

metaphors  
of design



# trueSpace7.61

*Unofficial Update v10*

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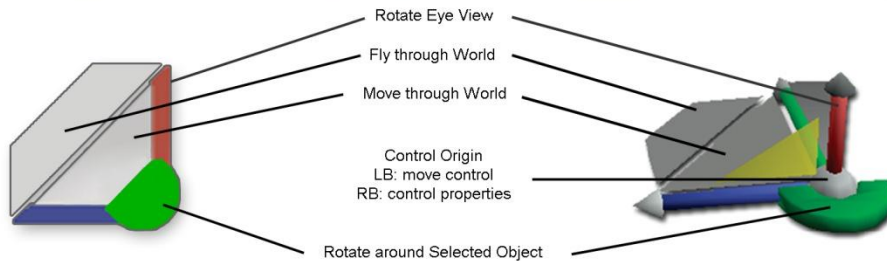
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### Workspace

### View Navigation Controls

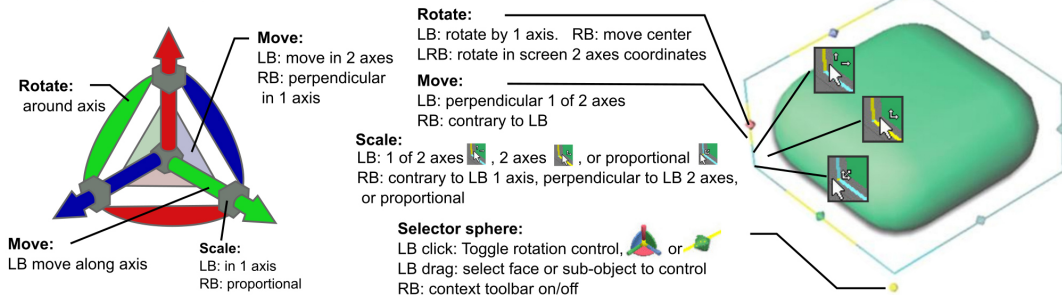
### Model



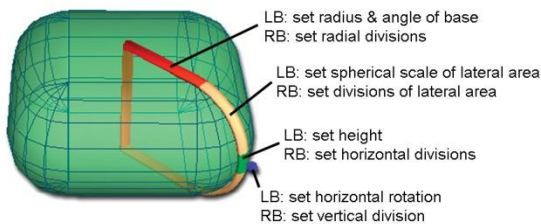
### Workspace

### Object Navigation Controls

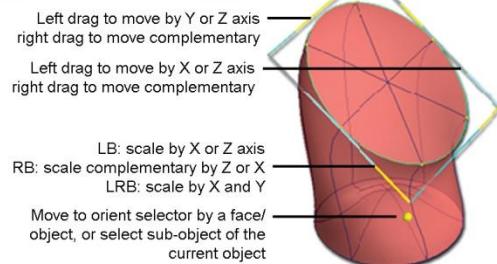
### Model



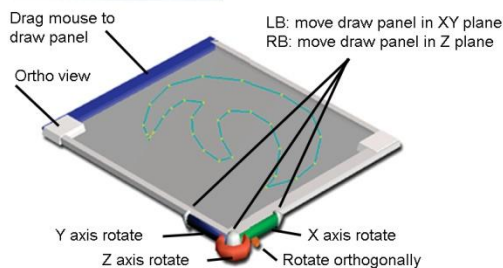
### Magic Ring



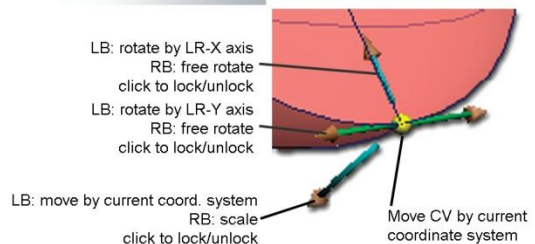
### Isocurve Selector



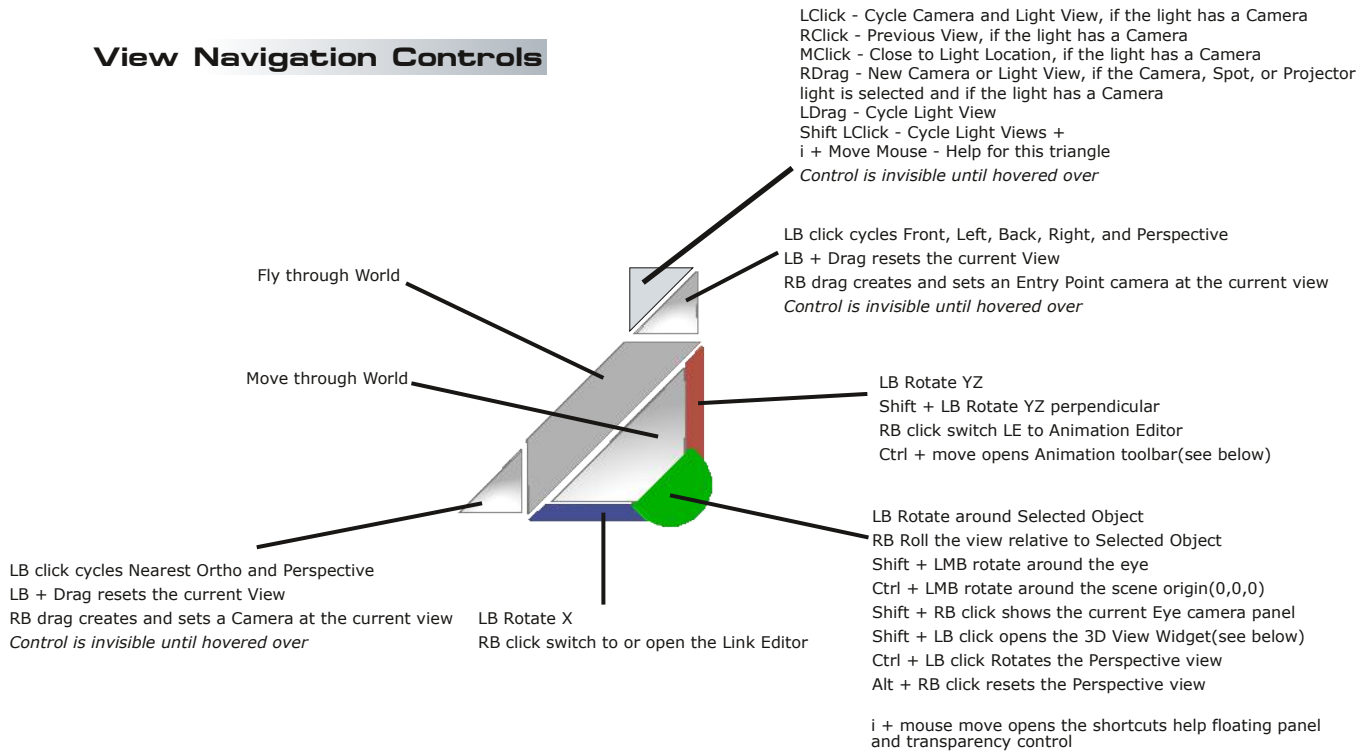
### Draw Panel



### CV Handles



## View Navigation Controls



**Animation Toolbar**

## Animation Buttons from left to right

- Automatic Keyframing - LMB - On, RMB - Off
- Set Keyframe, RMB Keying Panel
- Start Frame
- Previous Keyframe
- Previous Frame, RMB back 30 frames
- Pause
- Play, RMB preferences floating panel
- Next Keyframe
- Next Frame, RMB forward 30 frames
- End Frame
- Set Flat interpolation on selected keyframes, RMB open interpolation panel



### Cube View Widget

[More Information](#)



### 3D View Widget

[More Information](#)

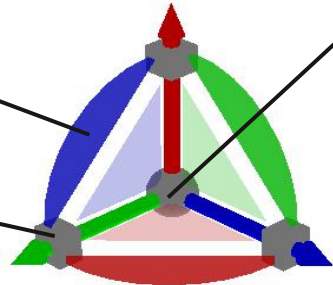
**Ctrl + Shift + V = View Navigation Toolbar**



# Object Navigation Controls

LB + Drag rotates around the geometric center,  
if pivot rotate around the pivot instead  
RB + Drag rotates around the mesh origin

RB + Drag scales uniformly around the  
geometric center,  
if pivot scale around the pivot instead



LB + Drag - Moves selected object in X and Y  
MB + Drag - Moves the widget

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

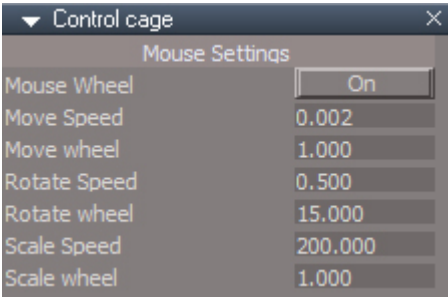
Alt + LB first click navigates to the Object in the Link Editor  
Alt + LB second click navigates to the inside of the Object in the Link Editor

P + LB click 'Toggles On/Off' the Axis widget  
letter O + LB - opens the Mesh Origin tool  
Alt + MB click toggle the Object Move widget

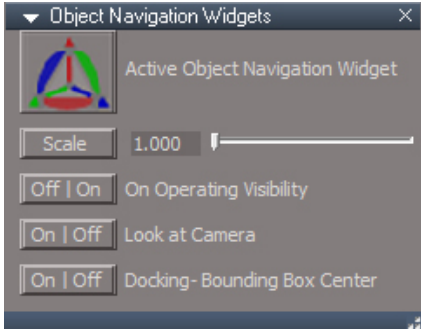
Ctrl + LB click any surface opens their Mouse settings  
Shift + LB click in empty 3D Space deactivates Object widgets - Move, Rotate, Scale

## Bars, Triangles, Cubes and Arcs

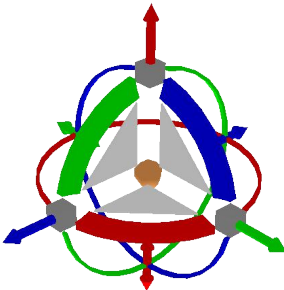
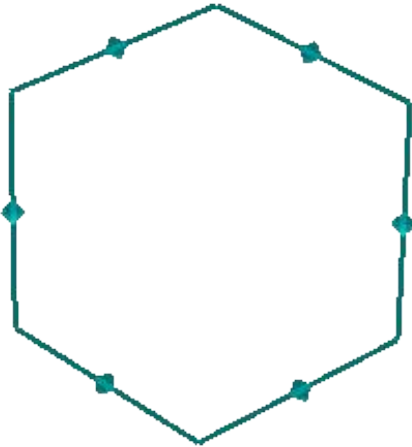
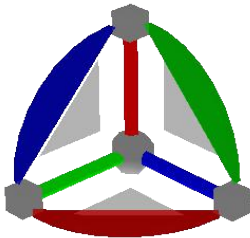
Shift + LB click = switch to the other Object Navigation Widgets  
H + LB click = switch to/from the Selector Cage Widget  
J + LB click = add/remove cage widget to the current widget



**Mouse Wheel On** - wheel will activate the rotation diamonds and move and scale in the direction of the lines instead of the perpendicular directions of the left and right buttons. So you can use the left and right mouse buttons to move/scale perpendicular to the line direction or use the middle wheel(not button) to move/scale parallel to the line. This setting has no effect on a cage that has been added to the normal navigation widgets. It is only used in the standalone cage widget.



**Scale** - resize the widget  
**On Operating Visibility** - On = can see the widget element while dragging  
**Off** = widget invisible while dragging  
**Look at Camera** - widget orients to face the viewer  
**Docking- Bounding Box Center** - widget centered in the middle of the selection. When off will be located at the nearest lowest bounding box corner



i + mouse move any surface = Help

Ctrl + Shift + O = Object Navigation Toolbar

## Point Edit Navigation Controls

LB to rotate about the selection center

RB to rotate about the axis or about the mesh origin if there is no axis

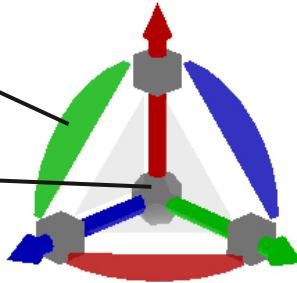
LB + Drag - Moves selected element in X and Y

MB + Drag - Moves the widget

Alt + LB click - align view to the selected face

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

Shift + LB click - set mesh origin



### 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

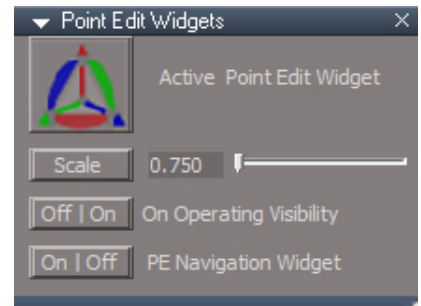
P + RB click moves and rotates the Axis to the selected Face

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

Period + move - Hides UnSelected elements

Comma + move - UnHides All elements

O + LB click Toggles - Mesh Object Coordinate Mode



**Scale** - resize the widget

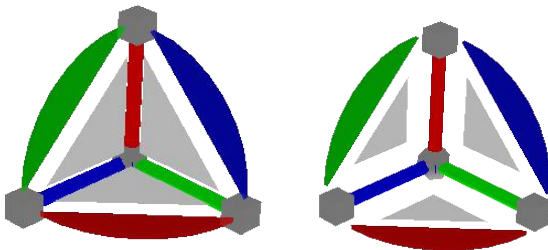
**On Operating Visibility** -

**On** = can see the widget element while dragging

**Off** = widget invisible while dragging

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 + move any surface = Help

pe and nav widget preferences/settings - On Operating Visible on/off clears undo history and only effects the active widget ⚠

Ctrl + Shift + P = Point Edit Widget Toolbar

## Camera Controls

i + move any surface = Help

Shift + LB click any surface = switch camera widget

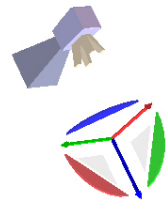
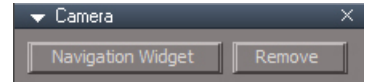
LB = Spin Left & Right  
ALT + LB = Rotate Left/Right Up/Down  
RB - Tilt Up & Down  
Alt + RB = Tilt Left & Right / Bank

FOV  
LB + Drag = Adjust FOV  
LB = View from Camera  
RB = Reset FOV  
RB Drag = New View from Camera

**Custom Camera Widget**

LB = Move Left/Right Up/Down  
RB = Forward & Backward

LB = Move Left & Right  
LB + Alt = Move Left/Right Up/Down  
RB = Move Up & Down  
Ctrl + LB = open navigation widget panel



Shift + LB click any surface = switch camera widget

LB = Look Around  
RB - Roll camera  
Ctrl + LB = Look Left/Right  
Ctrl + RB = Look Up/Down

FOV  
LB + Drag = Adjust FOV  
Mouse Wheel = Adjust FOV

**Original Camera Widget**

LB = Move Left/Right Up/Down  
RB = Forward & Backward  
Ctrl + LB = Move Left/Right  
Ctrl + RB = Move Up/Down

LB click = camera view  
Ctrl + LB Click = new camera view

## Background Controls

b + i + mouse move = help

Wheel - Move view In and Out

Shift + Wheel - Zoom (FOV) and Move view In and Out

Ctrl + Shift + MB Drag - Zoom view (FOV)

MB Drag - Rotate view around selection or scene center if no selection

RB Drag - Move view up/down

Ctrl + MB Drag - Move view up down left and right in screen space

Shift + MB Drag - Look around

Ctrl + MB Click - Look At Selection

MB DblClick - Look at and fill the view with the current object selection or Point Edit selection

Shift + MB Click - Moves the view to show all objects in the scene and open Zoom to Selections panel

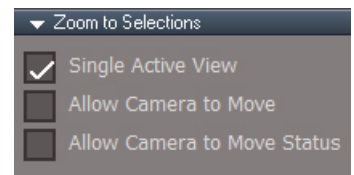
Comma + LB Drag - Shows All hidden items

Period + LB Drag - Hides All Except the selected items

## Default Context Controls

ALT + LB - Select Locked objects

Esc + move - Unselect

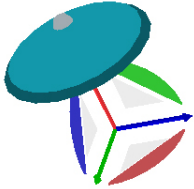
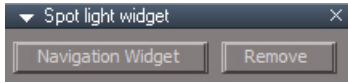


**Single Active View** - effect only the active window  
**Allow Camera to Move** - enable for camera views  
**Allow Camera to Move Status** -

**Ctrl + Shift + V = View Toolbar**

## Spotlight Controls

LDrag - up down left right  
RDrag - forward backward  
Ctrl + LClick - preferences panel



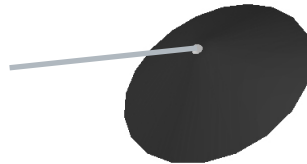
LDrag - look around  
RDrag - roll

LDrag - change angle  
MWheel - change angle  
LClick - switch to light view  
RClick - reset angle  
RDrag - new light view  
MClick - unlookat

RClick in space opens the selected spotlight panel

## Spotlight Controls in view mode

LDrag move up/down left/right  
RDrag move forward/backward  
RClick close light view

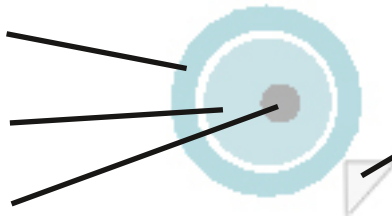


## Spotlight View Controls

LDrag & MWheel - Angle  
LClick - Light View  
RClick - Reset Angle

LDrag - Rotate  
RDrag - Rotate Origin

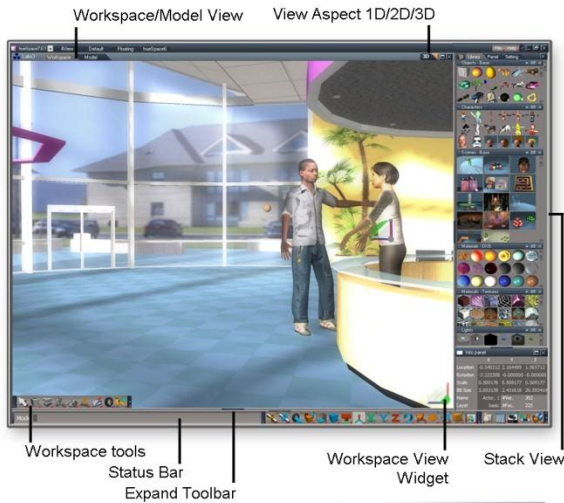
LDrag - Move  
RDrag - Up & Down  
RClick - Close



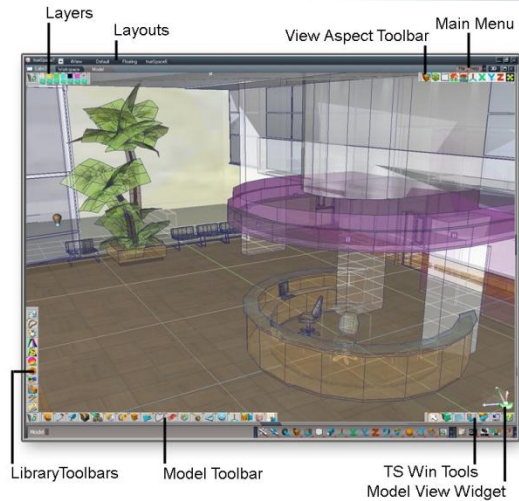
LClick - Cycle Light View  
MClick - Close at Location  
RClick - Previous View  
RDrag - New Light View  
Shift - LClick - Cycle Light Views +  
i + move - Light View Widget Help

Ctrl + Shift + L = Light Toolbar

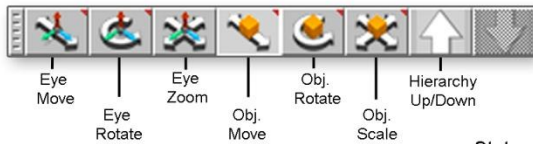
## Workspace View



## Model View

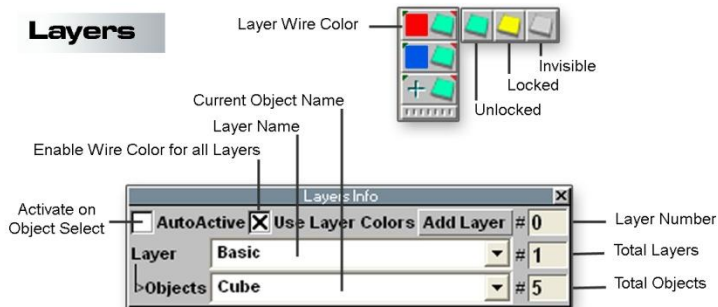


## Nav Tools

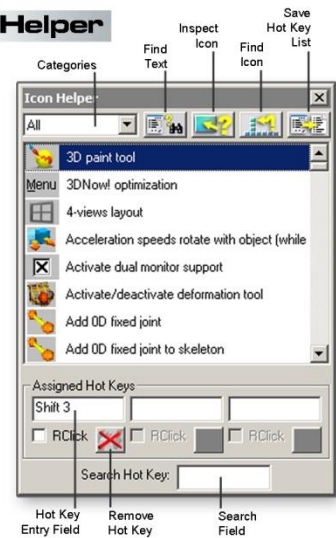


## Status

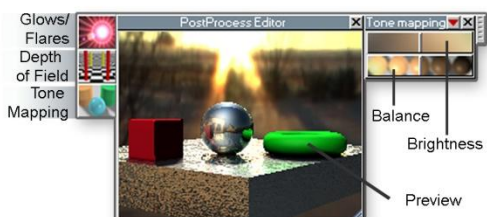
## Layers



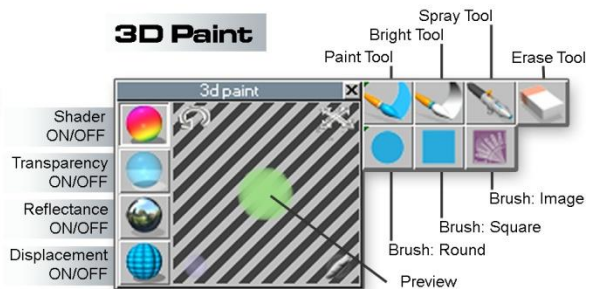
## Icon Helper



## Post Process Editor

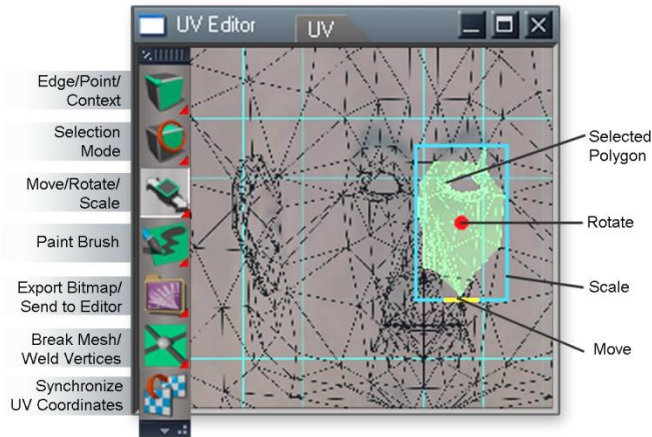


## 3D Paint

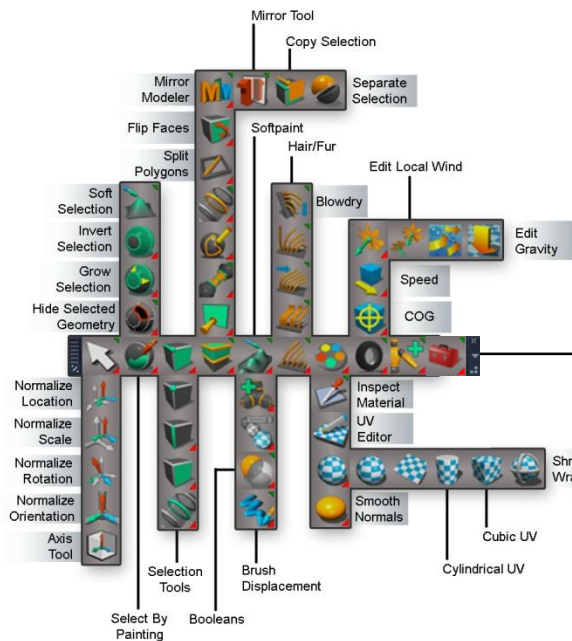




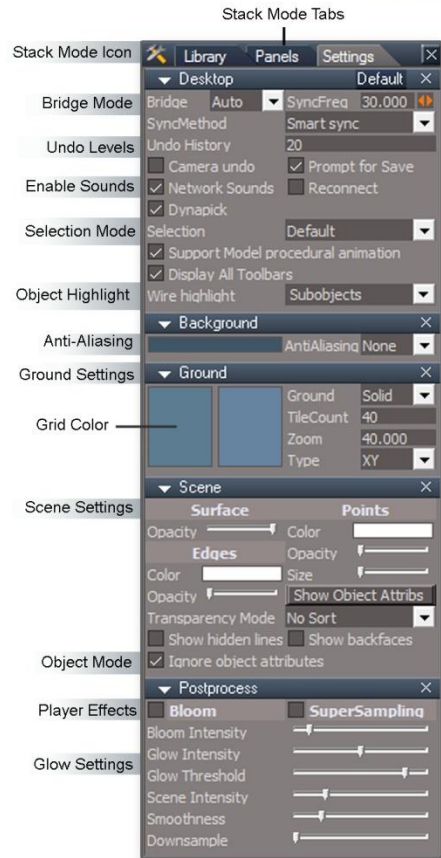
## Workspace UV Mapping Editor



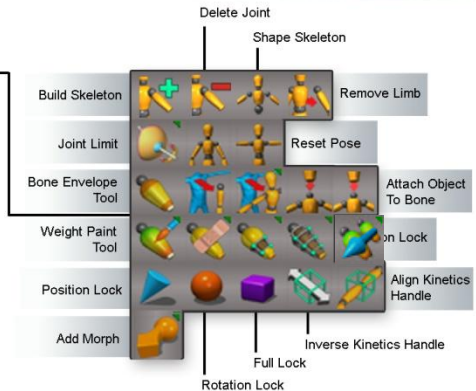
## Workspace Toolbar



## Preferences

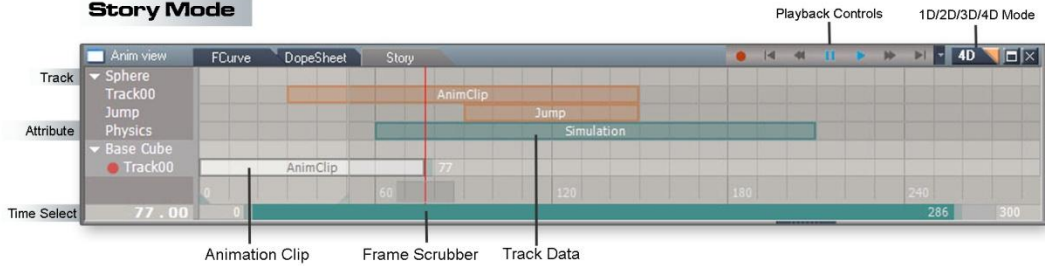


## Character Animator

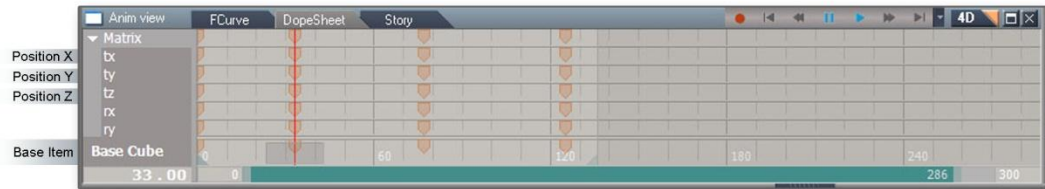


## Animation Editor

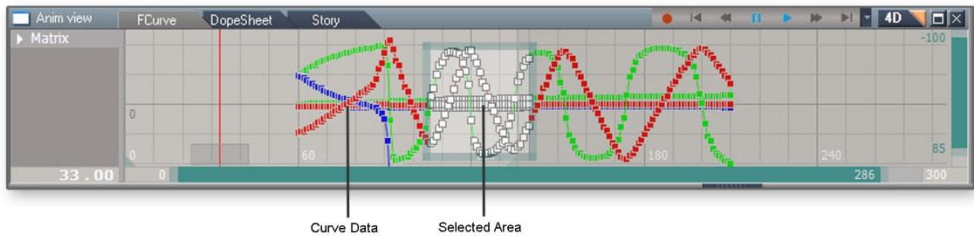
### Story Mode



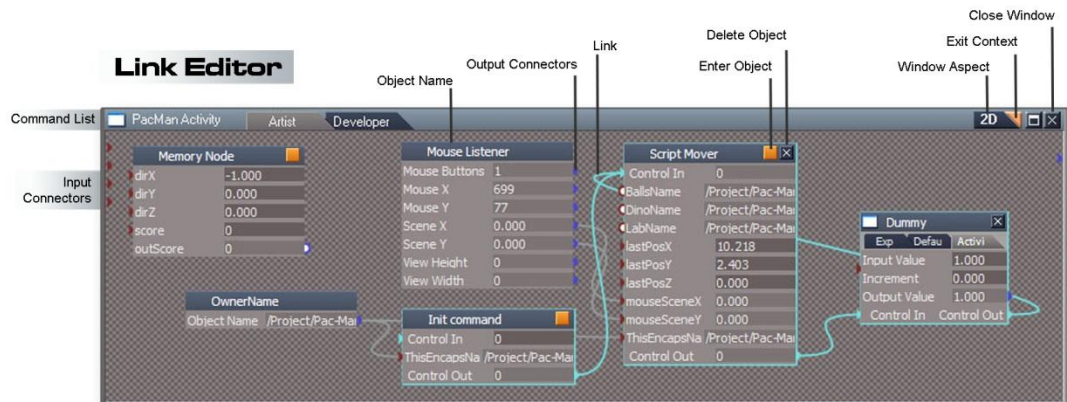
### DopeSheet Mode

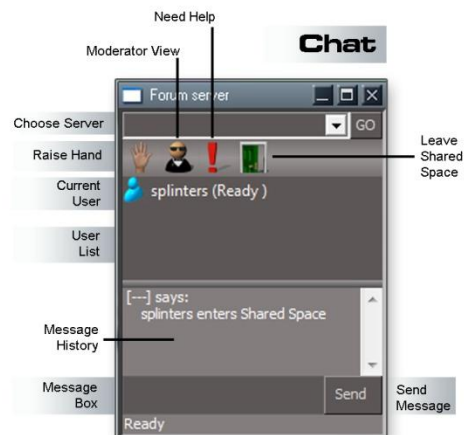
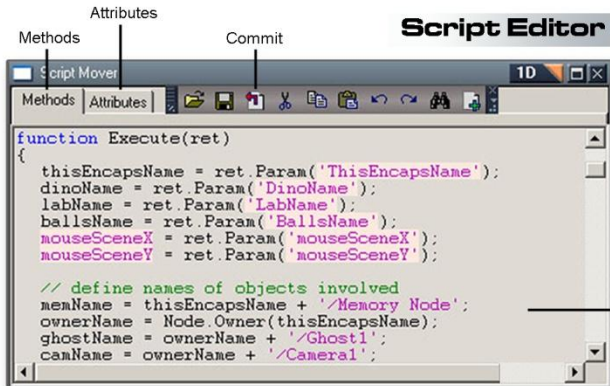


### FCurve Mode

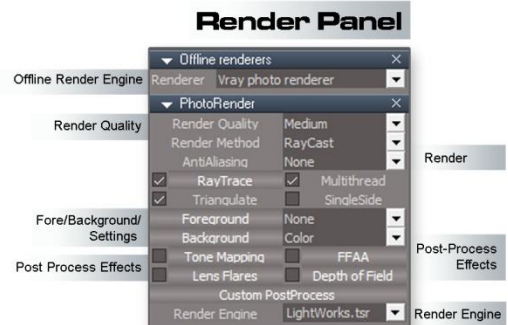
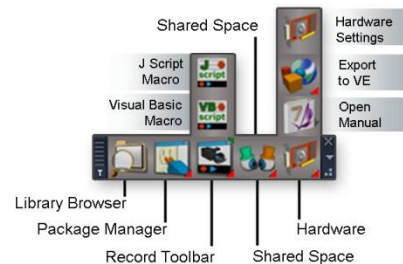


### Link Editor

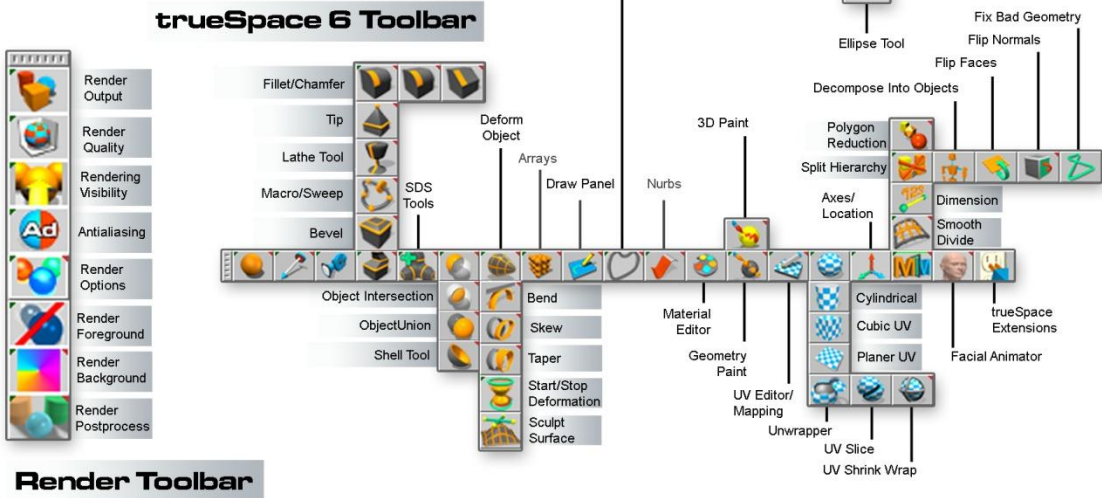
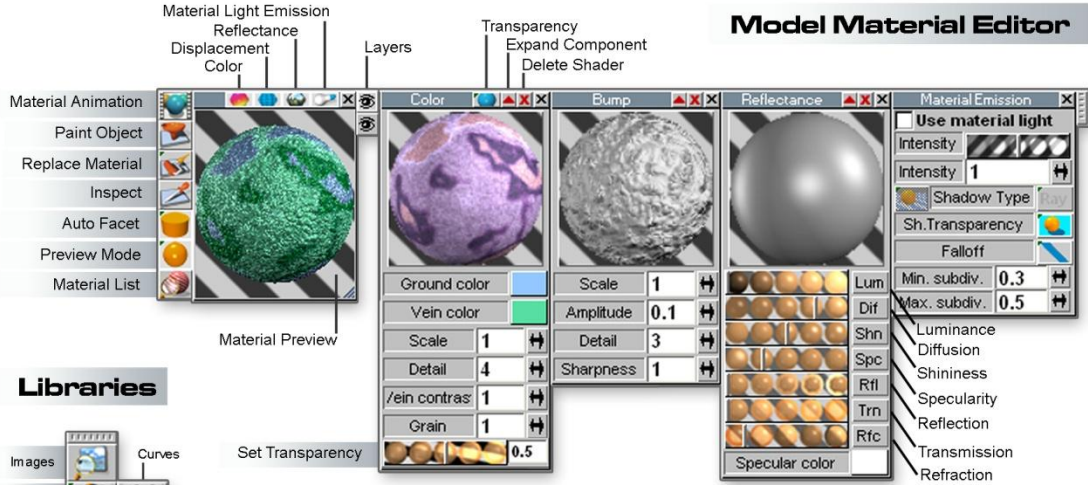




## Options Toolbar









# Chapter 1 Introduction

The trueSpace Unofficial Updates are a collection of bug fixes and scripts to enhance the capabilities of trueSpace 7.61 Beta and Std(Rosetta) versions of the software. This manual is a documentation of those changes and includes some corrections and additions to the original manual.

This document has the same chapter numbers and subheadings as the original manual so that items are easily cross referenced between the two. The final chapter of this document has information on new tools that were not added to the existing toolbars.

This manual is best viewed using a web browser that has been setup to open pdf documents within it's own window.



Warning - indicator that an action has some cost or undesirable side effects



Informational - helpful information, tips and mild warnings



[More Information](#)



Internal Link - connects related items together

"Same icon as ..." - Is a kind of warning that an icon image has been copied but does not have the same function as the original button.



## 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 plus all extras added.

*For an up to date list of shortcuts use the Shortcuts Runner [↗ More Information](#) ↗*

### 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 encapsulated object
UP	Select object encapsulator
SHIFT CTRL RIGHT	Look at Next object
SHIFT CTRL LEFT	Look at Previous object

### Global Shortcuts

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

3D Window Shortcuts

Key	Description
CTRL SHIFT V	View Toolbar
CTRL SHIFT O	Object Navigation Toolbar
DELETE	Delete selected object
CTRL K	Delete selected object
CTRL I	Inspect Material
CTRL R	Render to file
LEFT	Select Previous object
RIGHT	Select Next object
DOWN	Select first encapsulated object
UP	Select object encapsulator
Z	Start Move tool
X	Start Rotate tool
C	Start Scale tool
NUMPAD7	Rotate Roll -1
NUMPAD9	Rotate Roll +1
NUMPAD1	Rotate Pitch -1
NUMPAD3	Rotate Pitch +1
NUMPAD0	Rotate Yaw -1
DECIMAL	Rotate Yaw +1
CTRL NUMPAD7	Rotate Roll -45
CTRL NUMPAD9	Rotate Roll +45
CTRL NUMPAD1	Rotate Pitch -45
CTRL NUMPAD3	Rotate Pitch +45
CTRL NUMPAD0	Rotate Yaw -45
CTRL DECIMAL	Rotate Yaw +45
NUMPAD5	Normalize Rotation

NUMPAD8	Move -Y 1/10
NUMPAD4	Move -X 1/10
NUMPAD6	Move +X 1/10
NUMPAD2	Move +Y 1/10
CTRL NUMPAD8	Move -Y 1
CTRL NUMPAD4	Move -X 1
CTRL NUMPAD6	Move +X 1
CTRL NUMPAD2	Move +Y 1
PAGEUP	Move +Z 1/10
PAGEDOWN	Move -Z 1/10
CTRL PAGEUP	Move +Z 1
CTRL PAGEDOWN	Move -Z 1
HOME	Normalize Location
A	Camera Move tool
S	Camera Rotate tool
D	Camera Fov tool
SHIFT X	X lock
SHIFT Y	Y lock
SHIFT Z	Z lock
F1	World Coordinates
F2	Object Coordinates
F3	Screen Coordinates
F4	Tangent Coordinates

Point Edit Shortcuts

Key	Description
ESC	Cancel PE 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
V	Select Vertices
F	Select Faces
E	Select Edges
L	Select Face Loops
T	Select Context
F4	Tangent
Shift I	Invert Selection
SHIFT A	Select Connected
SHIFT C	Convert Selection
SHIFT S	Smooth Selection
SHIFT O	Outline Selection
Q	Quad Divide Selection Faces
SHIFT Q	Smooth Quad Divide Selection
CTRL Q	Quadrify Selected polygons
M	Mirror Selection
CTRL M	Mirror Modeler
SHIFT B	Form Polygonal Bridge

SHIFT	Merge polygons
H	Hide Selected geometry
SHIFT H	Hide Unselected geometry
U	Show All hidden geometry
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
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

Animation Editor Shortcuts

Key	Description
DELETE	Delete object
CTRL C	Copy object
CTRL X	Cut object
CTRL V	Paste object
CTRL A	Select All
CTRL U	Clear Selection
CTRL Z	Undo
CTRL SHIFT Z	Redo
SHIFT LEFT	Previous Keyframe
SHIFT RIGHT	Next Keyframe
K	Set Keyframe
CTRL LEFT	Previous Frame
CTRL Right	Next Frame
SHIFT HOME	Start Frame
SHIFT END	End Frame
CTRL HOME	Play
CTRL END	Pause

Link Editor Shortcuts

Key	Description
DELETE	Delete selected object
CTRL Z	Undo
CTRL SHIFT Z	Redo
CTRL C	Copy selected object
CTRL SHIFT C	Copy selection
L	Lock selection
U	Unlock selection
LEFT	Select Previous object
RIGHT	Select Next object
DOWN	Select first encapsulated object
UP	Select object encapsulator
CTRL SHIFT LEFT	Select Previous object
CTRL SHIFT RIGHT	Select Next object
HOME	Current scene in Link Editor
NUMPAD5	Center All
NUMPAD1	Zoom All
MULTIPLY	Iconize All
SUBTRACT	Minimize All
ADD	Maximize All



Clinton Toolbar Shortcuts

Key	Description
L	Lock selection
U	Unlock selection
SHIFT L	Workspace Layers 4

Clinton Point Edit Shortcuts

Key	Description
SPACE	Point Edit Toolbar
SHIFT SPACE	Point Edit Toolbar 2

Popup Shortcuts

Key	Description
CTRL SPACE	Point Edit Widget Toolbar
CTRL SHIFT P	Point Edit Widget Toolbar

UV Editor

Key	Description
CTRL Z	Undo
CTRL SHIFT Z	REDO

Info panel

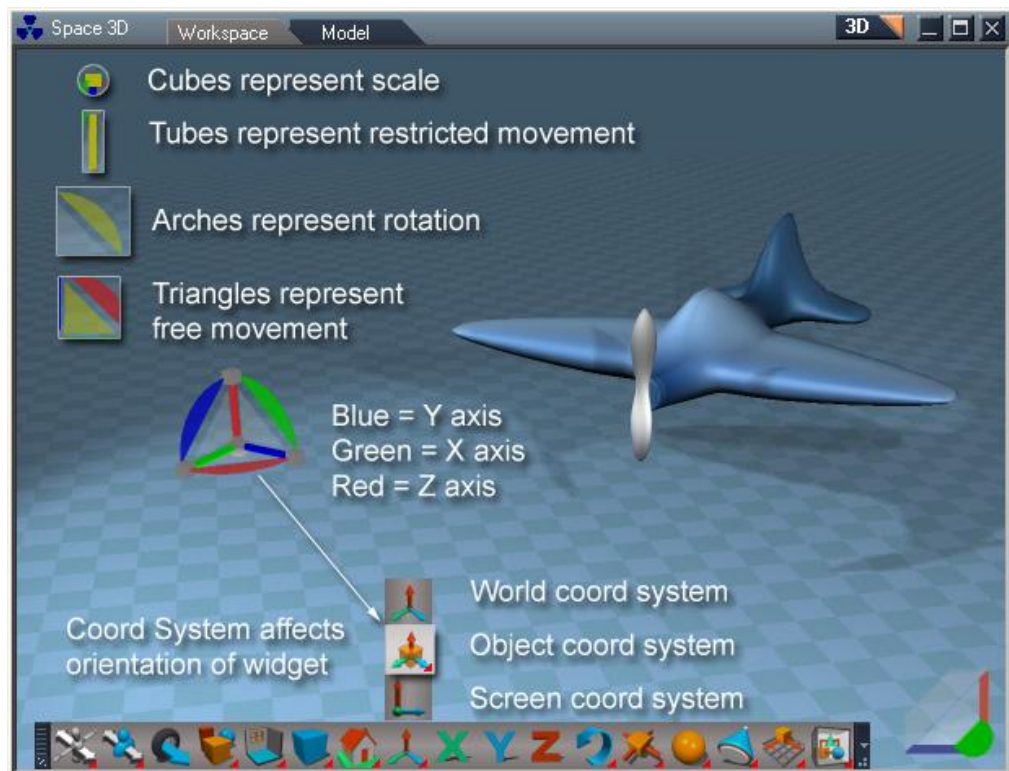
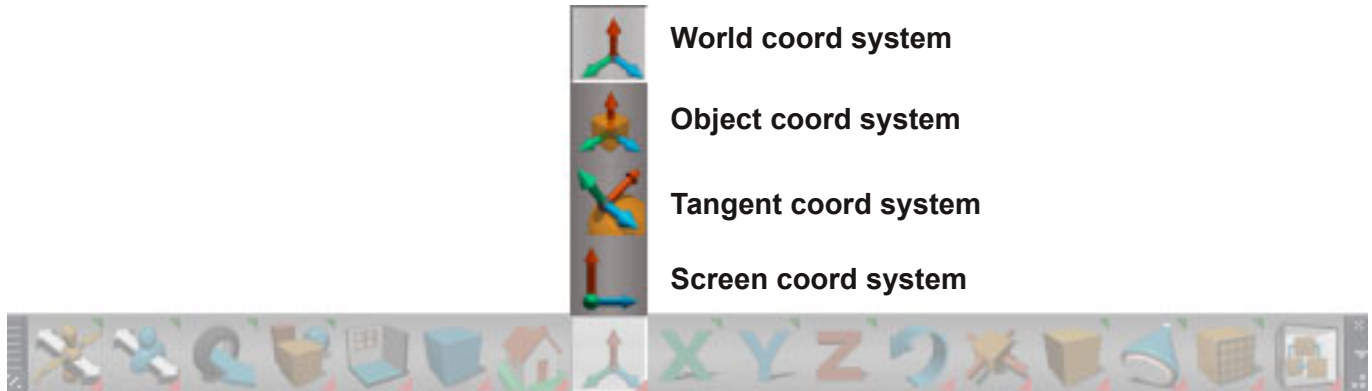
Key	Description
CTRL Z	Undo
CTRL SHIFT Z	REDO

Shortcuts Runner

 [More Information](#) 

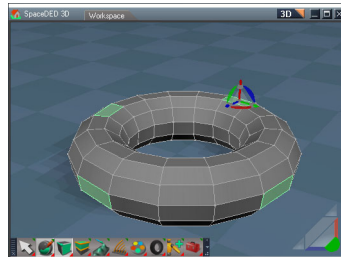
Link Editor	
Key	Description
<i>Mouse buttons</i>	
RMB	Zoom ALL/Move to Top
RMB + Drag	Zoom In/Out
MMB	Center selection
MMB + Drag	Move
CTRL + MMB	Up one level
MMW	Scroll Up and Down

## 2.5.1 Using Widgets

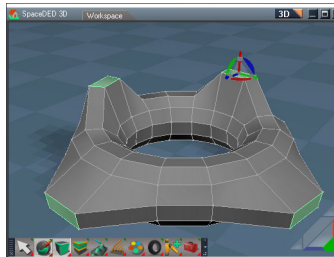




**Tangent Coordinate System** is useful for point edit modeling. The object navigation widget in tangent mode behaves the same as in world coord mode.  
*The tangent Coordinate system is not documented in the original manual.*



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.



