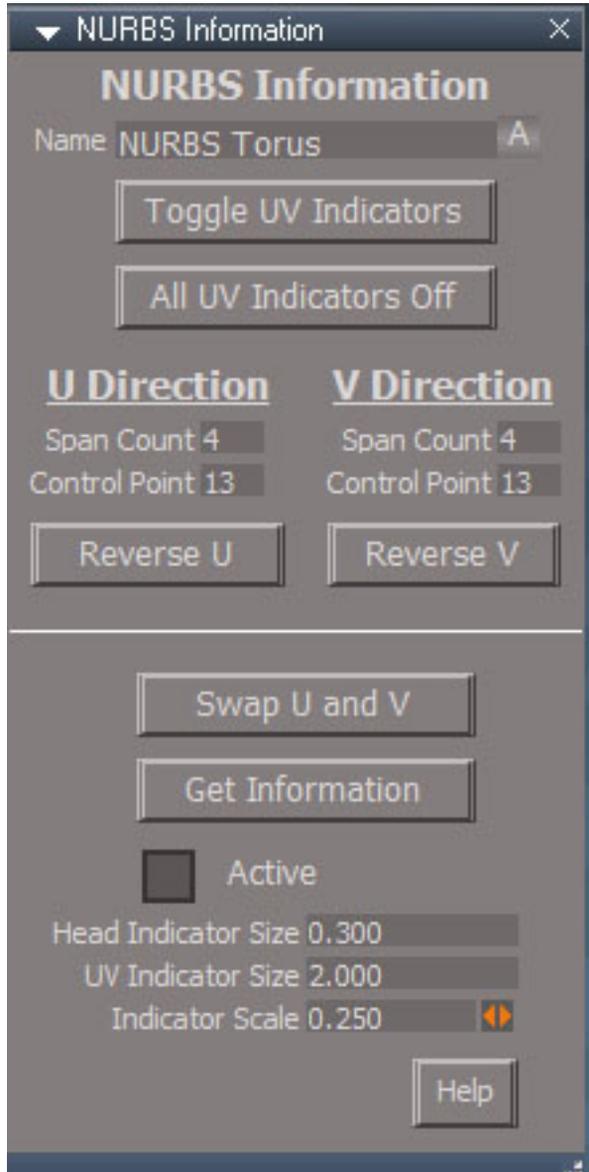


**Select Control Point Mesh**  
RMB Open NURBS Information Panel

*same icon as object tool*



*head and uv tail indicators*



Information panel displays information about the selected NURBS object and has buttons for changing the direction of the NURBS structure

## NURBS Info

**Toggle UV Indicators** - turn on or off the UV indicator for the selected NURBS object. The "Head" or start of the curve or patch is indicated by a yellow wireframe box. The U and V are indicated by a red U and a green V.

### All UV Indicators Off

**Reverse U** reverse the direction of a curve or U direction of a patch

**Reverse V** reverse the V direction of a patch

**Swap U and V** swaps the U and V directions of a patch

**Get Information** read U and V information for the selected NURBS object

**Active** - will update with selection changes

Head indicator Size - not used

UV Indicator Size - not used

**Indicator Scale** sets the size of the select NURBS UV indicators

ⓘ *UV Indicators will slow point edit. Turn them off when in point edit mode.*



### Copy NURBS

Special copy and delete buttons for NURBS. Will copy or delete the entire NURBS object no matter what element of the NURBS is selected.

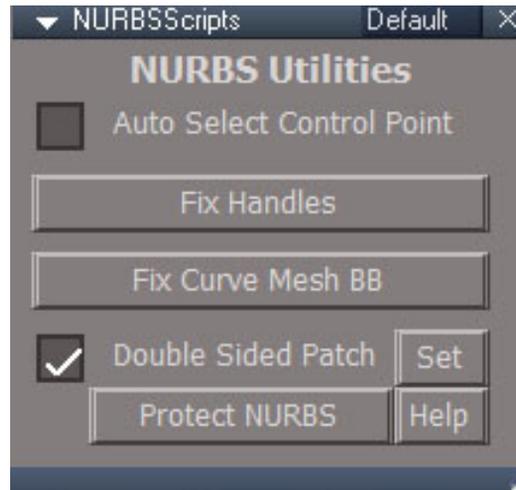


### Delete NURBS



## NURBS Utilities

*same icon as the Stack View button*



Default aspect

**Auto Select Control Point** - a NURBS selection will automatically change to it's control point mesh selection for editing and transformations. This is only active while the panel is open.

**Fix Handles** - if a process is exited prematurely or mesh edit triangulation is active during patch editing, the triangle indices of the control point mesh can get messed up. This fixes that problem.

**Fix Curve Mesh BB** - fix the curve mesh bounding box so that the top and bottom of the base control point mesh cone is centered in the curve.

**Double Sided Patch** - makes the NURBS display meshes double sided.

**Set** to apply the double sided patch setting to the scene and to the default patch creation.

A single sided patch has a better polygon mesh conversion result and is better for editing. Double sided is better for viewing and selecting a patch in the 3D view.

**Protect NURBS** - some tools are not compatible with the NURBS structure. This will remove NURBS objects from the selection before calling these tools.