**Toggle Object Coordinate Mode**

[More Information](#)

## 2.6 Stack View

### Info Panel

math expressions can be used in the numeric input fields:

	X	Y	Z
Location	$\sin(\pi/4)$	0.000	1.000
Rotation	0.000	-0.000	0.000
Scale	1.000	1.000	1.000
BB Size	2.000	2.000	2.000
Name	Cube	#Ver. 8	

before evaluation

	X	Y	Z
Location	0.707	0.000	1.000
Rotation	0.000	-0.000	0.000
Scale	1.000	1.000	1.000
BB Size	2.000	2.000	2.000
Name	Cube	#Ver. 8	

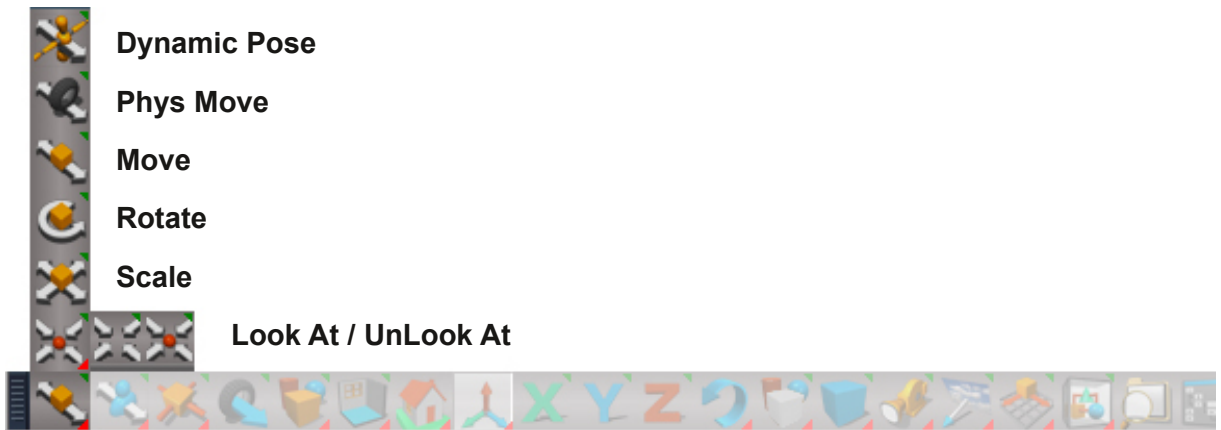
after evaluation

**+, -, \*, /, sin, cos, arcsin, arcos, ln, log, exp, sqrt, PI**

---

## 2.7 3D View – Workspace

### 2.7.1 Object Navigation Tools



**Object Move** Press the Move button to activate the tool  
- RMB to exit tool.



**Object Rotate** Press the Rotate button to activate the tool  
- RMB to exit tool.

Ctrl + LB click - Yaw rotate selected mesh object +45 degrees  
Alt + LB click - Yaw rotate selected mesh object -45 degrees



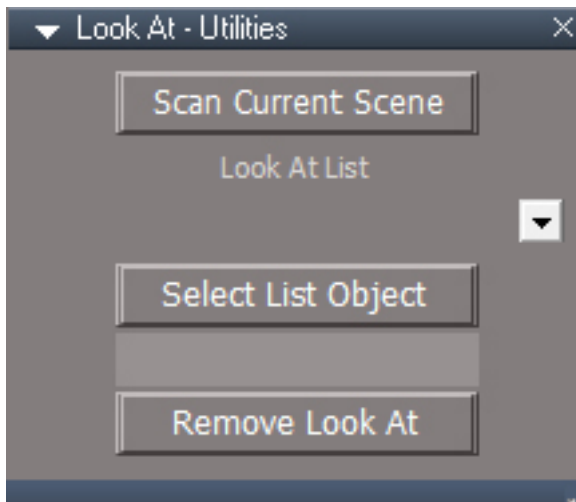
**Object Scale** Press the Scale button to activate the tool.  
- RMB to exit tool.



### Object Look At

This command is used to make an object, camera, or light continually realign itself to remain pointed at another object.

RMB - open Look At - Utilities panel.



**Scan Current Scene** - populate the Look At List with all scene items that are looking at another scene object.

**Select List Object** - select the scene item from the list.

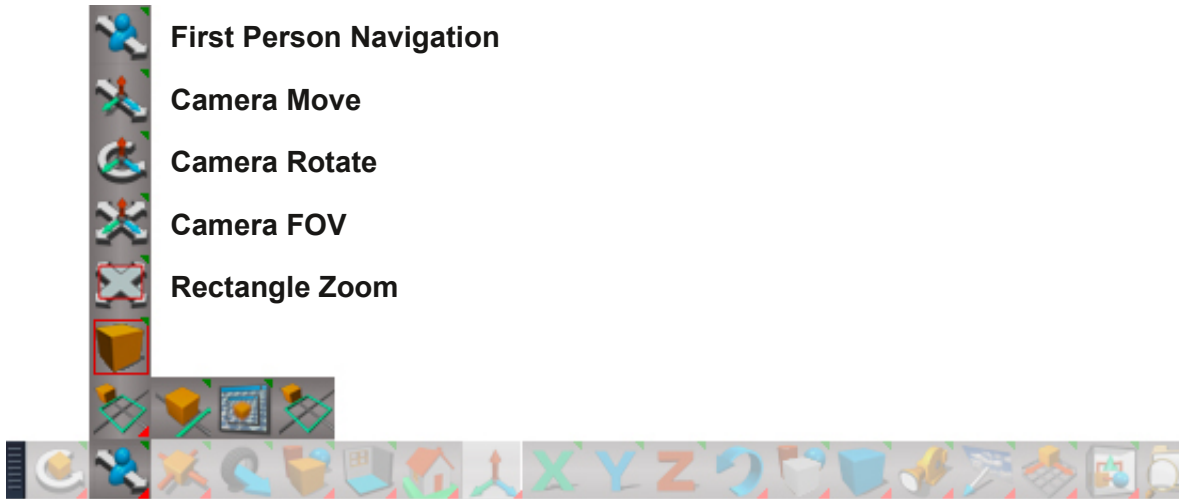
**Remove Look At** - same as Object UnLook At button.



### 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.

## 2.7.2 View Navigation Tools



*Unofficial Update Bottom Toolbar*



**Camera Move** - RMB to exit tool



**Camera Rotate** - RMB to exit tool



**Camera FOV** - RMB to exit tool



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

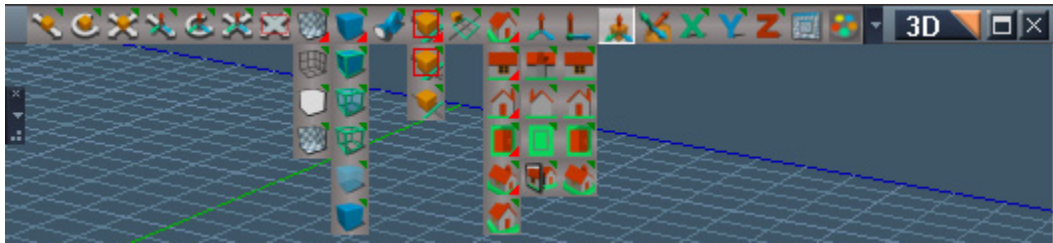


**Look At Selection** Left-Click on the tool places the active Workspace view so the current selection is in the center of the viewing area.  
- RMB select next object and look at it.



**Look At Selection All Windows** - RMB reset view all windows.

## Main View Toolbar



*Unofficial Update Main View 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.



**Open New 3D View** - includes a version of the main view toolbar

This window will have a button with the same icon that can be used to save the state of the window including position and size. The next time the Open New 3D View button is pressed it will open in that saved position with the same 3D view appearance.



**Open Material Editor**



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

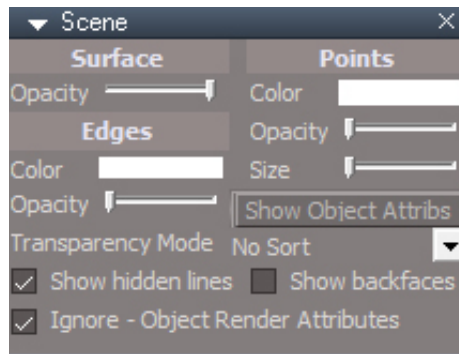


**Zoom To Selection** - RMB reset view.

The view buttons in the Main View Toolbar will change the active 3D view or they will change the main 3D view if there are no active 3D views.

All of the toolbars with View icons (and some other icons) work like this

## 2.7.4 Render Preferences Presets



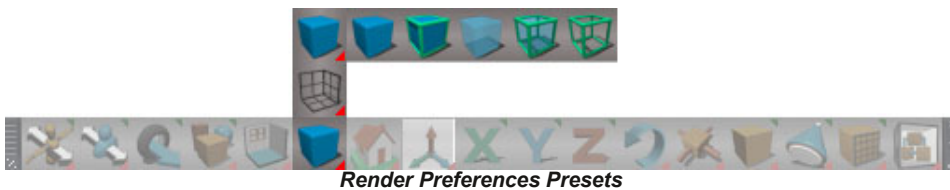
### Show Object Attribs

LMB = Shows the first selected object's ORA panel in Settings

RMB = Closes any panels opened in Settings

Only allows one panel at a time to be displayed. Restricted selection to a single item and has protection for certain objects that could become damaged by the command.

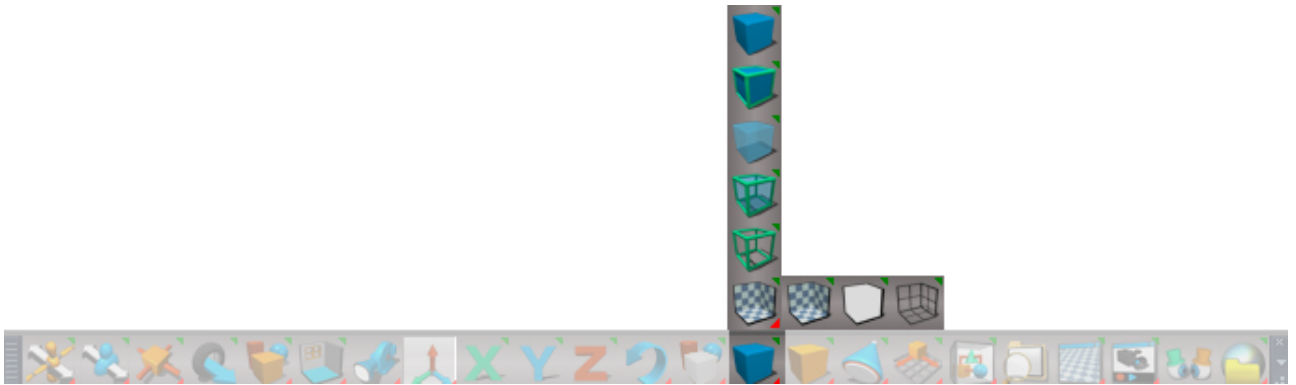
With this icon group you can set the real-time render modes.



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

RMB will change all 3D windows.





*Unofficial Update Render Preferences Presets*

### Draw as Solid

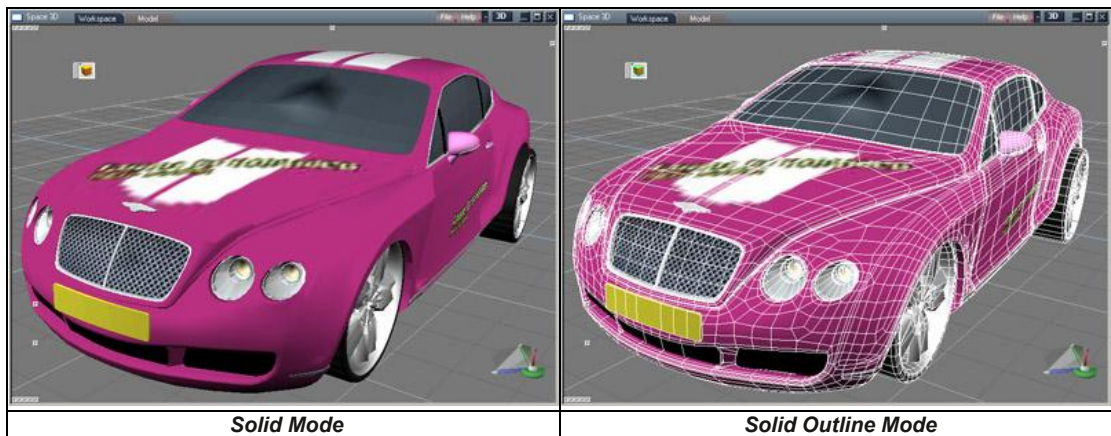


trueSpace will render all objects in your scene as completely opaque, shaded, and preview rendered.

### Draw as Solid Outline



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

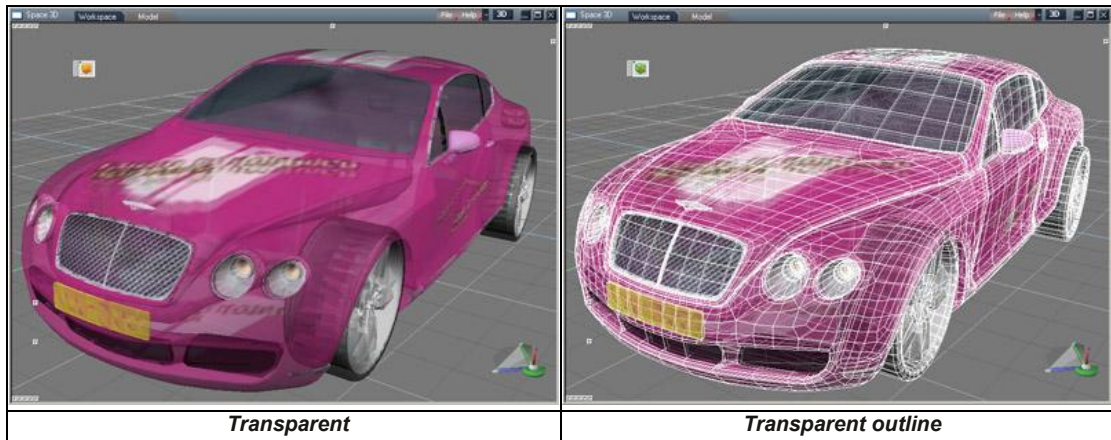


**Draw as Transparent**

This will allow you to partially see through objects.

**Draw Transparent Outline**

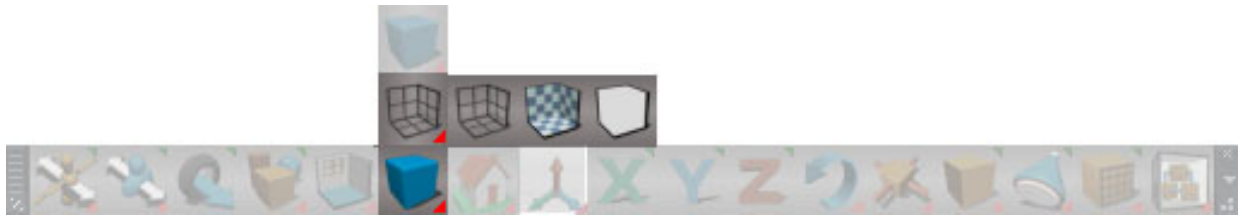
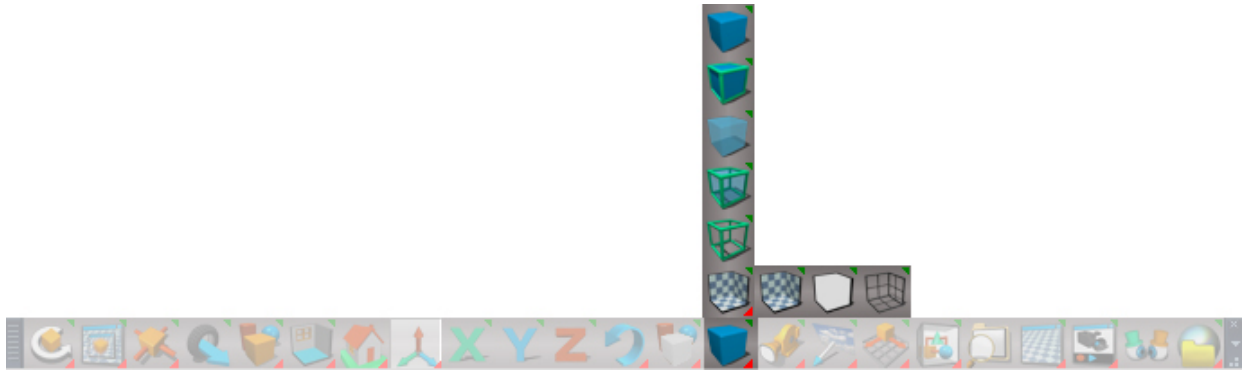
This is similar to Draw as Transparent, with the added function of highlighting all vertices and edges.

**Draw as Wireframe**

Draw the polygon edges with transparent faces



*Wireframe*

*Ground Display Mode**Unofficial Update Ground Display Mode***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 for these buttons.



**Show Selected**



**Hide Selected**



**Hide Unselected**



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



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

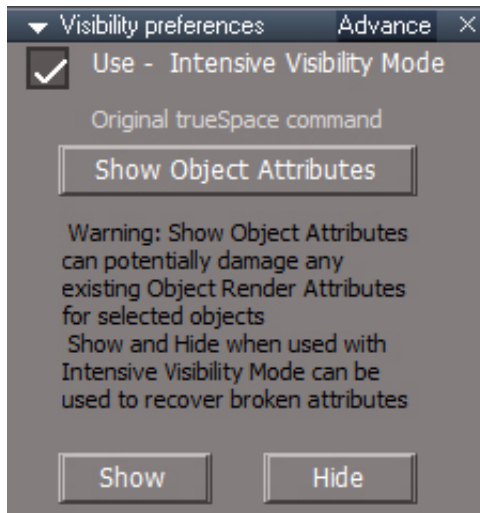


**Show All**



**Hide All**

RClick on the buttons opens the Visibility preferences panel.



**Use - Intensive Visibility Mode** - the internal structure of scene items will be rebuilt to ensure proper behavior of the visibility show/hide buttons.

This can be extremely slow if Show All or Hide All is run with a large number of items in the scene. In these cases run a Show All or Hide All with this option enabled once and disable it for future runs.

**Show Object Attributes** - the original unmodified action - see section 2.7.4, Show Object Attrs button of Render Preferences panel



Background shortcuts

Period + LB Drag - Hide Unselected (Isolate Selected)

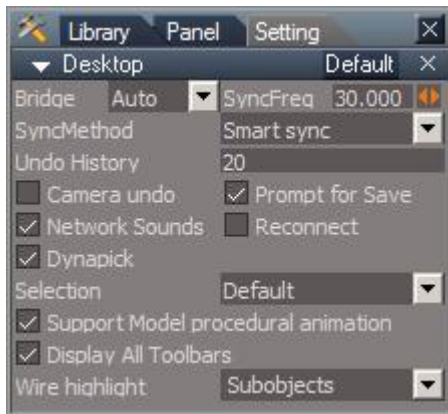
Comma + LB Drag - Shows All

[More Information](#)

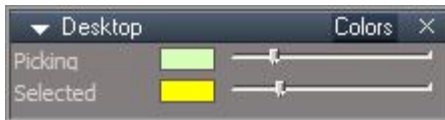
show / hide tools can be found in the view popup toolbar

[More Information](#)

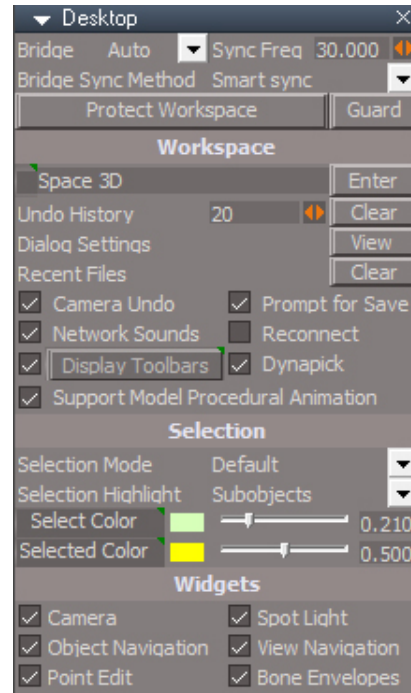
## 2.7.6 Desktop Preferences



*Desktop Default*



*Original Colors Aspect.*



*Unofficial Update Desktop Panel*

**Protect Workspace** - Opens the Protect Workspace and Synchronize panels

**Guard** – opens the Guard panel [↗ More Information ↖](#)

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

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

Desktop Preferences - missing information in the manual  
Selection ("Selection Mode") not documented:

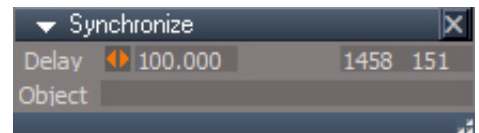
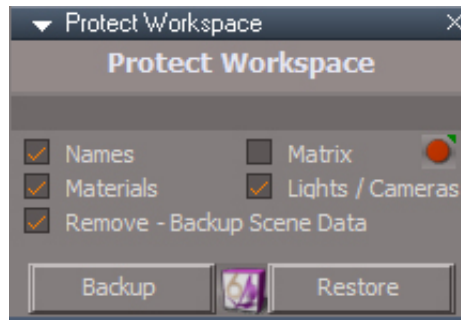
**Default** - select front object or cycle among all objects that are overlapping/touching

**First Object** - select front object

**Small BBox** - select through to the smallest object

**Through** - each click cycle through occluded objects, not necessarily overlapping/touching

## Protect Workspace



open and dock a  
model view

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.

**Record** - create a matrix key at frame 0 for all mesh objects that don't have animation. Matrix must be set in the keying panel. RMB go to time of first keyframe

### 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

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

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

### 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*

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



## 2.76b 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.

## 2.7.6a Copy and Erase



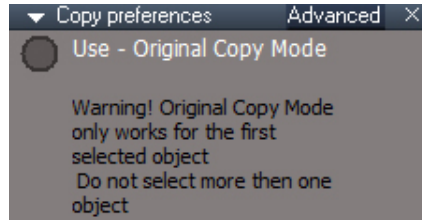
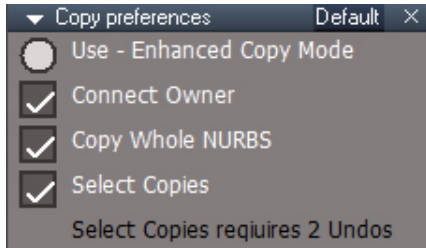
**Copy** LMB creates a duplicate of the selected object(s) and arrange the new nodes in the link editor. Will copy the entire NURBS object.



**Delete** LMB will remove the currently selected object(s). It also formally deselects to fix a ghost selection bug (tS scripts think the objects still exist). Will delete the entire NURBS object.



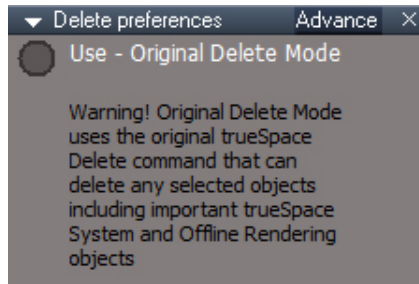
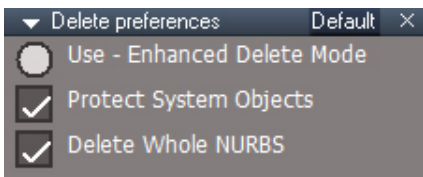
**Use - Enhanced ... / Original ...** - toggle between using the original trueSpace copy or delete command and the enhanced unofficial updates version



**Connect Owner** - when the selected object is part of a 3D group the copy will be connected to the same 3D group

**Copy Whole NURBS** - will copy the entire NURBS structure of the selected object

**Select Copies** - the copied items will be selected instead of retaining the original selection



no compensation for NURBS objects or ghost selection fix

**Protect System Objects** - display a dialog if the selected object is outside of the scene or is used for rendering, answer "Yes" to delete anyway and "No" to cancel the deletion

**Delete Whole NURBS** - will delete the entire NURBS structure of the selected object



Cut



Copy



Paste

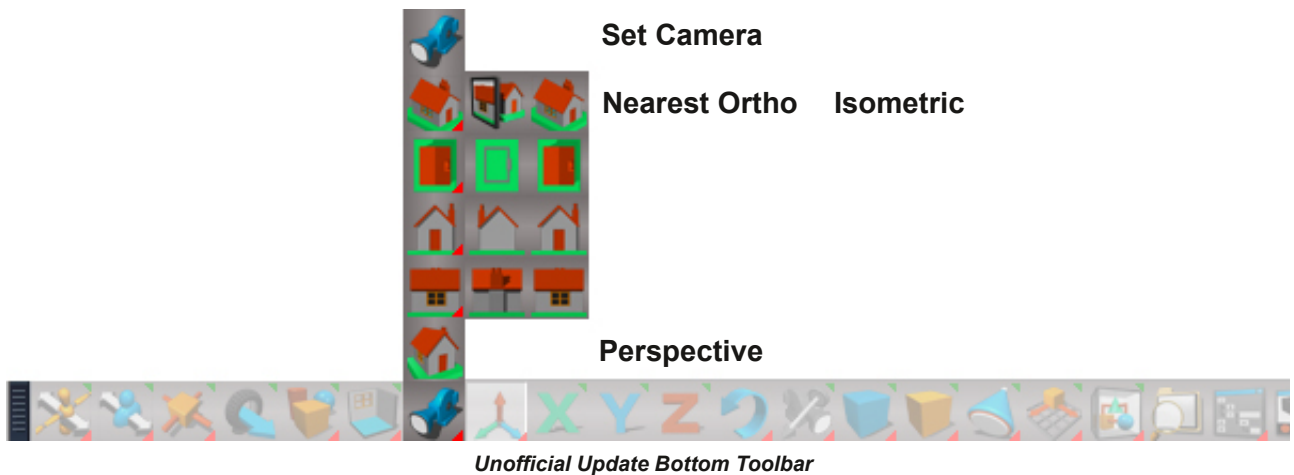
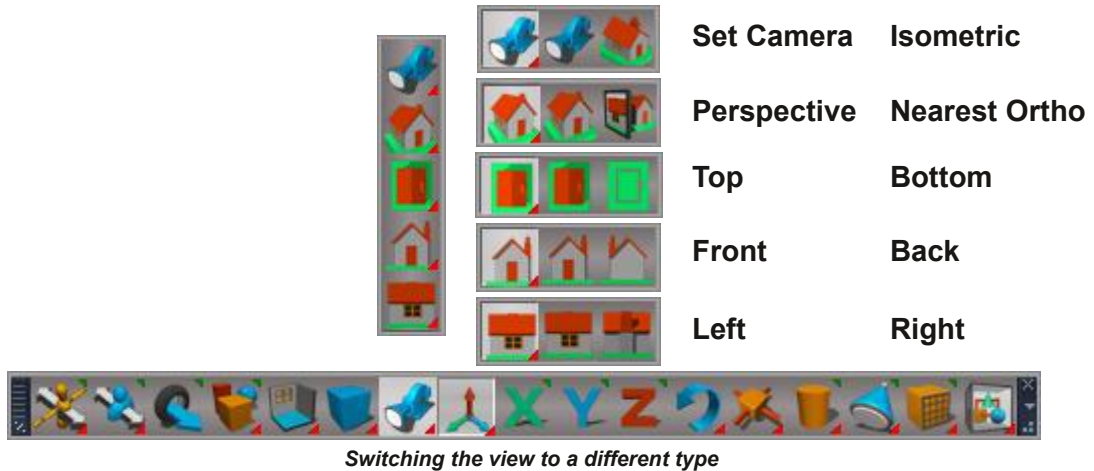


[More Information](#)



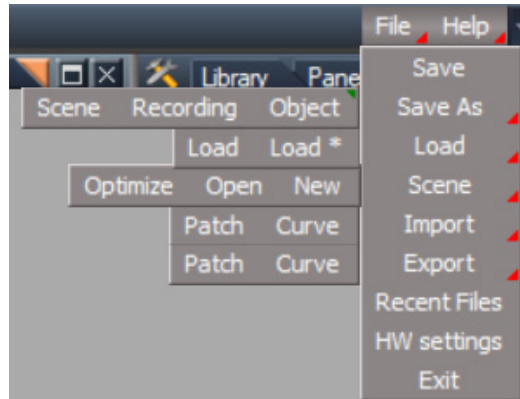
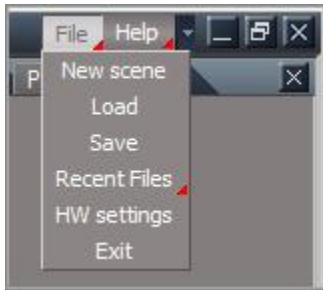
## 2.7.7 Perspective and Orthogonal Views

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.



In the Unofficial Update the camera view is not grouped with the isometric view and the perspective view is not grouped with the nearest ortho view.

## 2.7.9 Workspace File and Help Menu



*Unofficial Update File Menu*

### Error from the original manual

#### **Load**

Allows for the loading of tS7 supported object types. Opening an object adds it to your scene.

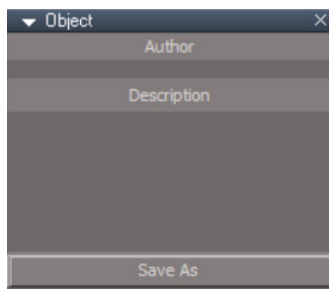
#### **Load**

Allows for the loading of tS7 supported object types. Opening an object adds it to the owner of the current selection.

**Save As > Scene** - file save as dialog with RsScn file extension as the only choice. More direct and convenient than using Save and will update the scene name to match the file name.

**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 single item selection as an RsObj object file, Multi-selection will be reduced to a single selection.



RMB panel

**Author** and **Description** set values for the file properties

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

**Load > Load** - original tS load, load file into the same owning node as the current selection

**Load > Load \*** - load file into the current scene

## Scene > Optimize

Opens the Optimize Wokspace 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.

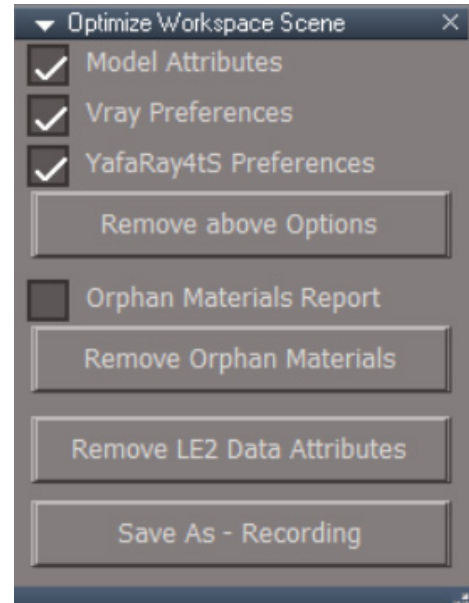
**Remove above Options** - executes the removal setup in the previous checkboxes

**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.

**Orphan Materials Report** - open Log view to see the result of the Remove Orphan Materials process

**Scene > Open** - load scene file RsScn

**Scene > New**

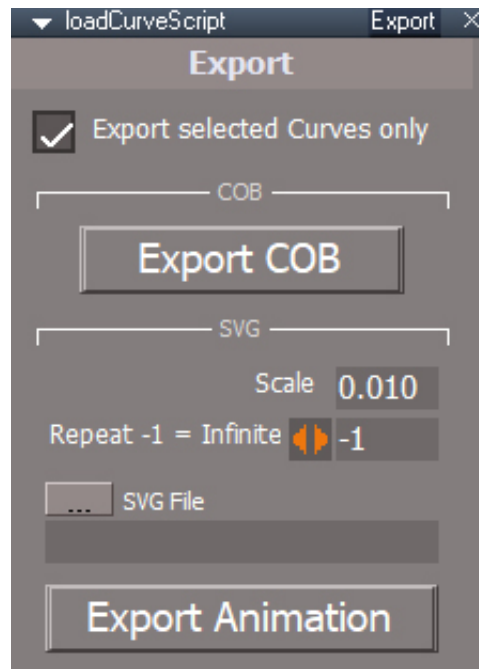


**Remove LE2 Data Attributes** - some scene items seem to have excessive numbers of LE2 Data connectors.



will erase undo history

**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



## Export > Curve

**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.

----- *svg export* -----

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

**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 import* -----

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

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

**Ellipse as polygon** - imports ellipses and circles as solid curve shapes

**Line as polygon** - lines and polylines imported as triangles each with only 1 edge visible

**Path as polygon** - import closed paths as solid curve shapes

**Rectangle as polygon** - import rectangles as solid curve shapes

**Freeze polygons** - converts the solid curve shapes imported as polygons into polygon meshes

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

**Break down compound paths** - splits compound paths into distinct curves

**Always close paths** - close all open paths

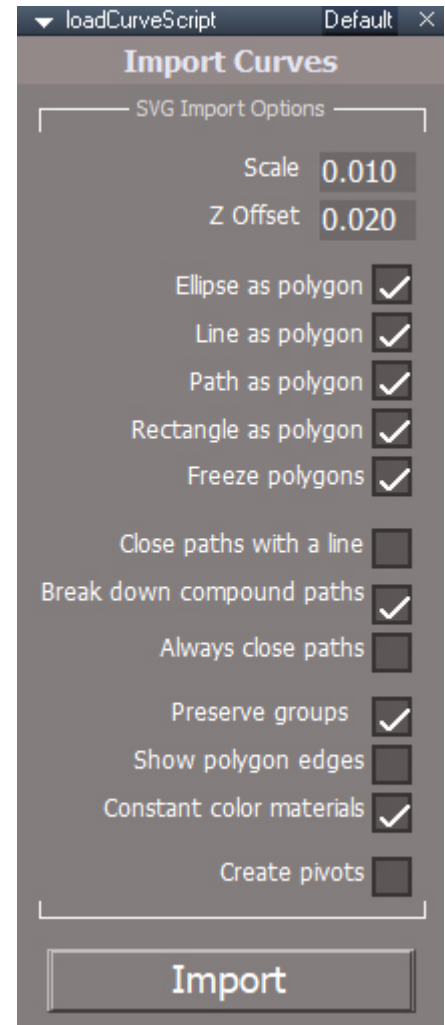
**Preserve groups** - if unchecked will ignore groups that have no transform values

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

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

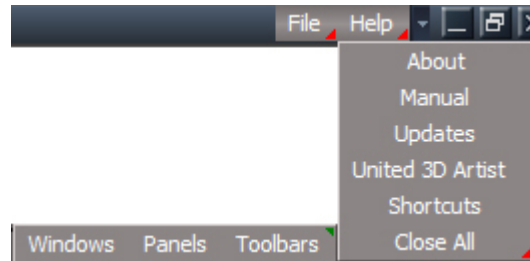
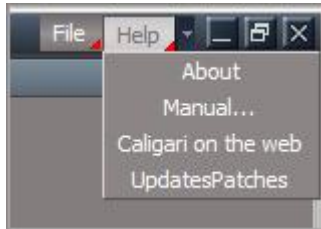
**Create pivots** - pivots are needed for items that will be animated and exported as css animations

**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



### 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.

### Help: Close All - Windows

Close all open floating windows. No effect in the Floating layout.

### Help: Close All - Panels

Close all open floating panels.

### Help: Close All - Toolbars

Close all toolbars. This will also close the toolbar in the lower left of all non-floating 3D windows. A dialog box will show giving the option to reopen this toolbar for the main 3D window. RMB will reset all toolbars, ⚠ which will take some time to run.

## Shortcuts Runner

The Shortcut Runner is a context sensitive, searchable list of the toolbar button and widget shortcuts that can be run at the press of a button.

RMB open a text list of shortcuts.





**Search Term** - interactively filter the list of toolbars based on the names and descriptions  
**Filter** - press if the search stops updating, if the search gets stuck clear the text and press the button

**Blank Button** - press the buttons on the left of each line to run the corresponding shortcut

**List Navigation Buttons** - T=top, B=bottom, PgUp/PgDn move up or down 8 items(1 page), -2/+2 move up or down 2 lines, -1/+1 move up or down 1 line  
The slider indicates the position in the list. It does not update the list in any way.

**Search Shortcut** - include the shortcut keys column in the search

**Search Descriptions** - include the shortcut description column in the search

**Include Global Shortcuts** - include the global shortcuts in the list

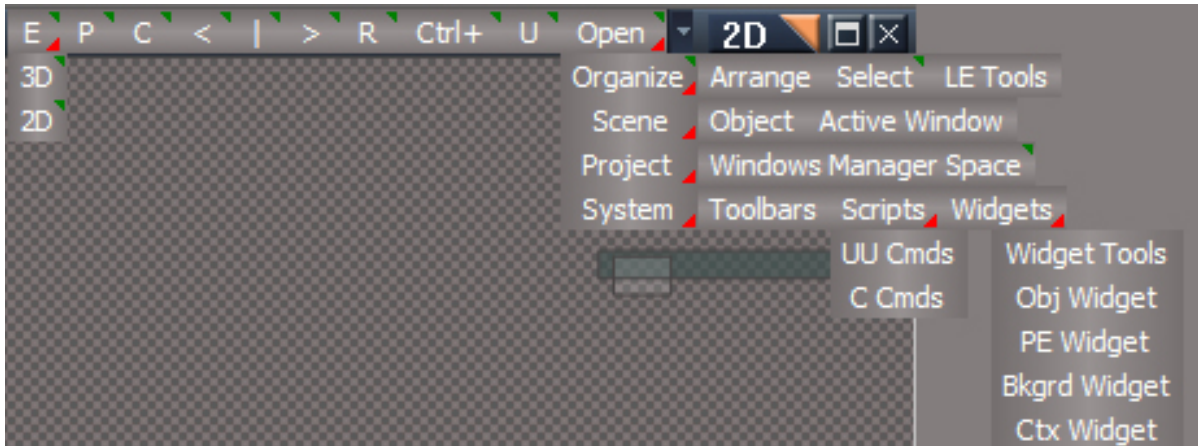
**Close on Run** - close the panel when running the command. This option is meant to be used with a shortcut key assigned to the shortcuts runner (shift + f )

**Update** - press if the list is not in the correct context. For example point edit shortcuts are shown when the link editor window is active . Also use to clear a stuck search term.

**Sort by Shortcut or Description** - sorts the list.

## 2.8 2D View – Link Editor

### 2.8.1 Link Editor Description



*Unofficial Update Link Editor Navigation Toolbar*

### Link Editor Navigator Toolbar

**3D** : encapsulate 3D with dialog, RMB 3D Unencapsulate

**2D** : encapsulate 2D with dialog, RMB 2D Unencapsulate

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

 Ctrl+ can be unpredictable when used inside of a NURBS object.

**U** : LMB unselect, RMB unselect and close all open object panels

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

### **Tools :**

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

**Arrange** : order nodes in the Link Editor

**Select** : open the Select panel, LMB open the Cycle aspect, RMB open the Default aspect. Alphabetize aspect is also available once the panel is open.

**LE Tools** : open LEtools panels

**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

**UU Cmds** : open link editor to the scripts

**C Cmds** : open link editor to the scripts

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

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

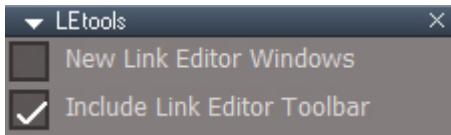
**Obj Widget** : open link editor to the active object navigation widget

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

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

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

## LE Tools

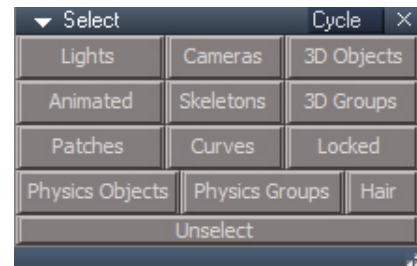
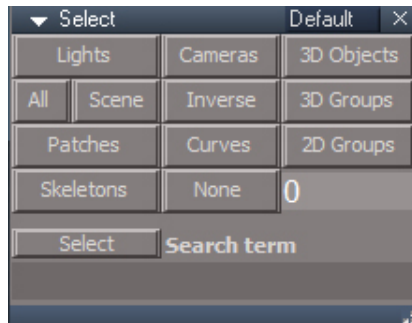


**New Link Editor Windows** : link editor toolbar buttons open the link editor in a new window

**Include Link Editor Toolbar** : if New Link Editor Windows then also add the link editor toolbar to the new window

## Select

### Default aspect



### Cycle aspect


Select items based on their common characteristics.

**By object type:** Lights, Cameras, 3D Objects, 2D Objects, NURBS Patches and Curves. Scene refers to all objects that can be manipulated in the 3D view.

**Modify selection:** All, None, Inverse.

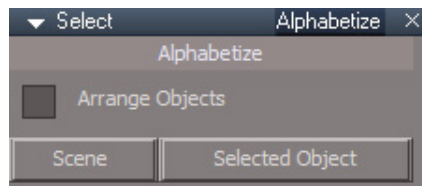
**Name matching:** Enter a search term in the text input field and press the Select button. The search is case insensitive and the search term will be found at the start, end or in the middle of the object name..

The number field will show the number of selected items after a button is pressed.

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

**Cycle aspect** Cycle Select items based on the type of object.

### Alphabetize aspect



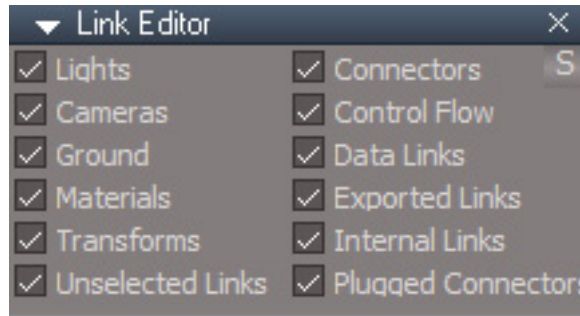
Place the objects in alphabetical order by a delete and restore process. A link editor window will open to the scene or selected object.

**Arrange Objects :** Nodes will be rearranged inside the link editor.

**Scene :** Alphabetize the scene.

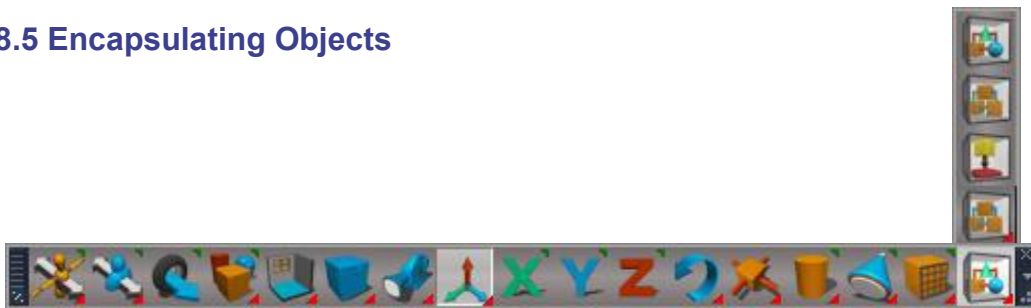
**Selected Object :** Alphabetize the nodes inside the selected object.

## 2.8.2 Main Elements of the Link Editor



**S** - same as the link editor navigation toolbar Select button - see previous page

## 2.8.5 Encapsulating Objects



*Bottom Toolbar*



*Unofficial Update Bottom Toolbar*



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



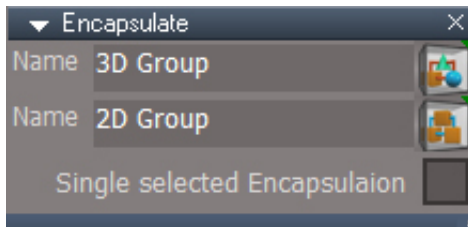
**Encapsulate in 3D** - RMB open the Encapsulate panel



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

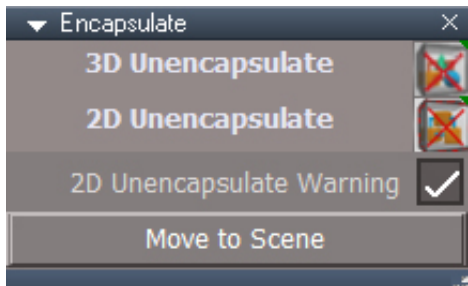


**Unencapsulate in 3D** The UnEncapsulate In 3D tool breaks a group apart and cleans up extra nodes that were used by the 3D group.  
RMB open the UnEncapsulate panel



**Name** - The panel text inputs allow you to name the new group before creating it.  
RMB for both buttons opens the Unencapsulate panel.

**Single selected Encapsulation** - allows making a group with a single member.

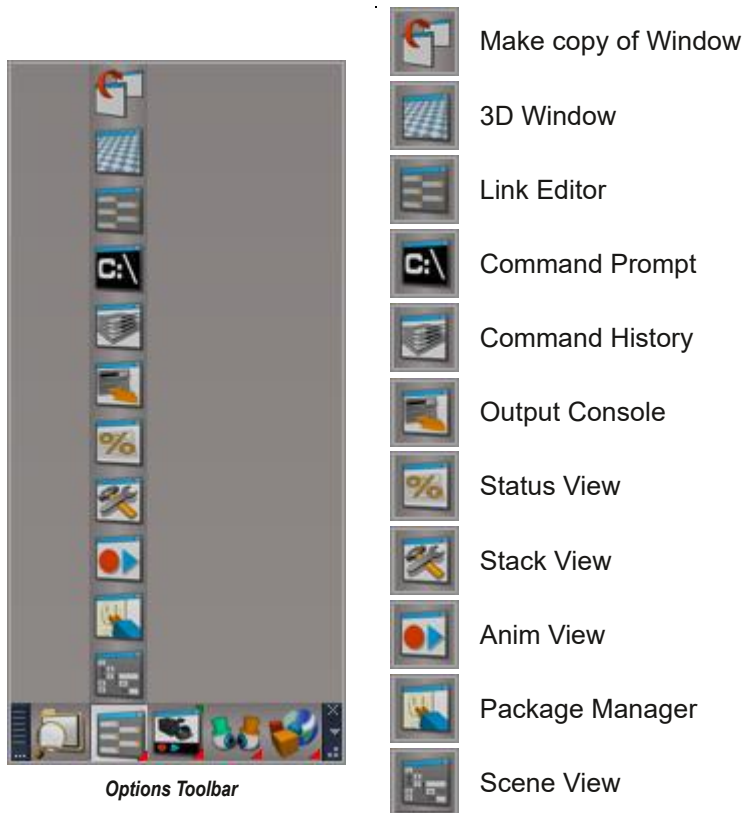


Panel buttons seem to be identical to the toolbar Unencapsulate and Unencapsualte 3D buttons.  
RMB for both buttons opens the Encapsulate panel.

**2D Unencapsulate Warning** - uncheck to remove the warning every time you disassemble a group.

**Move to Scene** - move the selection from inside a group in the scene to the scene level

## 2.12 Other Views



Unofficial Update Combined Stack Toolbar

The Options Toolbar has been combined with the main bottom toolbar



Stack View - will open a floating stack view if the stack view is not open.  
*original would simply close the stack view, requiring a layout load or reset*

**⚠ BUG: The floating Stack View cannot be re-docked. Attempting to do so will fail and could crash trueSpace.**





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



**3D Window** - LMB - original command plus offset the window position  
RMB - original command (no offset)

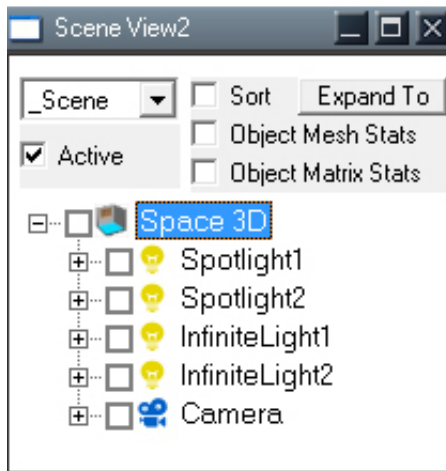


**Link Editor** - LMB - original command .  
RMB original command and includes the Link Editor Navigation toolbar

The window is opened with an offset position for both LMB and RMB actions.