## NURBS Colors

**Curve Display** NURBS display color

**Curve Handle** edge color

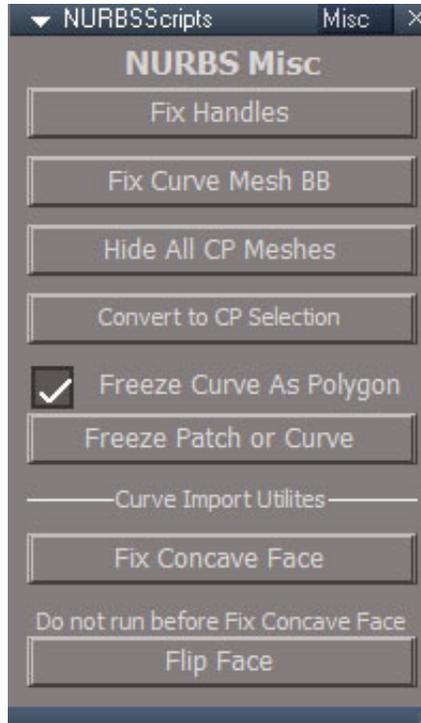
**Curve Point**

**Set Curve Colors** apply the curve colors to the default and scene curves

**Patch Handle** edge color

**Patch Point**

**Set Patch Colors** apply the patch colors to the default and scene patches



NURBS Misc

**Fix Handles** see default aspect above

**Fix Curve Mesh BB** see default aspect above

**Hide All CP Meshes** set all control point meshes in the scene to invisible

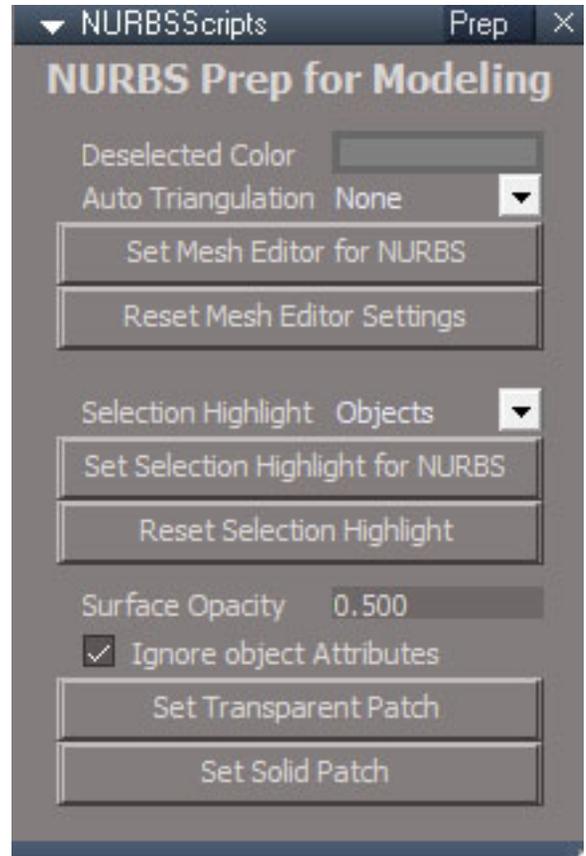
**i** *In this packaged version of the tools the control point mesh visibility control is not readily available and so this button serves no purpose here*

**Convert to CP Selection** convert the current NURBS selection into control point mesh selections, same as LMB press on the button

**Freeze Curve as Polygon** will make a polygon face when freezing curve objects

**Freeze patch or Curve** - convert NURBS object to polygon mesh. A double sided patch will freeze as a triangulated mesh.

**Fix Concave Face, Flip Face:** 2 utility buttons for fixing curve based concave polygons and for flipping the normals of mesh faces. The fix polygon is set to work in object mode, not point edit mode. These 2 buttons were added to deal with SVG import problems.



Settings that make editing easier to see

## NURBS Prep for Modeling

### **Deselected Color**

**Auto Triangulation** - None best for NURBS editing

### **Set Mesh Editor for NURBS**

### **Reset Mesh Editor Settings**

**Selection Highlight** - Objects is best for selection highlighting

### **Set Selection Highlight for NURBS**

### **Reset Selection Highlight**

below is for the currently selected patch

**SurfaceOpacity** 0.5

**Ignore object Attributes** true

### **Set Transparent Patch**

### **Set Solid Patch**



**Draw Curve** - Use existing scene geometry as a "draw panel" for curve creation.  
RMB panel for PickSelect options

*same icon as Add Polygons*

Drag for a freehand drawing style



Circle - Create circles by selecting point edit geometry  
RMB panel with option to create circle with only 180 degrees



### Circle by Center Point and Plane

- first selection will be the center of the circle
- second selection will be the start of the circle
- third face selection will give the normal orientation for the circle



### Circle by 2 Points and Plane

- first selection will be the start of the circle
- second selection will be on the opposite side of the circle from the first selection
- third face selection will give the normal orientation for the circle



### Circle by 3 Points

- first selection will be the start of the circle
- second selection will be the second point on the circle
- third selection will be the third point on the circle



**Polygon to Curve** - Select the polygon and push the button to create a curve from the polygon vertices.



**Points to Curve** - enter a special vertex selection mode. In this mode you select vertices one at a time and they will have a green line in between each selected vertex that represents the final curve. Right click to exit this mode and create the curve.



**Extend Curve** - Select one of the vertices at the end(or start) of the control point mesh and push this button to extend the length of the curve with a new set of control points.



**Insert Control Point** - enter a special mode for adding control points to the curves control point mesh. After pressing the button the handles will disappear and the previously invisible line segments between the handles will become visible. Select one of these line segments and a new set of control points will be added to the center of the line segment making a new handle.