**Scene View 2** - LMB open Scene View2 window, RMB open Scene Graph Utilities window



## Scene View2 Controls

**\_Scene** - refresh/load with the scene as the top level node

**\_Root** - refresh/load with the Kernel root as the top level node

**Active** - update the tree interactively from changes in trueSpace

**Sort** - sort alphabetically

**Object Mesh Stats** - update the object statistics panel mesh element counts

**Object Matrix Stats** - update the object statistics panel matrix values

**Expand To** - open the tree to the currently selected node



**Object Statistics**

[!\[\]\(3211b5d1d968fc1665909b34f9f16010\_img.jpg\) More Information !\[\]\(d47ad152ec3d86a04ad64c8049e1f17f\_img.jpg\)](#)

Rows from left to right

Checkbox - selections used in the item checkbox context menu

Icon indicating the type of object - click to refresh the tree branch of the parent item

Object name - click to select, rclick to open the item context menu

Right click context menu:

**Browse in LE** - open and look inside the node in the LE view

**Delete** - remove the node from trueSpace

**Rename** - open an edit control to rename the node, press enter when complete

**Show Node in LE** - centers the node in the LE view

**Copy** - copy the node to a temporary holding area

**Cut** - copy the node to a temporary holding area and delete the original

**Paste Into** - paste the previously copy or cut nodes into the node

**Duplicate** - copy the node as a sibling node

**UnGroup3D** - same as Ungroup but will cleanup connections and remove the transform node

**UnGroup** - unencapsulate the node

**Copy Path** - copy the full path of the node into the windows clipboard

**Update Tree** - will update the tree from the items parent downward in the tree hierarchy

## Right click checkbox context menu:

Select using the checkboxes then use this menu to operate on the selection

**Select** - select all chosen items

**Delete** - remove the items from trueSpace

**Copy** - copy the items to a temporary holding area

**Cut** - copy the items to a temporary holding area and delete the original items

**Paste Into** - paste the previously copy or cut nodes into the item

**Duplicate** - copy the items as a sibling nodes

**Group3D** - make a 3D Group from the selected items , UU required

**Group** - make a 2D Group from the selected items

**Move into Group** - move selected nodes into another node, check the boxes of the items to move then right click on the target item box

**Move into Group 3D** - move into group for 3D objects with matrix connections, check the boxes of the items to move then right click on the target item box

**Update Tree** - will update the tree from the items parent downward in the tree hierarchy



Light, Camera, Material, Scene, 2D Group, 3D Group

Joint, Bone, IK Handle IK Lock, Skeleton, Actor

NURBS Patch, NURBS Curve, Text, Animation

Geometry, Mesh, Particle System, Physics, Hair

Constraint, Modifier, Object Render, Default blank,

Null, Null(non-rendering)



## 2.13 Macro Recording and 3D Recording

### 2.13.1 Macro Record



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



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

### 2.13.4 Record Toolbar



#### **Open 3D Record Toolbar**

The tooltip was updated to "3D Record Toolbar" from simply "Record Toolbar". The usage in the original manual is inconsistent and uses both terms. Adds actions to show the stack view.

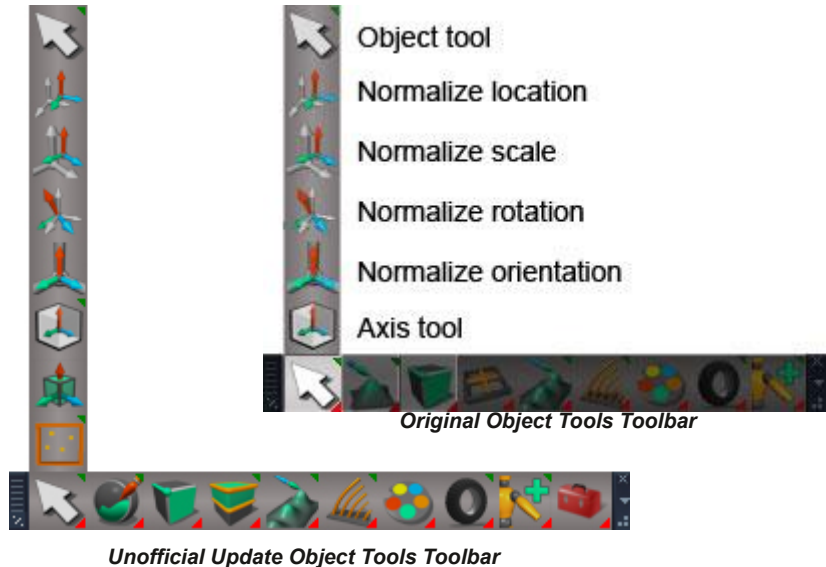
LB - Opens the 3D Record Toolbar & Record Preferences panel in Settings

RB - Opens the Record Preferences panel in Settings



# Chapter 3 MODELING - Workspace

## 3.1 Object Tools



### 3.1.1 Object

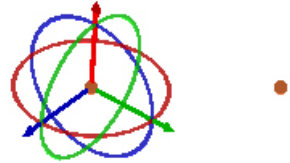


The Object tool is used to select an object. Once an object has been selected, the remaining object tools can be used. Choose the Object tool and left click on an object in the Workspace to select it.

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.  
A clickable sphere control has been added to the axis tool widget

P + Left click - open Axis Snap panel without the need to enter point edit mode - see Axis to Selection below

Right click close Axis Snap panel

Middle click hide arcs and arrows

Left click show arcs and arrows



**Flatten Axis** - *"Store pivot transformation into mesh and reset pivot to identity."*

Meshes have a local coordinate system where all the vertex positions are measured from the 0,0,0 origin position. Flatten Axis will move the vertices so that the origin is in the same position and orientation as the pivot. After moving the vertices the pivot is also set to 0,0,0 to prevent the vertex positions from jumping out of place.

This is useful when exporting to other applications that do not support the trueSpace style pivot.



**Axis to Selection**



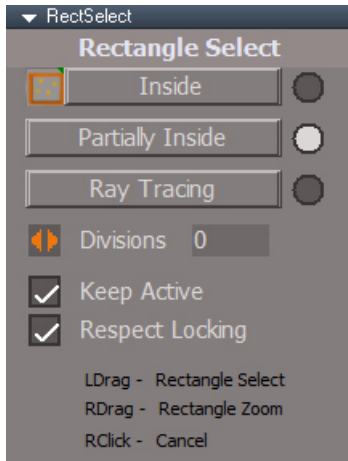
[More Information](#)





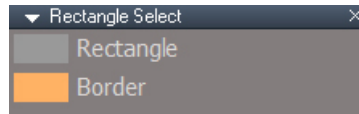


**Rectangle Select** - rectangle style object selection via bounding box/frustrum or ray tracing  
also includes a zoom in and out function  
RMB to open the default aspect of the panel



*Rectangle Select Panel*

Icon button in the panel is the same as the toolbar button except Right Click to open the color panel



RB + Drag rectangle down and right to Zoom In  
RB + Drag rectangle up and left to Zoom Out

### Usage:

- Left click the button to run with the current options
- Right click to open the options panel.

**Inside** - objects must be fully enclosed in the selection rectangle.

**Partially Inside** - objects can be partially inside the selection rectangle

**Ray Tracing** - use the ray tracing method

**Divisions** - the number of vertical and horizontal ray traces used to find objects.

**Keep Active** - tool stays valid until RMB click in space.

**Respect Locking** - if an object has been marked as unselectable it will not be selected.

### Notes:

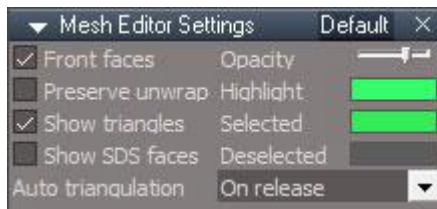
- Use combinations of Ctrl and Shift like all other selection tools.
- Small items can be missed in ray tracing mode - increase the Divisions
- Only visible non-occluded objects will be selected in ray tracing mode.
- Occluded objects will be selected in the default rectangle frustum mode
- Radio buttons only indicate the selection mode.
- Non-ray tracing works on the object bounding box not the actual visible mesh.

### 3.2.0 Mesh Editor Settings

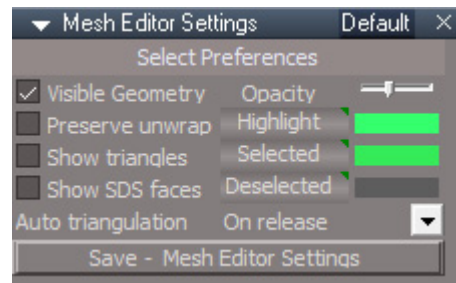
There are many options and settings that will control how Point Edit works, adjusting everything from the colors used in making a selection, to how certain tools work. This section details those options before we get into looking at the tools themselves. Where the options apply to a particular tool,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

"Front faces" renamed to "Visible Geometry"

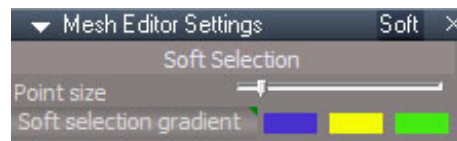
**Save - Mesh Editor Settings** will make the current values the defaults when resetting the default context.

#### 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.*

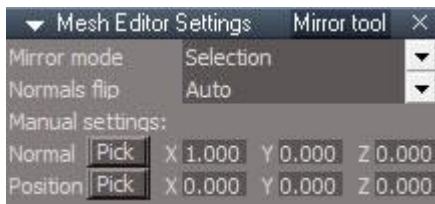


*Unofficial Update Soft aspect.*

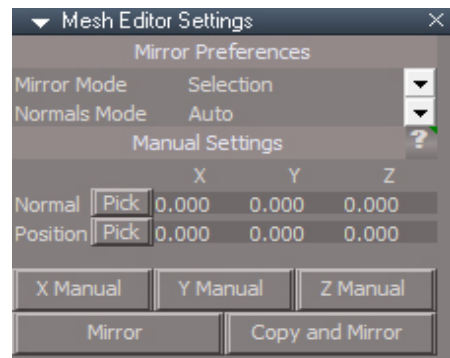
**Soft Selection Gradient** – RMB reset gradient colors

## 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.

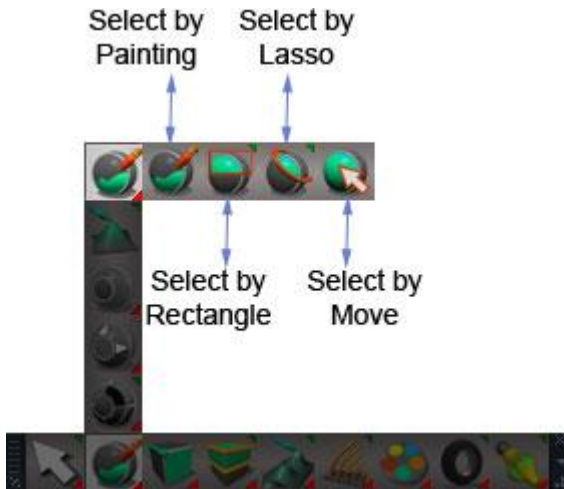


*The Mirror Tool aspect of the Mesh Editor Settings panel.*

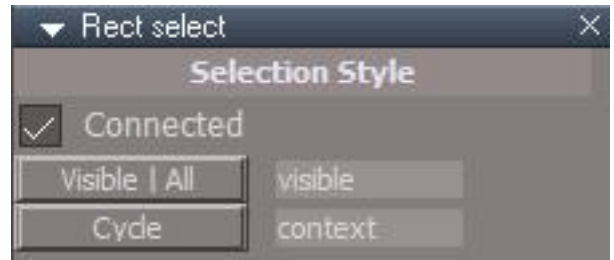


*Unofficial Update Mirror Tool aspect.*

- **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.



*Lasso & Rect select RMB panel*

**Visible | All** - switch between select visible geometry and select all geometry

**Cycle** - change selection element from/to context  
 > vertex > face edge > triangle edge > face > triangle > triangle edge > edge loop > face loop and back to context

### 3.2.1 Select By Painting



RMB sets to context mode and front faces.

### 3.2.2 Select By Rectangle



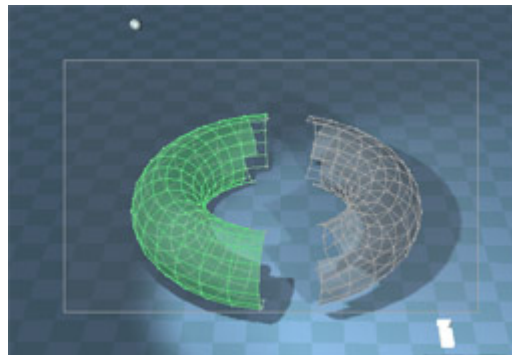
**Connected** – RMB panel, This checkbox determines if the selection is allowed to select other object's elements or not.

### 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.

Rectangle and Lasso panels each have their own "connected" panels.



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



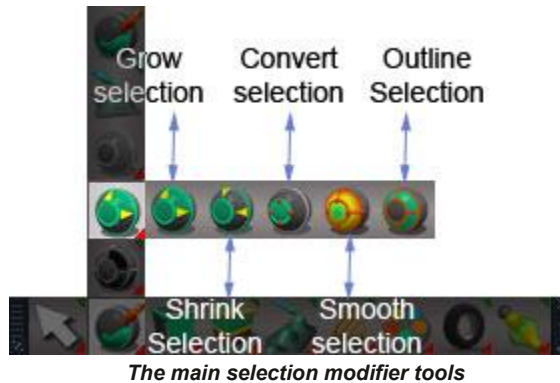
### Select Plane Loop

[More Information](#)



### Select by Normals

[More Information](#)



#### 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. Set the selection mode to points to get the old behavior.*

#### 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. Set the selection mode to points to get the old behavior.*

#### 3.2.17 Hide Unselected Geometry

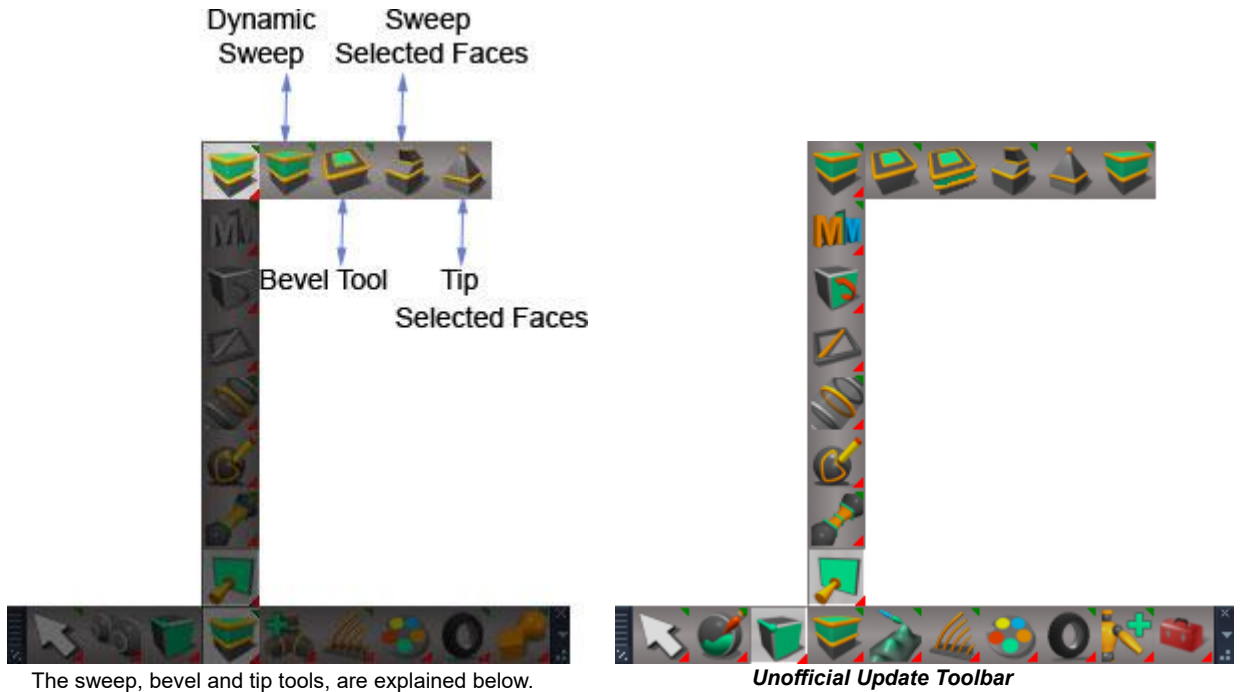


This hides the unselected elements, so that the selected elements are the only ones that remain visible, and are the only ones that can be selected and edited. This is useful for focusing work on a particular area of an object, without the distraction of other elements being visible in the scene.

*The original manual has the wrong button image*

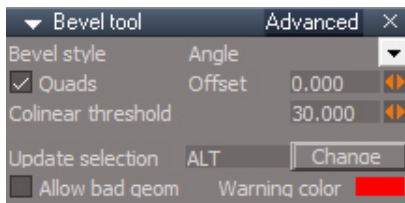
### 3.4 Sweep, Draw, Topology Tools

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:

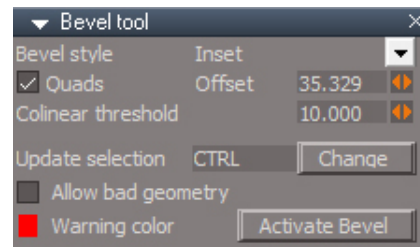


The sweep, bevel and tip tools, are explained below.

#### 3.4.2 Bevel Tool



**Bevel Tool Panel - Advanced**



**Unofficial Update Bevel Tool Panel**

*The Advanced tab information for the bevel tool is missing from the original manual.*

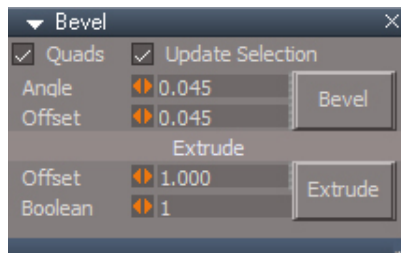
**Update selection**- when the indicated key is pressed while beveling, the new geometry will be selected after the operation is complete.

**Change** - will open a shortcut key dialog to choose the desired key for updating the selection.

**Allow bad geometry** - will not stop the creation of messy geometry.

**Warning color** - indicator of bad geometry.

**Activate Bevel** - unofficial update addition, same as pressing the bevel toolbar button.



**Bevel and Extrude**- opens the non-interactive bevel/extrude panel. The top part of the panel is for the Bevel and the bottom part is for the Extrude.

**Bevel**- perform a bevel with the basic options for angle and offset

**Extrude**- perform an extrude with the basic options of offset and boolean

Press the button to open the panel and start point edit mode for the selected object.

Offset - Negative numbers = Inset | Postive numbers = Height

Boolean - 1 = true | 0 = false

Note that this panel does not read any of the options from the bevel tool or extrude tool panels.

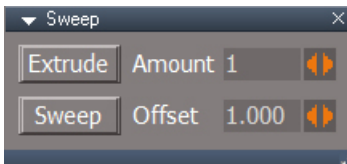
### 3.4.3 Sweep



#### Sweep- RMB sweep panel

Subsequent clicks on the Sweep tool will continue sweeping the selection. On subsequent sweeps, the Sweep tool will exhibit a “memory” of how the face was created. It will repeat the same “operation” on the subsequent sweep

- ❗ The above statement from the original manual is misleading. The extrude tool is aware of the geometry the selection is connected to and will continue the extrusion using the same direction and length to maintain a continuous mesh structure.



**Extrude** - regular sweep command with a specified number of segments

**Amount** - number of segments - 1=2segments, 2=3segments...

**Sweep** - uses a dynamic sweep to simulate a regular sweep in the direction of the selected face normals using a specified offset value

**Offset** - length of the sweep



Lathe [↪ More Information ↪](#)

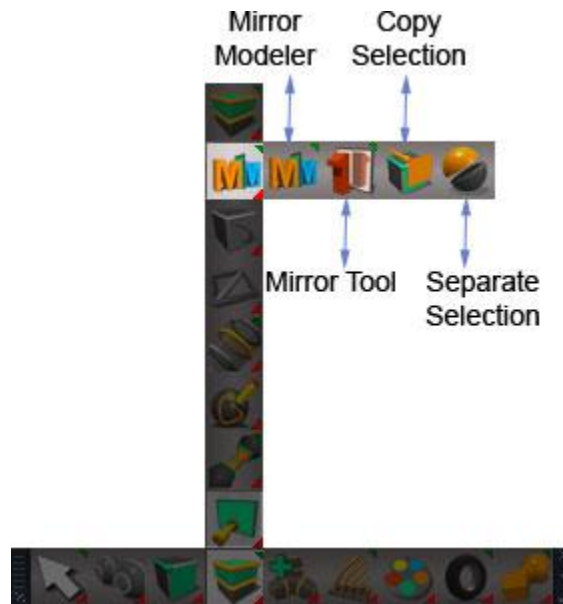


Static Sweep [↪ More Information ↪](#)

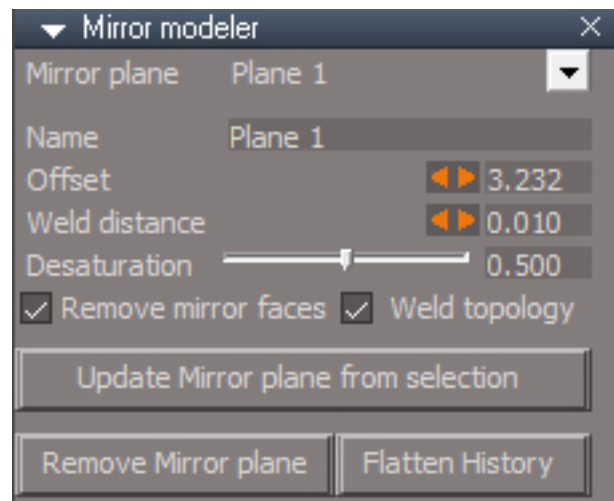


True Bevel [↪ More Information ↪](#)





### 3.4.5 Mirror Modeler



### Mirror Matrix



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

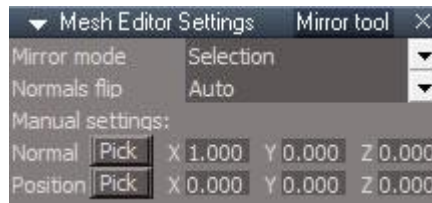
[More Information](#)

### 3.4.6 Mirror Tool

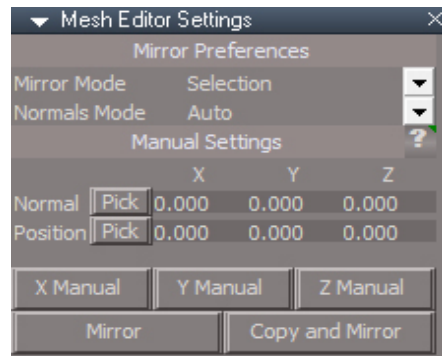


The Mirror Tool allows you to make a selection of elements on an object and Mirror that selection. If no selection of elements is made, the entire object is mirrored across the x-axis.

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](#)

### 3.4.16 Quadrify Polygons



**Quadrify**

[More Information](#)

### 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.

To add new vertex on the edge, click on it.

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

When you activate other widget tool in this state, tool will finish without closing whole polygon. This behavior is intended for drawing edges or adding vertices.

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

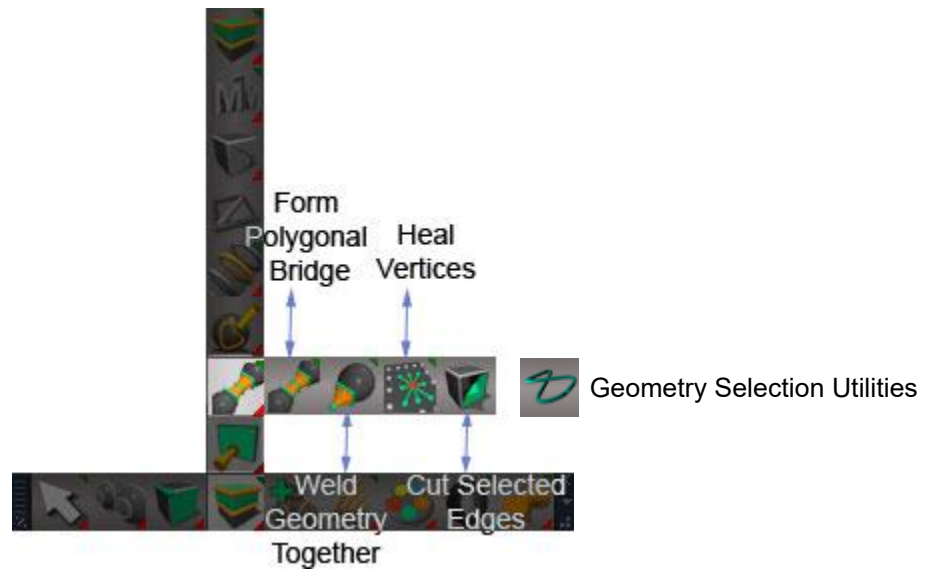
The snapping can be locked to an edge by holding the shift key.

To lock movement perpendicular to the current snap location on the edge hold the shift and ctrl keys. Other active snaps can override this behavior.

### 3.4.25.a Target Weld



[More Information](#)



### 3.4.27.a Geometry Selection Utilities



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 SDS geometry. It also includes some random selection tools that can be used for artistic purposes.

**Tris** - select 3 sided polygons

**Quads** - Select 4 sided polygons

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

**Percent** - percentage of point or face elements to select

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

**Points** - select random points

**Faces** - select random faces

**Concave** - select concave polygons

**Floating Points** - select points that have no edge connections. If the points cannot be deleted try to quadrify or triangulate the polygons to reconnect the floating points.

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

**Non-Manifold** - select edges that have more than 2 polygons in common

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

**Tolerance** to determine maximum polygon bending

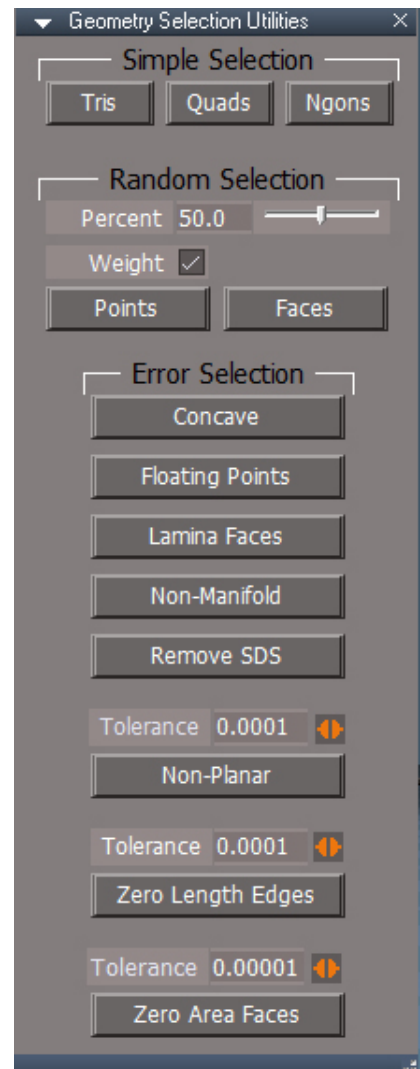
**Non-Planar** - select polygons that are not flat using the tolerance value

**Tolerance** to determine maximum edge length

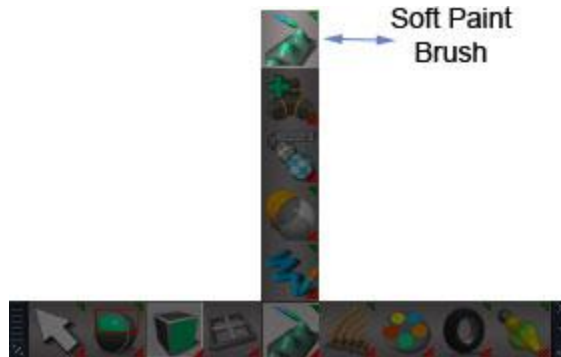
**Zero Length Edges** - select triangles that have a zero length side with the zero being defined by the **Tolerance**

**Tolerance** to determine maximum edge length

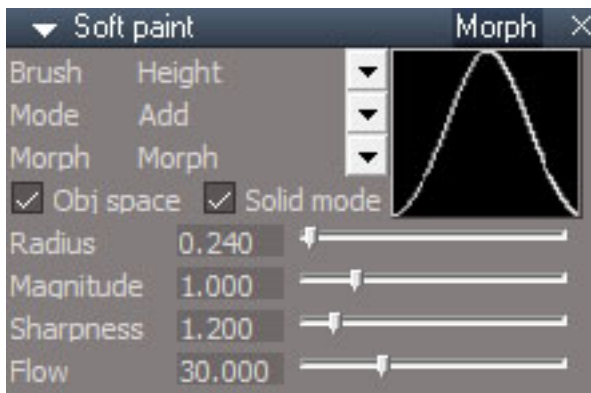
**Zero Area Triangles** - select triangles that are very small with small defined by the **Tolerance** value



### 3.5 Soft Paint

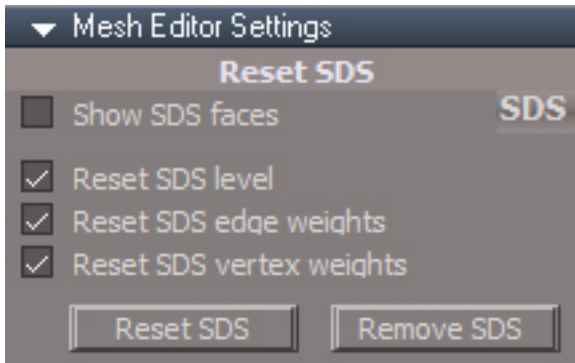


*Information missing from the original manual*



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.

### 3.6.3 Reset SDS



#### Show SDS faces

**SDS** – open the floating SDS toolbar

**Reset SDS** – *see the Reset SDS toolbar button*

**Remove SDS** – works by copying the elements of the mesh data into a new mesh data structure that does not include SDS data.

 This is not the same as the Remove SDS toolbar button

## 3.7 Boolean Tools



**Boolean Slice** – creates a slice through geometry by using the boolean cut function with a plane sized larger than the mesh and perpendicular to the active 3D viewport

Select a mesh object in a 3D view

Push the button and adjust the cut with the object navigation widget.

Left click to start a new cut and commit the previous slice or ctrl+left click to start a new cut at the last cutter location and commit the previous slice.

Left click to commit the slice and start a new cut using the default orientation

Ctrl-left click to commit the slice and start a new cut in the current location ( this will be invisible because the committed cut and the new slice will be at the same location)

Right click to end the tool and abort the last cut.

Ortho views will have a more predictable default cut orientation

It does not work with grouped objects.

The name of the object will change during the boolean operation.

A pivot will be added to the mesh.

If you get the "Construction history will be removed" message - check the box and answer yes.

Might get better control with a centered object navigation widget

Ctrl+Shift+O to open the object navigation popup

Choose Preferences


Press On | Off Docking - Bounding Box Center

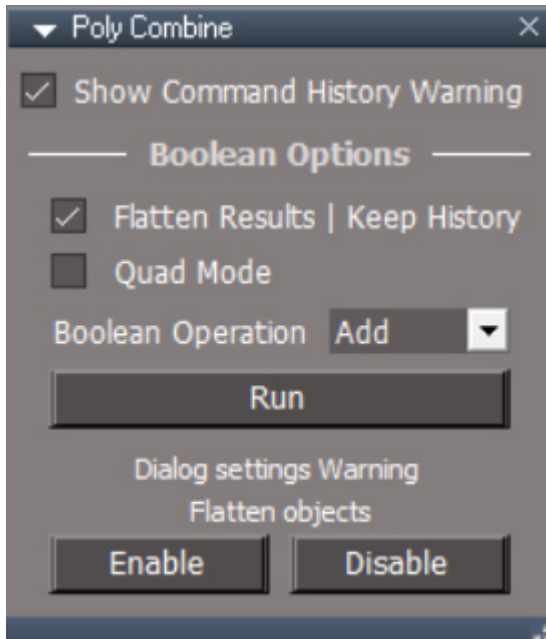




**PolyCombine** – Uses a boolean process to convert a 3D group or a selection of individual 3d mesh objects into a single polygon mesh object. By default the result is flattened and no geometry changes occur.

LMB - open floating panel, RMB open panel in the stack view.

 All undo history will be erased when running this tool.



Usage:

LMB - open floating panel, RMB open panel in the stack view

Understand that undos will be lost and uncheck Show Command History Warning

Select several simple 3D objects and press the button to merge them into a single polygon mesh object.

Select a 3D group object made up of 3D objects and sub-groups of 3D objects and press the button to merge the group hierarchy into a single polygon mesh.

The tS "Construction history will be lost" dialog may show if Flatten Result | Keep history is on. When the dialog shows check the checkbox and press the Yes button. This prevents the question from being asked for the duration of the tool run. After the run the dialog is restored to it's previous state. An error dialog will show if the tS dialog is not set properly and no processing will occur until it is.

**Show Command History Warning** - uncheck to turn off the warnings for no undos / all undos will be lost.

**Flatten Results | Keep History** - default true, atypical set to false and keep boolean construction history

**Quad Mode** - any new faces generated will have 4 edges, option is for Merge and Union boolean operations  
Default value is Off.

**Boolean Operation** - Add(Boolean merge geometry), Merge and Union options. Off by default

Add (default) - combine the unaltered meshes together

Merge - combine the meshes while also adding intersection lines to the geometry

Union - combine the meshes removing any internal geometry

**Run** - execute the poly combine process

**Enable / Disable** - set the visible state of the Construction history/Flatten dialog after a successful Poly Combine run or first use of the Construction history/Flatten dialog by any tool

Notes:

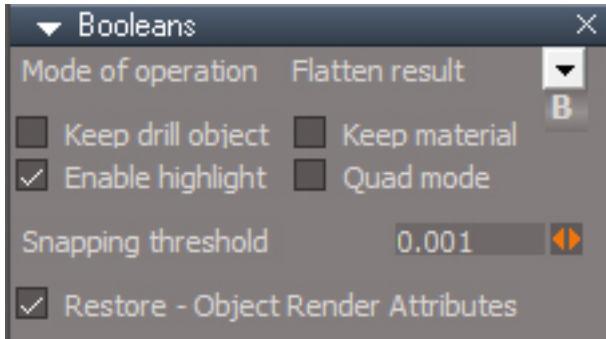
If one item in the selection is a child of a parent node then all the items must share the same parent.

Parent objects, complex 3D structures and non-mesh objects cannot be combined into a single mesh.

All undo history will be erased when running this tool.

Flatten Results | Keep History will restore the flatten Dialog settings enable/disable value after a successful run

### 3.7.7 Boolean Options Panel



**B** - open a boolean toolbar

**Restore - Object Render Attributes** - if checked the currently selected item's object render attributes node is saved when the boolean tool is started and copied back in to the new boolean item. If unchecked a default object render attributes node is added to the new boolean item.

**i** If the selected item does not have an object render attribute node, then the last saved object render attribute will be used.

## 3.11 Flatten History



*The location of the Flatten History tool*



*Unofficial Update location of the Flatten History tool*

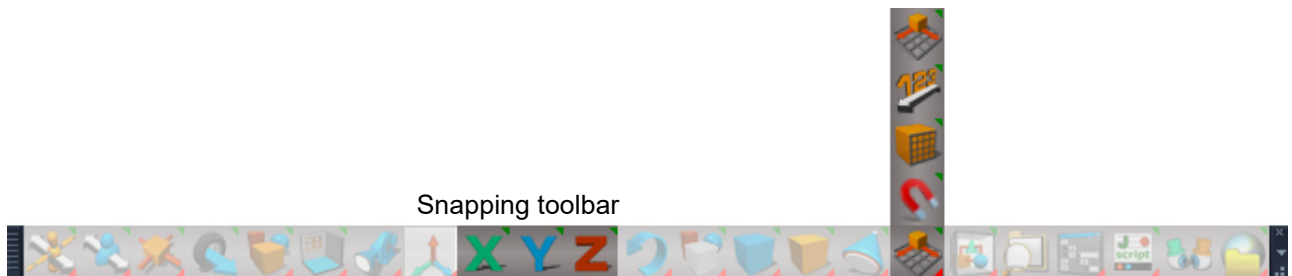


LMB flattens history, will not flatten lights, cameras, mesh in point edit mode or objects marked as uneditable. Will not flatten NURBS or dimension objects. Will only flatten objects that have a WldMatrix connector.

## 3.12 Snapping and Distance Tools



*The location of the snapping tools*

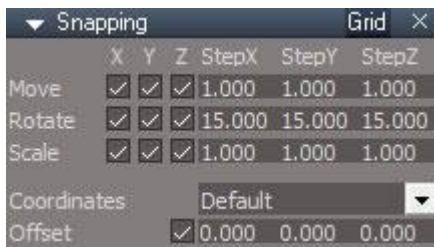


*Unofficial Update location of the snapping tools*

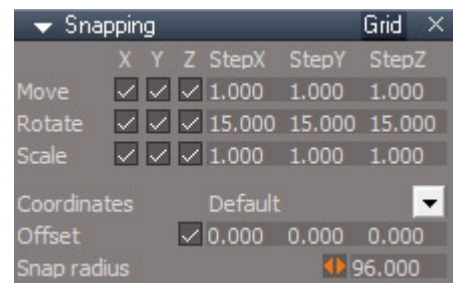
### 3.12.1 Grid Snapping



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.*

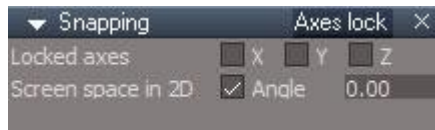
**Snap radius** – This value controls how close to a snapping grid location you need to move before snapping will take place

### 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.

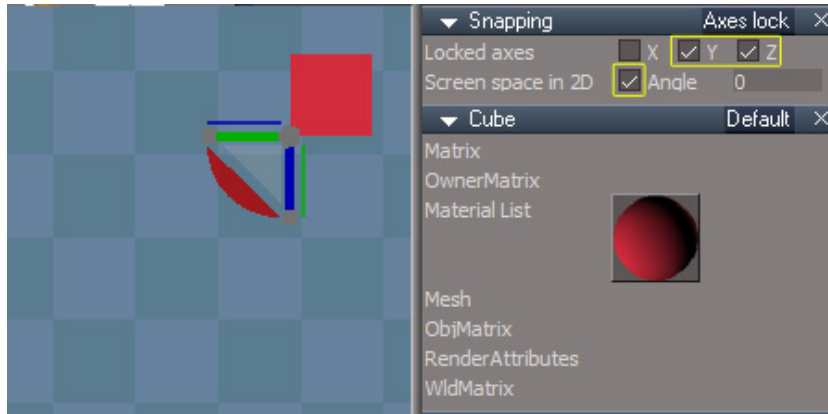
- **Locked Axes** – This locks changes in the X, Y or Z directions, and is the same as activating or deactivating the X, Y and Z locks on the main toolbar. Activating or deactivating these checkboxes will highlight or un-highlight the icon on the main toolbar, and using the icons on the main toolbar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



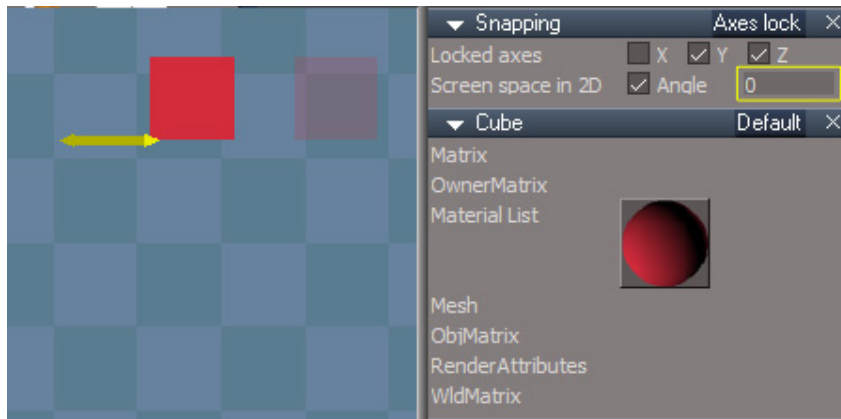
RMB open the Snapping Panel to the Axis lock aspect.

- **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.

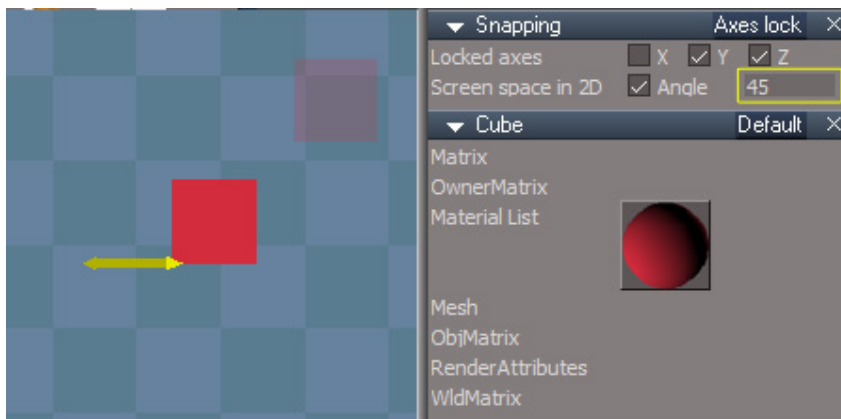
*Images and text on next page have been altered for clarity in this manual*



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.



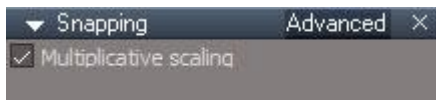
With an Angle of 0, movement occurs directly along the screen X axis, irrespective of what direction this might be in the World axis.



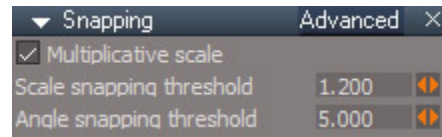
By setting the Angle to 45, clicking on the X movement axis of the widget this time moves the object along a line rotated 45 degrees.

## Advanced Aspect

This aspect lets you control snapping with the Scale tool.



*The Advanced aspect of the Snapping options panel.*



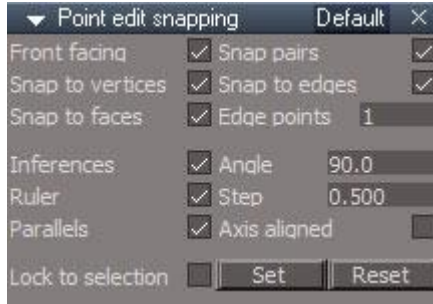
*Unofficial Update Advanced aspect of the Snapping options panel.*

- **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.*

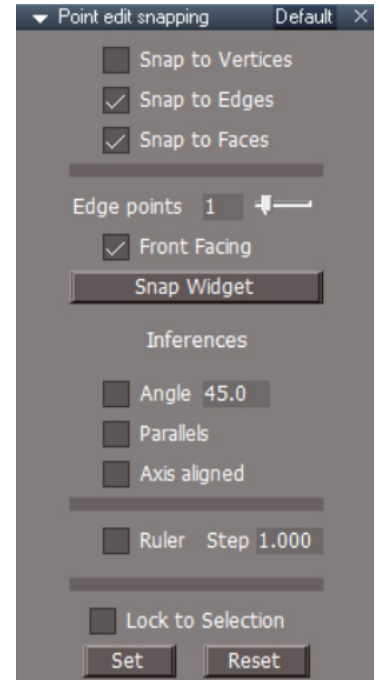
"Snap pairs" is checked to snap on elements and unchecked to snap the widget. The Inferences label only effects angle inferences.

#### Design Changes:

Moved "Edge points", "Front facing" and "Snap pairs" to an options section below the snap selection choices.

"Inferences", "Parallels" and "Axis aligned" are all inferences, so changed the "Inferences" label to "Angle". Ruler and Step effects all 3 inference methods, so moved into an options section below.

The original default aspect was renamed to "OriginalDefault".



*Unofficial Updates Default aspect of the Point Edit Snapping options panel.*

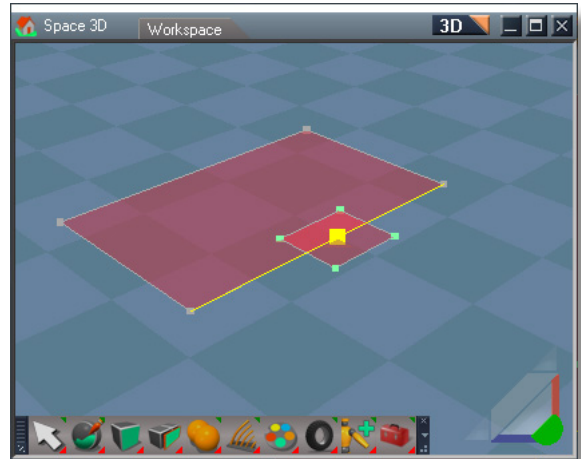
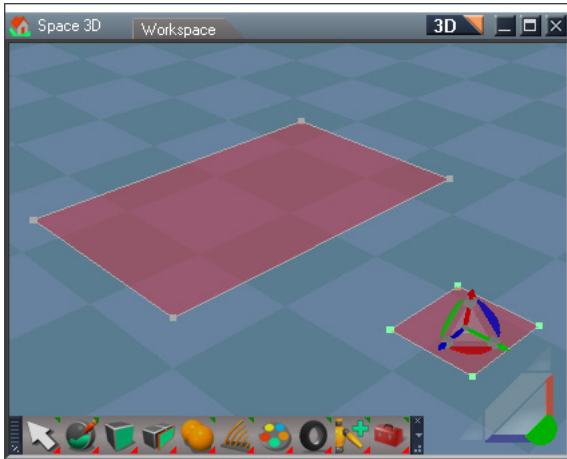
**Snap Widget / Snap Elements** – translation of the original Snap pairs checkbox.

- **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.

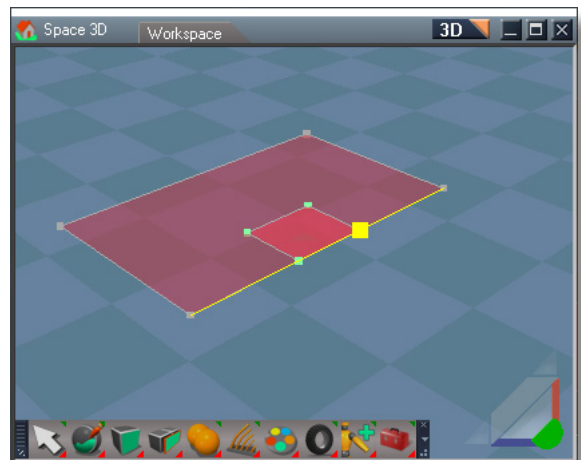
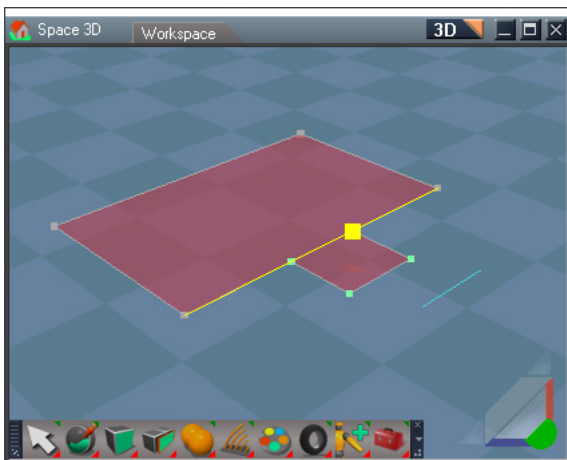


*Images and text on this page have been altered for clarity in this manual*

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 nears 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 information 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.

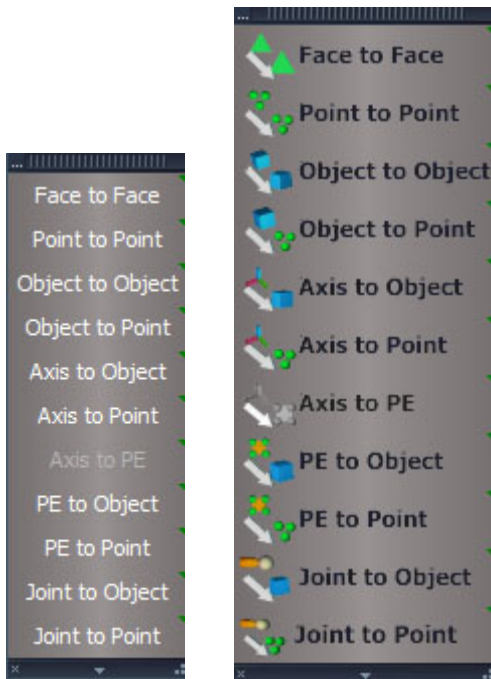
Inferences are useful when used with the drawing tools for polygons and lines and also may be useful for moving some elements around on a flat surface like after a bevel insert.



**Snapping Toolbar** - Open Snapping Toolbar.



*Snapping Toolbar – standard style*

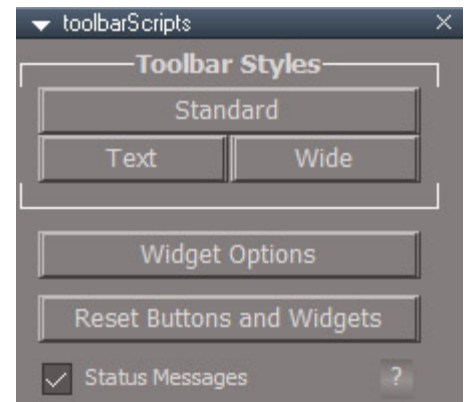


*Snapping Toolbar – text and wide styles*

**Standard** - square icon buttons

**Text** - text based buttons

**Wide** - icon plus text



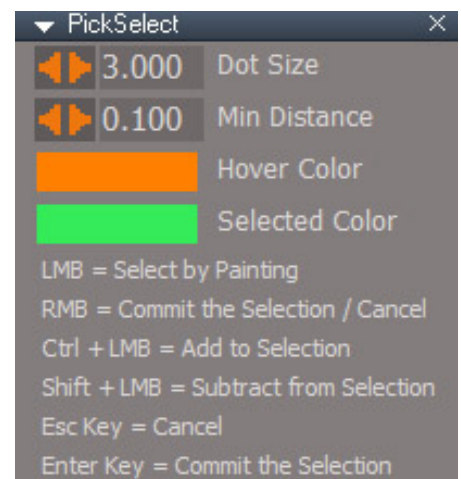
*Snapping Toolbar Options*

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

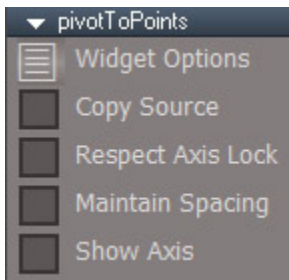
**Reset Buttons and Widgets** - clean out of sync widgets

**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**

Two additional keyboard key gestures  
 Enter Move Mouse = Commit  
 Esc Move Mouse = Cancel

**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 blue cube 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.



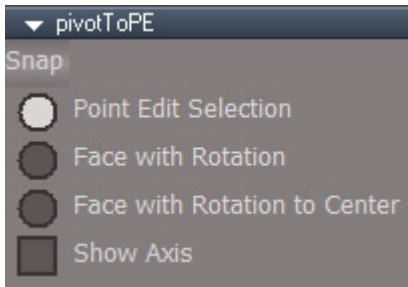
**Axis to Object** - Move the axes of an object selection to the center of a target object selection.



**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 (original trueSpace)*



Many of the scene primitive nodes have extra scrubbers for fine control of the input values.

Many of the scene primitive nodes have a button for keying purposes.

LMB - select the internal primitive node and open the keying panel.

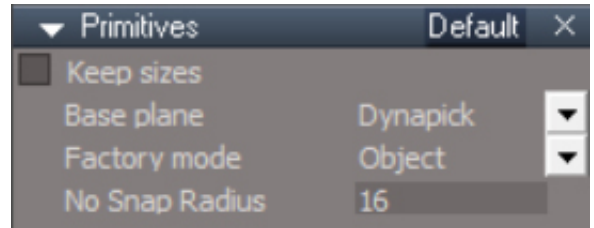
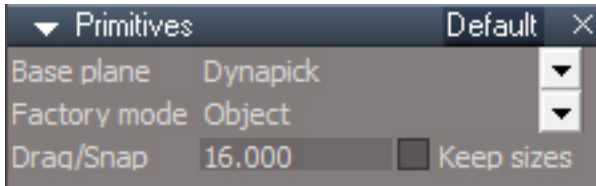
RClick items in the list and choose **add to keying template**.

RMB - select the primitive object to start animating with the modified keying template.



## 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.

 *To work around the Screen base plane 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

Sibling mode will not create anything if nothing is selected.

Cameras and lights only have Object and Sibling factory 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. Be sure to release the mouse buttons before releasing the ALT key. The Unofficial Updates adds the Shift key as an alternate to the ALT key.

*This setting does not seem to be working and the shortcut key has no effect on snapping. Using the Alt or Shift without snapping enabled shows a kind of soft face snapping behavior.*

**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

When using the boolean modes, add, cut, intersect, merge, subtract and union first 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.

Boolean modes operate on the currently selected mesh object.

Text primitive with cut mode 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.

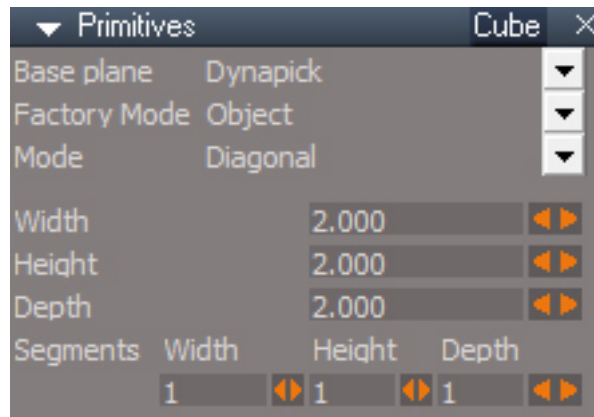
"Primitive employs extensive snapping."

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, LClick create using preset sizes

**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

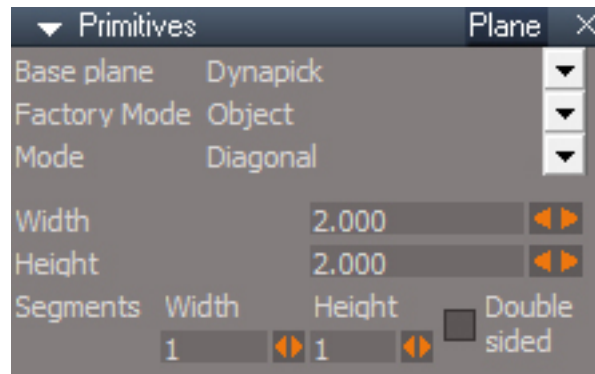
**Height Segments** - number of edges in the Z direction

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

LClick can be used to create the primitive using the preset values in a single step when in Diagonal or Edges mode.



## 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

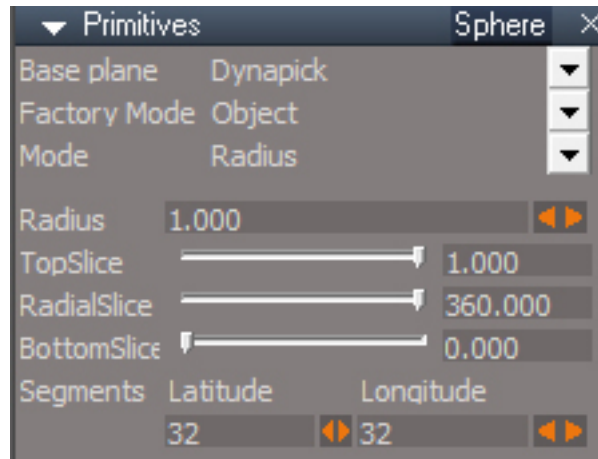
**Height Segments** - number of edges in the Y direction

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

LClick can be used to create the primitive using the preset values in a single step when in Diagonal or Edges mode.



## Sphere Primitive



## Mode

**Diameter** – define diameter for base by LDrag or RDrag sets the size.

**Radius** - define center + radius for base by LDrag or RDrag sets the size.

**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

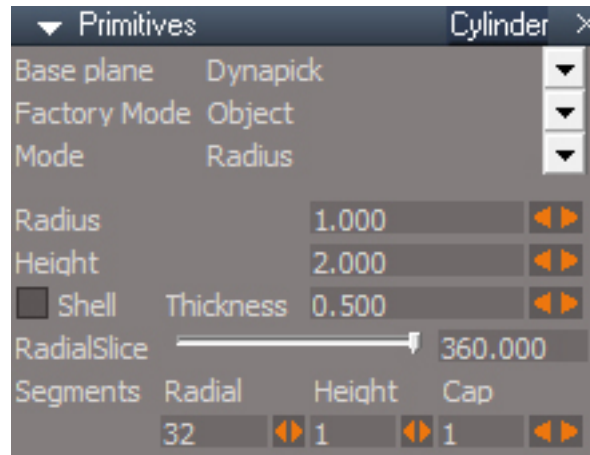
**Latitude Segments** - number of edges in the radial direction

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

LClick can be used to create the primitive using the preset values in a single step.  
RDrag can only create a sphere with a radius at least as big as the set value.



## 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

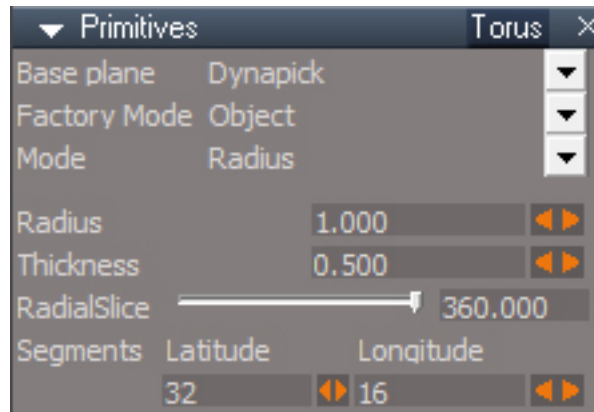
**Height Segments** - number of edges in the local Z direction

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

LClick can be used to create the primitive using the preset values in a single step.



## 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 to the center of the circular cross section

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

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

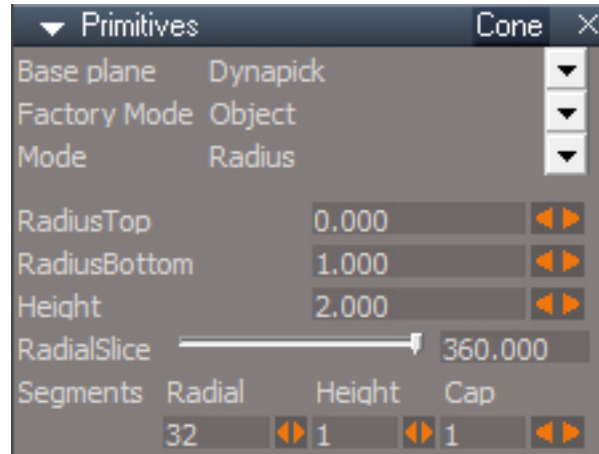
**Latitude Segments** - number of edges around the major axis

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

LClick can be used to create the primitive using the preset values in a single step.



## 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

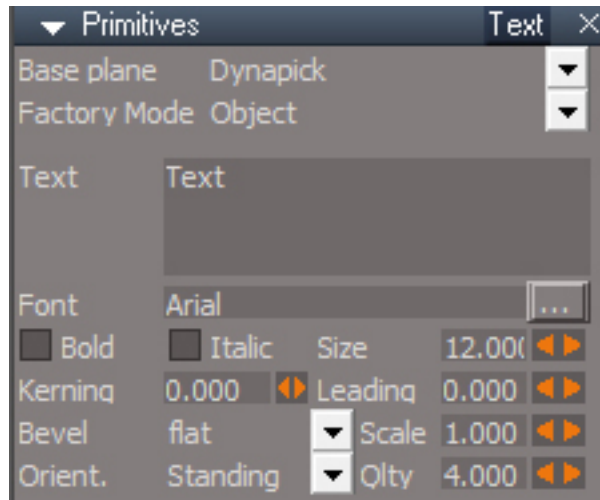
**Cap Segments** - number of edges at the bottom of the mesh, the first edge is invisible

LClick can be used to create the primitive using the preset values in a single step.





## Text Primitive



LDrag to control orientation about the local Z axis, RDrag to scale along the local Z axis. When laying down RDrag will make the text thicker, when standing the text will get taller or shorter.

**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

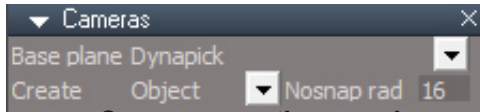
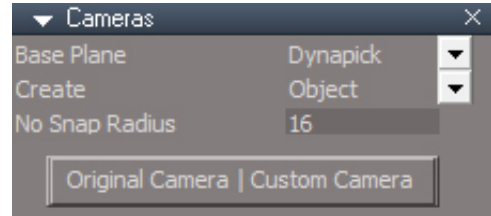
**Scale** - bevel scale, positive values effect the bevel and negative values effect the base(more or less)

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

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

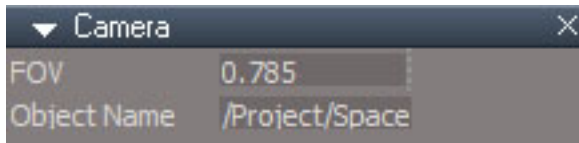
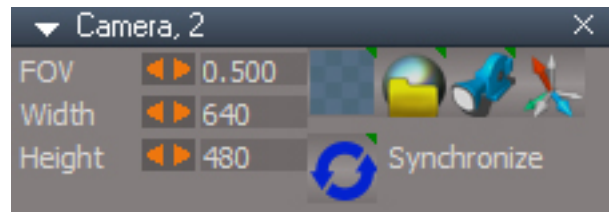
The thickness of the text depends on the bevel type.

Large values for Qlty 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.

**Cameras creation panel****Unofficial Update Cameras creation panel**

**No Snap Radius** - 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.**

**Original | Custom** - toggle creation of the full custom unofficial update camera or an original trueSpace camera. Look at the status line after pressing the button to see which type of camera will be created.

**Camera panel (original trueSpace)****Unofficial Update Camera panel**

**Camera** - Create a camera in the scene facing in the negative Y direction. The camera has a FOV of 0.5 by default.

The Unofficial Update version of the camera has extra buttons and controls and the Object Name is not shown in the panel.

The camera FOV units are in radians and is measured in the vertical direction by default. The original trueSpace default of 0.785 radians is about 45 degrees, that translates to 22.5 up and 22.5 down. The Unofficial Update camera has a default of 0.5 radians which is about 28.6 degrees, 14.3 up and 14.3 down.

## Camera Panel buttons



**Camera Window** - Open a new 3D window to the camera view and move it to the upper left 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



**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.



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



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

*Same icon as Camera*



**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(~28.6 degrees).



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.



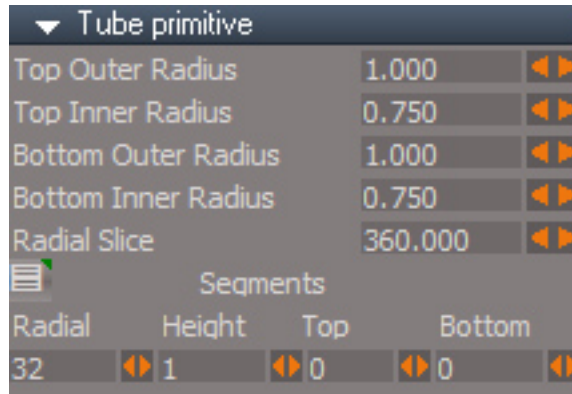
**Background Image Camera**

[More Information](#)

## 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

LClick to create the primitive using the preset values.

LDrag and RDrag have no effect.



**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

LClick to create the primitive using the preset values.

LDrag and RDrag have no effect.

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.



**NURBS Toolbar**

[More Information](#)



**Dimensions**

[More Information](#)



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# Chapter 5 SURFACING - Workspace

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## 5.1 UV Projections

### 5.2 UV Editor

navigation information missing from the original manual

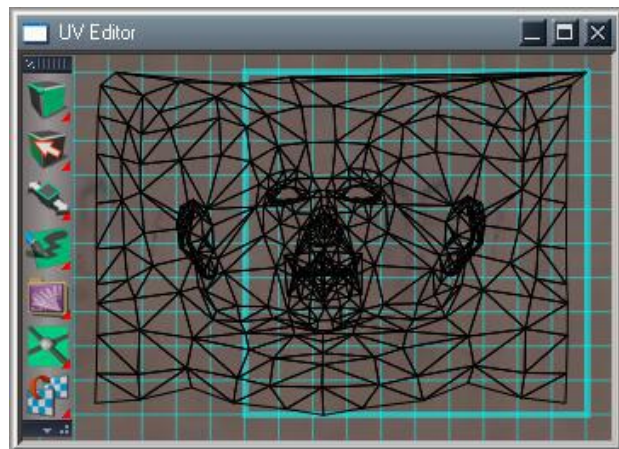
ALT + RDrag zoom

MMB click or ALT + LMB click, zoom all

#### 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**

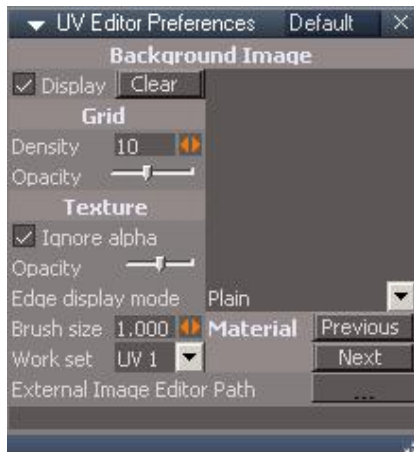
### 5.2.3 Mesh Tools



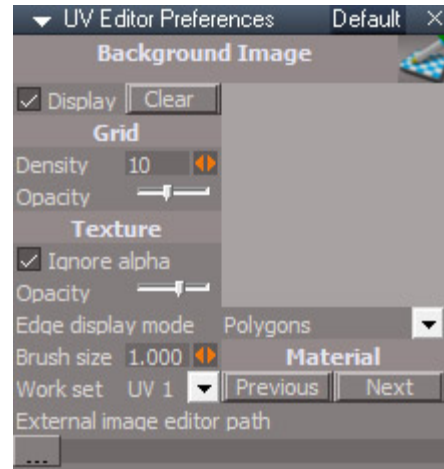
#### **Flatten Selected UV Coordinates**

This tool will not run on a triangulated mesh. At least 1 face must have more than 3 vertices. The reason for the added limitation is that running this tool on a triangulated mesh will crash trueSpace.

## 5.2.5 UV Mapping Editor Options



*Default Aspect*



*Unofficial Update Default Aspect*



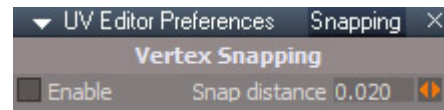
*Color Aspect*



*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

### Extra Material Tools



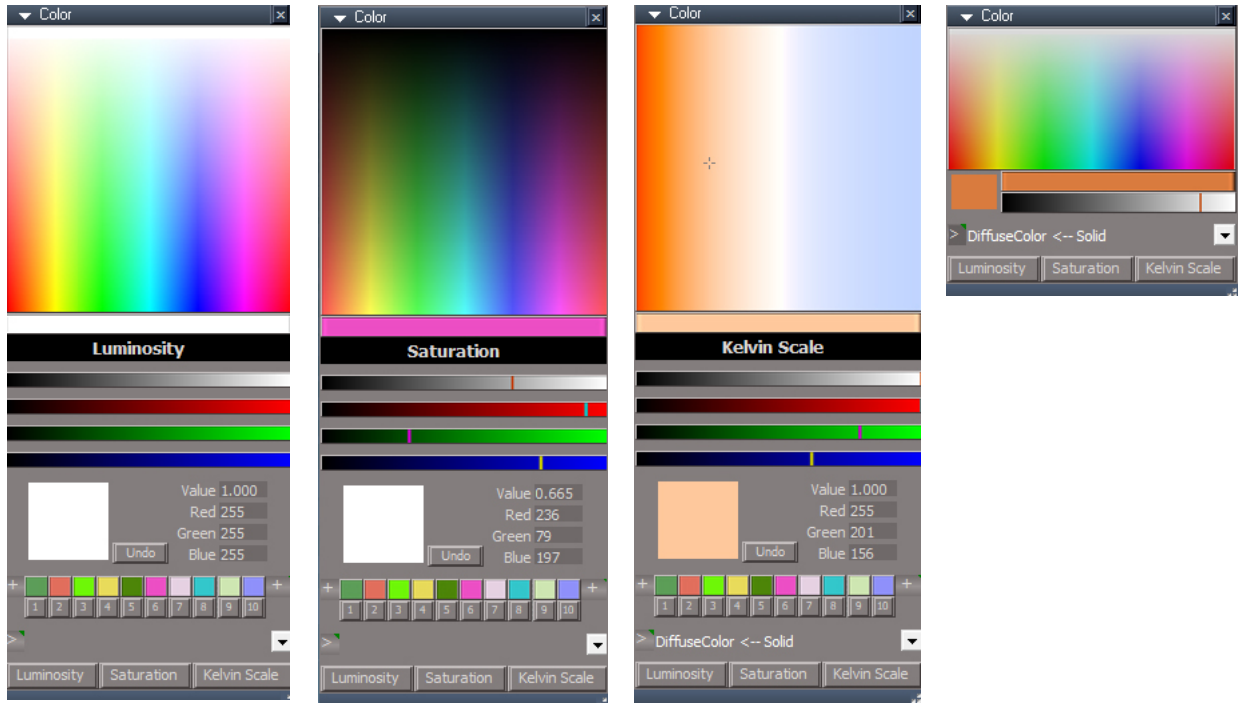
**Color Picker**



**Vertex Color Paint**



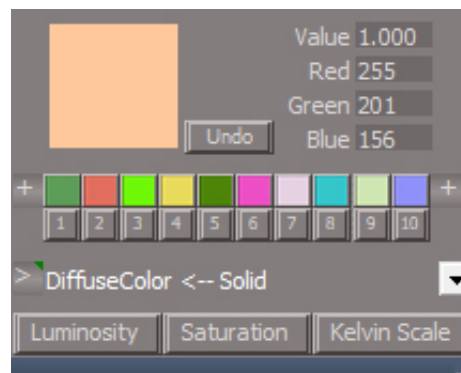
## Color Picker



click or drag in the color controls to change the color of the selected attribute on the selected object

The color bar below the main color input is read only and indicates the current color while dragging

The gray, red, green and blue bars are slider controls for their respective channels. The gray bars controls luminosity and saturation values.



**Undo** - allows a only a single undo to run. Use the normal undo button to undo color changes.

Value, Red, Green and Blue inputs are read only and do not change the color value

Click on the color swatches to assign a preset color to the object attribute. Click on the numbers to assign the current color to the corresponding swatch. Press the "+" buttons to randomize the color swatch values.

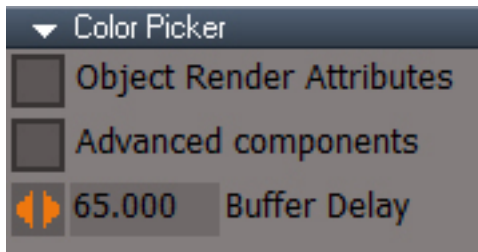
> - LMB switch between the large and small color picker panels. RMB open the link editor to the node that has the selected color attribute

The drop down contains a list of all the color attributes of the selected object. With default options there is usually only one or two items in the list

**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 physical meaning, brightness slider.



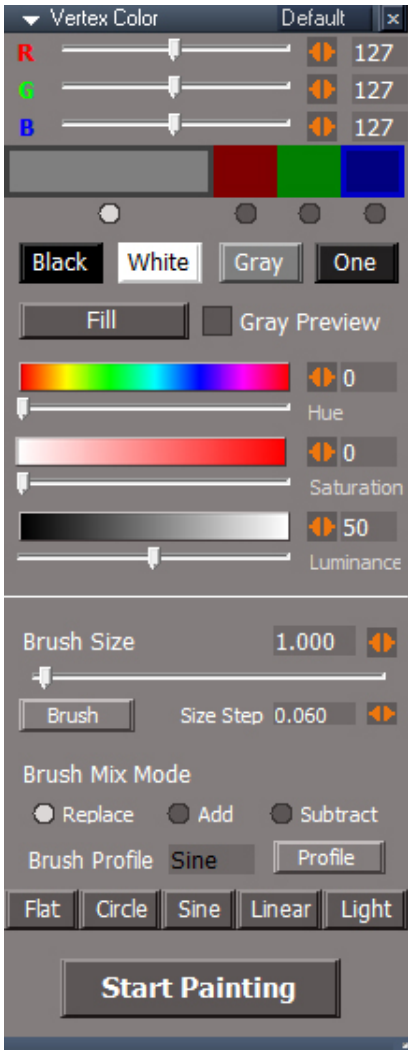
**Object Render Attributes** - include the render attributes points, edges and overlay colors

**Advanced components** - will show all color attributes including those that do not contribute to the material

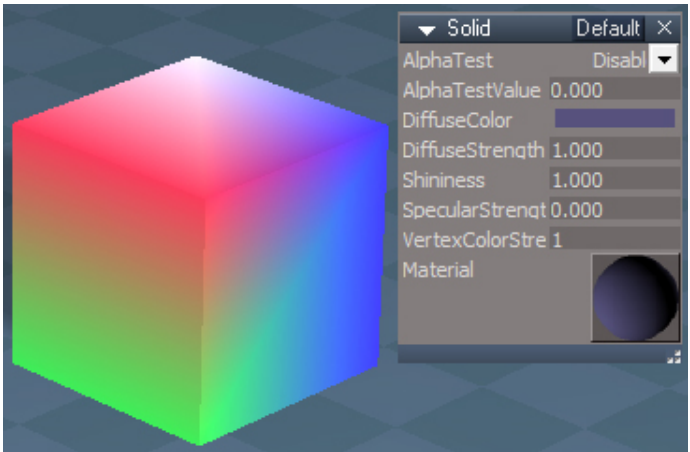
**Buffer Delay** - controls the speed of the color picker, lower values are faster and less reliable for undos



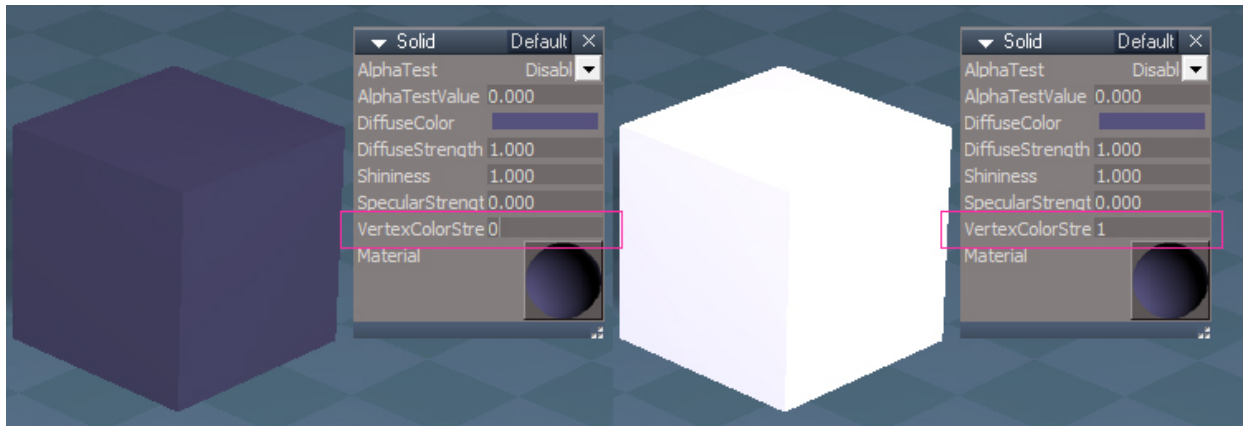
**Vertex Color Paint**



*Vertex Color Panel*



*Vertex Colors*



*Solid color material with 0 vertex color strength (left) and 1 vertex color strength (Oops, panel positions are reversed)*

The first step is to assign a material that uses vertex colors.

The default solid color material has access to vertex colors. This can be assigned by RMB reset on the Material Editor sphere. To see the vertex colors increase the value of the "VertexColorStrength". The "DiffuseColor" can be darker to increase the vertex color effect or black to see only the effect of the vertex colors.

The "Materials - DX9" library also has D3D Vertex material, DX9 Vertex Color, DX9 Vertex Constant Color and Solid Transparency Vertex materials.

**R G B** - set red, green and blue values.

radio buttons and color indicators for selection of full color paint or red, green or blue only.

**Black, White, Gray or One(1,1,1)** Preset Colors - Black, White, Gray or very dark color values.

**Fill** - fill the selected object with the current color. This fill button only works when the brush is inactive.

Use the **"F"** key fill shortcut when the brush widget is active.

**Gray Preview** - when painting in single color mode only the selected color channel will show and it will show as a grayscale display.

**Hue Saturation Luminance** - set HSL color values.

**Brush Size** - size of the paint brush in local coordinates of the mesh. The brush size can also be controlled by RDrag up and down over the mesh object.

**Brush** - open the Vertex Color Brush panel

**Size Step** - amount to change the brush size with each press of the toolbar button.

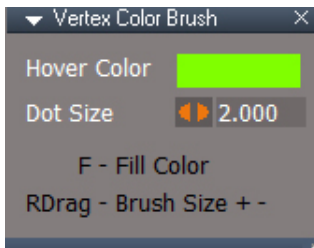
Brush Mix Mode - **Replace**, **Add** and **Subtract**. The color fills quickly so use very small (dark) color values should be used for Add and Subtract modes.

**Brush Profile** - shape of the brush effect Flat, Circle, Sine, Linear and Light.

**Profile** - open the brush profile panel

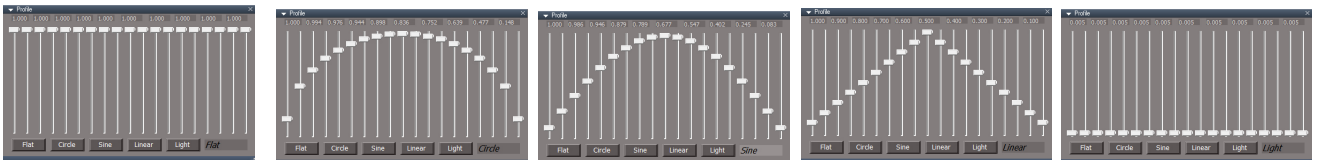
A custom profile can be created in the Profile aspect panel.

**Start Painting** - begin the paint process. The first item you paint on will be the object to receive the colors. If the object does not have any vertex colors, a black color will be assigned to all the vertices of the mesh.



**Hover Color** - color of the dots showing the brush size.  
**Dot Size** - size of the brush dots hover effect.

Widget controls are set before invoking the paint tool.



**Brush Profile Preset shapes - Flat, Circle, Sine, Linear, Light**

The Light profile can be used with the Brush Mix Modes of Add and Subtract.

The sliders work in pairs to define a custom profile for the brush. The numbers left to right are the center to outside values.



**Bone Weights** - press to assign random vertex colors based on the influence of each bone in an actor.

Set Vertex Colors based on UV values:

**Axis** - the direction to create a vertex color gradient. U direction, V direction or both U and V directions

**Channel** - read values from UV channel 1 or 2.

**U Color** - color channel to use in the U direction gradient red, green or blue.

**V Color** - color channel to use in the V direction gradient red, green or blue.

**UV** - press to create the vertex colors on the selected mesh object.

Set Vertex Colors based on Bitmap color values:

**Channel** - read values from UV channel 1 or 2.

**Node** - full path to the node that has the bitmap data connector.

**Get Source Node** - copy the selected node path to this input and guess the bitmap connector to use.

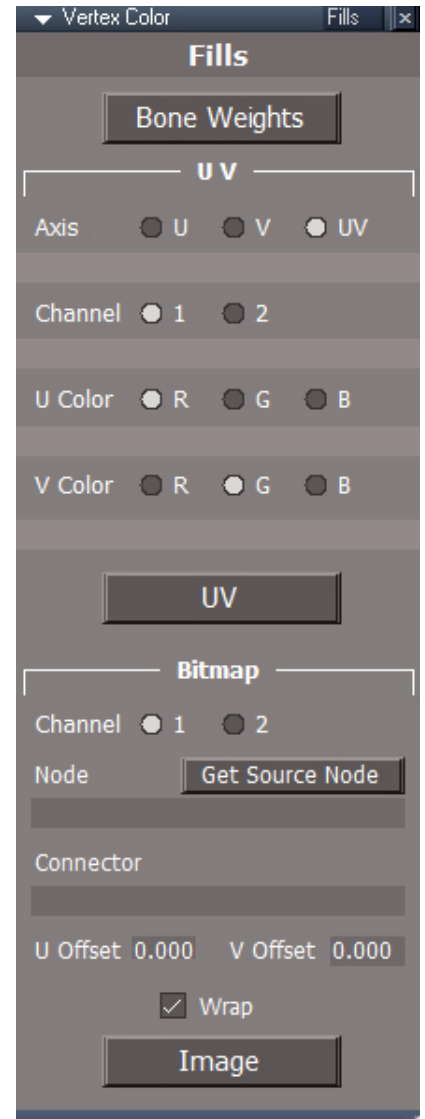
**Connector** - the node connector that has the bitmap data.

**U Offset** - sample the bitmap using an offset in the u direction.

**V Offset** - sample the bitmap using an offset in the V direction.

**Wrap** - wrap the uv values to the 0 - 1 space. When false the u and v values will be clamped to the 0 - 1 uv space.

**Image** - press to copy the bitmap image colors into the mesh vertices



## Vertex Color Notes:

Editing a mesh can remove vertex colors. Once vertex colors are assigned do not add any new geometry to a mesh.

Set Mesh Editor Settings Autotriangulation to "None" before reshaping a mesh that has vertex colors.

The vertex colors can be fed into the vertex shader nodes position, normal and tangent inputs. The normal and tangent values are normalized when retrieved. Meaning something like a very dark red would be normalized to the brightest red value. Pure white would normalize down to a medium gray.

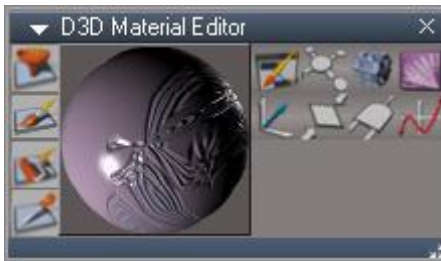
Vertex colors are not available in the constant shader. The normalized colors can be accessed by piping the color into the normal or tangent, but these values would be normalized.

Vertex colors are not available in any of the base, non-compound, texture materials.

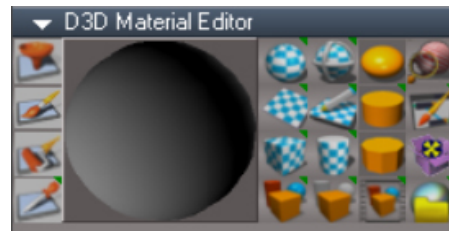
Vertex colors only work with D3D renders. It does not work with Lightworks, V-Ray or YafaRay renderers.

## 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**



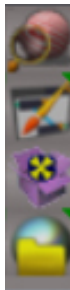
**Autofacet Normals**



**Facet Normals**



**Render Animation**



**Materials List**



**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.*

Left-click on any face using a particular material you want to make active in Material Editor.

Left-drag to select an object

Right-drag to open the selected material in the link editor and exit the inspect tool

Shift + move mouse to open the scene in the link editor

RClick Inspect Material icon or LClick Edit Material in the Link Editor icon

Edit - Inspected Material in the Link Editor must be enabled

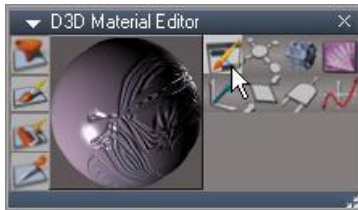
Or use the Inspect Material widget shortcut

LClick Inspect

RDrag Open the Material in the Link Editor

## Advanced Editing Tools:

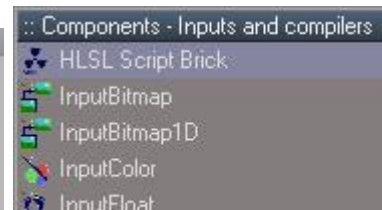
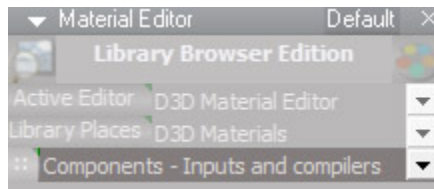
- DX Edit.



*Edit DX Materials in the Link Editor*

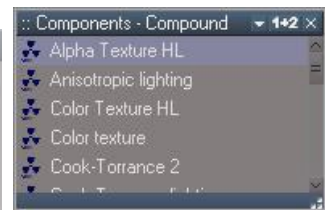
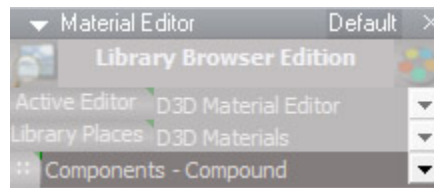
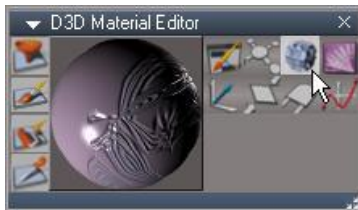


- DX Components Inputs and Compilers.



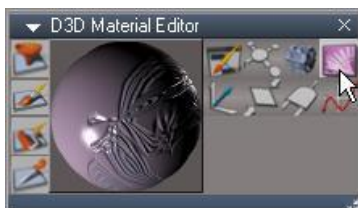
*Opens DX Components Inputs and Compilers bricks library*

- DX Components Compound.



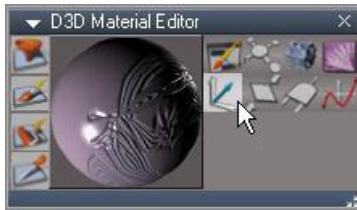
*Opens DX Components Compound bricks library*

- DX Components Texturing.

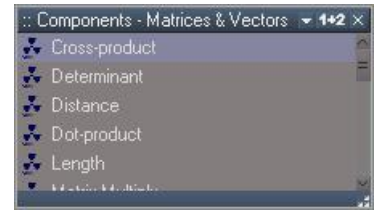


*Opens DX Components Texturing bricks library*

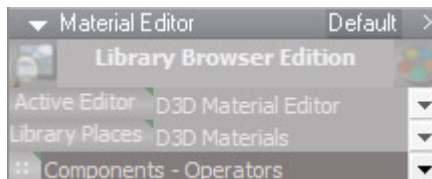
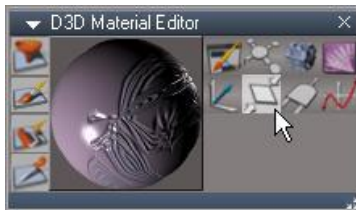
- DX Components Vectors.



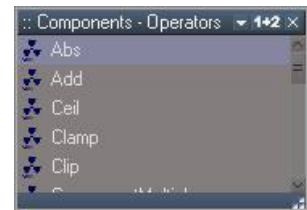
*Opens DX Components Vectors bricks library*



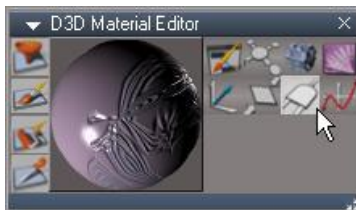
- DX Components Operators.



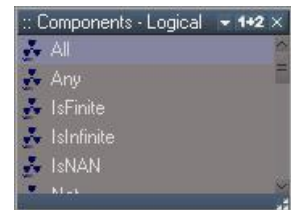
*Opens DX Components Operators bricks library*



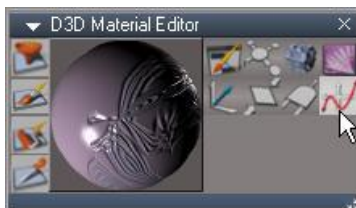
- DX Components Logic.



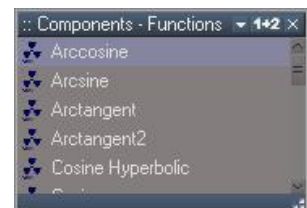
*Opens DX Components Logic bricks library*



- DX Components Functions.

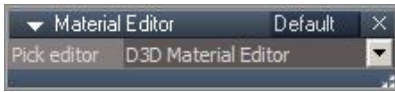


*Opens DX Components Functions bricks library*



## Material Editor Settings:

- Default Aspect:



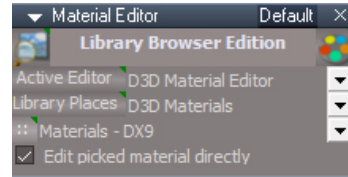
*Default Aspect*



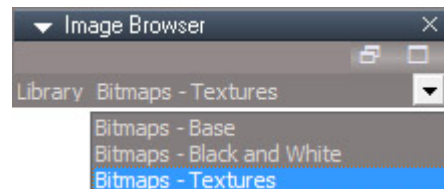
**Image Browser** – open image browser.  
Open a library by selecting one of the options in the dropdown.



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



*Unofficial Update Default Aspect*



**Active Editor** – Right click to Reset the Active Editor

**Library Places** - Right click to Update - Library Places

**[::]** –

LMB saves the 2D aspect state

RMB saves the 1D + 2D aspect state

saves the current floating panel Aspect(2D or 1D 2D), Height, and Thumbnail size

Active Editor - List of Material Editors

D3D Material Editor

Vray Material Editor

If you have Vray Installed and Loaded then the option to use it will show in the Active Editor

Library Places - List of Library Places

D3D Materials

Main Library Place

**[::]** - List of Libraries

D3D Materials is a filtered list of the default trueSpace libraries

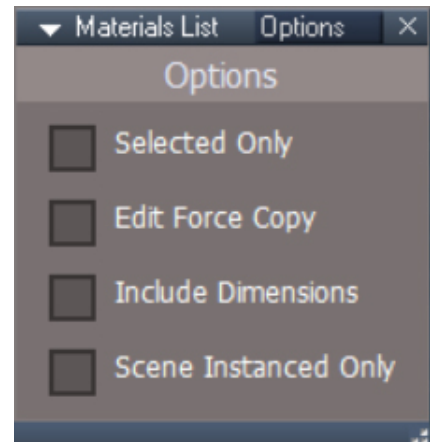
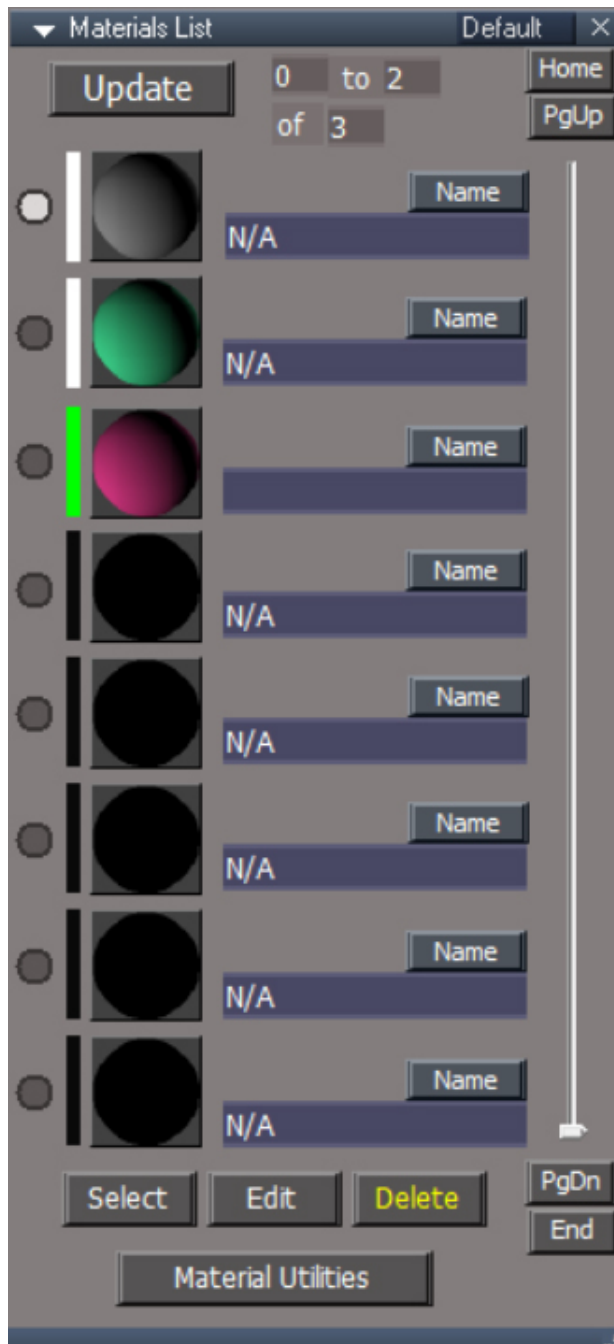
When you Update the Library Places all of your current libraries will show in the List of Libraries

You will need to Update the Library Places after resetting the Default Context or adding Libraries or Library Place

Tip: After setting the floating panel and Library Places, switch to the Advance aspect and press the Save - Material Editor button



## Materials List:



Options:

**Selected Only** - only show materials for the selected objects

**Edit Force Copy** - when Edit is pressed force the creation of a new material, otherwise use the corresponding material editor settings.

**Include Dimensions** - include the materials of dimension objects

**Scene Instanced Only** - get the list directly from the scene 'Materials' encapsulator.



## Controls:

**Update** - update the list with any changes to the materials. If nothing is selected the first item in the scene will be selected first.

**Home End** - move to the beginning or end of the list

**PgUp PgDn** - move through the list one page of 8 items at a time.

Row details - left to right

**Active** - select a row for Select, Edit and Delete operations

Status Color -

White is no material instancing

Green is scene instanced material

Yellow is scene instanced material not assigned to anything in the scene

Black is no material

Material Preview

**Name** - add/assign a name to the material node. Type the name below then press to make it happen. Must be pressed after typing a new name

**Name Input** - will show as "N/A" if the material does not have a name and will show as "NULL" if the name has no value

Bottom Section

**Select** - select the objects that use the selected material

**Edit** - edit/load the selected material into the material editor.

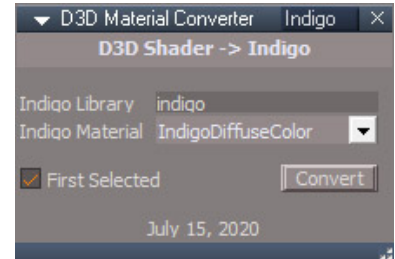
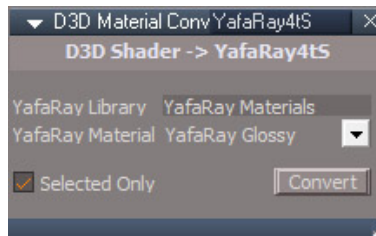
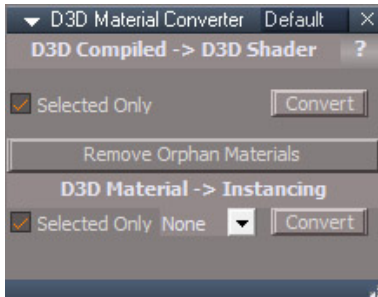
**Delete** - delete the selected scene instanced material that is not assigned to any object (Yellow status).