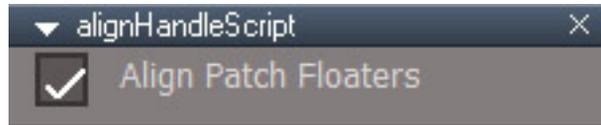
**Delete Control Point** - Select the vertex on the curve representing the root of a handle and push this button to delete the control point and it's handles.



**Smooth**



**Sharp**



**Align Patch Floaters** - will move the intermediate control points to more closely mimic modelspace NURBS patches

Align the handles of a NURBS object to their connected handles or neighbor handles or control points, creating a smooth or sharp appearance at the control point.

The tool behaves differently depending on what is selected, the control point or the control point handle.

The vertices that touch the visible curve are the control points and the 1 or 2 points connected to them through edges are the control point handles

## Smooth

if a control point is selected then it's handles will form a straight line parallel to a line formed by it's neighbor control points.

if a control point at the start or end of the NURBS is selected then the handle points will point to their immediate neighbor handles

if a handle is selected then it will rotate to form a straight line with it's control points other handle

if a handle at the start or end of a curve is selected it will point towards it's closest neighbor handle point

## Sharp

if a control point is selected then it's handles will point towards the neighboring control point

if a handle is selected then it will point towards the neighboring control point

## Usage:

If smooth doesn't give the desired result on a control point, select the control point then press sharp then repeat but press smooth the second time through.

If control and handle points are both selected it will have less predictable results for smoothing.



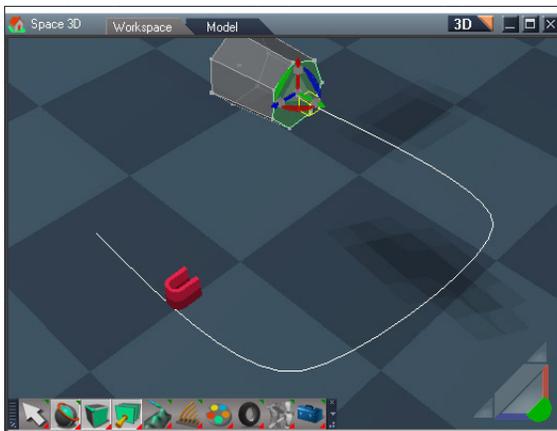
**Extract Curve from Patch** - Creates a curve from a patch selection.

### Usage

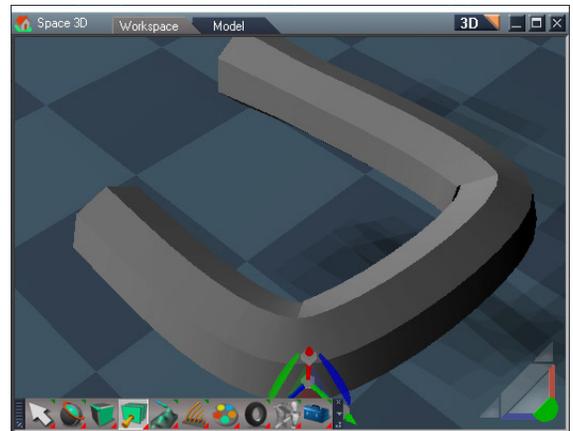
Select 2 vertices or a control edge and press to create a curve from the corresponding isocurve the selection is a part of.

Selection must be part of the control handles. The floating control points cannot be used.

The selected points do not have to be part of the same handle



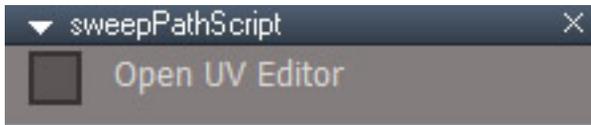
*start of sweep*



*sweep completed*



**Sweep Path** - create a series of sweeps for a polygon mesh along a curve path



**Open UV Editor** - trueSpace may be more stable with this option

The polygon mesh must already have uv assigned to set number 1.

The face that will be swept must have other faces connected to it. This is needed so the tool knows how to extend the existing uv into the sweep. A cylindrical uv assigned to the face and it's connected neighbors works best.

Usage:

Line up the face to the head of the curve

Enter point edit mode

push the button

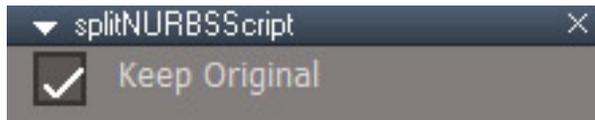
script will now wait for you to select a curve

After the selection the face will be swept once for each curve segment, then a copy of the mesh will be swept to generate uv values.

The number of curve points controls the smoothness of the sweep.



**Split NURBS** - separates a NURBS object into 2 distinct objects.



### Usage

To split a curve select the base control point to split then press the button

To split a patch choose 2 points or an edge and press the button to split along that selection.

RMB panel, **Keep Original** - will end up with 3 objects, the original and the 2 results of the split



**Extrude Patch** - Extends a patch by adding an isocurve beyond the selected border

select a border control edge or at least 2 vertices on a border  
run the tool and the geometry will be extruded and selected  
move the new isocurve into position



**Add IsoCurve** - Add isocurve geometry to the interior of a patch

start the tool - the control mesh line appearance will change  
select one of the edges and an isocurve will be added perpendicular to it  
the isocurve will be selected so it can be adjusted



**Select IsoCurve** - Selects a line of control points with a soft selection to imitate modelspace manipulation of isocurves

Select a control edge and press the button to select the isocurve.



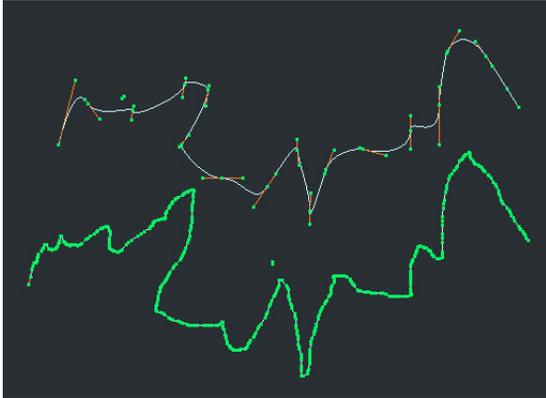
**Remove IsoCurve** - Remove a isocurve geometry from a NURBS patch

Select the vertices of a control handle or the control handle edge of the isocurve and press to delete it

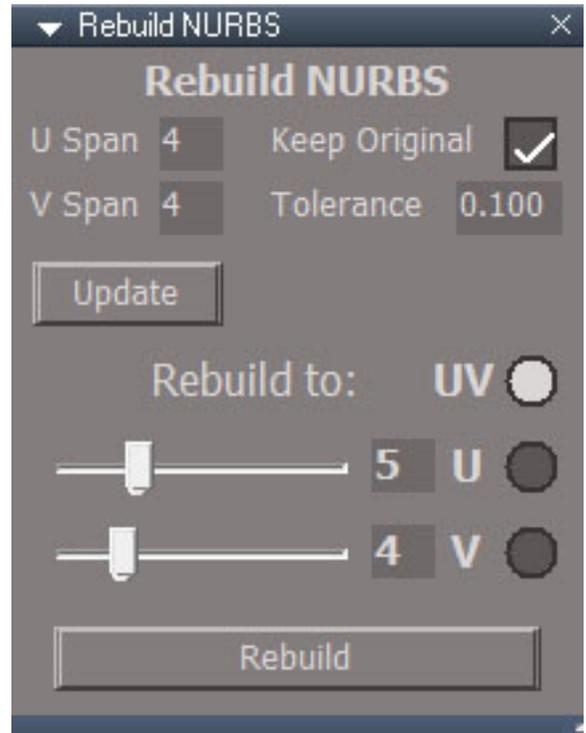


**Rebuild** - Change the detail or resolution of a NURBS object

The purpose of rebuilding is to reduce unnecessary detail, smooth out a NURBS object, add detail for a future modeling step, match the spans for patch modeling tools.



*curve rebuilt - before bottom, after top*



U Span, V Span, **Update** - refresh display for the current selection

**Keep Original** keep a copy of the original NURBS object from before the rebuild

**Tolerance** measure of how close a rebuilt control point can be to an existing control point

**UV, U, V** rebuild in one or both U and V directions

U inputs new span value in U direction

V inputs new span value in V direction

**Rebuild** rebuild the NURBS object structure



**Adjust Floaters** - Floaters are what I call the control points that are not part of a control handle. This tool will place them so the result matches the modelspace handle manipulations.

The points are adjusted so that they form a parallelogram with their associated control handles. Must be in point edit mode to run



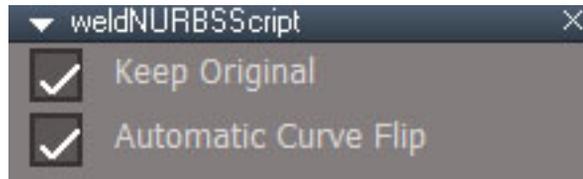
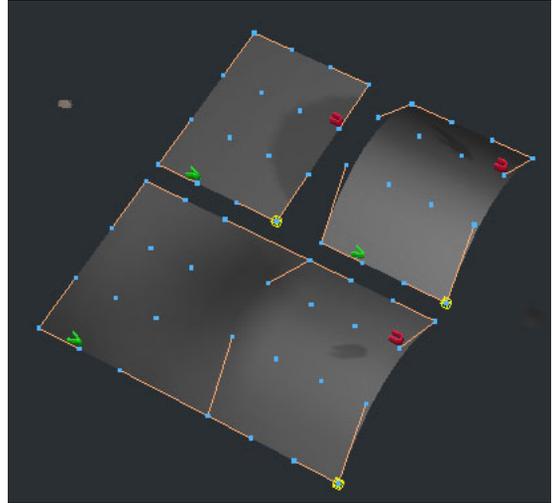
**Weld** - Join 2 NURBS objects together as one.

*same icon as point edit Weld geometry*

*Top left is welded to the top right with the result below.*

*U directions of both patches are parallel and the head of the first patch is close to the V indicator of the second patch.*

*Patches must have the same number of spans in the U direction.*



RMB panel

**Keep Original** - a copy of the original 2 NURBS objects will be kept  
**Automatic Curve Flip** - no need to align the head and tail of the curve