**Material Utilities** - open the material utilities panel

## Notes:

is most useful for scene instanced materials or scenes with a small number of renderable objects not compatible with object instanced materials  
materials must be in material list form - "Material List" node contains the material nodes  
use the Material Utilities to convert  
the top of the panel will show how many materials were found and the index range of the currently displayed materials. The indices start at 0.





### D3D Material Converter:

**D3D Compiled → D3D Shader** – converts materials from a closed compiled(base object) format to an open(compound object) 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 contains the Yafaray materials within the Main Library Place, Rs Main Libraries.

**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 base material to compound 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. This tool does not convert materials



may be unreliable when used with instanced materials



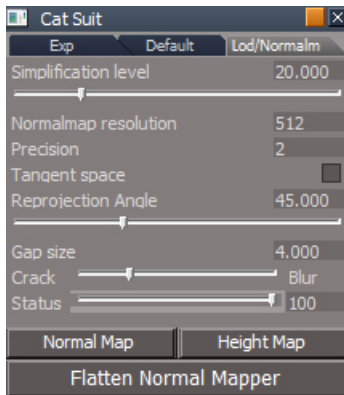
all d3d material converter functions will erase undo history

### 5.6.1 Simplify Meshes for Normal Mapped Objects



Welding has been brought up to the objects top level simplification lod panel and a **Flatten Mesh** button has been added.

### 5.6.2 Generating Normal Maps



Added Normal Map, Height Map and Flatten Normal Mapper buttons.

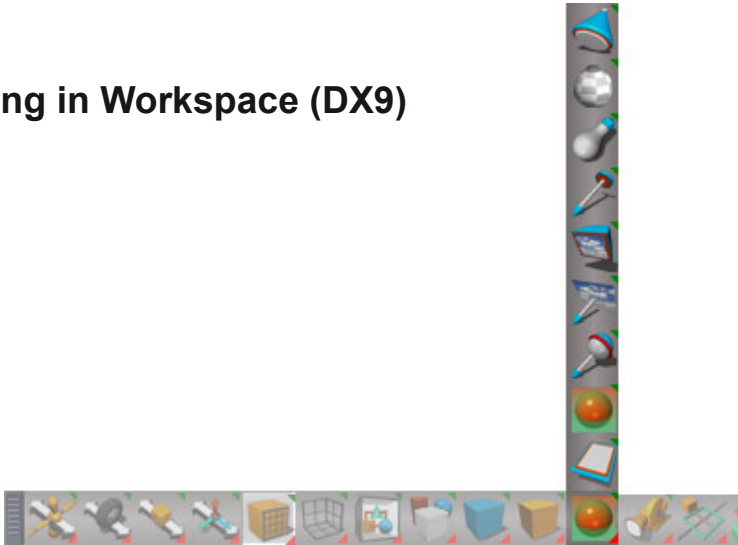
**Normal Map** - select the normal map bitmap node.

**Height Map** - select the height map bitmap node.

**Flatten Normal Mapper** - flatten the mesh.

# Chapter7 Lighting and Rendering

## 7.1 Lighting in Workspace (DX9)



### 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 has values 1.0 and up

**Saturation** – bottom scrubber range has values from 0.0 to 1.0

Intensity and Saturation are mutually exclusive controls. Only use one or the other.

**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.

**Color Picker** – open the color picker small aspect

### 7.1.1 Real-time Light Types

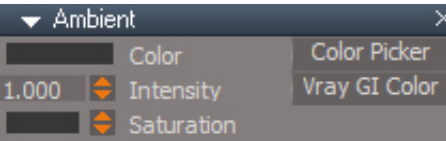


**Ambient light** Ambient light provides equal lighting conditions for every pixel of the scene.



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

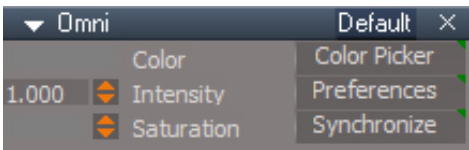
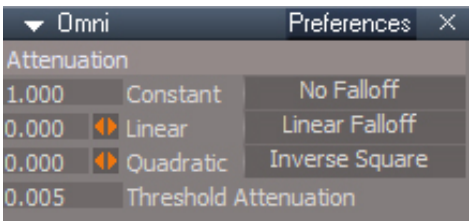
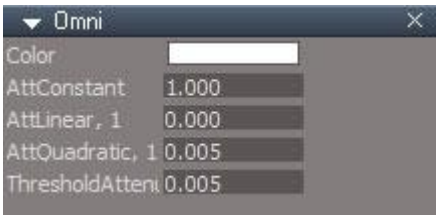
**Vray GI Color** – copy the color of the light to the vray environment color and activate the global illumination



*Unofficial Update Ambient Light*



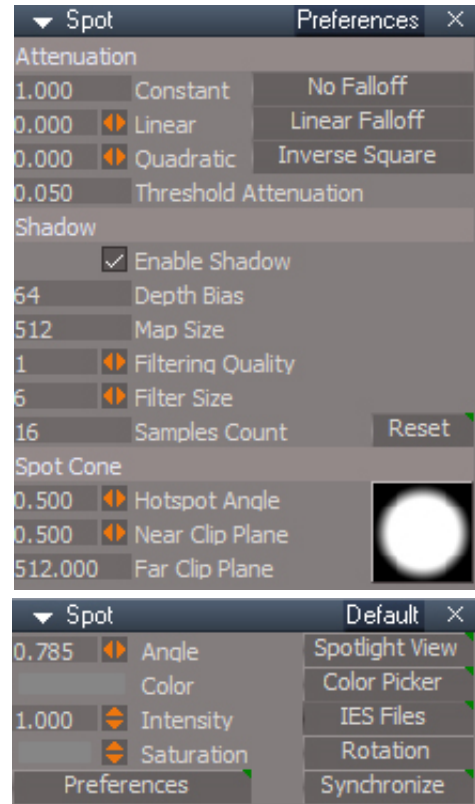
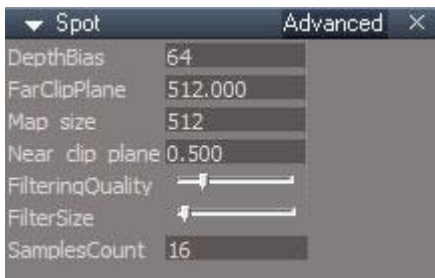
**Omnidirectional light**




*Unofficial Update Omni Light*



## Spotlight



*Unofficial Update Spot Light*

 Select the light and then ctrl + right click on it to open a floating panel.

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

**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.

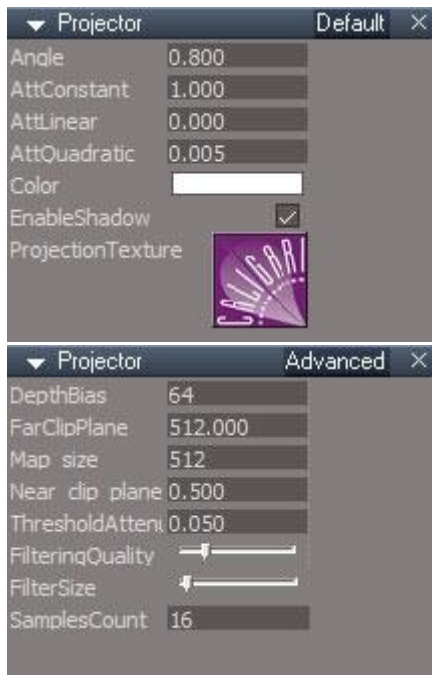
**IES** – opens the Convert Spot to IES panel

 [More Information](#) 

**Spotlight View** – LMB will set the main 3D window to a spotlight view. RMB open a new 3D view from the spotlight.



## 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 [More Information](#)

**Projector View** – LMB will set the main 3D window to a projector light view. RMB open a new 3D view from the projector light.

**Cone** – switch the projection between a square and circular shape. LMB=Cone, RMB=Square



*Unofficial Update Projector Light*

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

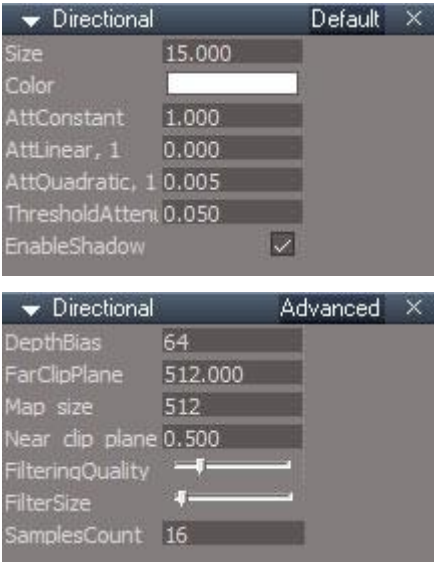
**Frame** – current frame number for the image sequence. The Frame value can be animated in the timeline.

**Activate** – activates the image sequence

**Keying Panel**– open keying panel



Directional light



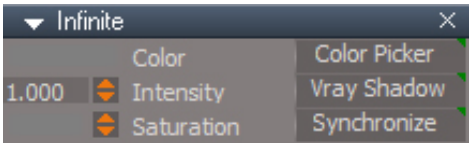
Unofficial Update Directional Light

**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

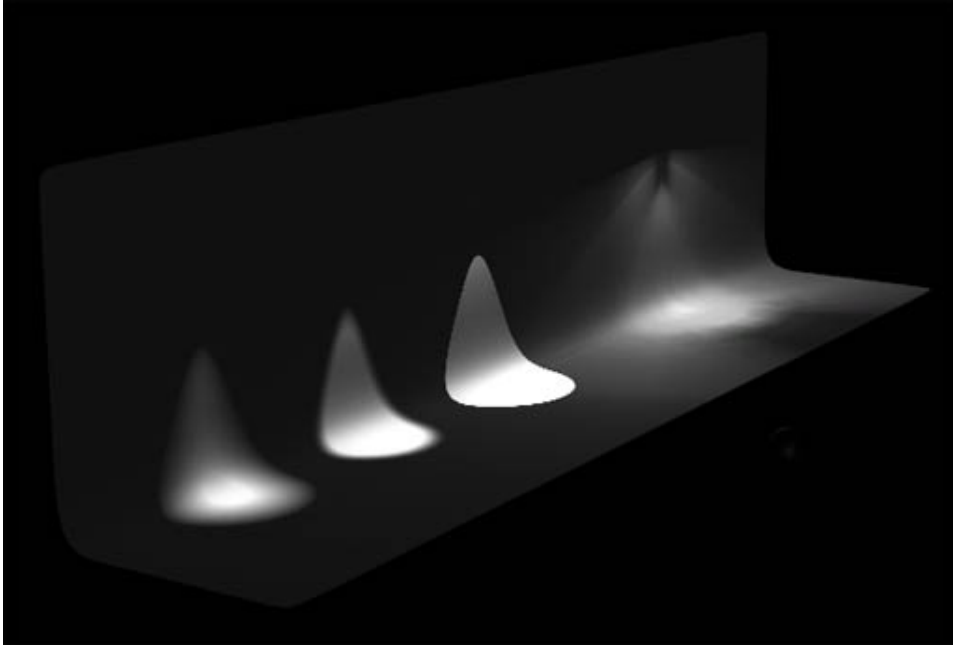


Unofficial Update Infinite Light



## 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*

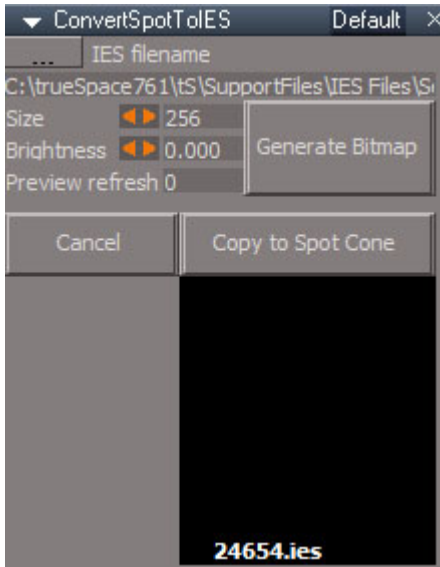
Both the IES Profile and Spot Cone alter the mask used by a spotlight that gives the light its circular shape. The Spot Cone alters the mask so that the spotlight angle and hotspot angle are used to generate the mask. This mask only effects how the spotlight looks in a D3D viewport.

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.

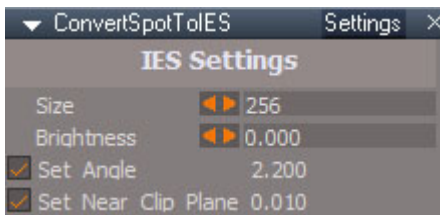
Push the **IES filename(...)** button to choose an IES file

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.

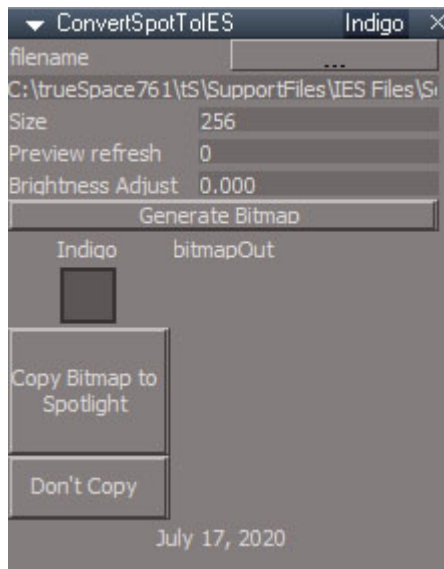
**Set Near Clip Plane** – small value results in better lighting of nearby surfaces parallel to the light orientation



**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)



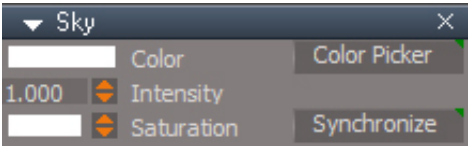
*Indigo compatible IES generator panel*

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*



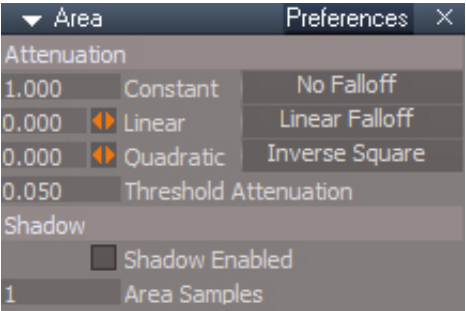
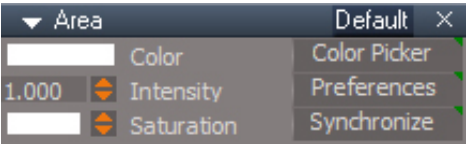
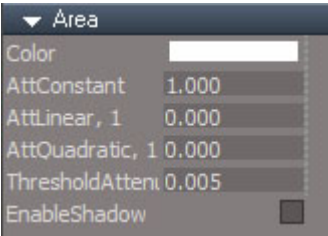
**Sky**



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

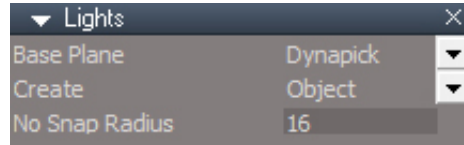


**Area**



Area Samples – unused

*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.


**i** *To work around the Screen base plane 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.*

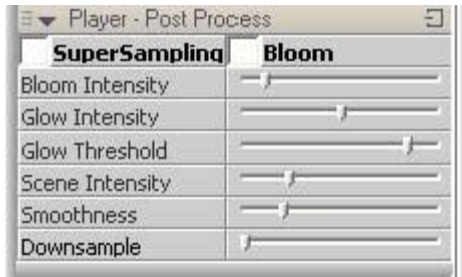
## Create mode

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

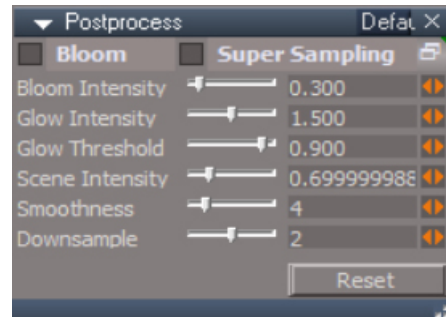
**Sibling** - create a grouped relationship with the selected item as children of the same group object

### 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.*

**Button** - LMB floating/ RMB stack

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

Scene Intensity value below 100 will have normal behavior

Scene Intensity to 100 - 199 to get only the bloom, which is really a blur

Scene Intensity to 200 - 299 to get alpha values as gray color

Scene Intensity to 300 - 399 to get a color key based glow

Scene Intensity to 400 - 409 tint

Scene Intensity to 410 - 419 vignette 1, squared corners

Scene Intensity to 420 - 429 vignette 2, rounded corners

Scene Intensity to 430 - 439 vignette 3, circular shape

Scene Intensity to 500 - and up pixelate

The value is offset by the range of values used: 301 is for glow 300 plus a Scene Intensity = 1

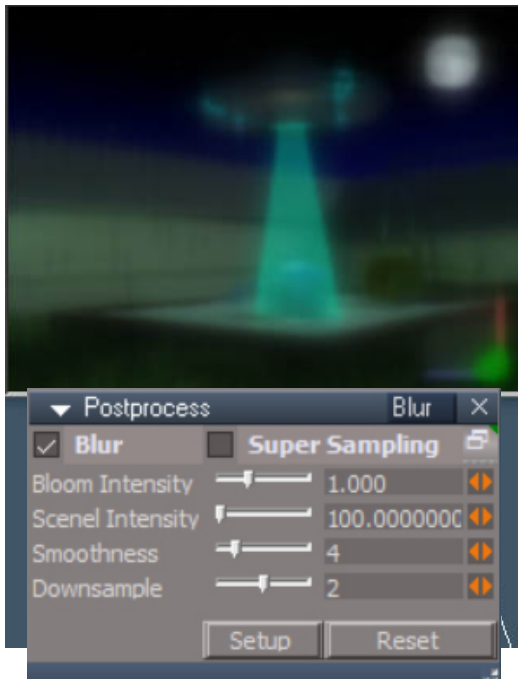
Any final color output within 10% of the glow postprocess color key value will glow



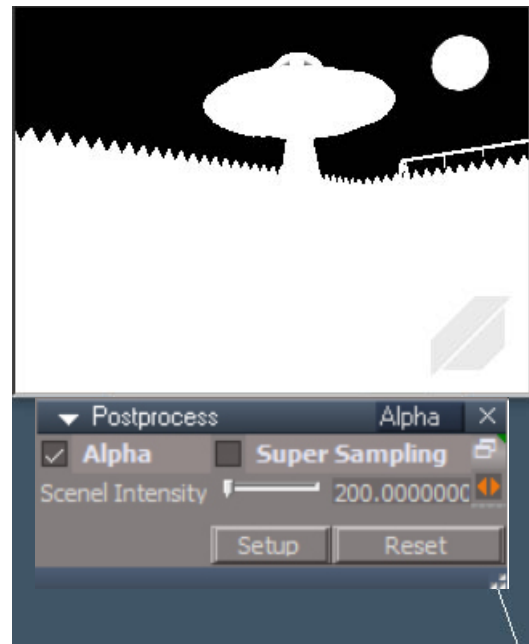
*Post-processing panel in the default state - Off.*



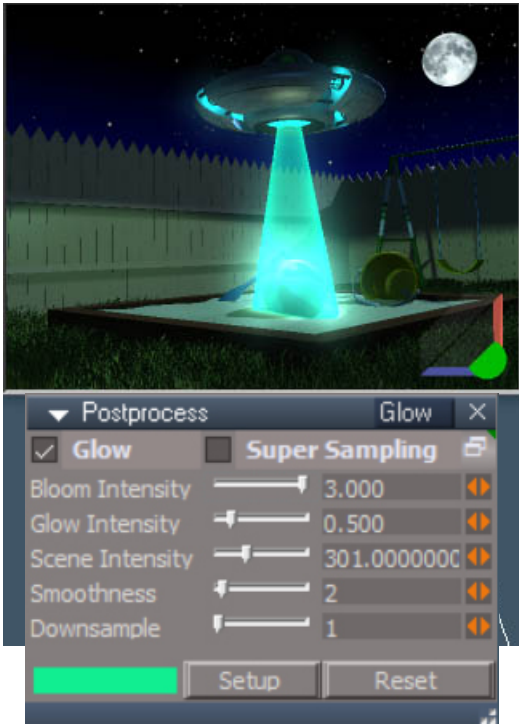
*Post-processing panel in the default state - On.*



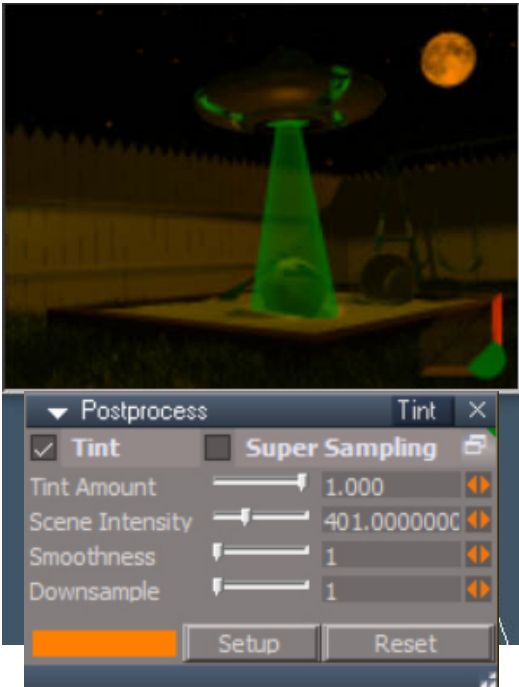
*Post-processing panel Blur.*



*Post-processing panel Alpha.*



Post-processing panel Glow.



Post-processing panel Tint.



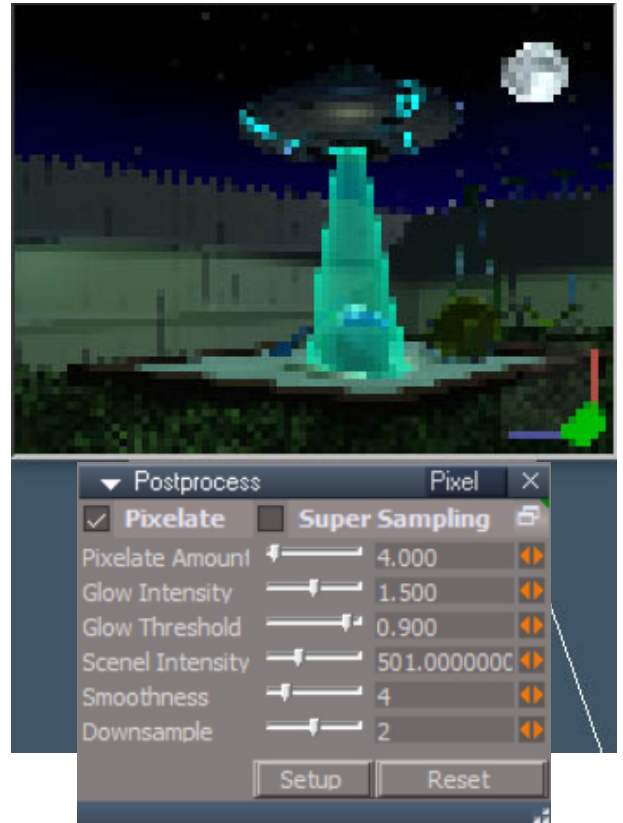
Post-processing panel Vignette 1.



Post-processing panel Vignette 2.



*Post-processing panel Vignette 3.*



*Post-processing panel Pixelate.*

The 3 vignette images come from a blank scene in order to show the effect more clearly.

#### Usage:

- activate/select a 3D view
- press the Options button on the Postprocess panel
- if the panel does not open select the window again and press the button a second time (tS bug)
- choose the panel aspect to use
- press the Setup button and turn on the effect
- for tint and glow choose a color and press the Set Color button

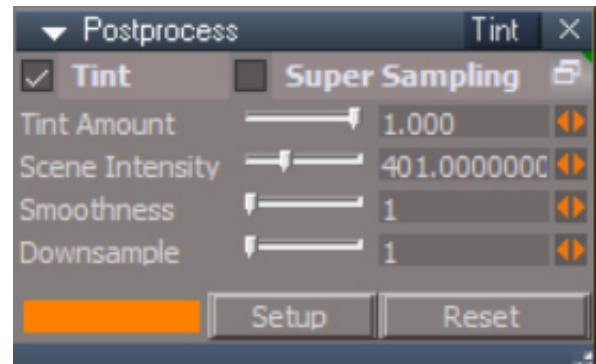
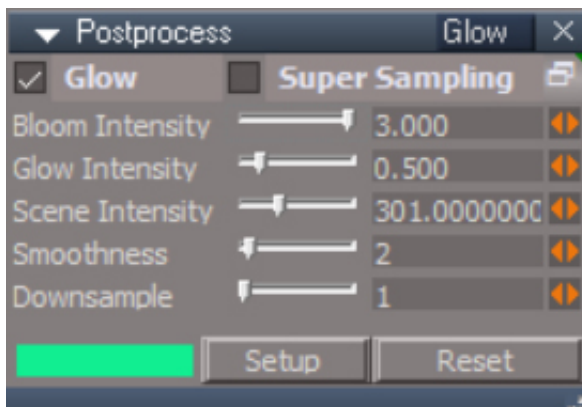
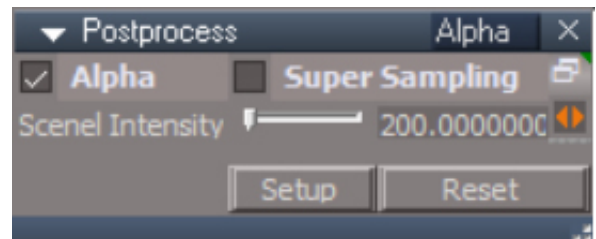
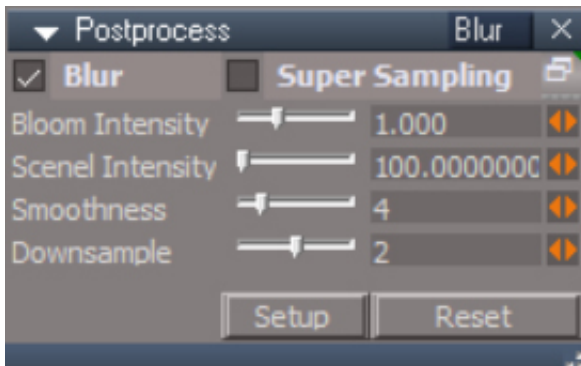
Glow works best with Constant Color shaders - easier color matching

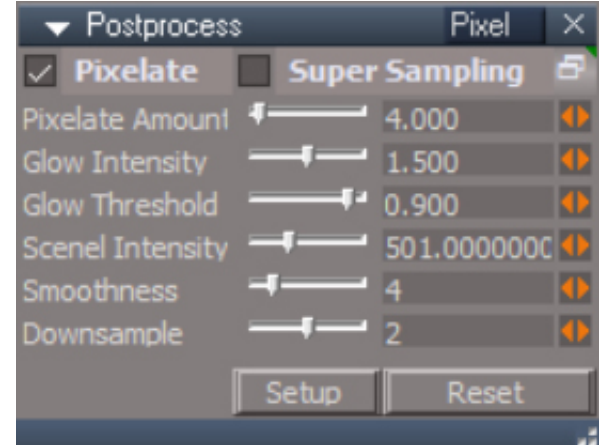
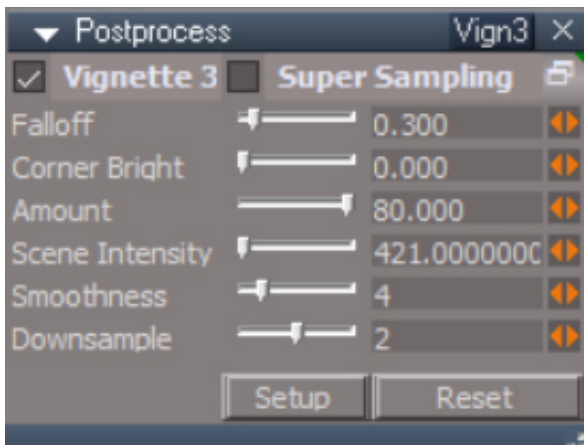
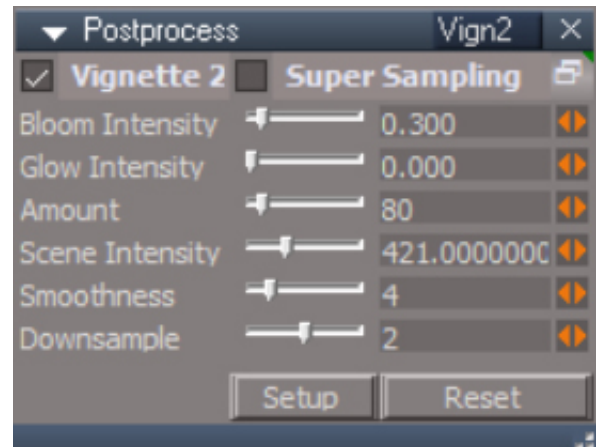
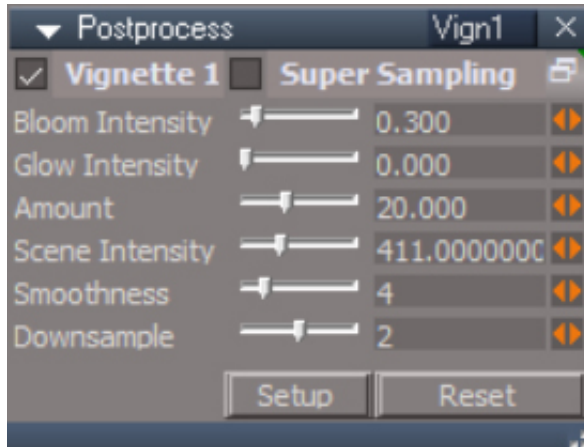
Blur has no control for blurriness except for downsample and smoothness



The alpha option needs a mesh background with an alpha material to work.

a large inside out sphere centered in the scene works well for the background mesh  
 assign a blank d3d material with a Constant Alpha shader or Alpha Blend with both values 0  
 constant alpha = 0  
 alpha test set to opaque  
 alpha test value = 0





The alpha option, Scene intensity=200, needs a mesh background with an alpha material

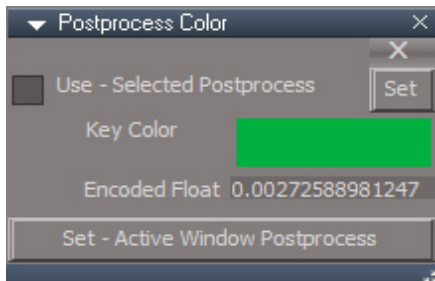
A large inside out sphere centered in the scene works well for the background mesh  
assign a blank d3d material with a Constant Color shader

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 Posprocess 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.



**Scene Animator FX**

[More Information](#)

### 7.1.7 Real-time Render To File



RMB opens an explorer window to the render file path



D3D Render [↗ More Information ↖](#)

## Offline 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

The Unofficial Updates comes with hooks for the YafaRay Render engine installed. YafaRay can be installed anywhere on the machine. If it is placed in one of the predefined locations it can be found via the options setup panel automatically. See the Unofficial Update installation instructions for more details or activate the YafaRay renderer and open the help file from the toolbar.

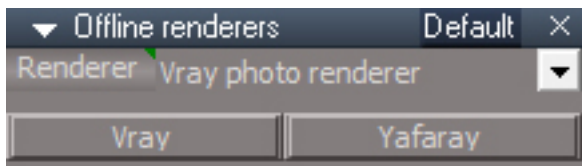
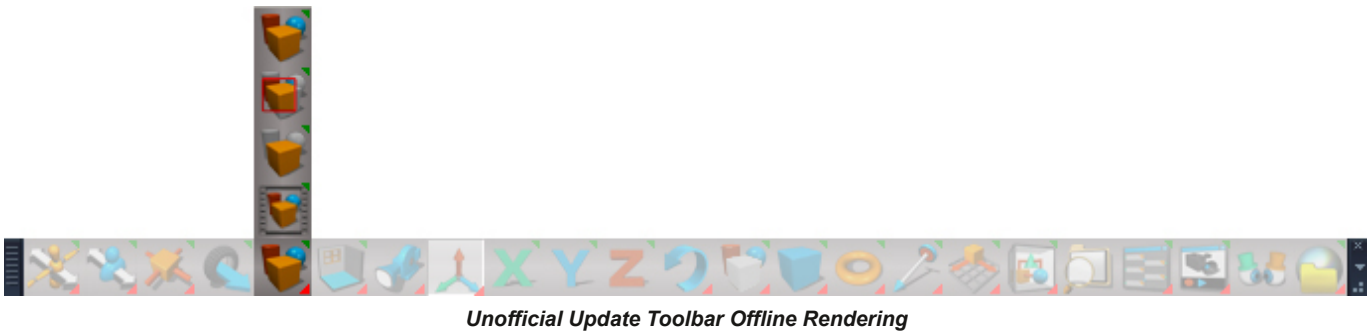
### **Predefined YafaRay installation locations:**

C:\Program Files\Bforartists 1.0.0\2.79\scripts\addons\yafaray\_v3\bin\yafaray-xml.exe

C:\Program Files\Blender Foundation\Blender\2.79\scripts\addons\yafaray\_v3\bin\yafaray-xml.exe

C:\Program Files\yafaray\_v3\bin\yafaray-xml.exe

C:\Programs\yafaray\_v3\bin\yafaray-xml.exe



RMB on all offline render buttons will open the render preferences for the active render engine and a panel for selecting the current renderer.

## Red Toolbar Render buttons [More Information](#)

Render to File for Activities, Timers, and Scripts

## Chapter 8 - Character Editing

## 8.1 Character Editing Introduction



## 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.*



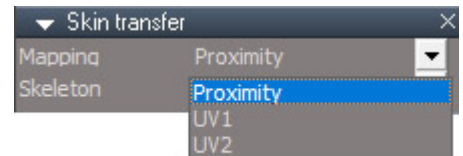


**Transfer Skinning Weights** Transfer skin tool – structure, names, distances skeleton matching algorithms; uv1,uv2; proximity skin transfer algorithms

**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

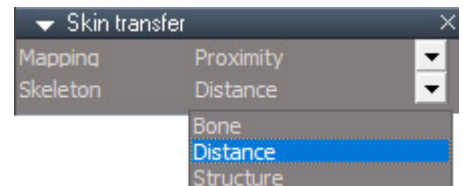


**Skeleton** – match bones between characters

**Bone** – match bones by their names. The names must match between the skeletons and be unique within the skeleton.

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

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

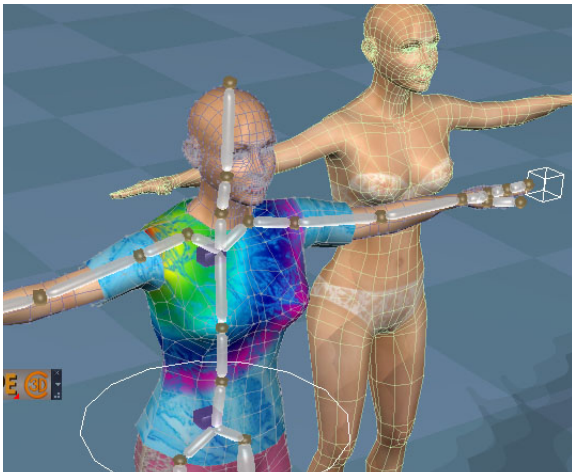


[video link](#)



The "woman" character was loaded from the Avatar - Female library. The shirt mesh was loaded from the same library and attached to the character with the Attach Skin to Skeleton tool. The resulting deformations are not ideal.

The second woman was loaded and animation preferences set for play mode of selected, so the front woman could be animated while leaving the second woman in the default pose.



The clothed woman is set to the default pose and the Transfer Skinning Weights is activated. The options are set for Proximity Mapping and Bone or Structure for the skeleton setting and the naked woman is selected to copy her skin weights.

**i** Testing shows that both characters must be in the default pose before transferring the weights.



Now the skin weights for the clothing are improved.



## Joint Orientation - controls

### Usage (orient a joint):

- 1.select a joint
- 2.press the **Create Guide** button
- 3.either
  - rotate the guide(xyz arrows) to the desired orientation
  - or press the **Z Axis Target** button and move the Z axis indicator(the blue sphere)
- 4.press the Update button to finish

### Usage (zero all joints)

- 1.select an actor or a skeleton
- 2.press the Zero All Joints button

Use on an unskinned skeleton, otherwise the skin will deform. It's best to use this tool before skinning.

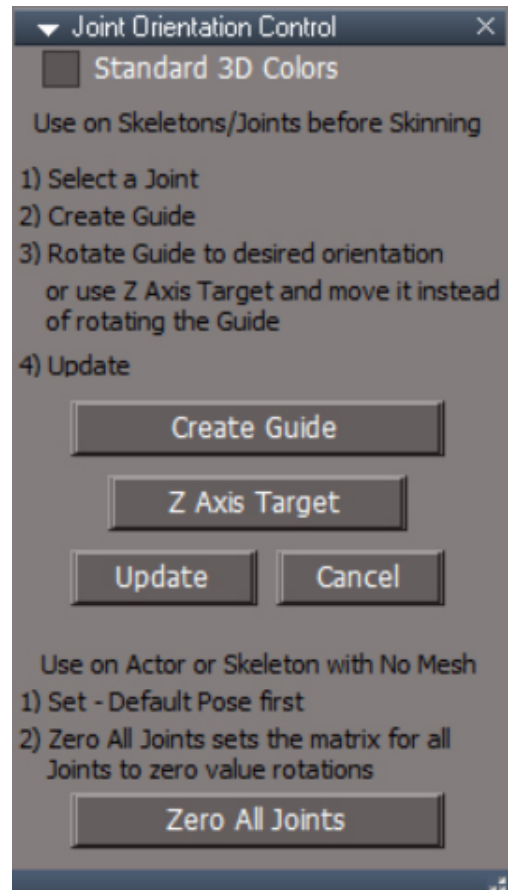
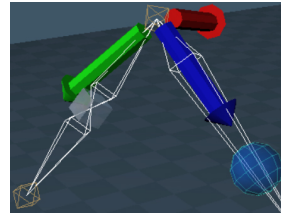
The Standard 3D Colors will make a helper mesh where x=red, y=green and z=blue.

The tool will not work on skeletons that have ik handles

The Zero All Joints may fail if joint names for the skeleton are not unique. Repeating names may cause an error.

The guide can be translated but the tool was not designed for it

The guide can be scaled for convenience.



### To use on a skinned character (assuming uv set 2 is free):

- 1.Apply any uv map using UV set 2
- 2.Edit uv map set 2 and choose "Flatten selected UV vertices" to make unique uv's for each vertex.
- 3.Copy the character/actor and use the copy in the following steps.
- 4.Use the "Attach Skin to Skeleton" tool to detach the skeleton.
- 5.Use the Joint Orientation Control on the new character without a mesh.
- 6.Use "Attach Skin to Skeleton" to reattach the skeleton to the mesh.
- 7.With the new actor selected, use "Transfer skinning weights" tool and choose "UV 2" in the mapping options. Select the original character and the skin weights will transfer to the new character.



## **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 hierarchy graph - there will be no indication that the copy was successful ⚠ this step will erase 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 erase 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

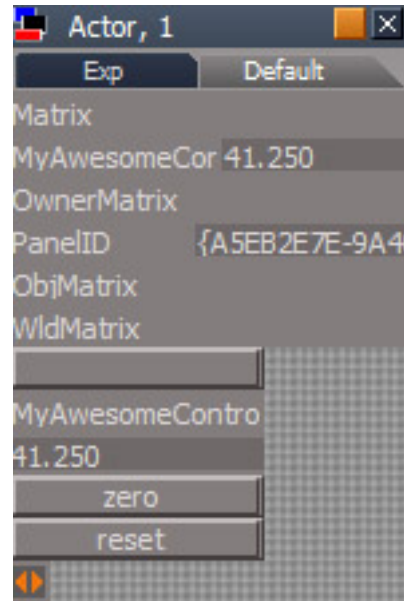
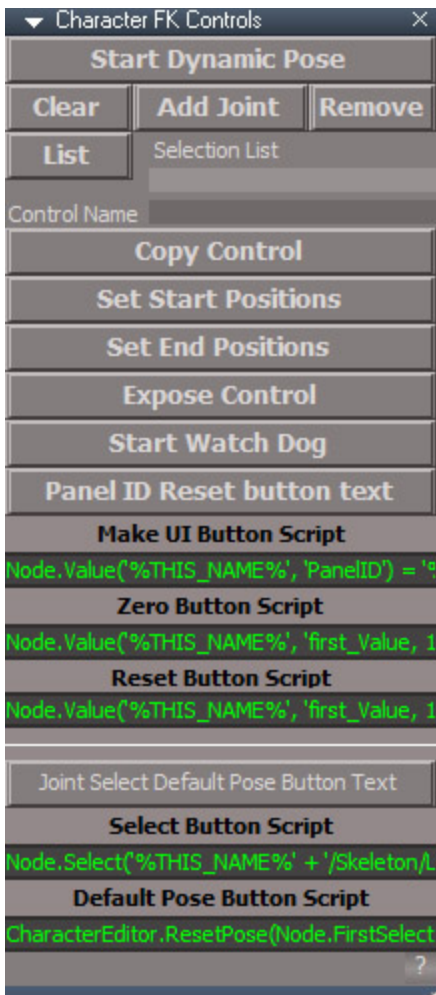
**Make UI Button Script** in to it

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 hierarchy 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

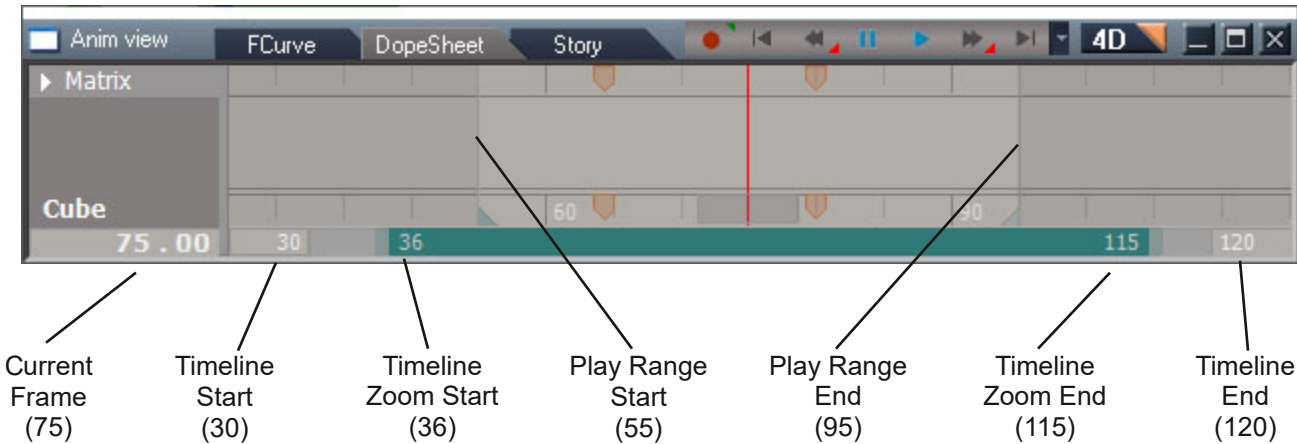
# Chapter 9 – Animation

## 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





Animation Panel

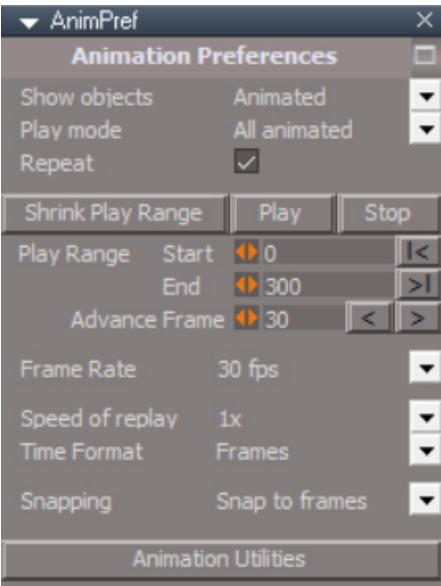
Same icon as Anim View

[More Information](#)

### Chapter 9.2.1 Error

section 9.2.1.1 **Edit in New Track** belongs inside section 9.2.1.2

## 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.

Show objects only affects the Anim View Story tab.

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

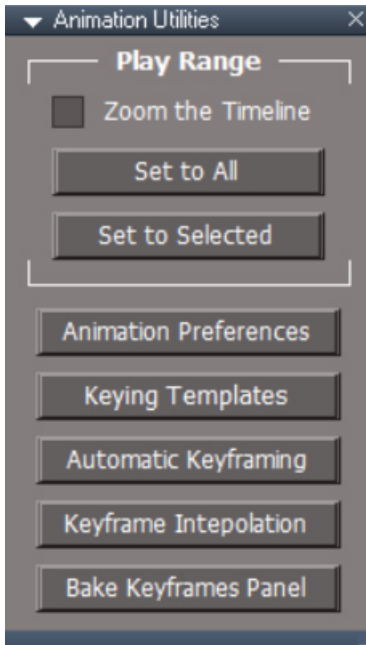
**Shrink Play Range** : set the timeline start and end to match the scene minimum and maximum keyframe times  will erase undo history

|< : set timeline start and play range start to 0

>| : set timeline end and play range end to 300

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

**Animation Utilities** : open the animation utilities panel



**Play Range** :

**Zoom the Timeline** - zoom to the play range when it is set

**Set to All** : set the play range to all the animated objects in the scene.s

**Set to Selected** : nset the play range to all the selected animated objectsns



**Animation Preferences** : open the animation preferences panel in a floating window.s

**Keying Templates** : num buttons



**Slot/Name** - type a name for the template.

**S** - save the current keying template into the slot.

**L** - load the template into the Keying panel.

**Archive** - save the key templates to disk.

**Restore** - load the key templates node from disk.

### Key Templates Example Usage

Create a cone primitive.

Open the Anim View Keying panel.

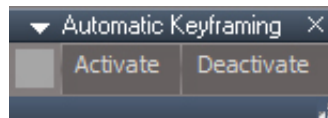
RClick and browse attributes. Add Cone primitive Height, RadiusBottom and RadiusTop

Open the Keying Templates panel.

Give a name like "Cone" to one of the slots and press the S button to save

If desired Press the Archive button to permanently save the state of the Key Templates

Now whenever animating a cone primitive object use the L button to load the attributes into the Keying panel



**Automatic Key framing** : open the Automatic Keyframing panel. The object navigation widget center sphere will turn green when automatic keyframing is active.

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.