## Usage

To weld a curve select 2 curves then press the button

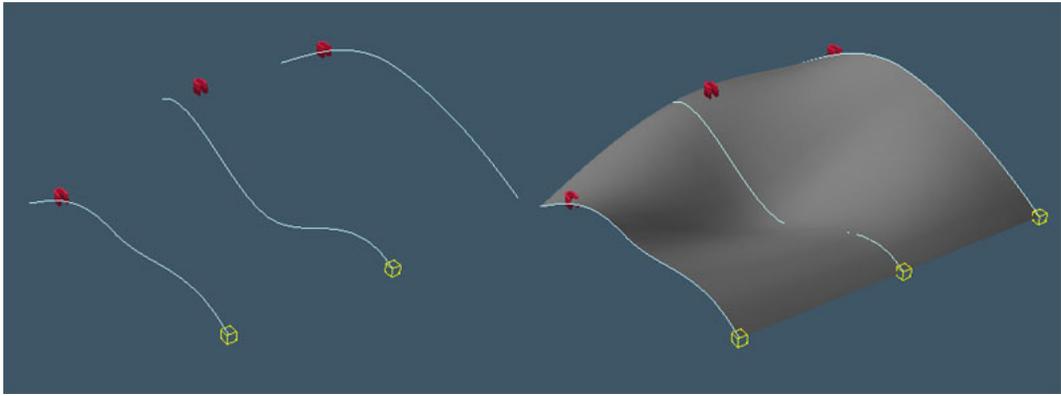
To force a specific weld curve direction disable the Automatic Curve Flip option.

To weld 2 patches first line them up and arrange their structure so the head of the first patch is close to the tail of the second patch. Then make sure both patches U and V are in the same direction and press the button.

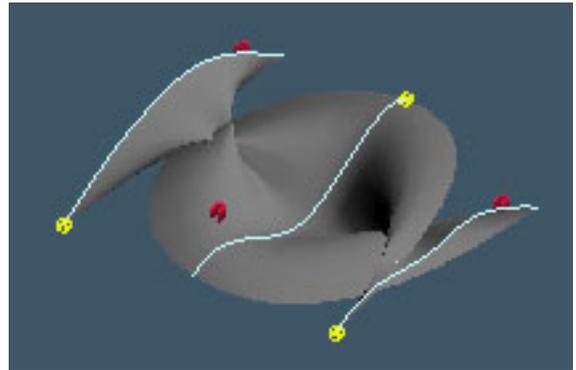
For patches the U directions will be parallel and the order of arrangement will be first patch V then head then second patch V then head.



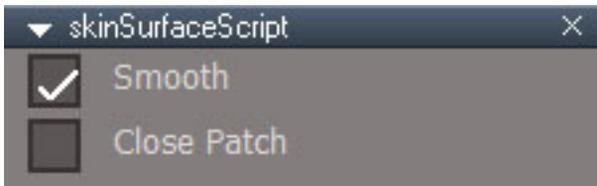
**Skin** - create a patch from a series of curves



Select a series of curves and press the button to create a patch.



*Be mindful of the curve direction to avoid twisting.*



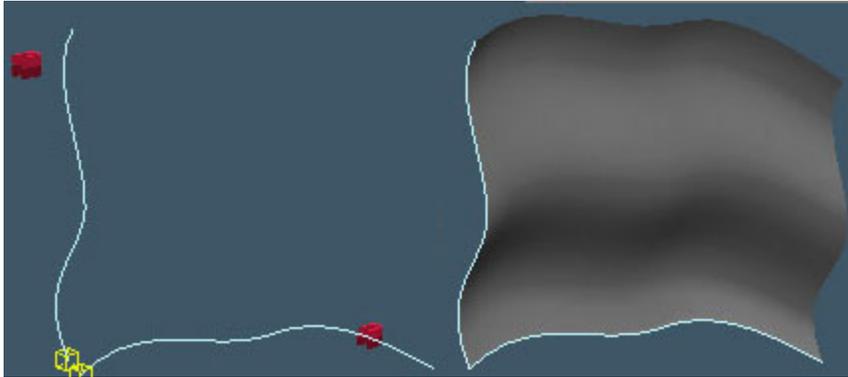
**Smooth** make a smooth transition between profile curves

**Close Patch** - repeat the first curve to give the appearance of a closed patch

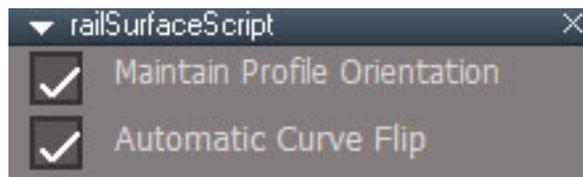
The curves must all have the same number of spans.



**Rail** - create a patch from a profile and a rail curve



Set the profile curve so it's head is very close or touching the head of the rail curve. Select the profile then the rail and press the button.

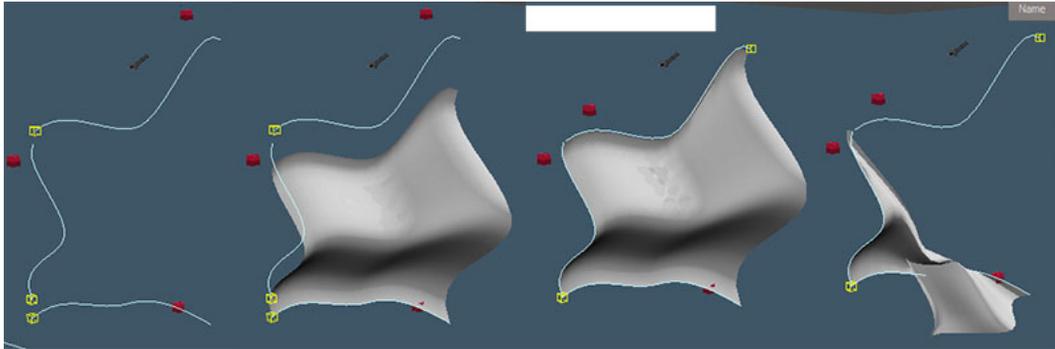


**Maintain Profile Orientation** - profile will not rotate to follow the rail curve

**Automatic Curve Flip** - will automatically flip the curves so the curve heads are close together



**BiRail** - create a patch from 1 or 2 profile curves and 2 rail curves.



*birail with 1 profile curve*

Left to Right.

profile curve on the left and 2 rail curves top and bottom.

result of birail selection order left profile, bottom rail then top rail

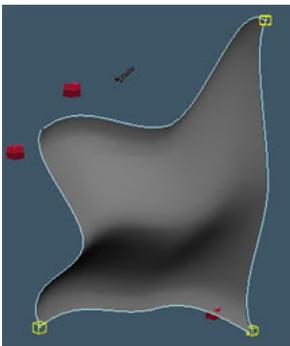
same birail with the curves touching and the top rail reversed to show automatic flip in action

same birail with the curves touching and the top rail reversed, automatic curve flip turned off

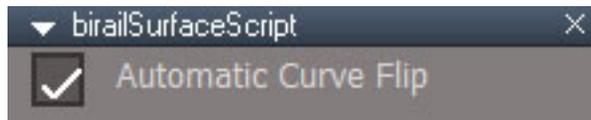
Arrange the curves so the head of the first profile is near the head of the first rail. If not then the Automatic Curve Flip isn't guaranteed to work properly.

Select the profile, then optionally select a second profile opposite the first, then the first rail and second rail, press the button to get a patch.

Two profile curves can be used in cases where one profile lacks some control caused by rotational flips of the profile as it is swept along the rail path.



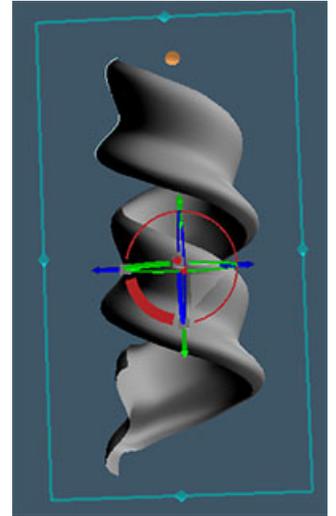
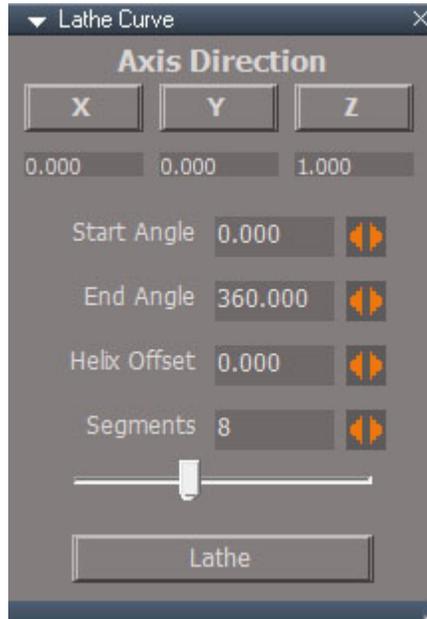
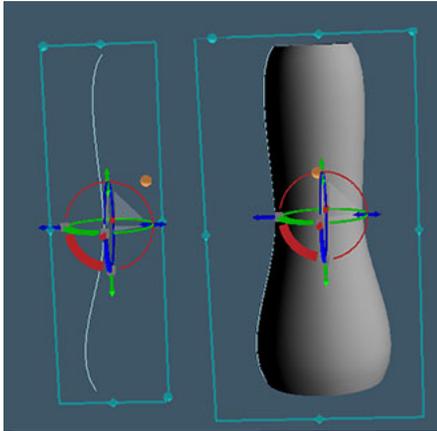
*birail with 2 profile curves*



If Automatic Curve Flip is off the curves must be placed in the proper arrangement. Profile curves must run in the same direction and rail curves must run in the same direction.



**Lathe** - create a patch from a revolved profile



**X,Y,Z** local axis direction for the lathe, not world axis

**Start Angle**

**End Angle**

**Helix Offset** to create spiral

**Segments** number of times the curve will be copied to make the patch

**Lathe**

Lathe center will be the origin of the curve, (0,0,0) in local space. This is shown in the image above as the orange sphere location of the centered object navigation widget.

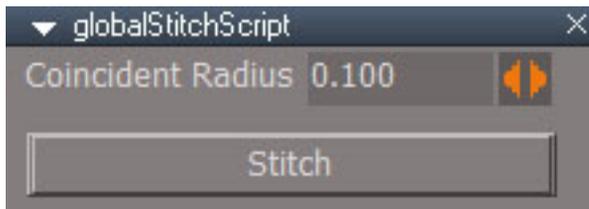
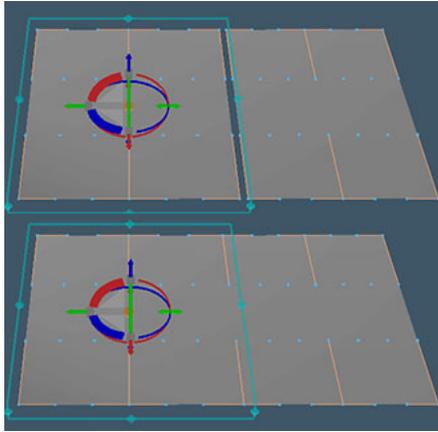
Far right image shows a helix result for the same curve.