**Key frame Interpolation** [↗ More Information ↗](#)

**Bake Key frames** : open the Bake keyframes panel

set the animation play range to determine what keys get baked  
or uncheck and manually set the range

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

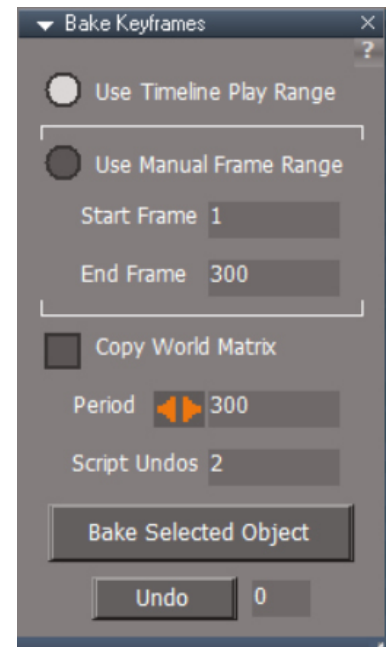
If an object is controlled by script that updates the position, but not the Matrix values check the Copy World Matrix option

If a script run generates undos set the Script Undo value so the Undo button can allow for it.

select the item to bake and push the button

a keyframe will be created at every frame for the object

remove the command script controlling the object



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.

**Copy World Matrix** - the world matrix will be copied into the matrix for keying.

**Use timeline play range** - will bake the frames for the object using the timeline range.

**Start Frame** - set to the first frame if not using the timeline play range.

**End Frame** - set to the last frame if not using the timeline play range.

**Period** - delay period to give scripts time to run for each frame.

**Script Undos** - enter the number of undos a script uses for each time it is run.

**Bake Selected Object** - perform the bake process

**Undo** - will undo the number of frames that were baked

## 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



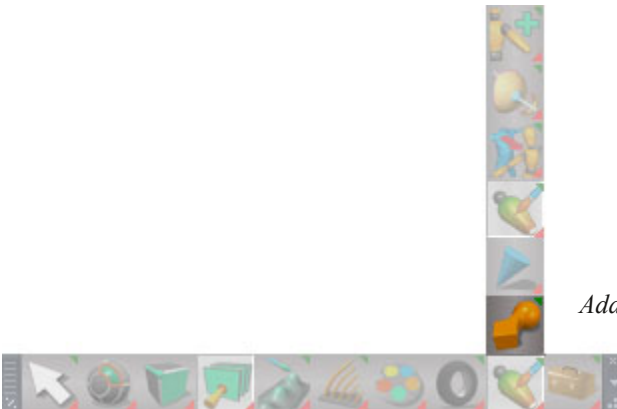
To begin working with morphs, you will need to create the first morph for an object. To do this, click on the Add Morph icon in the character editor tools, and this will open the morph panel, create a new morph for the object, and take you into edit mode on that morph.

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.

*link to soft paint morph mode pg 76*

[!\[\]\(05be7c7a8995decd503647c99211f7c2\_img.jpg\) More Information !\[\]\(16cd6e1a39784ecf52b4db09f4865f40\_img.jpg\)](#)

*Add Morph icon is wrong in the original manual*





**Interpolation Toolbar**



[More Information](#)



**Animation Toolbar**



[More Information](#)



## Chapter 10 – Physics

### 10.1.1 Physics: Space and Engine



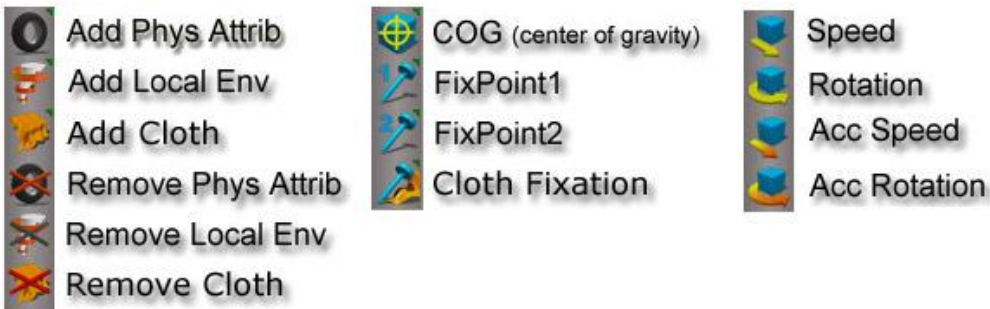
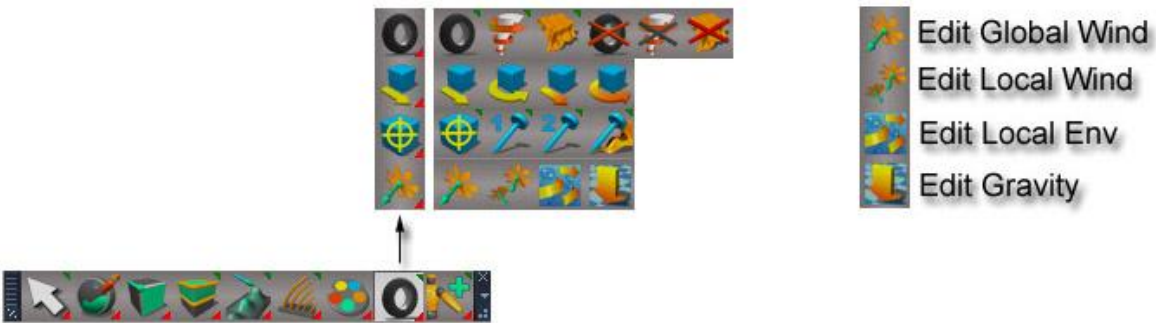
Particle System



[More Information](#)



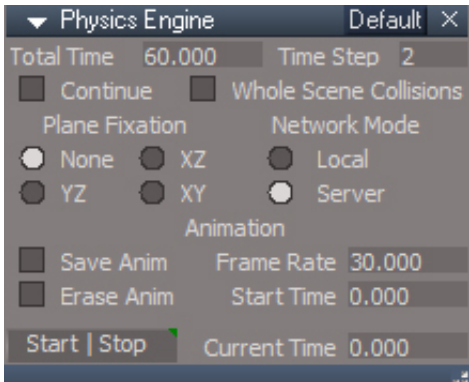
## 10.2 Physics Toolbar



Main Physics Tools



Physics Move and Start/Stop simulation tools

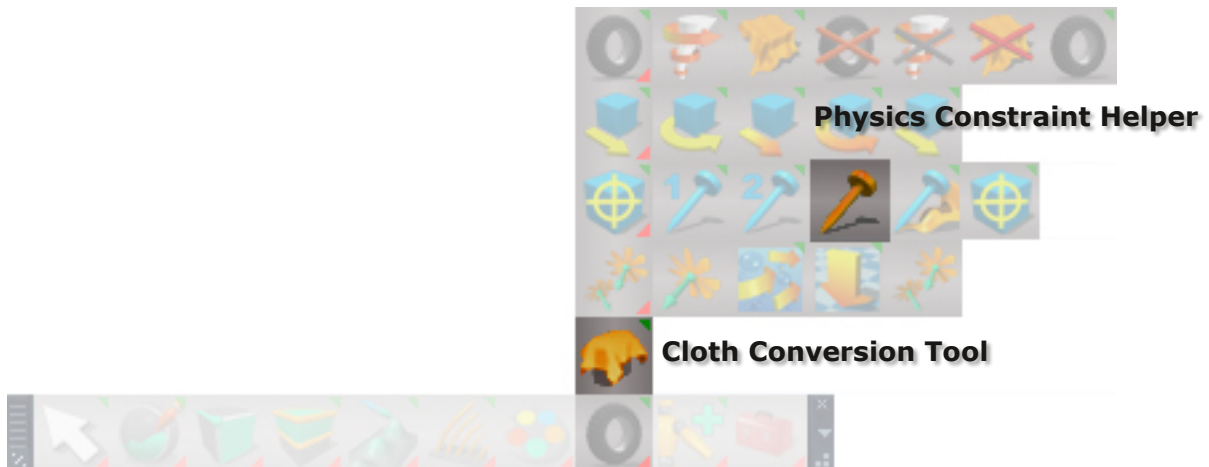


**Start | Stop** - start and stop the physics engine  
RMB - remove the physics engine and physics space from the scene

### 10.2.4 Physics Cloth

*Original Manual Error: "R-click in the title bar" should be "L-click in the title bar"*

Tip:- If you wanted to see the Exp aspect in the stack you can L-click in the far left section of the title bar in the LE and choose **Detach** from the menu.



Unofficial Update Main Physics Tools



## 10.2.7 Centre of Gravity and Fixation



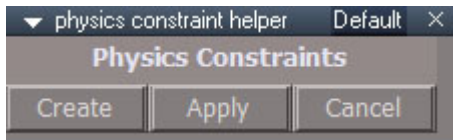
**Center Of Gravity**



**Fixation point 1**



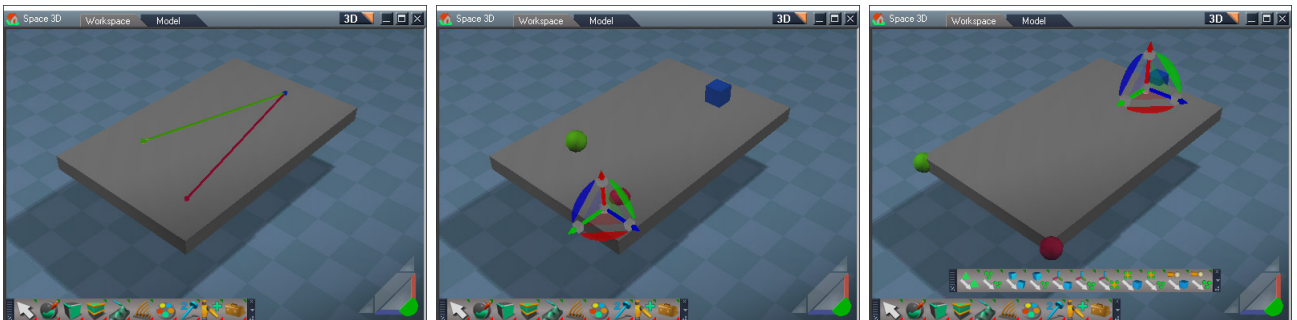
**Fixation point 2**



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

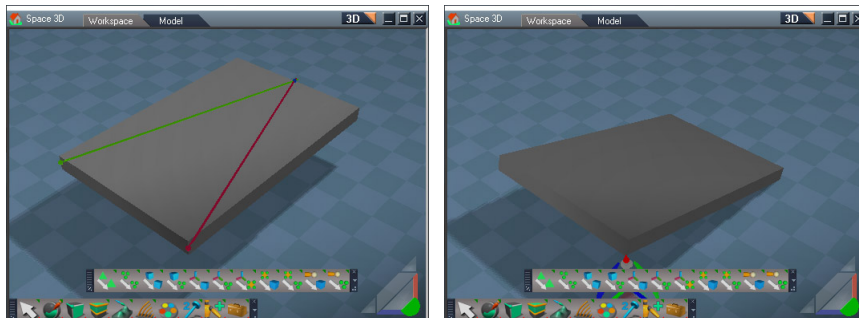
**Create:** create helpers for the object center of gravity and fixation points

**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.

### 10.2.7.5 Cloth Conversion Tool



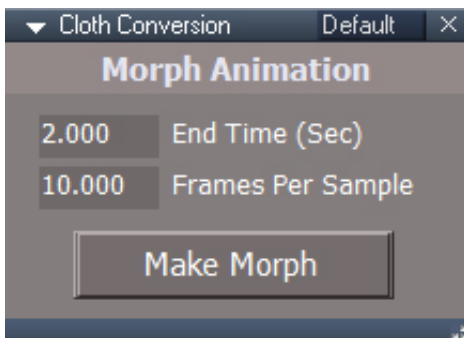
LMB open the cloth conversion panel

RMB open panel in the stack view

The first step of any cloth conversion is to determine the length of the animation.

Make sure the "PhysEngine" node is visible and you can see the Current Time.

Run the simulation and take note of the Current Time value. Stop the simulation after determining the desired end time.

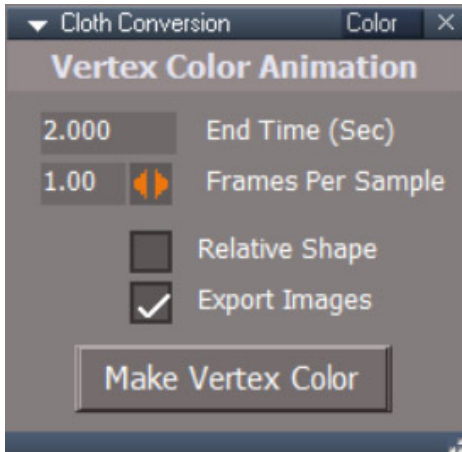


Morph Animation:

**End Time** - number of seconds to capture, where the time starts at 0.

**Frames Per Sample** - number of frames that run between samples. A value of 10 means 10 simulation frames will run between each capture of the mesh state.

**Make Morph** - create a morph animation from the selected cloth simulation.



Vertex Color Animation:

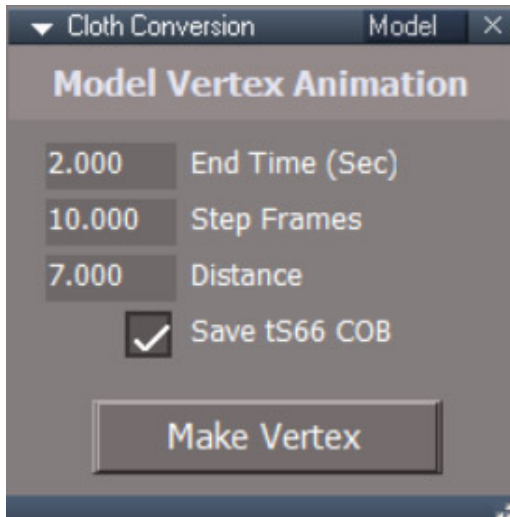
**End Time** - number of seconds to capture, where the time starts at 0.

**Frames Per Sample** - number of frames that run between samples. A value of 10 means 10 simulation frames will run between each capture of the mesh state.

**Relative Shape** - a new shape for the converted cloth will be created that maximizes the color space for small motions. The animation is stored as the change of each points position relative to the new optimized shape. When unchecked the bounding box extents of the animated shape serves as the container defining the maximum and minimum point locations..

**Export Images** - export the resulting position and normals animation images for use in other applications. Images can be saved as png, tga, hdr and jpg formats. The rsx extension adds exr float format images. The prefixes "VAT\_Posn\_" and "VAT\_Norm\_" will be added to the file names to indicate the position and normals images.

**Make Vertex Color** - create a vertex color animation from the selected cloth simulation with the option to export the bitmaps as image texture files.



Modelspace Vertex Animation:

**End Time** - number of seconds to capture, where the time starts at 0.

**Step Frames** - number of frames that run between samples. A value of 1 means for each simulation frame the mesh state is captured.

**Distance** - offset value in x,y and z to prevent the copied meshes from interfering with the cloth simulation run.

**Save tS66 COB** - when active an ascii format tS cob file is created. When unchecked mesh objects are created for each captured frame and a python script is used to combine them into a vertex animation in modelspace.

**Make Vertex** - create a collection of meshes from the selected cloth simulation to be used in the modelspace python script for vertex animation.

The first step is to determine the length of the animation.

Make sure the "PhysEngine" node is visible and you can see the Current Time.

Run the simulation and take note of the Current Time value. Stop the simulation after determining the desired end time.

## Morph Animation

Set the End Time to the length of the desired animation.

Set the Frames per Sample value. This is how many frames of the simulation will run before a morph target is created.

Select the object and press the Make Morph button.

Answer "Yes" to any construction history alerts.

## Vertex Color Animation

The cloth object must have compound D3D nodes style materials. Use the material converter script if the material is a base, non-compound, material.

Option: freeze the cloth objects transforms.

Set the End Time to the length of the desired animation.

Set the Frames per Sample value. This is how many frames of the simulation will run before a morph target is created. Vertex color animation is stepped, so a value of 1 works best.

Use Relative Shape if the cloth object has very small motions.

If exporting the result to another 3D program or game engine, check the Export Images.

Select the object and press the Make Vertex Color button.

Answer "Yes" to any construction history alerts.

As instructed press the Vertex\_shader button, "activate/return to scene". The LE will open to it automatically.

A Vertex Animation Texture (VAT) node is added to the object and the information can be used in the vertex shader development.

## Modelspace Vertex Animatio(COB File)

Set the End Time to the length of the desired animation.

Set the Step Frames value. This is how many frames of the simulation will run before a shape target mesh is created.

The Distance value is not used.

Save tS66 COB enabled

Select the object and press the Make Vertex button.

Answer "Yes" to any construction history alerts.

Go to modelspace or open trueSpace v6.6

Load the cob file

## Modelspace Vertex Animatio(Python workflow)

Set the End Time to the length of the desired animation.

Set the Step Frames value. This is how many frames of the simulation will run before a shape target mesh is created.

Set the distance so that the copied meshes don't interfere with the cloth simulation.

Select the object and press the Make Vertex button.

Answer "Yes" to any construction history alerts.

Close any open Scene View panels

Go to modelspace

Load the python script, "modelCloth2vertexAnim.py", into the Scene script(top of the dropdown list)

Edit the script so the timeIncrement is the same as the Step Frames value.

Run the script to create the vertex animation.

Remove the script from the scene

Delete the targetMesh objects and the transformNode objects

For most cases the Morph Animation is the best choice for use inside of trueSpace.

Press the "Esc" key to abort a run.

Always answer yes when asked about construction history.

VAT does not work with scene instanced materials

Vertex colors only render with the D3D render engine

Vertex color normals will not process within trueSpace shaders.

The information from the VAT node can be added to fbx exports by renaming it to "Metadata"

When exporting to fbx any textures need to exist on disk and materials need to be compound materials.

The 3 Flags.RsScn demo scene uses a UV Mapper node, so these cloth objects should be flattened before freezing their transforms for a vertex color run.

Close any open Scene View panels before running any python scripts. There is an incompatibility between the workspace Scene View and the modelspace python editor. If it is open tS will slow down right after opening the python editor. To fully recover from this state, close the Scene View and restart trueSpace.

# Chapter 12 Collaboration



*Toolbar with SharedSpace icon*



*Unofficial Update Toolbar with SharedSpace icon*

## Chapter 40 Unofficial Update Additions



## Miscellaneous Toolbars



### Red Toolbar



### Blue Toolbar



**Gold/Clintons Toolbar**



## Red Toolbar



**Cut** - cuts the first selected item.



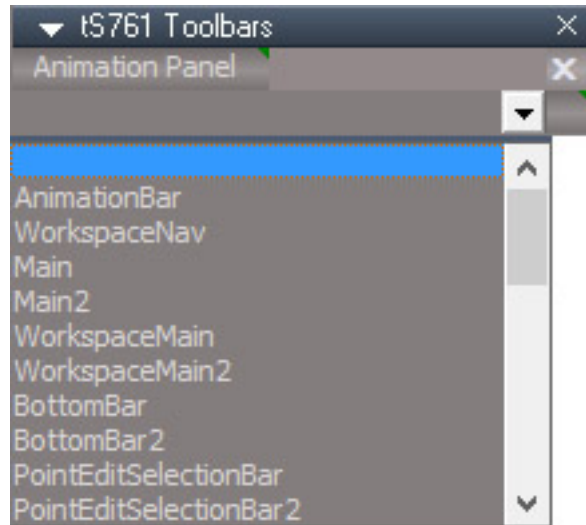
**Copy** - copy the first selected item



**Paste** - paste into the active link editor window.

RMB for all buttons will delete the last Cut or Copy file item that was created by the Cut and Copy tools

These are useful for copying or moving items into different areas of the Link Editor or even into a different scene.



**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

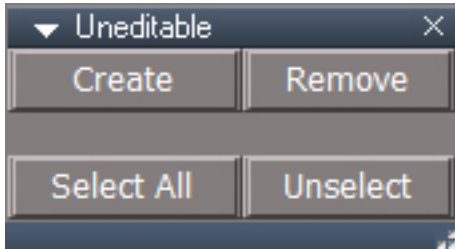
The dropdown list can be used to open 2 separate toolbars. Select a toolbar from the list then press the small unlabelled button to the right of the dropdown to load the toolbar.

Select a second toolbar from the list and

Right Click on the small button to open it



**Uneditable** - open the Uneditable panel.



The Uneditable script is used to lock 3D items from the point edit process.

**Create** - mark selected 3D objects as "Uneditable"

**Remove** - free the selected objects from the Uneditable state

**Select All** - select all uneditable objects

**Unselect** - deselect everything

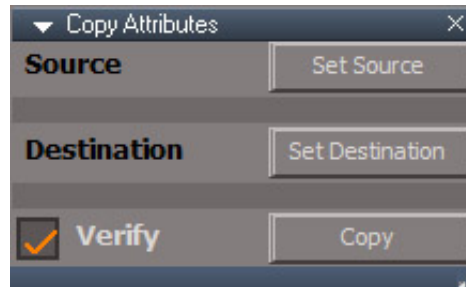


**Open Floating Panel** - open a floating panel for the selected object.

RMB - Close All Panels.

**Open Floating Panel with no aspect** - open a single floating panel for the selected object with aspects hidden..

RMB - Cycle Aspects of the open panel.



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

*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. The Verify can be an inconvenience if there are many attributes to copy.

**Copy** - Copies the first selected object's Location, Rotation, Scale, and Shear

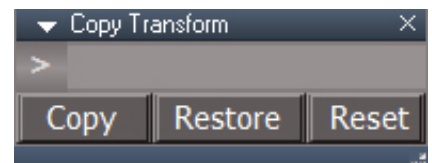
**Restore** - Restores the copied values

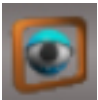
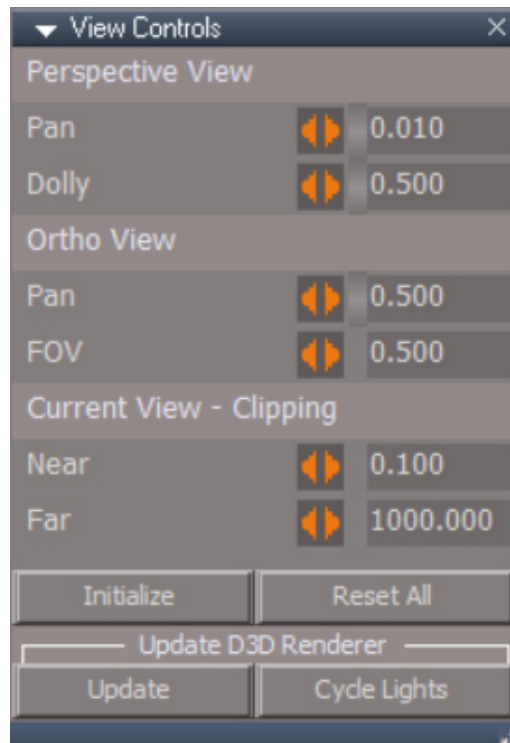
**Reset** - Normalize the included Transform node used to store the values

Example use:

Select a Camera and press the Copy button

Move the Camera somewhere, then press the Restore button





Speed controls for the 3d view and controls for near and far clipping

**Initialize** - copy the display attribute values of the active view to the panel controls and bind the 3D view to the controls

**Reset All** - reset to default values

**Update** - Update internal renderer data from a renderer settings node.

**Cycle Lights** - select the lights in the scene in order



**HDRI to Lights** - a read an HDR image and convert it to a collection of spot lights and a preview sphere.

LMB to open the panel, RMB to open a preexisting HDRILightsGroups panel.

Creation Controls:

**File** - open a dialog to choose the image file

Width, Height - show image dimensions

Format - HDRI is usually "A32FB32FG32FR32F" and LDR would show as "A8R8G8B8"

**Probe** - check after loading a probe style image to convert it to a lat long format.

**Reduce** - shrink the image down to a size that can be handled by trueSpace. It will always reduce down to a width below 800 pixels wide. When the reduce factor is too low a yellow indicator will show that the image was force reduced below the maximum allowed. Indicator turns red for the case of too much reduction

**Divisions** - controls the number of lights created from the image

3 => 8 lights

4 => 16 lights

5 => 32 lights

6 => 64 lights

7 => 128 lights

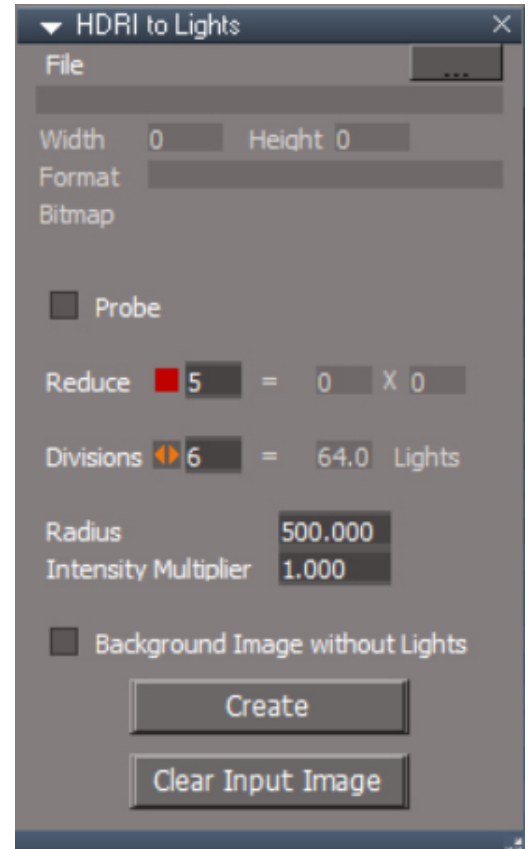
**Radius** - initial radius of the image sphere and light rig

**Intensity Multiplier** - initial intensity value

**Background Image without Lights** - create only the image sphere

**Create** - generate lights and preview sphere, an HDRILightsGroup will be created in the scene.

**Clear Input Image** - clear an aborted run so the image is not permanently included in the tS context saves.



[Hugins panorama stitcher](#)

HDRILightsGroup:

**Gamma** - control the preview image brightness and contrast.

**Radius** - size of the image sphere and light rig.

**Light Distance** - light distance factor used to move the lights in and out relative to the Radius value.

**Rotation** - yaw value for the light rig

**Cone Angle** - set the cone angle of the spotlights used in the rig.

**Intensity** - light brightness

**Saturation** - light saturation color

**Shadow** - lights can cast shadows

**Depth Bias** - shadow offset from geometry

**Filtering Quality** - At all settings except the maximum, it adjusts the quality of the filtering done on the shadows. When set to maximum(5), Poisson disk shadow filtering is used and the two parameters Filter Size and Samples become active.

**Filter Size** - Larger values will give a softer and broader edge to the shadow. Shows green when active.

**Samples Cnt** - Samples Count is the number of samples used to generate the soft shadows. Shows green when active.

**Map Size** - size of the shadow map texture

**Threshold** - disable shadows for dimmer lights. The graph shows the relative intensity of each light as the length of the horizontal line. Any line too short to reach the slider position will not cast shadows. You can also click inside the graph to set the threshold value.

**Set Shadows** - turn shadows off and on for the lights based on the shadow checkbox and threshold value

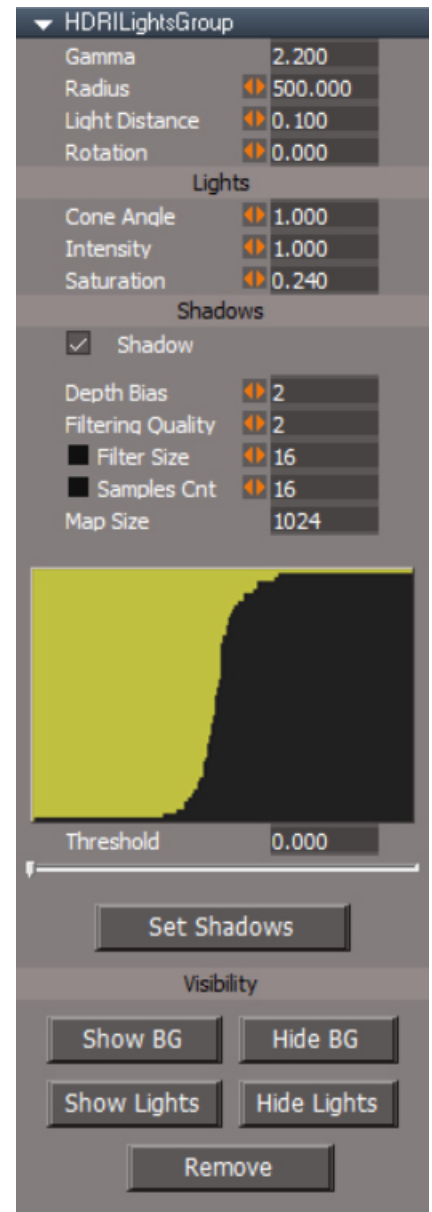
**Show BG** make the background preview sphere visible

**Hide BG** make the background preview sphere invisible

**Show Lights** make the lights visible

**Hide Lights** make the lights invisible

**Remove** will quickly remove the HDRILightsGroup from the scene bypassing the undo system.



Usage:

FileName to select an image

Check Probe if it is a probe image and the Hugin program will convert it to a latitude longitude/panoramic format

Set the image reduction and number of desired lights.

Check background Image Only if you don't want any lights created

Press Create Lights to create the light rig and preview sphere

--- after creation ---

Set desired Gamma, Radius and Rotation values

Reduce the Cone Angle to the smallest value that will cover the scene

Adjust the intensity and saturation

If there are too many shadows adjust the threshold value and press Set Shadows

Press "Hide BG" before adding any workspace primitives to the scene

Remove the HDRILightsGroup from the scene before rendering with Lightworks or V-Ray using their built in environment lighting.e.

Use the smallest Cone angle and Light Distance for the best shadow quality

Smaller depth bias is better until the meshes start to self shadow too much

The conversion only works with panoramic images with a size ratio of 2 to 1

Probe images can be converted via Hugin

Hugin creates 2 temp files, pto and exr image and will ask if you want to delete them.

Code has hooks into the YafaRay4tS renderer to create background previews

To preview for V-Ray use a rotation value of 180 and maybe set the gamma to 1

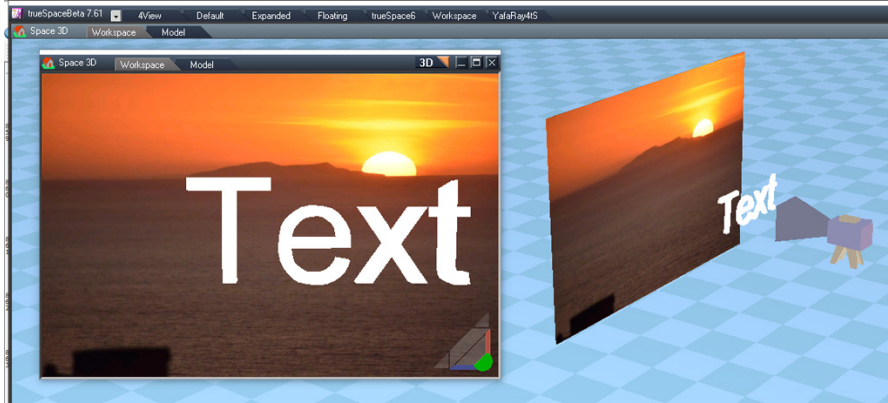
YafaRay is auto rotated 180 degrees behind the scenes

Lightworks no corrective rotation needed

Large images can take a long time to load

An 8k image takes a long time to load and 16k image will crash tS.e.





**Background Image Camera** - a camera with a projection plane attached that displays an image or image sequence that fills the cameras 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

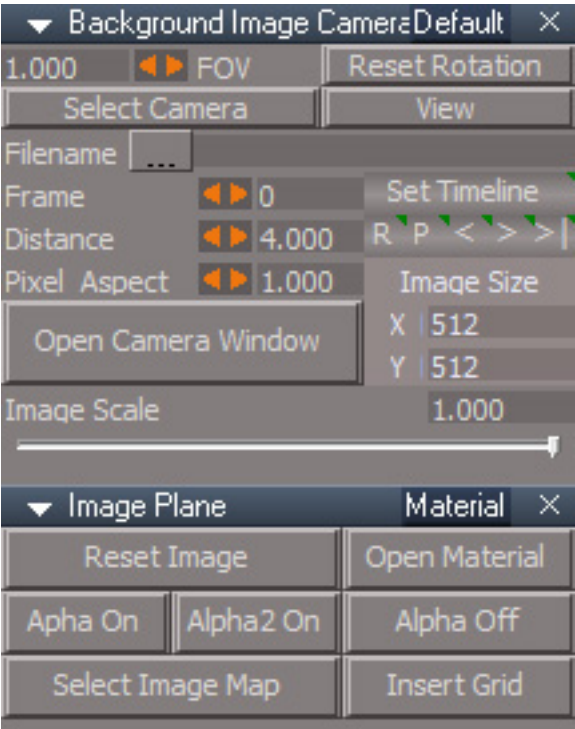
**i** To get more than 1 Background Image Camera in the scene rename the existing one first.

**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. Use the Image Scale to reduce the size. 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 larer 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

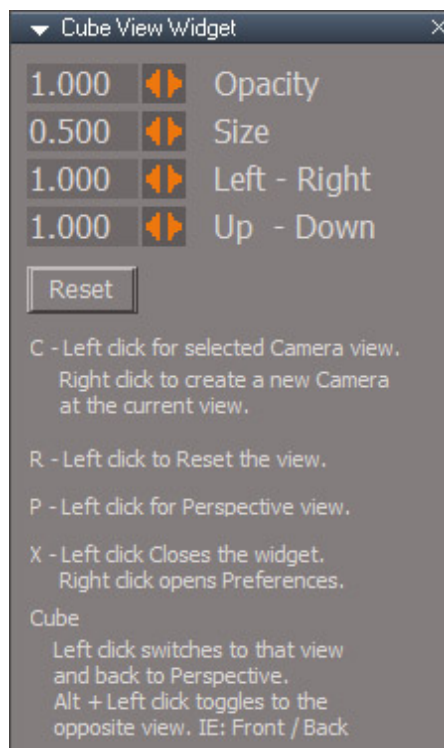
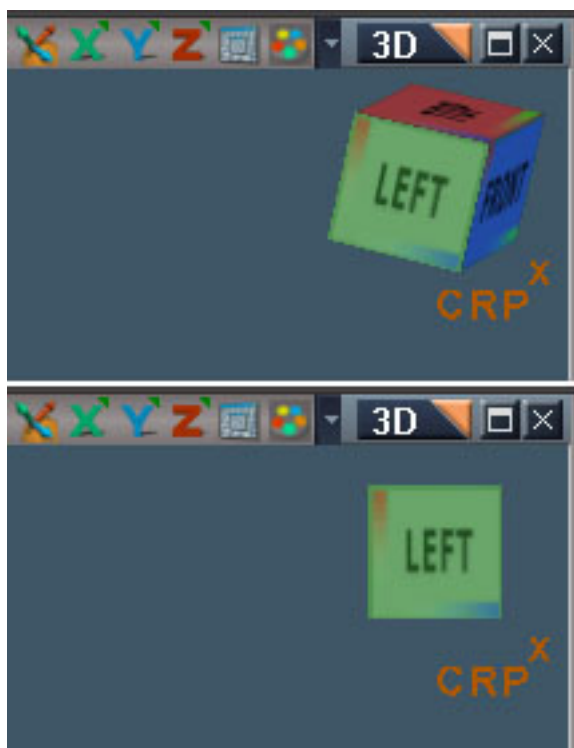
**Alpha Off** - this turns off the alpha masking

**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 orientation. 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.



**Save Scene** - LMB open the Save Scene panel, RMB open the Save Scene Backups panel



**Save Record** - LMB open the Save Recording, RMB open the Save Recording Backups

***Quoted from the release notes:***

RClick - Open "Save Scene Backups"

Save Recording Backups

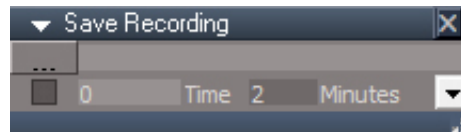
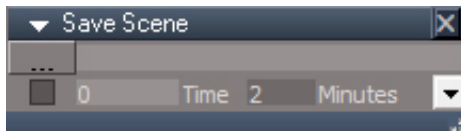
RClick - Open "Save Recording Backups"

Use:

Open the Scene or Recording in trueSpace first

Open the File, set the number of Minutes or Seconds, and check the check box to start

Each copy name is appended with the day, month, hour, minute, and seconds

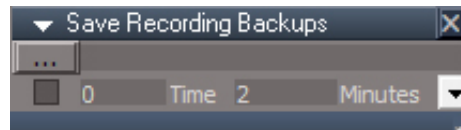
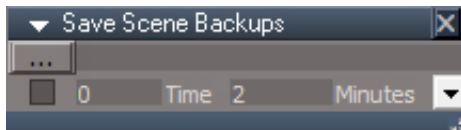


Press the button to choose a scene file - the choice will not show in the panel at this time

Set the number of minutes or seconds between saves

Checkbox on to start the timer

The scene will save over the selected file at regular intervals and the file name will display in the panel.



Press the button to choose a scene file - the choice will not show in the panel at this time

Set the number of minutes or seconds between saves

Checkbox on to start the timer

The scene will be saved at regular intervals with unique names (original name, day, month, hour, minute, and seconds) and the file name will display in the panel.



### D3D Render to File



LClick - Set Render to File

RClick - open explorer to the destination folder for the render

Set - Frames to Render

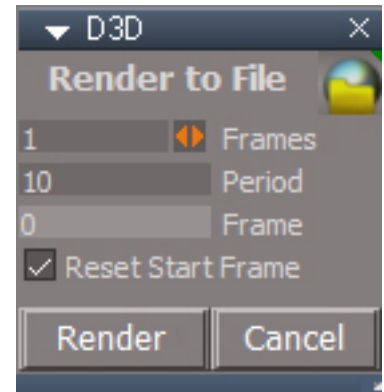
Render

Uncheck - Reset Start Frame to render from the last Frame rendered

Note: Add addition Frames to Render from the last Frame rendered

Cancel- Stops the Activity and Closes the panel

Press your keyboard Esc key to Stop the Activity while rendering



### Vray Render to File



LMB icon button - Set Render to File

RMB - open explorer to the destination folder for the render

Set - Frames to Render

Render

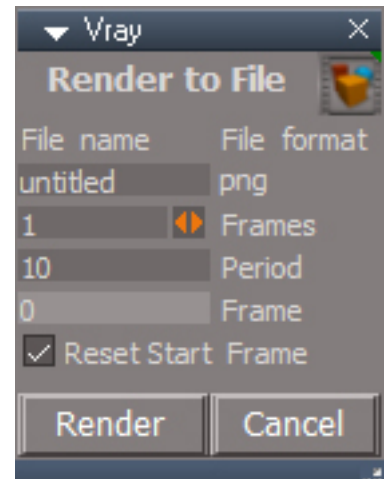
Uncheck - Reset Start Frame to render from the last Frame rendered

Note: Add addition Frames to Render from the last Frame rendered

Cancel- Stops the Activity and Closes the panel

Press your keyboard Esc key to Stop the Activity while rendering

Tip: Recommend that you set your render view's Ground to None



About: D3D Render to File & Vray Render to File

Allows you to render a sequence if images while Activities, Timers, and Scripts are running that do not interrupt this rendering process, like scripts that call Alerts, Dialogs, etc...

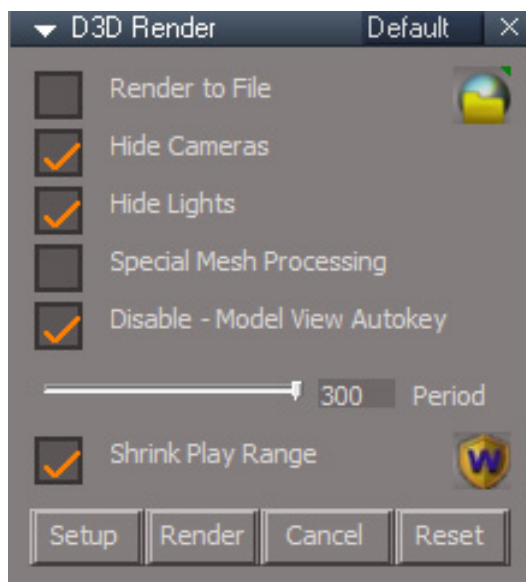
Caution: If you do not Set Render to File first before Render, you might end up with images created in the last Saved file from trueSpace's File Menu - File/Save, which is the most Recent File

It is only necessary to Set Render to File on the first run or when you change the place to Render -> Savein: [Folder]



## 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 Render button

### Render a sequence to files:

Check the Render to File  
Press the Render To File 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 Render button

 Will not run unless a model view is open. Not included in trueSpace Std/Rosetta version

## General Usage:

Set the animation playback range in workspace

Press Render to File button to set the filename, location and frame numbering start

Press the Setup button

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

Press the Render button to begin the render.

## Alternate manual process:

Do not press Setup

Open Protect Workspace and press the Backup button

Switch the main view to Model

Open a Workspace 3D Window

Set the Workspace Play Range

Note: The Play Range should be equal or greater than the Model's animation

Press the Render button



**Render to File** - pg 113, 7.1.7 Realtime Render To File



**Protect Workspace** - open panel and perform initial backup

[More Information](#)

Options:

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

**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. After rendering a dialog will give the option to close trueSpace to avoid problems when opening the python editor.

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

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

**Shrink Play Range** - will look at the range of keyframes set in workspace and adjust the play range to fit. If the current play range is less than the keyframes, the play range will be expanded to fit.

**Setup** - open a docked model space view and the protect workspace panel and optionally fit the play range to the keyframes. If model space view is already open will be prompted to close the model view.

**Render** - start the render/preview

**Cancel** - stop the render/preview

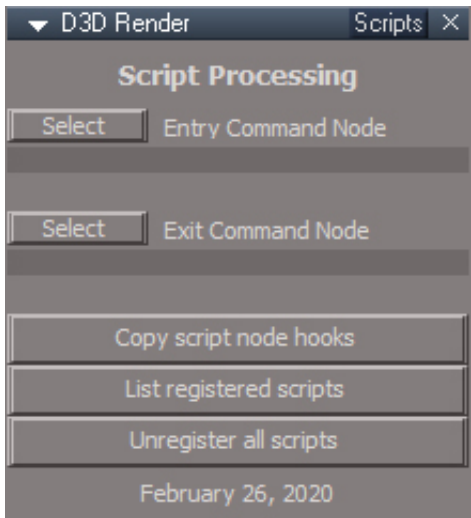
**Reset**

Workspace Protection Notes: The Matrix option will interfere with modelspace 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.



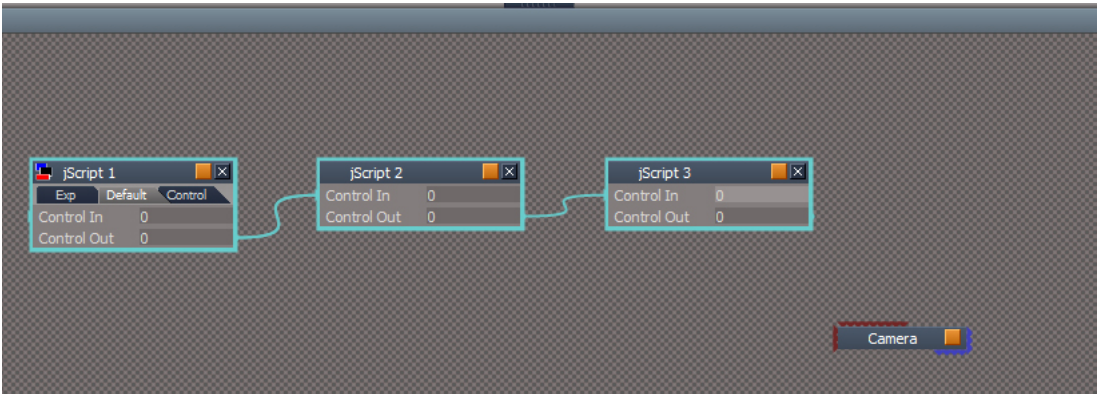
*Changing layouts after a render may cause instability and crashes, first exit truespace*



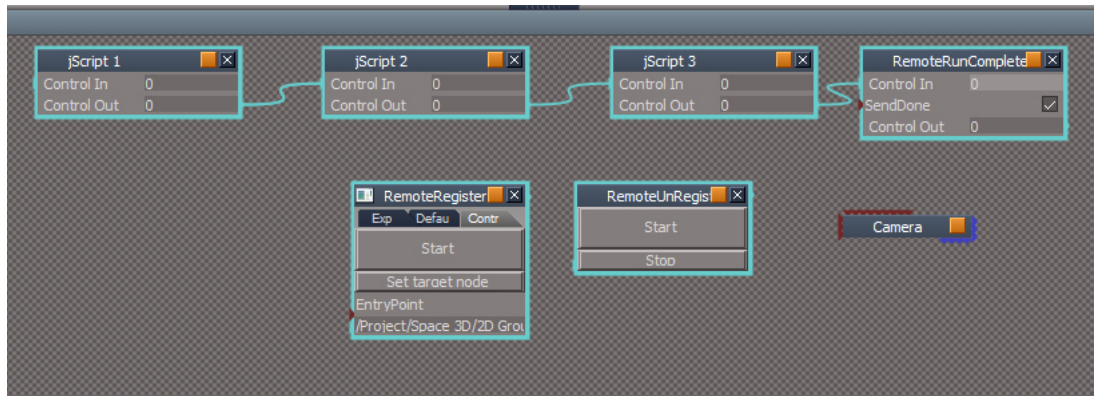


### Command Script Processing

A command script can be driven from the combination of a Watch Dog Event node attached to some animated object. This arrangement cannot be rendered since command scripts are incompatible with the animation rendering process. This method is an alternative way to drive the scripts during the D3D render process. This method assumes a chain of command nodes with the start and end command nodes encapsulated inside the same node. If an animation frame watchdog is active it must be disconnected, only one process can properly control the scripts at one time.



*A chain of command scripts to be called by the rendering loop*



*After the script node hooks have been copied*

## Usage:

**Select** the entry point command node and press the corresponding Select button. In the image above the "jScript 1" node was selected.

**Select** the exit/end point command node and press the corresponding Select button. The "jScript 3" node above.

Press the **Copy script node hooks** button. This will copy, connect and register the nodes with the D3D Render scripts. 3 nodes are copied:

**RemoteRegister** - tells D3D Render which node to start the command sequence (entry point node)

**RemoteUnRegister** - can be used to remove the script sequence from the D3D Render process. Run the RemoteRegister to reconnect.

**RemoteRunComplete** - is connected to the exit/end point node and is used to return control from the command node(s) back to the D3D Render process

**List registered scripts** - shows a list of scripts that will run from the D3D Render process

**Unregister all scripts** - removes all the command scripts from D3D Render process control

The entry and exit can be the same node.

## Key frame Interpolation



### Interpolation Toolbar

*Same icon as the Custom Flat Bezier*

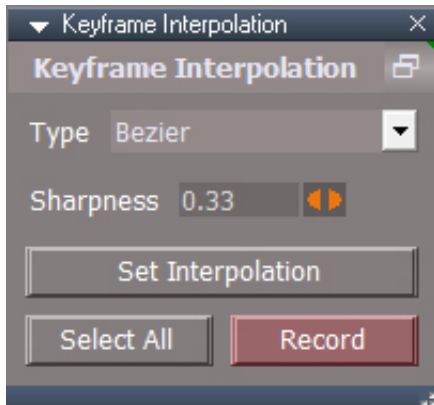


## Interpolation toolbar

**Record** - button will create a new keyframe using the chosen interpolation type and select all keyframes afterward in preparation for the next record. All keyframes must be selected first. If no previous keys exist or no keys are selected then the key interpolation will be controlled by the trueSpace default behavior. right click opens the keying panel

other buttons from left to right are **Bezier**, **Linear**, **Constant Start Value**, **Constant End Value**, **Custom Bezier** and **Custom Bezier Flat**. These buttons change the interpolation of selected keys

right click to opens the key frame interpolation panel



### Interpolation panel

**Type** - interpolator options match the button descriptions above plus one more option "-----" which will bypass any interpolation processing

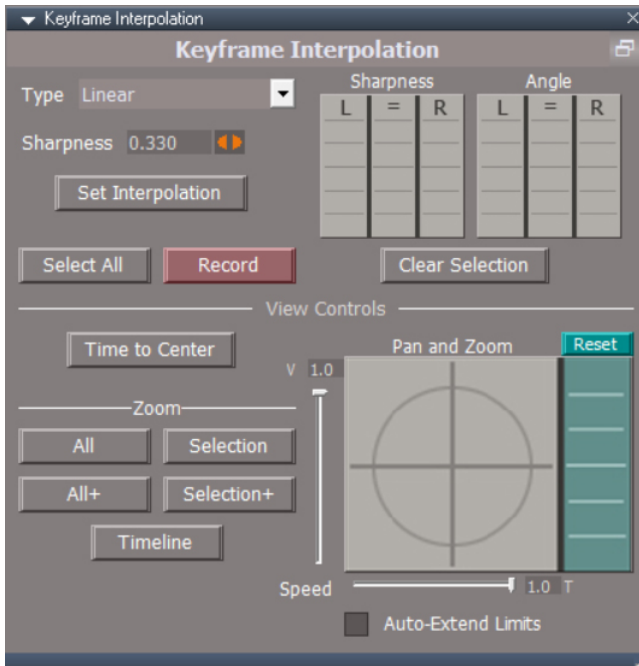
**Sharpness** - smaller values make a sharper curve - no effect in linear, start and end modes

**Set Interpolation** - button will set the interpolation type for the selected keyframe(s)

**Select All** - select all keyframe(s) before recording a new keyframe

**Record** - set new keyframe based on the selected interpolation

click the unlabeled button to switch the panel aspect



### Interpolation panel - cont.

**Sharpness and Angle** - use the 3 columns to control the FCurve values of the selected keys interactively.

**Clear Selection** - clears the keyframe selection. This is useful when there is no free area for a simple click deselect.

**Time to Center** - centers the time scrubber in the view.

**All and Selection** - zoom to fit, same as the context menu options.

**All+ and Selection+** - zoom to fit, same as the context menu options, plus zooms out a bit.

**Timeline** - zoom to fit the entire timeline.

**Pan and Zoom control** - interactive view control for the Dopesheet and FCurve views. LMB to zoom the view. MMB to pan the view. The Green section is to control the curve view vertical values.

**Speed** - control the speed (0.1 to 1.0) of the pan and zoom in the vertical(value) and horizontal(time) directions.

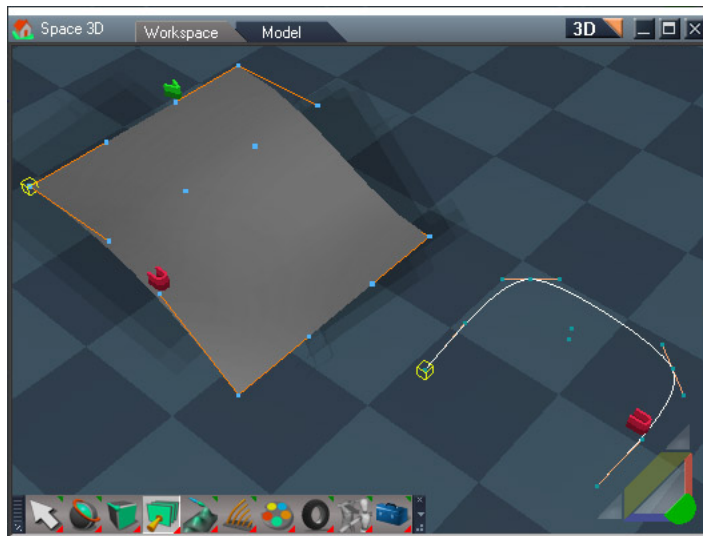
**Auto-Extend Limits** - when panning or zooming beyond the timeline start and end or the FCurve upper and lower values the limits will expand to allow the action.

**Reset** - set the FCurve view value ranges to their defaults.



## NURBS Toolbar

*Same icon as the NURBS Primitive*



**NURBS patch and curve with UV indicators and control mesh visible**

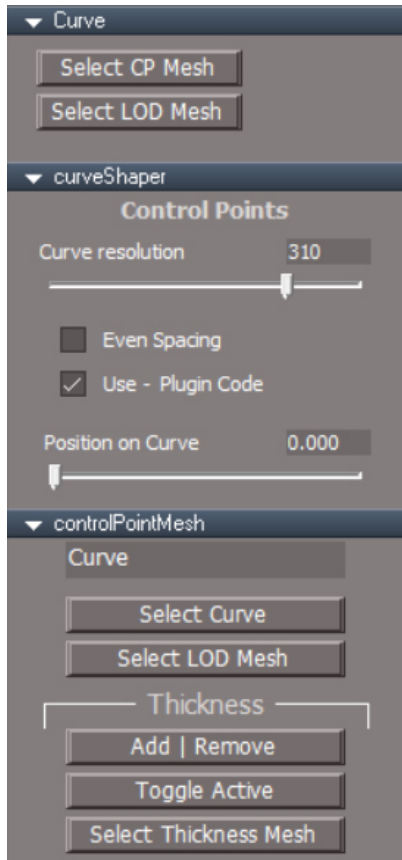
The control point is the point at the center of the 2 edges that form the control handles. The points without handles on the patch are the "floaters". The head of the NURBS shape is indicated by the yellow box and the U and V directions of the NURBS are indicated by the red U and green V shapes.



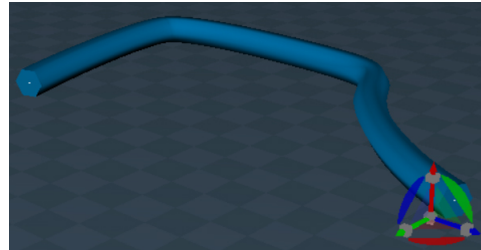
For point edit rectangle and lasso selection, do not enable select connected option for NURBS patch selections



To use the material inspector on a NURBS patch, first deselect it.  
Paint faces does not work with NURBS. Materials cannot be used with the control point mesh.



*NURBS Curve Panel*



### Thickness

**Add | Remove** - toggle add and remove thickness mesh to and from the curve

**Toggle Active** - thickness updates with the curve changes

**Select Thickness Mesh** - use to change the assigned material or change the render attributes

**Curve resolution** - number of points used to render the curve to the viewport

**Even Spacing** - the curve points will have equal distance between them

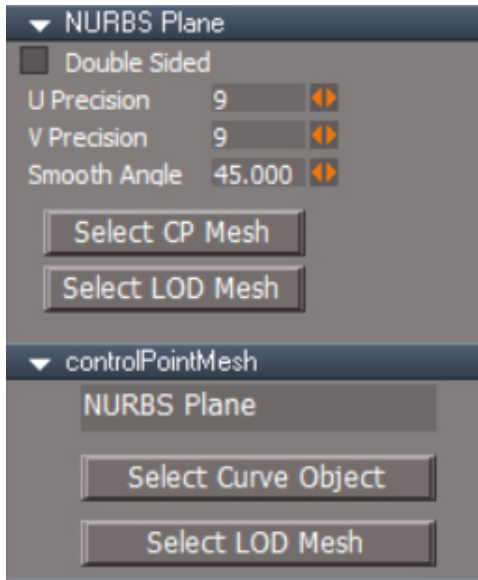
**Use - Plugin Code** - when checked the plugin code will calculate the shape otherwise script code will calculate the shape

**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.

**Select LOD Mesh** - select the mesh that represents the visual construction of the NURBS. Once selected a patch can be assigned a material and a curve or patch render settings can be controlled.

**Select CP Mesh** - select the control point mesh

**Select Curve Object** - select the NURBS curve object



*NURBS Patch Panel*

**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 LOD Mesh** - select the mesh that represents the visual construction of the NURBS. Once selected a patch can be assigned a material and a curve or patch render settings can be controlled.

**Select CP Mesh** - select the control point mesh

**Select Curve Object** - select the NURBS patch object



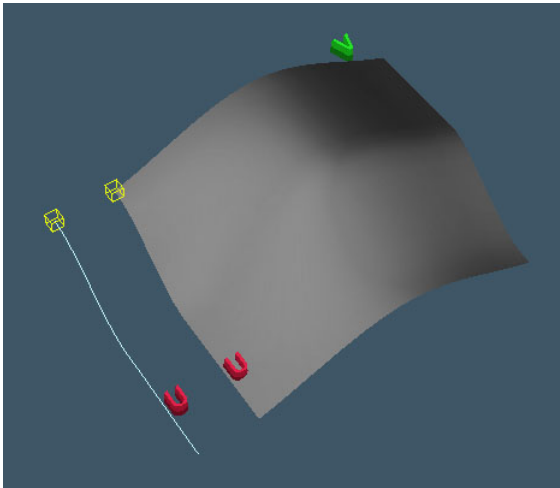


**Select Control Point Mesh**

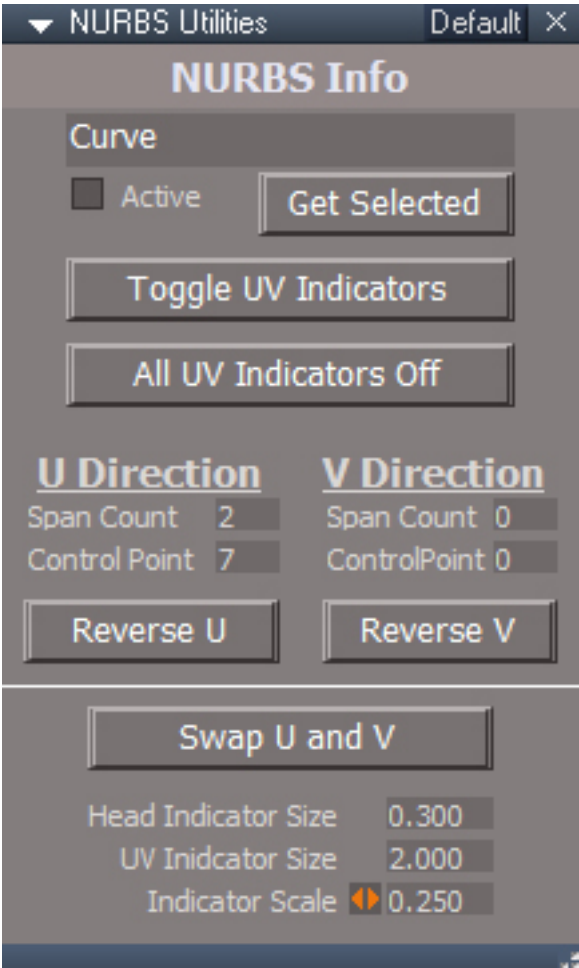


**NURBS Utilities**

*same icon as the Stack View button*



*head and uv tail indicators*



Information panel is the default Utility panel. It displays information about the selected NURBS object and has buttons for changing the direction of the NURBS structure

## NURBS Info

**Active** - will update with selection changes

**Get Selected** read U and V information for the selected NURBS object

**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

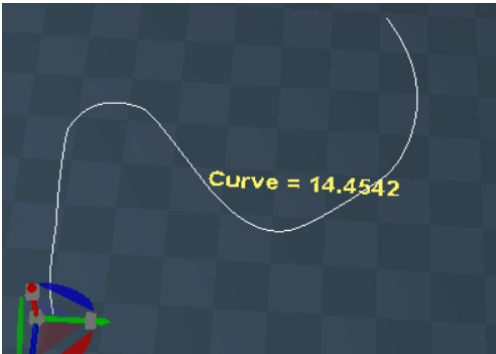
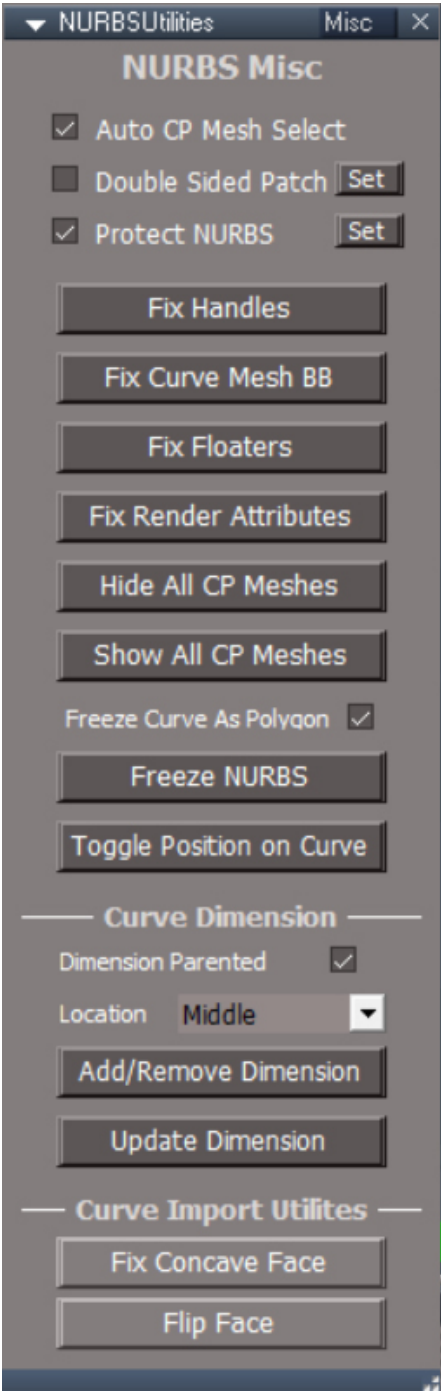
**Swap U and V** swaps the U and V directions of a patch

Head indicator Size - not used

UV Indicator Size - not used

**Indicator Scale** sets the size of the select NURBS UV indicators

① *UV Indicators will slow point edit. Turn them off when in point edit mode.*



*curve length dimension*

## NURBS Misc

**Auto CP Mesh Select** - a NURBS selection will automatically change to it's control point mesh selection for editing and transformations

**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** - activate the Unofficial Update script for protecting or guarding lights, cameras and NURBS from inappropriate changes

**Set** - to apply the protect NURBS state

**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.

**Fix 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

**Fix Render Attributes** - some actions can damage the display of a NURBS object, repair it

**Show / Hide All CP Meshes** set all control point meshes in the scene to visible or invisible

**Freeze Curve as Polygon** will make a polygon face when freezing curve objects

**Freeze NURBS** - convert NURBS object to polygon mesh. A double sided patch will have the option to heal vertices, otherwise the 2 sides of the nurbs patch will be created as 2 unconnected sections facing in opposite directions.

## NURBS Misc

**Toggle Position on Curve** - the Position on Curve is used to output the position along the curve via the "PositionMatrix" output. If the curve is moved the connected object will not follow. Pressing this button will make the object follow the curve when it moves. This is inefficient because the curve is continuously rebuilt. If the curve does not move or is not animated press the button again to disable it.

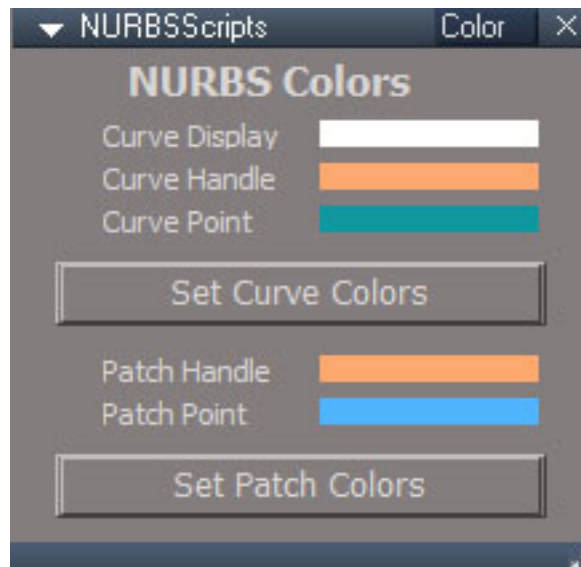
**Dimension Parented** - will create a text object dimension that is parented to the curve, instead of creating the text object inside the curve object.

**Location** - where on the curve the dimension will be created. Middle, Origin, Start, End and Custom Middle is the midpoint of the curve and Custom will maintain the manually set position of the dimension when updating.

**Add/Remove Dimension** - add and remove the length dimension with each subsequent press.

**Update Dimension** - update the length value after point edit or scaling the curve. If the location is not Custom the position of the dimension will also update.

**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.



## 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

Be sure the control mesh is not selected when setting the colors. The color change will be hidden by the selection color.

Settings that make editing easier to see and select

NURBS Prep for Modeling

**Not Selected Color**

**Auto Triangulation** - None best for NURBS editing

**Select All Geometry**

**Set Mesh Editor for NURBS**

**Reset Mesh Editor Settings**

**Outline Select** - Objects is best for selection highlighting

**Set - Selection Highlight**

**Reset - Selection Highlight**

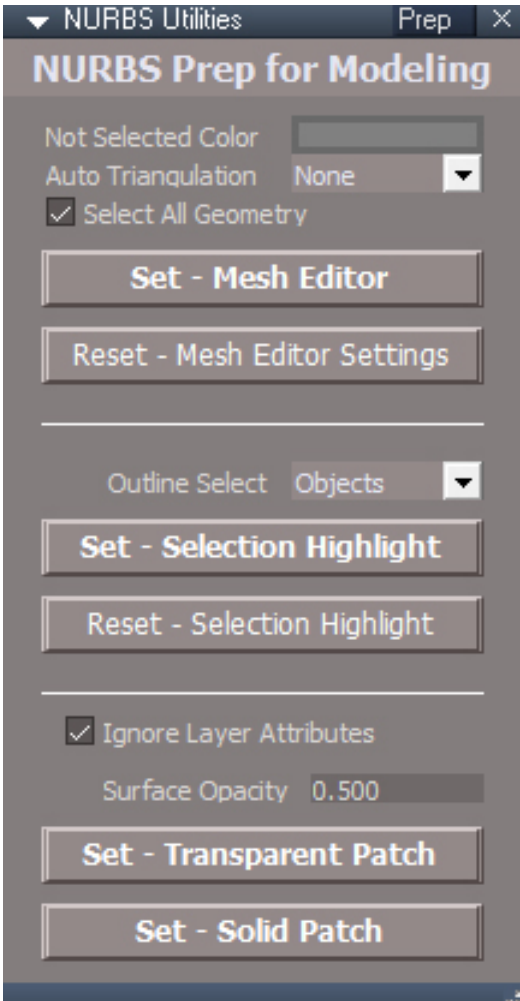
below is for the currently selected patch

**Ignore Layer Attributes** true

**SurfaceOpacity** 0.5

**Set Transparent Patch**

**Set Solid Patch**



Plane mesh created to resemble the tS grid.  
Useful for the Draw Curve and Circle tools

## Surface

**Tile Colors**

**Opacity**

## Grid

**Grid Colors** - edge and point colors

**Edge Opacity**

**Point Opacity**

## Presets

### D3D Presets

**Solid** - match tS default solid grid colors

**Wire** - similar to tS grid wire display

**Points** - grid of visible points with the color taken from the Grid

## Color

**Invisible** - grid is transparent but can still be snapped to

## Details

**Axis** - create plane in XY, XZ or YZ orientation

**Grid Size** - total size of the grid

**Tile Count** - number of grid squares

**Grid Mult** - grid multiplier increases grid density

**Auto Close** - auto delete the plane after a circle or draw curve run

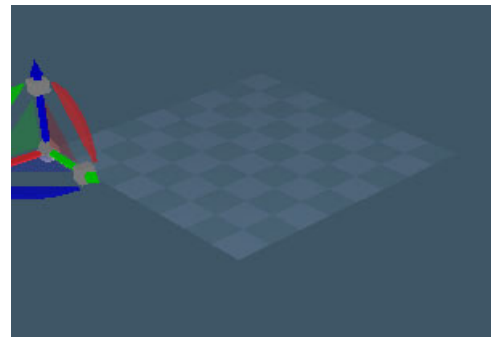
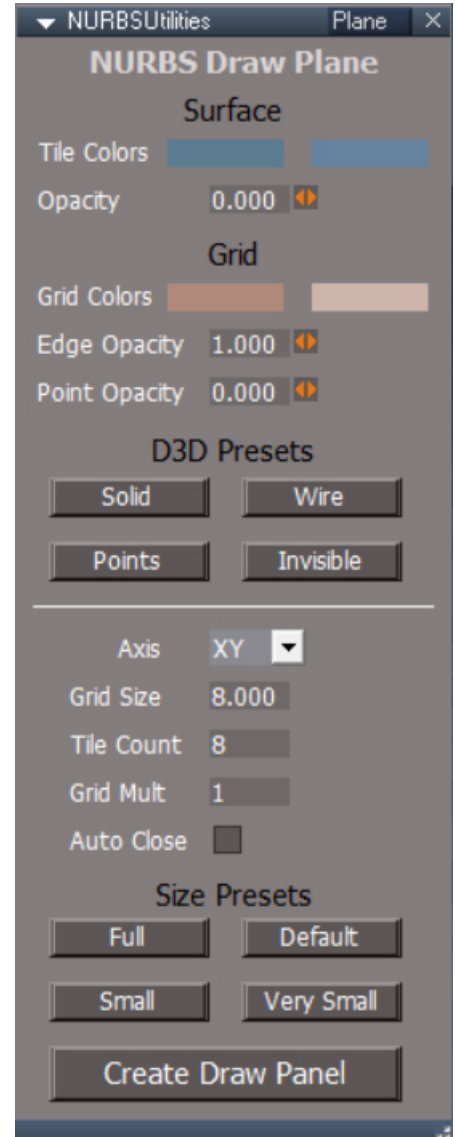
### Size Presets

**Full** - 80x80 to match the full size tS grid

**Default** - 8x8

**Small** - 2x2 with 10 snap points between each grid line

**Very Small** - 1x1 with 50 snap points in between

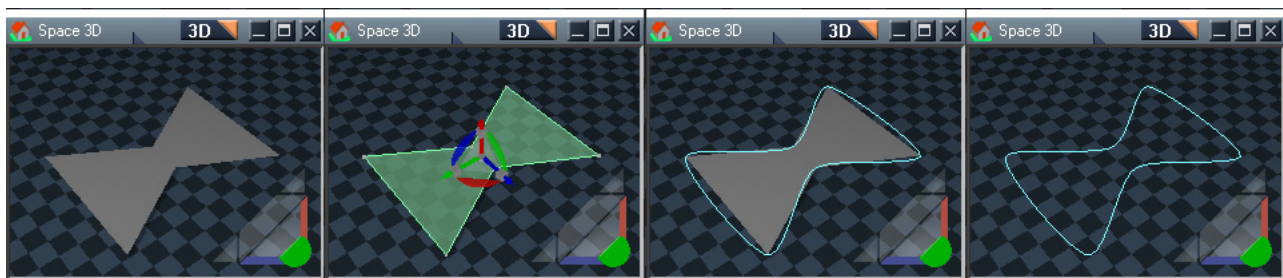




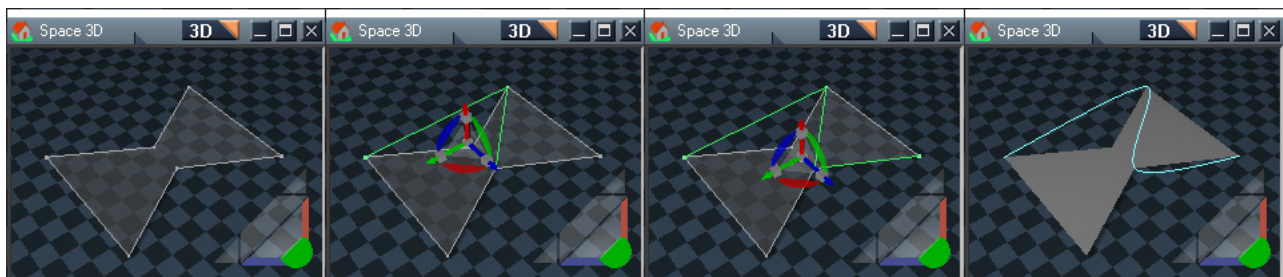


**Draw Curve** - Use existing scene geometry as a "draw panel" for curve creation.  
RMB panel for PickSelect options

Drag for a freehand drawing style. Simple button click to place control points.

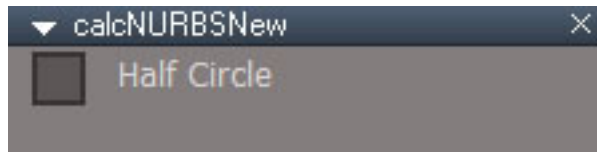


**Polygon to Curve** - Select the polygon and push the button to create a curve from the polygon vertices.



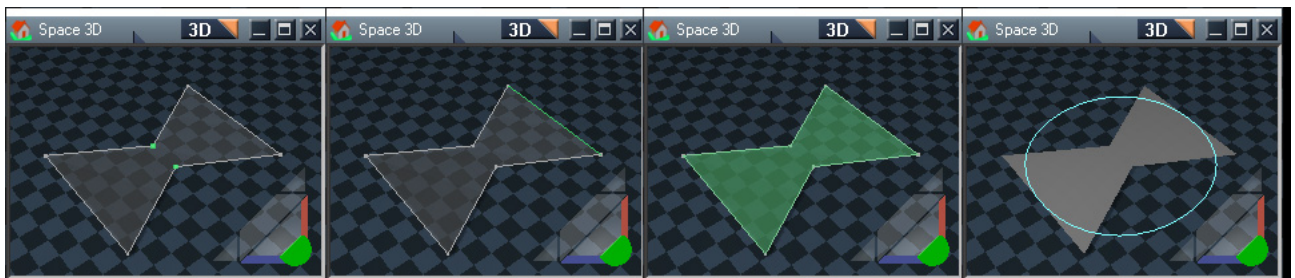
**Points to Curve** - enter a special vertex selection mode. In this mode you select vertices one at a time and they will have a green line in between each selected vertex that represents the final curve. Right click to exit this mode and create the curve.

## Circle Tools



Circle - Create circles by selecting point edit geometry or use widget based point selections outside of point edit mode  
 RMB panel with option to create circle with only 180 degrees

For the circle tools a point can be defined by a single point, or the center of a selection of points, edges or faces. Context selection mode is limited to single element selection.

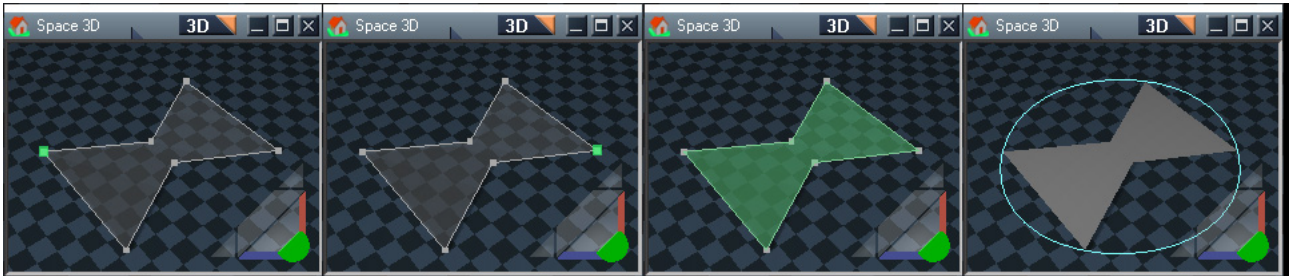


*First center at average of 2 points, second start of circle from center of edge, plane selection, final circle*



### 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

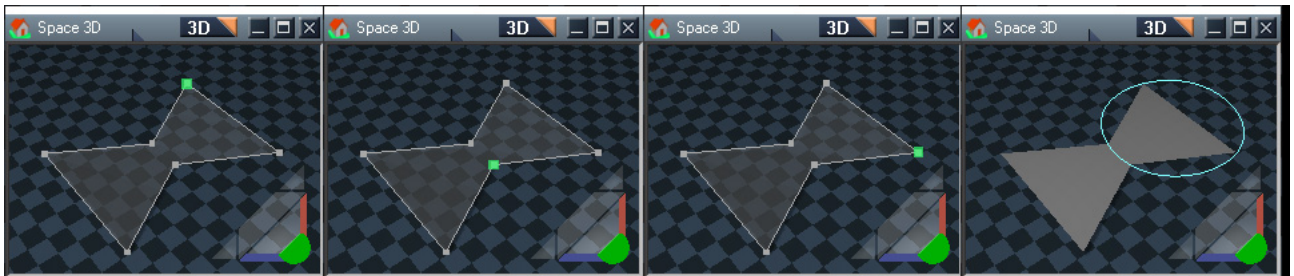


### Circle by 2 Points and Plane

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



**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



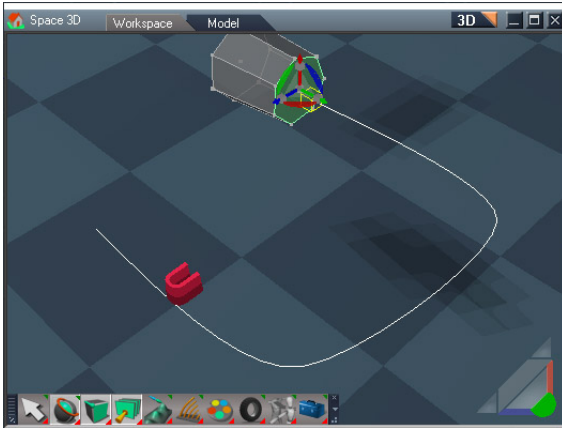
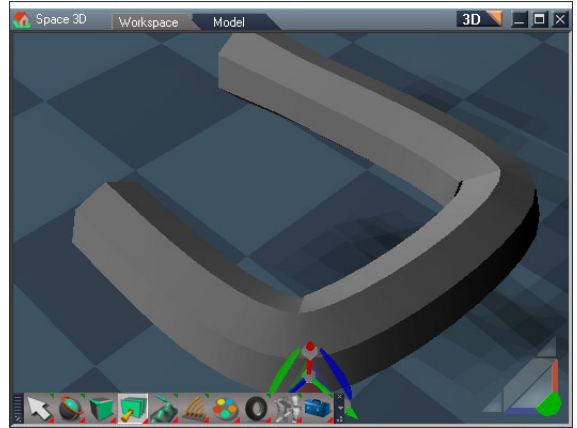
**Extend Curve** - Select one of the control handle elements at the end(or start) of the control point mesh and push this button to extend the length of the curve with a new set of control points.



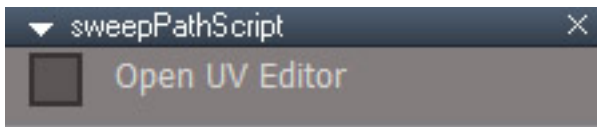
**Insert Control Point** - enter a special mode for adding control points to the curves control point mesh. After pressing the button the handles will disappear and the previously invisible line segments between the handles will become visible. Select one of these line segments and a new set of control points will be added to the center of the line segment making a new handle.



**Delete Control Point** - Select an element on the control handle and push this button to delete the control point and it's handles.

*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

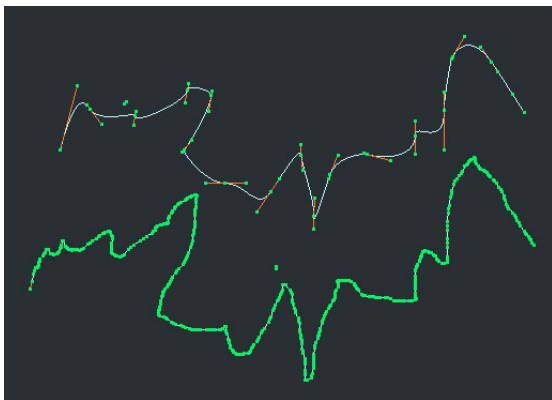
After the selection the face will be swept once for each curve segment, then a copy of the mesh will be swept to generate uv values.

The number of curve points controls the smoothness of the sweep.

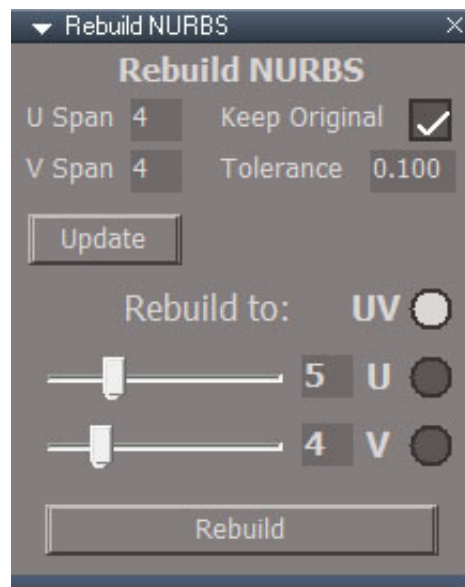


**Rebuild** - Change the detail or resolution of a NURBS object

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

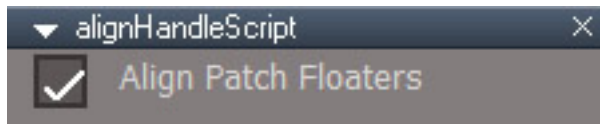
**UV, U, V** rebuild in one or both U and V directions

U inputs new span value in U direction

V inputs new span value in V direction

**Rebuild** rebuild the NURBS object structure



**Smooth****Sharp**

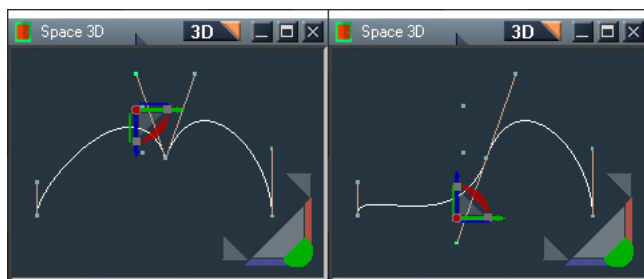
**Align Patch Floaters** - will move the intermediate control points to more closely mimic modelspace NURBS patches

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.

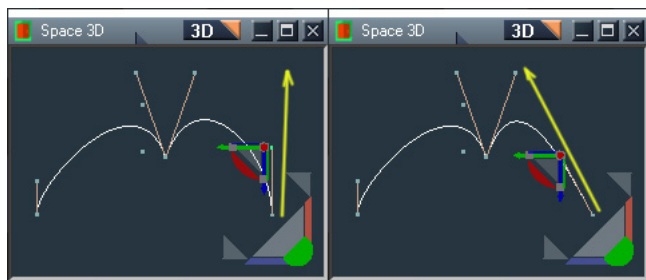
The tool behaves differently depending on what is selected, the control point or the control point handle.

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

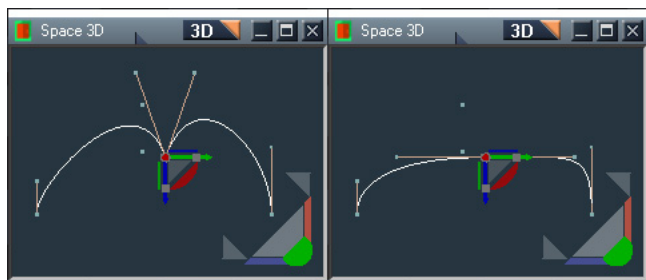
These tools also work with patches, only curves are illustrated below for clarify.



***Smooth - control handle***



***Smooth - control handle at start or end of the curve***



***Smooth - control point not at the start or end of the curve***

## Smooth

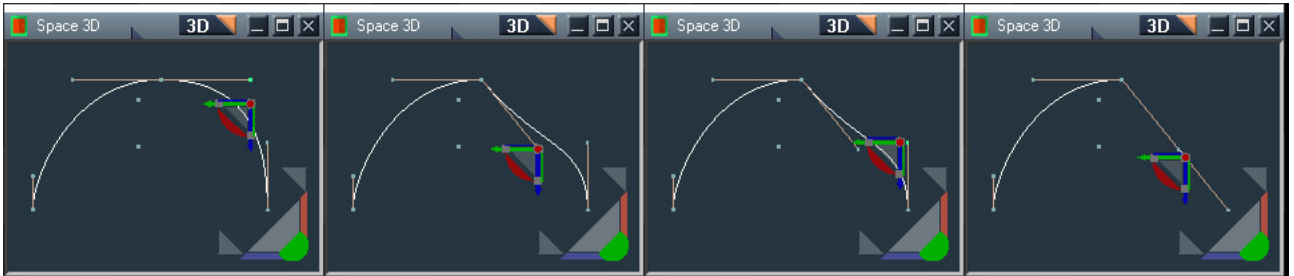
if a control point is selected then it's handles will form a straight line parallel to a line formed by it's neighbor control points.

if a control point at the start or end of the NURBS curve is selected then the handle points will point to their immediate neighbor handles - this only applies to curves not patches

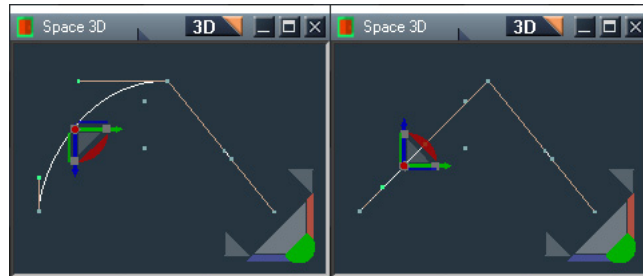
if a handle is selected then it will rotate to form a straight line with it's control points other handle

if a handle at the start or end of a curve is selected it will point towards it's closest neighbor handle point





***Sharp - center handle then end handle***



***Sharp - center handle plus end handle in one step***

## 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.

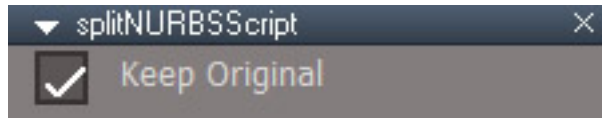
If control and handle points are both selected it will have less predictable results for smoothing.



**Set Mesh Origin** - set the mesh origin to the selected control point or to the control point of the selected handle. This enables the ability to scale and rotate from the control point using Ctrl + LMB/RMB for scale and RMB for rotate  
RMB open the Mesh Origin panel.



**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

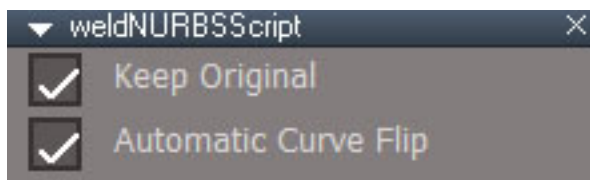
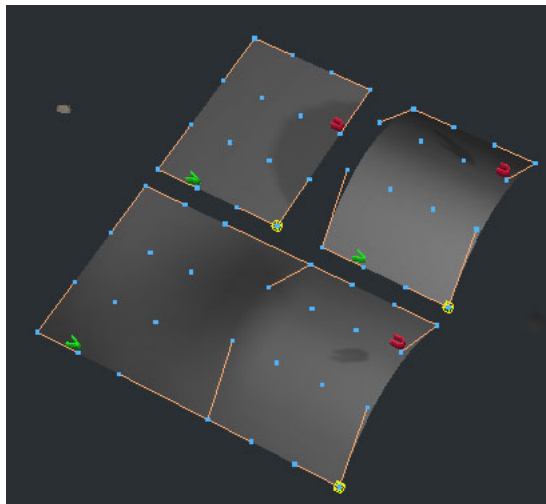


**Weld** - Join 2 NURBS objects together as one.

*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

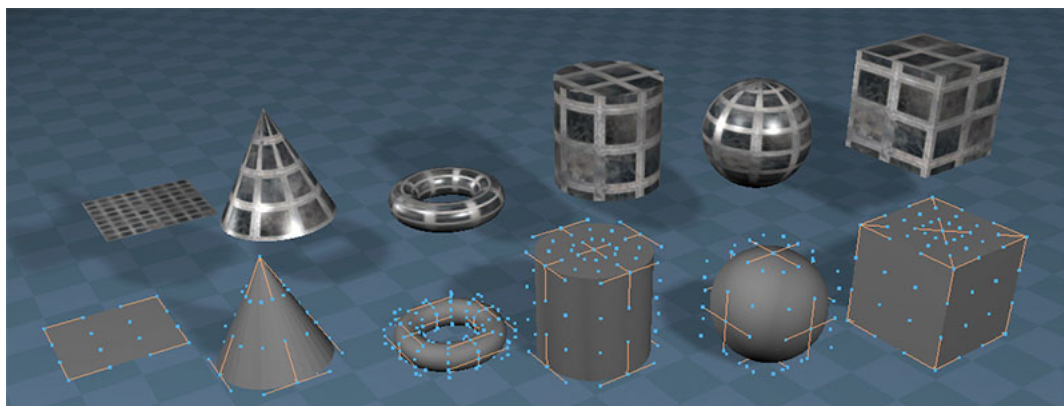
To force a specific weld curve direction disable the Automatic Curve Flip option.

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.



**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*

## Primitives

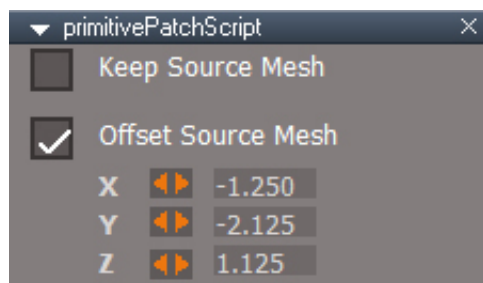
Cone and Cylinder

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.

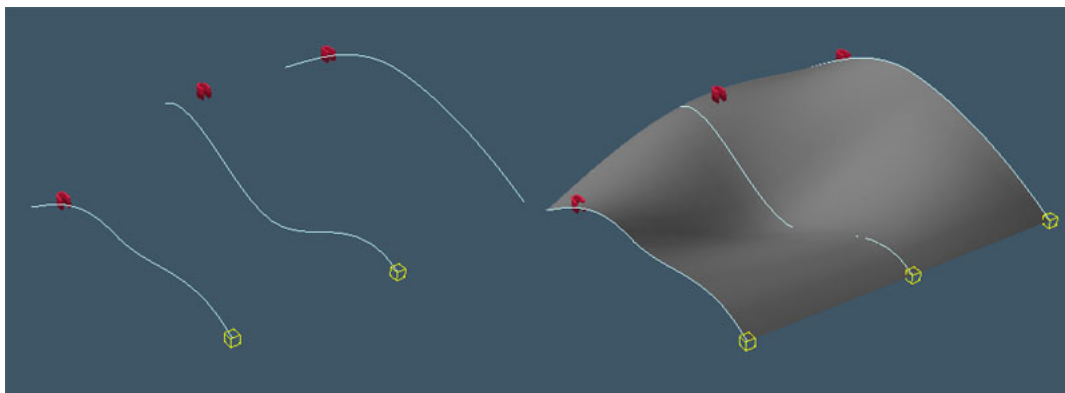
The plane segment counts will translate to the nearest multiple of 3. The final NURBS will have 3,6,9, etc segments on a side

Plane height count corresponds to NURBS U spans and width will translate to V spans.

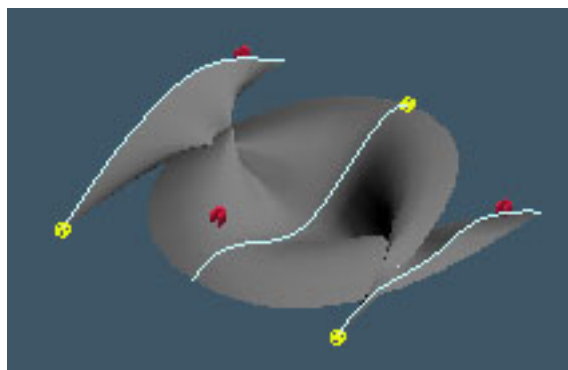
The NURBS cylinder is really a cone with equal top and bottom radii.



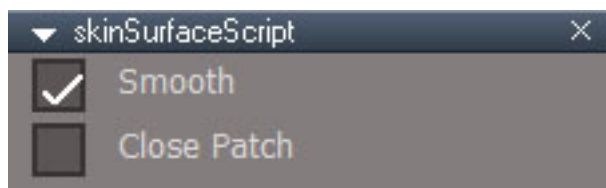
**Skin** - create a patch from a series of curves



Select a series of curves and press the button to create a patch.



*Be mindful of the curve direction to avoid twisting.*



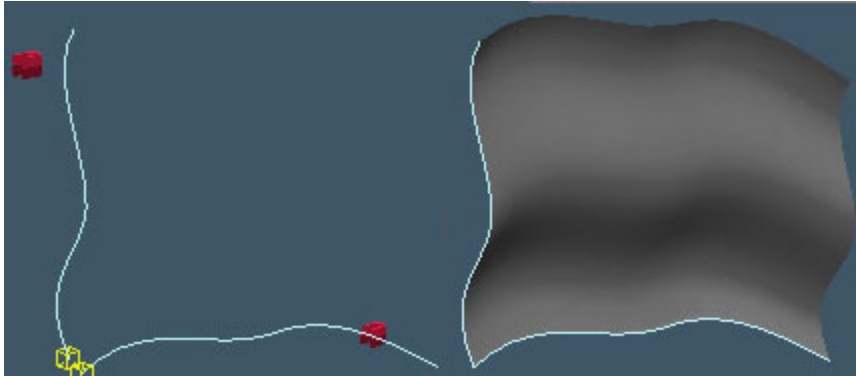
**Smooth** make a smooth transition between profile curves

**Close Patch** - repeat the first curve to give the appearance of a closed patch

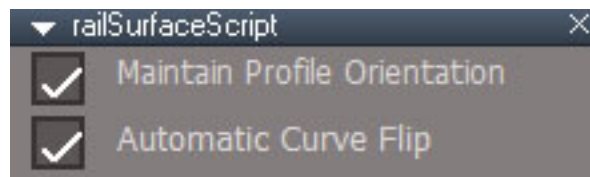
The curves must all have the same number of spans.



**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.

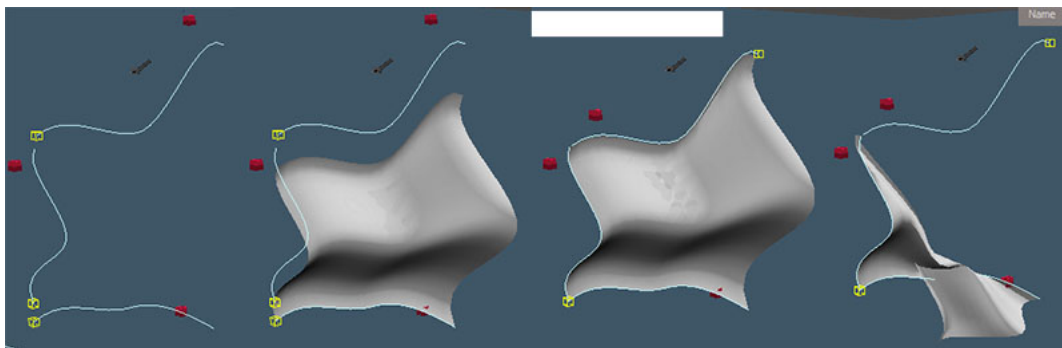


**Maintain Profile Orientation** - profile will not rotate to follow the rail curve

**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

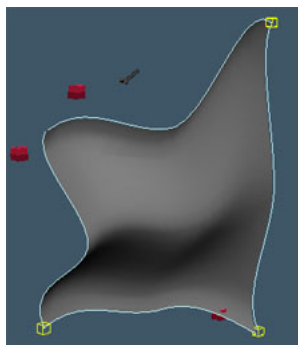
same birail with the curves touching and the top rail reversed to show automatic flip in action

same birail with the curves touching and the top rail reversed, automatic curve flip turned off

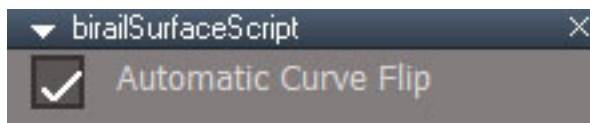
Arrange the curves so the head of the first profile is near the head of the first rail. If not then the Automatic Curve Flip isn't guaranteed to work properly.