The origin of the curve can be set by using the trueSpace Axis, then Flatten axis tools.

The Mesh Origin script is also helpful for setting the origin of the curve to a precise location.



**Stitch** - Moves the control points of 2 patches to be coincident



**Coincident Radius** - how close to make points coincident

Select 2 patches with overlapping control points and run the tool.

if nothing happens RMB and change the radius

Tool is like the first step of a welding type action, the points are moved together but not joined.

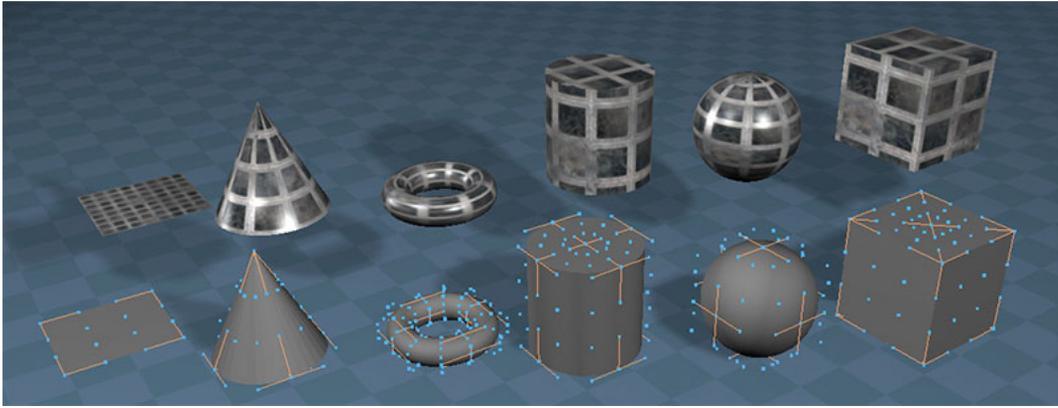
Only control point handles are affected, floaters are ignored.

Can be used to stitch multiple rows to get smooth continuity when patches are butted up against each other.

note have to use le to see control point mesh - way too awkward - need the cp mesh visibility controls back



**Convert Primitive** - create a patch from a mesh primitive, select a primitive and press the button



*original mesh primitives in back, NURBS result in front - note: the control mesh is not visible by default*

*image note control point mesh visible by le uncheck invisible - awkward - need invisible checkbox*

## Primitives

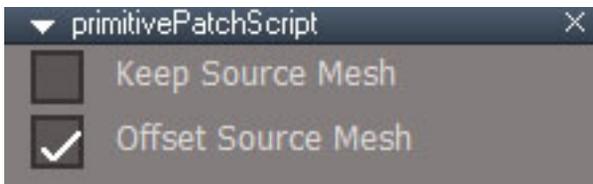
Cone and Cylinder

Torus

Sphere

Cube

Plane - the detail is defined by the segment counts for width and height



**Keep Source Mesh** will not delete the polygon source primitive

**Offset Source Mesh** if Keep Source Mesh is active, this will move the old primitive mesh so it does not overlap the newly created NURBS patch.

The plane segment counts will translate to the nearest multiple of 3. The final NURBS will have 3,6,9, etc segments on a side

Plane height count corresponds to NURBS U spans and width will translate to V spans.

The NURBS cylinder is really a cone with equal top and bottom radii.



**Plane Loop Select** [↻](#) *More Information* [↻](#)



**Select All** - same as select all geometry plus RMB select visible geometry

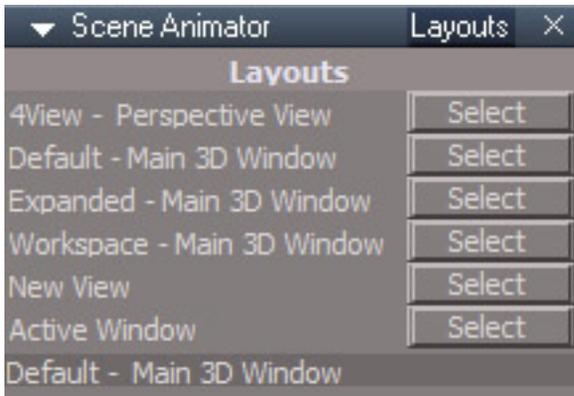


**Edit NURBS** - select the control point mesh and enter into point edit mode

The rest of the selection buttons are re-labelled point edit tools

# Junk Pages

## Scene Animator Layouts panel - random notes



Looks like there are some buttons to work with floating windows?

Guess this is for setting up for different layouts. So if you are in Expanded layout you press the Expanded button...

New View and Active Window buttons must do something...

### Note:

This enables you to apply the Set Postprocess Color Key to a New 3D Window. Only one.

When trueSpace opens a new 3D Window, the Postprocess panel does not exist until you select the 3D Window with the Settings tab opened. If you want to have the new 3D Window with Postprocess Color Key and not the scene, here is the steps.

1.) Do not apply the Set Postprocess Color Key to the scene!

2.) Open a new 3D Window with the Settings tab opened and make sure it has a Postprocess panel.

3.) Set the Postprocess Color Key.

If you close the 3D Window, you will have to apply the steps again.

"With regards to the above... In the UUs/Open - 3D Window icon(s) LMB Command The Postprocess panel DOES exist "

Dont know what any of that means

It is fairly simple, except that the Watch Dogs can be unreliable at first... Ugh!  
Once they wake up, it seems to work going forward  
If you want you can put this:

Supported in the Default Layout or  
similar by default  
If you wish to use this in another layout  
you will have to change the path in the  
Layouts tab

If you want to try it, here is an example:  
Switch to the 4View layout  
Load the Scene Animator  
In the Layouts aspect, select the 4View - Perspective Select button  
Switch to the Default aspect  
RMB - Reset the Background attribute "this seems to wake up the Watch Dog"  
Change the Background Color  
Try other attributes to see that is working in the right top window "Perspective" window  
Additionally you can try the Layouts/Active Window in any of the 4View windows that have focus

To see the attributes in the Animation Editor, select this object or in the top menu Open / Dock

Supported in the Default Layout or similar by default.  
If you wish to use this in another layout you will have to change the path in the Layouts tab.

Render to File  
Set the Play Range  
Select the Render button  
Select the D3D Render - Start button

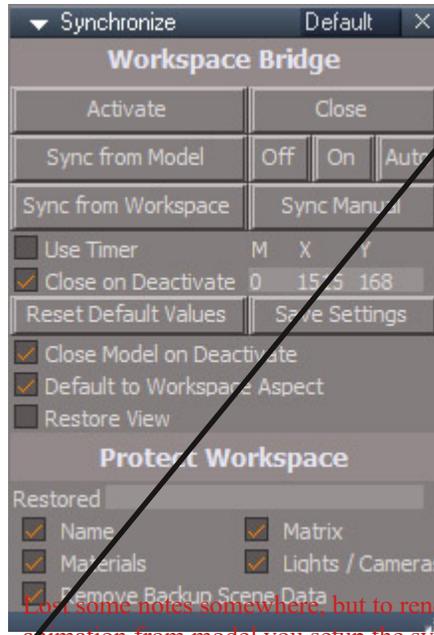
[Can't find anymore information on this](#)

# This version of Synchronize will be removed from the Unofficial Updates

Put last release on website as "experimental" sync script Chapter2 User Interface| 231

One thing you might want to mention about Synchronize, it is a Camera and it is necessary to be viewing from this camera from within Workspace & Model for synchronization. Adding objects from Workspace after Activating the Synchronize camera will not be Protected

New Synchronize2 ?  
wait before final update of these pages



Good test shows you can change the Model view to another camera and it will still sync - verified it works. So you don't have to be viewing from the camera to synchronize as stated in red over there.

New synchronize camera button was added

For some notes somewhere, but to render workspace animation from model you setup the sync, and on model render to file using the Animation > Workspace option. Also probably need to turn off model autorecord.



Workspace aspect(default)

Default aspect(not default)

Changes in the workspace view are not reflected in the modelspace view. You can move an object in modelspace and the same object will follow in workspace, but if you move the same object in workspace, modelspace will not follow. The Synchronize script makes modelspace follow the workspace changes. With synchronize active it is possible to render a workspace animation from inside modelspace and to combine workspace and modelspace animations into one render.

**i** When the Deactivate is run undo history will be erased.

**!** Rendering with synchronization in a floating model view may destabilize trueSpace. It is recommended to render with the main docked 3D view as the model view.

## Workspace aspect

**Activate** will link workspace changes to modelspace. If a Model view is not open, Activate will open a new Model view. A 3D workspace view must be open before activating the synchronization.

**Deactivate** or **Cancel** will stop the synchronization, close the modelspace view and close the synchronize panel.

Workspace is the true default mode and runs in 100% automatic mode. Pressing any button in the Workspace Aspect will change the run time values to Workspace aspect default values. If you make changes in the Default aspect do not press any buttons in the Workspace aspect or you will lose your changes.

## Default aspect

To set the Default aspect as the default behavior mode takes the following steps:

- 1.Switch to the Default aspect
- 2.Uncheck Default to Workspace
- 3.Press the Save Settings button to make the change permanent

To make workspace the default check Default to Workspace and press Save Settings to make permanent.

**Activate** will open a new 3D view or use an existing 3D view, convert it to a modelspace view and modelspace will become aware of workspace changes.

**Deactivate** will stop the synchronization, close the modelspace view and close the synchronize panel.

**Close** will close the synchronize panel.

**Sync from Model** is the same as turning the bridge Off then to Auto and automatically pressing the Content synchronization dialog button labelled "Sync from Model".

**Sync from Workspace** is the same as turning the bridge Off then to Auto and automatically pressing the Content synchronization dialog button labelled "Sync from Workspace".

**Off, On, Auto** sets bridge switch value using buttons instead of the desktop panel dropdown .

**Sync Manual** is the same as setting the bridge switch value to Off and then Auto .

**Use Timer** is for synchronizing workspace physics and procedural animations.

**Close on Deactivate** when checked will close the panel after the Deactivate button is pressed. The tool can be run more than once if this option is turned off.

**Reset Default Values** sets all controls to the Workspace aspect(default) automatic run values. It also resets it's internal camera parameters. ⓘ *This will clear the undo history.*

**Save Settings** saves the settings used in the default aspect.

**Close Model on Deactivate** when checked will close the modelspace view after the Deactivate button is pressed. The tool will not close an open modelspace view if this option is turned off.

**Default to Workspace Aspect** when checked will make the workspace panel the default.

**Restore View** when checked will restore the workspace 3D view to the state it had before synchronization.

protect workspace settings section values will override the protect workspace node values.

***Jump to Protect Workspace***