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.



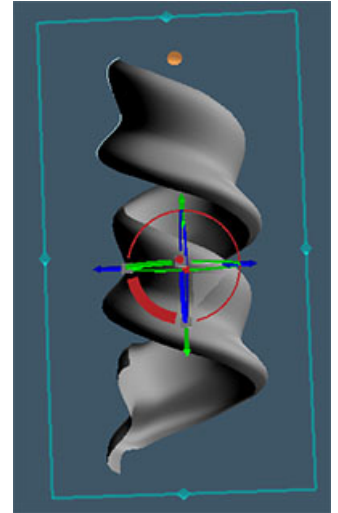
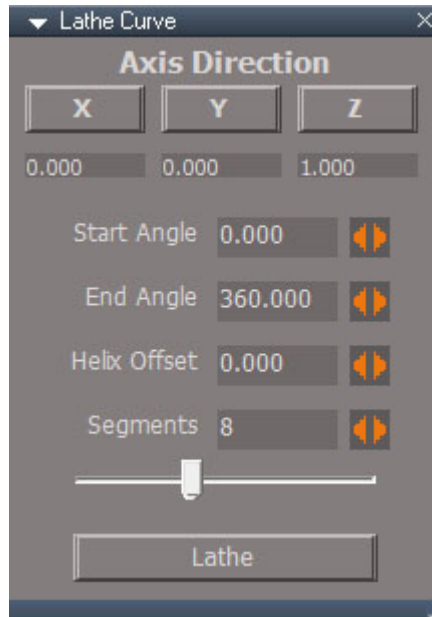
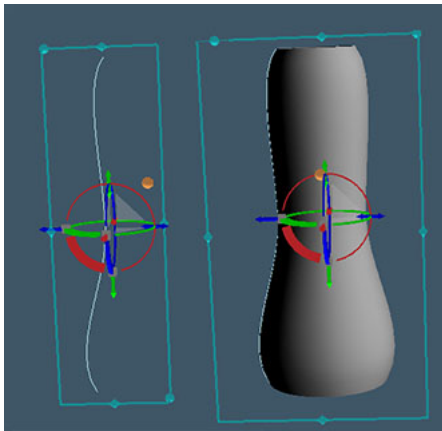
*birail with 2 profile curves*



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.

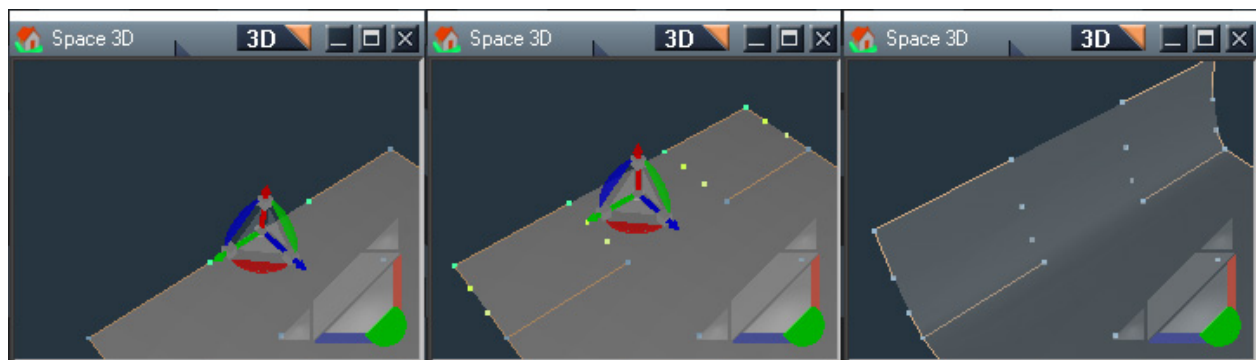
The origin of the curve can be set by using the trueSpace Axis, then Flatten axis tools.

The Mesh Origin script is also helpful for setting the origin of the curve to a precise location.



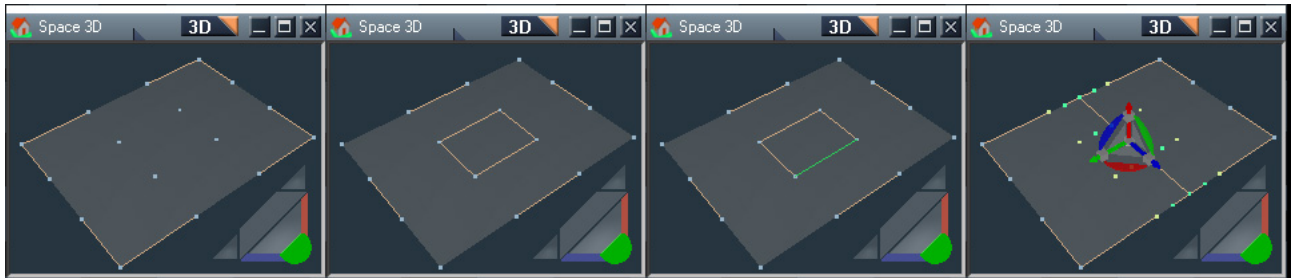
**Mesh Origin** [More Information](#)





**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

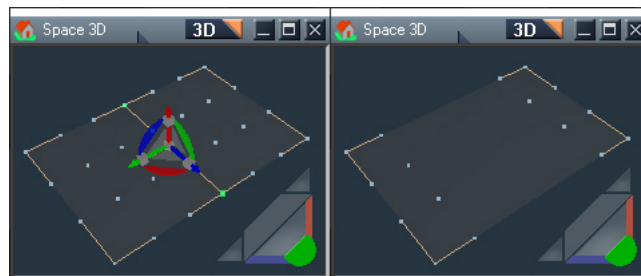


*New control points are added in between existing control points perpendicular to the new isocurve*



**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



*Remove 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



**Select IsoCurve** - Selects a line of control points with a soft selection to imitate modelspace manipulation of isocurves

*same icon as  
edge selection*

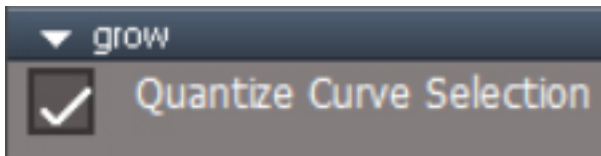
Select a control edge and press the button to select the isocurve.



**Plane Loop Select** [More Information](#)



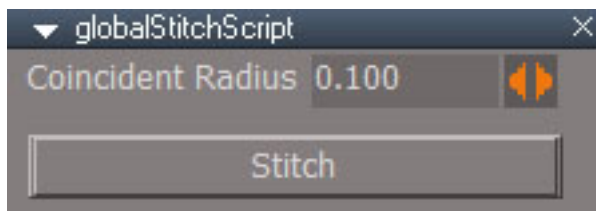
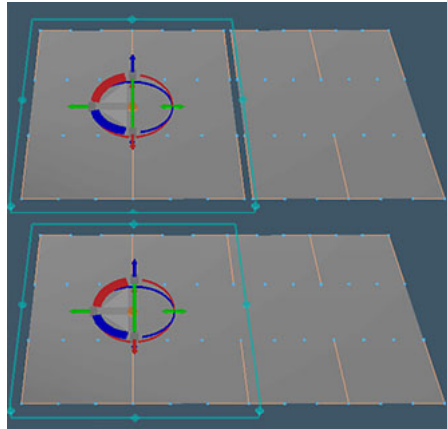
**Grow Handle Selection** - will expand the selection while limiting the selection to the handles and control points.



**Quantize Curve Selection** - will grow the selection limited to the handles and set the weights of the whole handle to the same value. This will keep the handles orientation and Soft selection moves will not sharpen the handles. When off the selection will grow a distance of 1 point at a time. When on it will immediatly grow to include the whole handle with the maximum current selection weight.



**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.



**Import Export Utilities**



*Import Export toolbar.*



**Convert Light Type**



**Freeze Transforms**



**Nulls**



**COB Export**



**Convert D3D Materials**



**Vertex Texture Animation**



**Material Utilities**



**OD Copy Paste**



**GLTF Import Export**



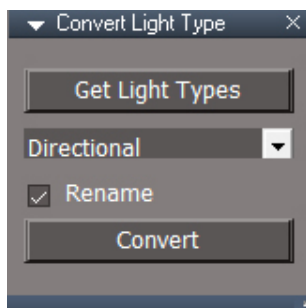
**Collada Import**



**FBX Import Export**



**Convert Light Type** - convert the selected lights to different types



press **Get Light Types** to populate the list

choose the new light type from the list

**Rename** to automatically rename the light, uncheck to preserve the name

Select the lights to be converted change

Press the **Convert** button



**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.

Freezing a group only freezes the group object.

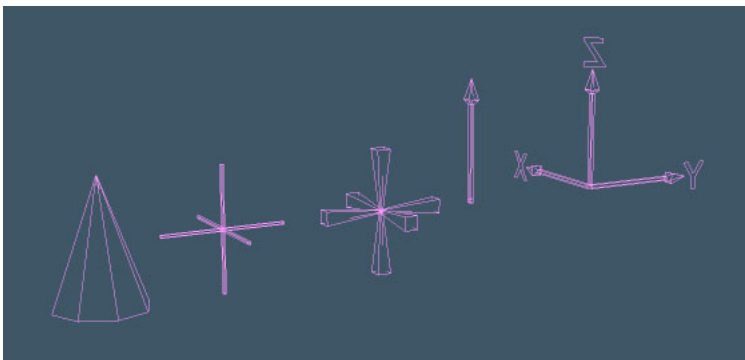
To freeze the elements of a group select them and then run the script.

The Shear option only operates on single mesh objects. Groups, lights and cameras are ignored.

.



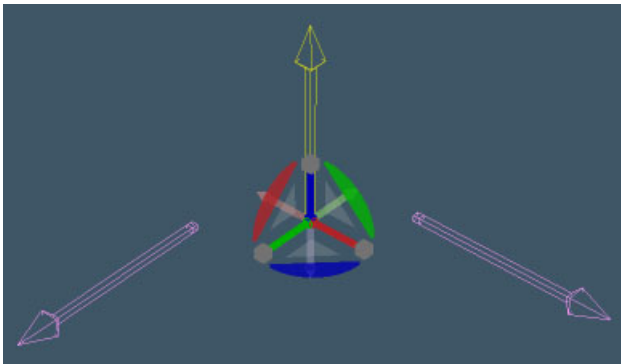
**Nulls** - convert meshes to null objects. Conceptually, a null is a non-rendering transform used for parenting, rigging, invisible look at target and as handles for various uses.




*Left to Right: Original(from a cone), Basic Cross, Flared Cross, Arrow, Axes*



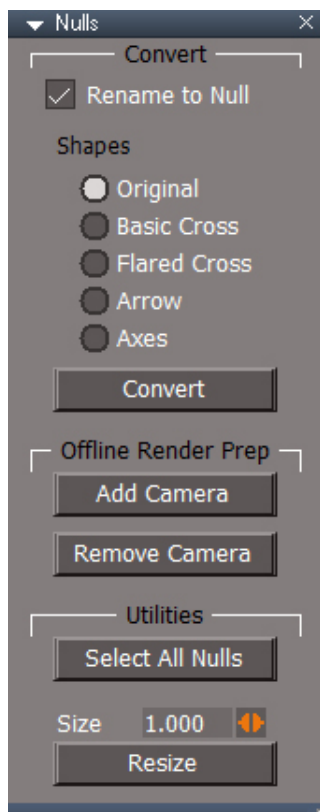
*Change the size and orientation of the null without altering it's transformation values*



*Left to Right: Y, Z and X orientations for the same mesh shape*

 Nulls inside of groups are not compatible with the Unofficial Updates Intensive mode Show and Hide scripts





Usage:

*Convert*

**Rename to Null** - will rename the object to "Null" after the conversion

**Original** - keep the original mesh object

**Basic Cross** - replace the object mesh with a basic cross mesh

**Flared Cross** - replace the object mesh with a flared cross mesh

**Arrow** - replace the object mesh with an arrow mesh

**Axes** - replace the object mesh with a xyz axes mesh

**Convert** - convert the selected mesh objects into null objects or change the shape of an existing null object

*Offline Render Prep*

**Add Camera** - add a camera to the selected nodes in order to fool offline renderers into thinking it's a camera and not render it

**Remove Camera** - remove the camera from the selected nodes

*Utilities*

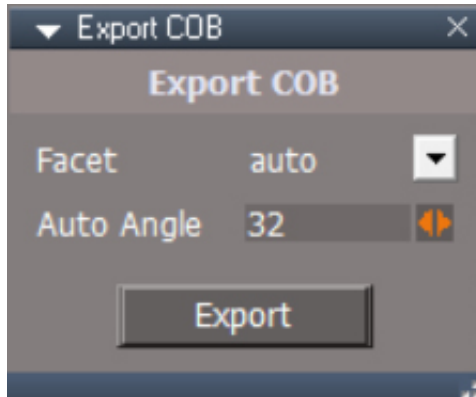
**Select All Nulls** - select all null objects in the scene

**Size** - the size value to use when resizing the selected nulls

**Resize** - resize the selected null objects



## COB Export



**Facet** - facet types are auto, faceted and smooth

**Auto Angle** - set smoothing angle for the auto facet type (0-179)

### Export Notes:

Designed for simple meshes. Will not work with actors.

Only exports 1 object at a time.

Morph animations will export as vertex animations in modelspace

Will read most compound and base d3d materials.

Use the "Fix Bitmaps For Export" from the Material Utilities for objects that have texture bitmaps applied to them.

Only linear dimensions will export. Workspace Dimensions



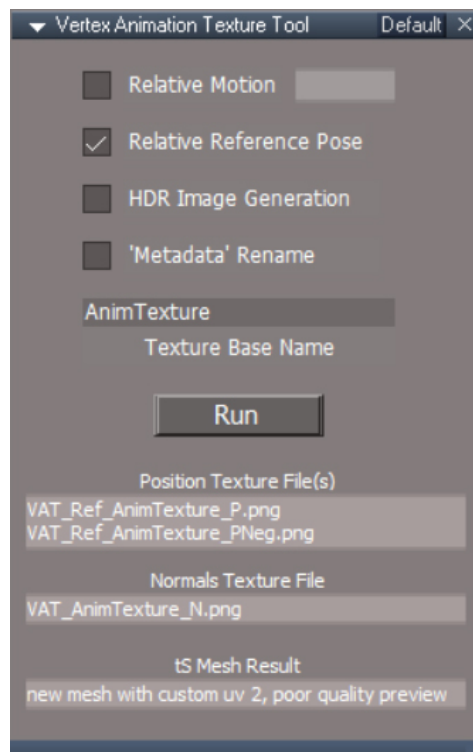
## Convert D3D Materials [↗](#) [More Information](#) [↗](#)



**Vertex Texture Animation** - export morph animation as a vertex animation texture file for use in the vertex shaders found in game engines like Godot and Unreal

## Usage:

1. Be sure the object uses compound d3d materials and they are not scene instanced.
2. material converter refers to compound materials as "D3D" materials
3. Name the materials for a better import result later and to avoid other material issues.
4. Animate the object using vertex morphs, skeleton or deformations.
5. note: if cyclic animation repeat the first keyframe at the end before conversion
6. If the First Frame Ref. Pose is used, create a keyframe 1 frame before the first frame of animation to define it.
7. Set the interpolation to linear to prevent overshoot in the animation.
8. Select the object and set the play range of the animation in the Anim view.
9. Open the Vertex Animation Texture Tool and set a base name for the textures
10. Press Run and choose the folder for the files.
11. The texture files will be generated and saved and a new mesh object will be setup to use the textures.
12. The new object will have a VAT Data or Metadata node inside that shows the scale and offset values needed for the vertex animation shader.
13. The new object will have UV set 2 setup for the animation.
14. Export the new mesh to a format the desired game engine can read
15. Use the values for scale, num frames, and offsets in the custom vertex shader



## Controls

**Relative Motion** - animation will be defined relative to individual vertex minimum XYZ values and maximum change in XYZ for all vertices. It works by creating an altered version of the mesh that maximizes the use of the color values to give higher resolution motions. When unchecked the mesh is not altered and the animation will be based on the bounding box minimum and maximum values. The RGB values are limited to 256 values each, so small motions can be clunky as they jump between the limited number of values.

**Relative Reference Pose** - creates difference texture data based on the original shape of the mesh. This option creates textures in a format where animations can be combined together in the shader. It creates 2 textures for LDR images. One for positive and one for negative value changes. For HDR image a single image with positive and negative values is created.

**HDR Image Generation** - when enabled the position texture will be saved as a float value exr image. When unchecked the position texture will be saved as a png format file.

**'Metadata' Rename** - the VAT Data node will be renamed to "Metadata" so the information from the node will be included in an fbx export of the mesh.

**Texture Base Name** - this name is used in the naming of the position and normals animation textures. Below shows naming samples assuming a base name of "AnimTexture"

VAT\_Delta\_AnimTexture\_P.png - "Delta" means Relative Motion and "P" means positions

VAT\_AnimTexture\_N.png - "N" at the end means normals, the normals are calculated the same for both types of motion. So there is no BBox or Delta signifiers.

VAT\_BBox\_AnimTexture\_P.png - "BBox" means use the extents of the bounding box over the course of the animation. Relative Motion is unchecked.

VAT\_BBox\_AnimTexture\_P.exr - hdr image is generated. EXR export does not use BBox despite the naming. The normals animation texture is always generated as a png file.

**Run** - execute the script. The anticipated result of the run will show in the information section below the run button.

**First Frame Ref. Pose** - the first animation frame vertex positions will be included in the bounding box limits of the animation. The actual animation will start on the next frame.

Relative Reference Pose is the most flexible option for VAT exports. Non-HDR will be limited to the 256 values of one direction positive or negative. So if the mesh is centered in the animation the range of values would be close to 512. Texture file will have "Ref\_" as part of the name.

Relative Motion gives best results inside of trueSpace. This is especially true for small motions. Relative Motion will add "Delta" to the texture file name. Unchecked will add "BBox" to the name.

This option will be disabled if Relative Reference Pose or HDR options are used.

The thinking behind the First Frame Ref Pose is that the mesh can be exported with it's original shape. and any other animations exported will work with that shape. Relative Motion can only be used with the shape generated by the Relative Motion process. The First Frame Ref Pose option does not always work with the Relative Motion option.

This option, First Frame Ref Pose, may be deprecated with the creation of the Relative Reference Pose.

HDR will export an exr image and create an 8 bit image internally for tS visualization.



**Material Utilities** A collection of tools for D3D Material processing  
 LMB open the panel  
 RMB open the panel in the stack view

**Convert D3D Materials** - convert base to compound, convert compound to yafaray and indigo. Change material instancing.

**Materials List** -

**Fix Orphan Materials** - some operations will copy mesh portions with all the original materials even if only one is used. This fixes those cases.

**Remove Unused Scene Instanced** - clear out any unused materials from the scene Materials node

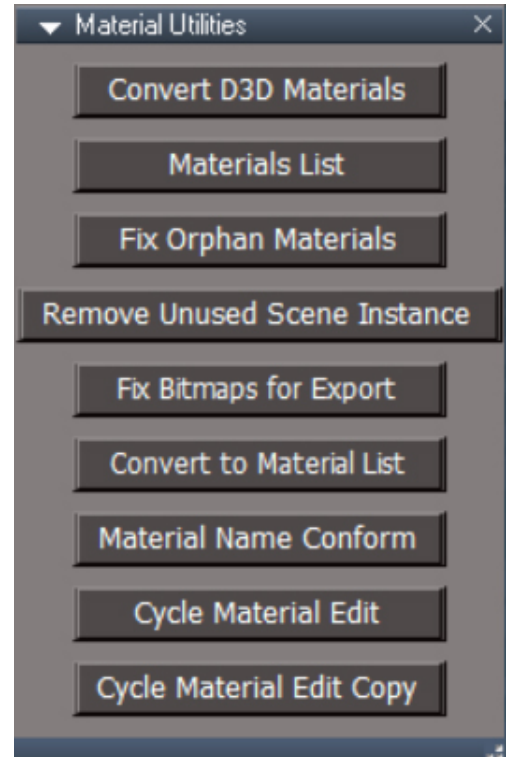
**Fix Bitmaps For Export** - report on and fix bitmap file references for exporting

**Convert to Material List** - convert old materials to compatible "Material List" format

**Material Name Conform** - if material has no name add one using the material node name, if the material has a name rename the material node to match

**Cycle Material Edit** - cycle the materials to the editor for the selected object

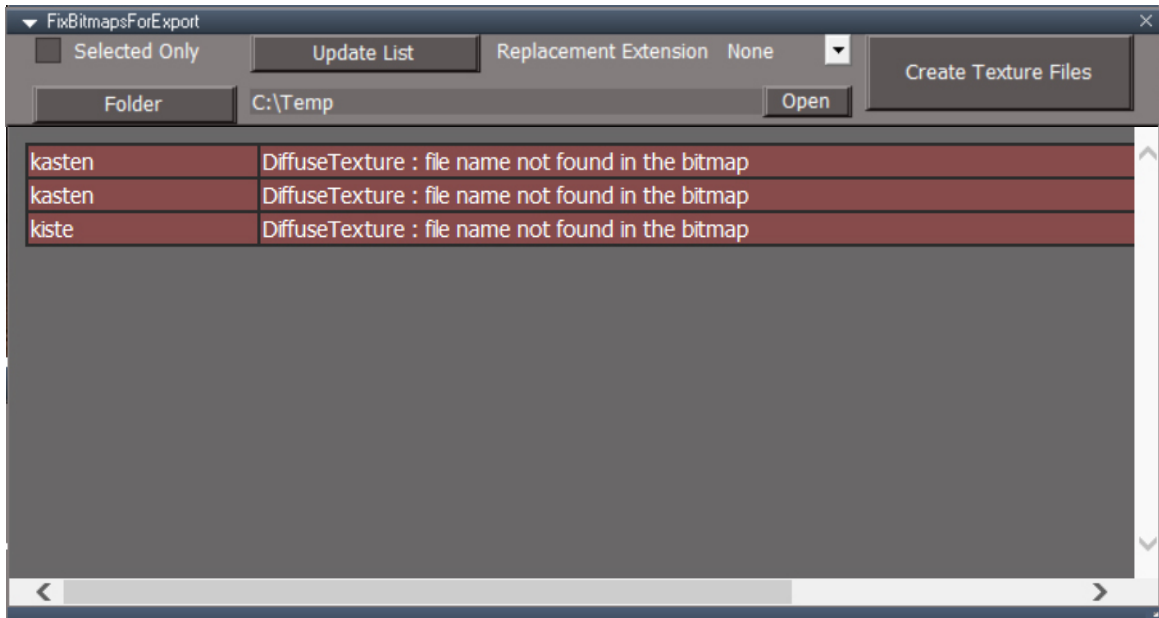
**Cycle Material Edit Copy** - cycle the materials to the editor for the selected object using a copy of the material. use to make a new material based on a preexisting onew



**Convert D3D Materials** [↪ More Information ↪](#)

**Materials List** [↪ More Information ↪](#)

## Fix Bitmaps for Export



Gives a list of all textures used in a scene. Red indicates some error with the texture file or that the bitmap file doesn't exist in the file system. Can fix purely embedded bitmaps so they reference image files on the local machine. Useful when exporting to other applications.

Red indicates image files that don't exist on the local machine or the bitmap does no refer to any texture file

Gray indicates good bitmap image state

**Create Texture Files** will recreate the bitmap texture files locally and assign those files to the material bitmaps. Lines with good state will not be altered or copied.

**Single selected** - only report on and fix the single selected item

**Update List** - generate the report

**Folder** - choose a folder for the image files

**Open** -

**Replacement Extension** - if None then the files will use the original extensions. If the file is not defined in the bitmap then a random named jpg file will be created.

**Create Texture Files** - create image files from the bitmaps embedded inside the objects and then reload the bitmaps from the new files

Steps

- run Update List to see the scope of the problem

- choose a folder to save the image files to

- choose a replacement extension if desired - use when the destination requires a specific format or destination is incompatible with the current image file format

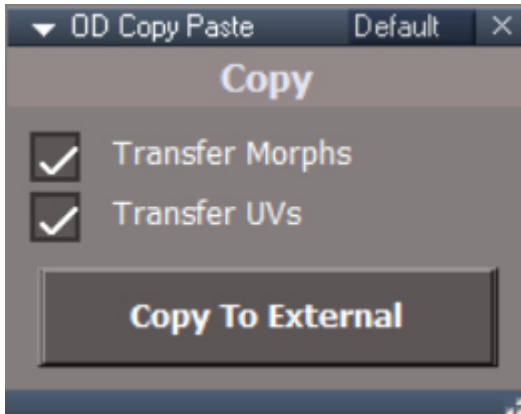
- run Create Texture Files

- the report will re-run after the fixes are complete





**OD Copy Paste** - copy and paste mesh data from an external file using the Origami Digital protocol. Supports UV and morph options.



Copy to External:

**Transfer Morphs** - copy and paste morphs

**Transfer UVs** - copy and paste uv values

**Copy to External** - write the selected mesh data to the temp file

### Basic Usage:

select a mesh

press the button to open the copy paste panel

choose options for morphs and UVs

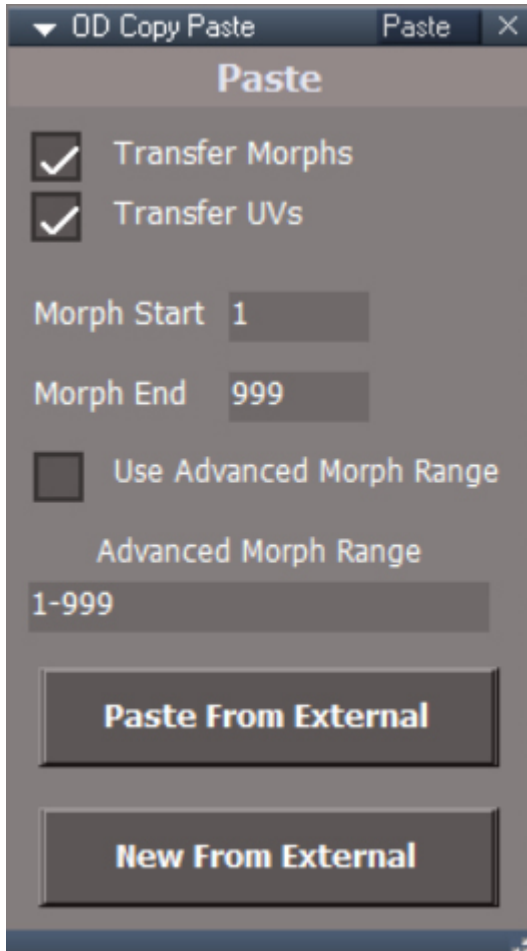
copy to external

paste into and edit in a compatible 3d program then copy out of the application

paste from external to get the changes into trueSpace

[https://heimlich1024.github.io/OD\\_CopyPasteExternal/](https://heimlich1024.github.io/OD_CopyPasteExternal/)

"Easily copying and pasting of geometry and common attributes across 3D Applications, perfect for quick iterations between them, without concerns about file management."



Paste/New from External:

**Transfer Morphs** - copy and paste morphs

**Transfer UVs** - copy and paste uv values

**Morph Start, Morph End** - range of morphs to paste in

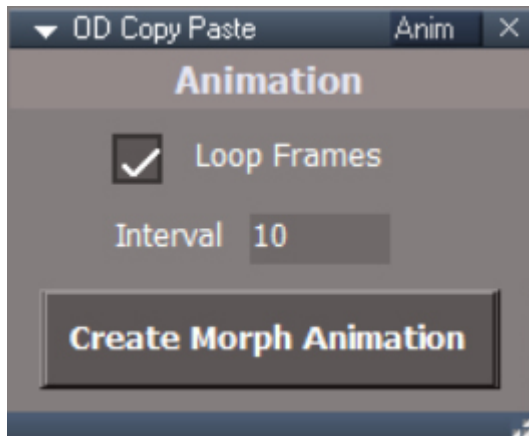
**Use Advanced Morph Range** - activate the advanced morph range input

**Advanced Morph Range** - use a combination of numbers and ranges of numbers separated by commas

ex: "1,3,7,25-33,42" => load morph numbers 1,3,7,42 and 25 to 33

**Paste from External** - read mesh data from the temp file replacing the selected mesh. If the selected object is not a simple mesh a new mesh will be created.

**New from External** - create a new mesh



Animation:

**Loop Frames** - will copy the first morph to the end for a looping animation

**Interval** - number of frames between keys in the sequence

**Create Morph Animation** - create a sequential animation from the morphs of the selected object

## Notes:

autofacet normals of 30 deg is applied to the pasted mesh - mesh normals are not included in the copy paste toolset

Morph Start and End are used to limit the number of morphs that will be created inside the trueSpace object.

Morph Start of 1 corresponds to the first shape key inside Blender after the Basis shape key entry.

If any morph is named "Morph" inside tS it will need to be renamed before running a paste operation.

material indices will transfer and simple solid materials with random colors will be assigned when pasting if the target item does not already have corresponding materials

Create Morph Animation is for reading in a sequence of morphs as a single animation expression. Morphs can be used as a means to read vertex animation in the form of a series of morphs.

Use the interpolation tools to set the keyframes as linear type for the best result

Anim view DopeSheet or FCurve - select "Vertex morphs"

RClick toolbar button to open the panel

Type: choose Linear interpolation in the dropdown

press Select All

press Set Interpolation

Does not support Weightmaps

Does not support SubD and Subpatch, only the cage polygons of the SDS will import and export

Does not support Lightwave style UV's

Might be limited to 15000 vertices if 2 uv channels and 30000 vertices if 1 uv channel

Material indices will transfer and simple solid materials with random colors will be assigned when pasting

## Morph names

The morph names may be too long to see in the default tS morph panel.

Open the Link Editor to the "Vertex morphs" node inside the pasted object

choose the Default panel, right click the title to start the editor

select the "Del" button and shift drag on the right to make it bigger - this step is to avoid a super tiny Add button later

select the top scrubber and shift drag it's left side to make them smaller

work your way to the left, selecting and shift dragging to resize the inputs until the names are big enough

Right click the title and choose "Replace"



GLTF Import

GLTF

Export

☒ Export Textures

☒ Export Animation

☒ Export Selected

☒ Export Cameras

☒ Export Lights

☒ Export Morphs

☒ Export Mesh Transforms

Export

ExportFileName  
C:\temp\Test2D.gltf

Open File Location

February 25, 2025

GLTF

IMPORT

☒ Import Animations

☒ Auto Adjust Timing

☐ Set Interpolation

Frame Skip 1

☒ Import Materials

☐ Full glTF Materials

☐ Simple Textures

☐ Simple Colors

☒ Import Meshes

☒ Import Morphs

☒ Import Skeletons

☐ Load Bind Nodes

Import Scale 1.000

Import

Use Bind Nodes

Apply Morphs

Skin Actors

Anim to Actors

Convert Nulls

Cleanup

December 13, 2023

GLTFgroup

Options

Import Options

☒ Randomize Materials

☐ Individual Mesh Primitives

☐ Import Material Data

☐ Import Extension Data

☒ Directional Light

Null Size 0.050

Import Scale 1.000

ImportedAnimClipNames

ImportedActorNames

Errors

CANCEL:user cancelled;

December 13, 2023

**Import Animation** - load animation trans, rot, scale

**Auto Adjust Timing** - gltf time in seconds, retime keys to get integer frame times in trueSpace, uncheck to maintain original animation speed

**Set Interpolation** - for non-baked animations script correction

**Frame Skip** - the number of animation keys to skip, 2=every other keyframe, a keyframe decimation option for baked animations

**Import Material** - load materials

**Full glTF Materials** - high complexity, full pbr compound material with optional reflection environment

**Simple Textures** - medium complexity textures for color, alpha and bump

**Simple Colors** - low complexity only colors, random colors in place of textures, use with glb format files

**Import Meshes** - if unchecked meshes will import as nulls

**Import Morphs** - morph targets includes unofficial targetNames import

**Import Skeletons** - load skeleton and skin data

**Load Bind Nodes** - use when the skeleton shape does not match the imported pose

**Import Scale** - scale to trueSpace meters

**Import** - start the import process

**Use Bind Nodes** - reshape the skeleton based on the bind node transforms

**Apply Morphs** - after import press to generate morphs and morph animations

*Do morphs before skinning actors.*

**Skin Actors** - after import press to apply skinning data

**Anim to Actors** - transfer animation from joint nulls to the actual actor skeleton joints

**Convert Nulls** - script will convert nodes that have been tagged as nulls by the import process into truespace null objects

**Cleanup** - remove helper objects and add items directly to the scene

**Randomize Materials** - to ensure there are no identical materials

**Individual Mesh Primitives** - if a mesh is made of a large number primitives then import each primitive as a separate mesh object. actor meshes will still import as multi-material single mesh. only use this option for special cases of single mesh with many materials applied to it (see Sponza sample below)

**Import Material Data** - include the original material data on a node, theory: round trip materials and convert between complexity values, not used

Import Extension Data - add gltf extension data node to the scene, not used

**Directional Light** - uncheck to import directional lights as trueSpace infinite lights

**Null Size** - dimensions used to create null cube

**Import Scale** - scale to tS meters

**Export Textures** - unchecked will export random color materials

**Export Animations** -

**Export Selected** - only export selected items and their materials. If the selection is a single 2D encapsulation then it will save the contents of the encaps.

**Export Cameras** - check to include cameras

**Export Lights** - check to include lights

**Export Morphs** - export morph targets including unofficial targetNames support

**Export Mesh Transforms** - can uncheck to export meshes without matrix transformations

**Export** - write the scene to a gltf file

**Open File Location** - windows explorer to the folder containing the exported file

**Open All Groups** - break down all 3D groups so that the child objects are directly at the scene level

A new addition to the hierarchy tools offers more options for converting 3D groups, such as converting groups into parenting relationships [hierarchy.html](http://hierarchy.html)

**Convert to Material List** - give modern structure to old materials by creating a material list node

**Convert Actor Animation** - change the animation so any motion on the actor and skeleton are transferred to the skeleton root joint. Animations on the actor and skeleton are ignored by the exporter.

**Morph Anims to Actor** - transfer the morph animations from an actor's mesh to the actor. Morph animations must be on the actor to export.

**Combine Morph Anims** - set animation keys for all morphs if any morph is keyed, so all morphs are keyed as a group. All morph values must be keyed together to export properly.

**Only Selected** - apply light intensity or pbr falloff only to the selected lights. Uncheck to apply to all lights in the scene.

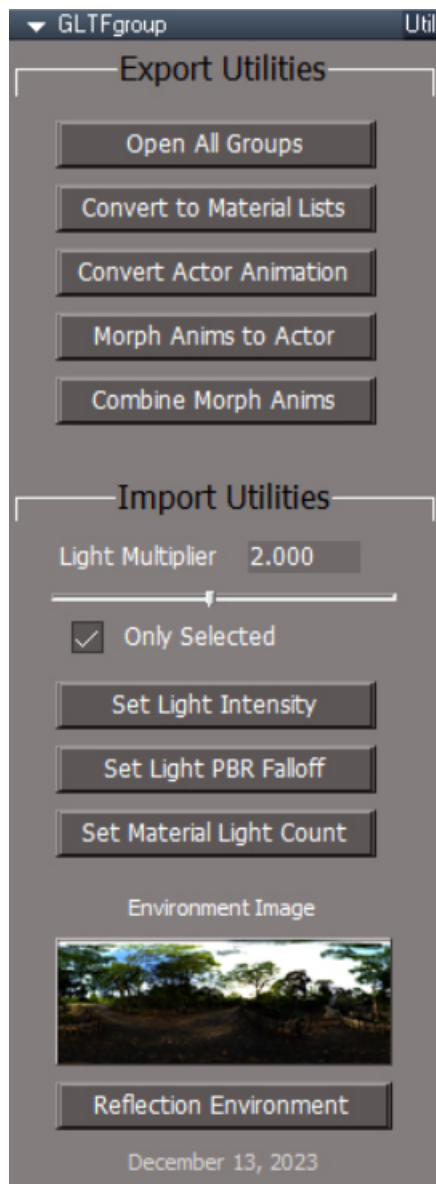
**Light Multiplier / Set Light Intensity** - change the intensity of all or selected lights by multiplying the current intensity values. use to adjust lights for imported meshes which may need higher light intensities

**Set Light PBR Falloff** - set light attenuation to match glTF pbr materials and intensity values will export proper values for a gltf light

Both Set Light Intensity and Set Light PBR Falloff will add an intensity control to lights that don't have one. The new control is only visible in the Exp aspect.

**Set Material Light Count** - the gltf based materials need to know the number of lights in the scene, press when the number of lights changes

**Reflection Environment** - convert the selected object gltf materials to have a reflection effect. If there is no valid renderable selection then all the materials will be converted. The conversion can take time to update the 3D view when there are a lot of materials.





### Import Export Notes

Does not export grouped objects - all objects must be ungrouped, see "Open All Groups" above  
 Materials that dont use material lists will not export  
 only scene instanced materials will import and export  
 mesh import/export points, triangles, normals, uv1, uv2, vertex color  
 actors limited to 4 bones per vertex export and 8 bones per vertex import  
 limited glb file format import and no glb export support

### Import Notes:

Use the Cleanup button after an import is complete and all optional processes have been run  
 nulls import as simple cubes - conversion button for true nulls  
 multi gltf primitive translates to multi-material mesh in tS unless ImportIndividualMeshPrimitives is checked  
 actor does not import as individual primitives - result will be a multi mesh actor  
 full gltf materials have the highest fidelity and use multiple distinct nodes (a compound material) to recreate the pbr material  
 animations import to named clips in their own tracks  
 does not use the imported bind pose by default - uses joint orientation, not correct but works for almost all samples, use bind options if needed  
 actor plus morph - must run morph before skinning  
 if an actor imports with the joint y-axis pointing down the bone, the joint will be unstable and cause the skeleton to crumple and move wildly when posing  
 If you get the texture limit reached warning there are 2 options - (best option) reduce the resolution of the texture files or try using the tS HW Settings to reduce the size in memory. after reducing the HW Settings, ignore the warning to see if it will load without crashing.  
 Another solution to the texture limit is to patch trueSpace to use 4Gb, NTCore 4GB Patch. Run against the Rosetta or tS7 exe files  
 if the material editor is open, selection will be slow for objects with gltf materials  
 imported lights will have an "Intensity" connector added. It is the intensity control for the light. It does not show in the default light aspect.  
 if the animation has more than 300 keyframes it will skip a minimum of every other key to avoid a memory issues crash

large flat surfaces will need subdivisions to display properly in tS



if windows explorer is previewing the gltf file it will load invisible and trueSpace may become unstable and crash. Select a couple of scene items and the import will become visible, though it's better to not have the preview open.

Export Notes:

texture export image must exist on disk - will create the image file for materials as needed

exports lights, skeleton, mesh, perspective and ortho cameras

perspective/ortho switch is found on the "Camera" node inside the camera object

exports multi material mesh as primitives

material export - only scene instanced

export KHR\_texture\_transform for uv offset, scale and rotation

export textures - when off will export random color objects

rotation, location and scale animations export with clip name - elements of matrix anim are exported, so if

only rotation only rotation keys are exported

morphs and morph animations will export

groups are not seen or exported, but their subobjects can be selected for export

can export objects inside of groups by using the selected only option

export single selected 2D group can be used to control what gets exported in a working scene

old style materials without a Material List Manager are not compatible

invisible objects will not export - camera and light visibility is ignored

the skeleton root of an actor is like an invisible first joint for the skeleton. It is the node that is connected to the Transform node inside the skeleton.

ik handles and locks are ignored

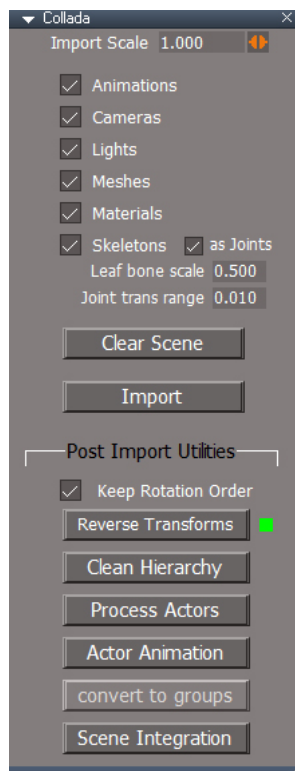
transform animation on the actor is not exported - actor animation starts at the skeleton root node

actor export hierarchy = actor null as parent of the skeleton null and the skeleton null is the parent of the mesh and the skeleton root joint



**Collada Import** ⓘ required plugin must be installed first

Load Collada mesh and animation data into truespace. It will read in lights, cameras, meshes, nulls, light color, spot light cone angle, camera fov and motion animations.



**Import Scale** - scale factor for import

**Animations** - import animations

**Cameras** - import cameras

**Lights** - import lights from the file

**Meshes** - import mesh geometry

**Materials** - import materials, otherwise only import color to a simple generic material.

**Skeletons** - import actors (skeletal meshes)

**as Joints** - interpret joints as joints and create an extra bone at the last joint in a chain so it can be used as a deformer. Otherwise reads joints as bones ignoring the last joint in a chain. trueSpace uses a joint/bone/joint structure, so uncheck if importing a dae file created by trueSpace. Other programs and the collada format don't have bones and have the skin assigned to the joints.

**Leaf Bone Scale** - set the size of the last bone in each chain of the skeleton hierarchy.

**Joint trans range** - will setup the joints xyz translation limits to plus or minus the original and this value. Zero value will cause translation animations to be filtered out during the transfer animation post import Actor Animation.

**Clear Scene** - delete all items from the current scene

**Import** - run the plugin portion of the import process

## POST IMPORT UTILITIES

The Post Import Utilities are used to apply animation and skinning and to convert and clean the node structures imported. The presentation order below and on the panel is the general order these utilities would be applied. The Process Actors and Actor Animations are only needed for skeletal animations.

**Keep Rotation Order** - when reversing transform nodes maintain the original order of the rotation transformation nodes. This is specifically for Blender exports.

**Reverse Transforms** - reverses the node ordering for rotation, translation and scale as read from the collada file. Specifically for Blender sourced dae files. Green means no reversed transforms were found in the collada file. If the indicator is yellow, some reversal was found in the file.

**Clean Hierarchy** - reduces the nodes to simple parenting relationships. This step can take some time to complete. This step is required before processing the actor. During the import several helper nodes are created to account for different rotation orders that might be encountered and to help with truespace rotation limits. This process transfers the transform data from the helpers to the base nodes(meshes, lights cameras etc) and deletes the helpers resulting in a cleaner scene. The animations are also compiled down from the helpers to the final base nodes.

**Process Actors** - moves the mesh into position, copies the bind poses and sets the skin weights for the skeletons/actor objects. It copies the bind pose(purple) to a fake skeleton(orange) then copies the transform values from the fake skeleton to the real skeleton and finally reads the skinning data from a data node and applies those values to the mesh.

**Actor Animation** -copies the animation from the fake skeleton joints(orange) to the real skeletons inside the actors. A long animation can take a long time to process.

**convert to groups** - converts the parenting relationships of the nodes to group relationships. Truespace does not natively support parenting and this process converts to a truepace compatible group format.

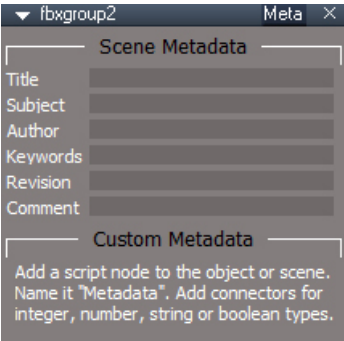
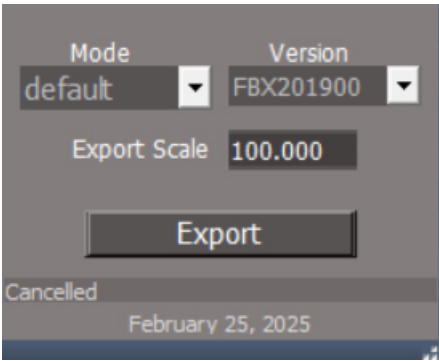
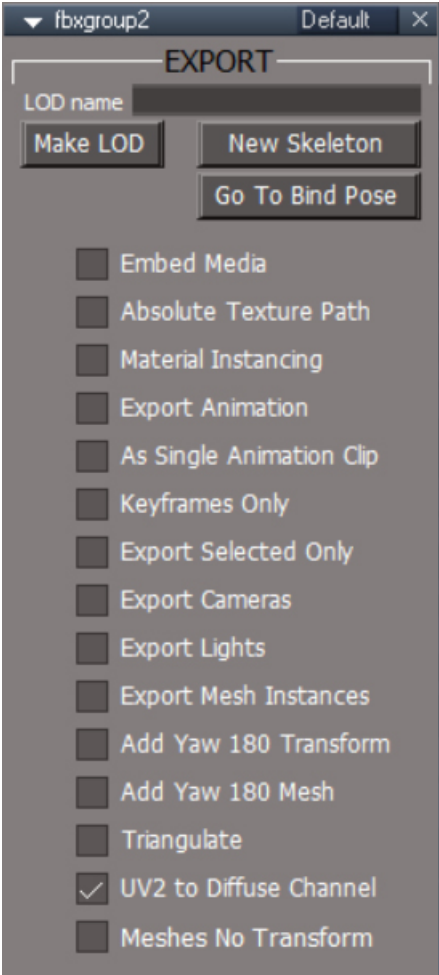
**Scene Integration** - the importer places everything except for actors into a temporary holding place so that name conflicts are avoided. This will clear out the temporary helper nodes and copy all items into the scene.



**FBX Import Export** Import FBX, DXF, OBJ, 3DS, ABC and DAE  
Export FBX, DXF, OBJ and DAE.  
Import and export BVH, HTR, TRC, ASF, AMC, C3D, AOA and MCD

Open the export panel.  
RMB to open the import panel.

required plugin must be installed first



**LOD name** - name for LOD group, if blank will use "LOD\_" + node name

**Make LOD** - place selected static meshes into an LOD group

**New Skeleton** - press this button to create a skeleton starting point

**Go to Bind Pose** - sets the timeline to frame -10 where a key for the bind pose is expected to be found.

**Embed Media** - will include textures within the fbx binary file

**Absolute Texture Path** - will use the absolute instead of the relative paths for texture files

**Material instancing** - export scene instanced materials. This will fall back to non-instanced if no global materials node is found.

**Export Animation** - saves object animations

**Single Animation Clip** - save all animations in one take otherwise each clip will become a take in the fbx file. This will disable the keyframes only option.

**Keyframes Only** - will export the keyframes instead of the baked animation. Linear interpolation will export as linear fbx, bezier and custom bezier will export as cubic interpolation, constant min and constant max will export as constant fbx interpolation. The interpolation handles are not translated only the key interpolation type. This option will be ignored if the Single Animation Clip option is checked

**Export Selected Only** - if unchecked the entire scene will export. If checked and using the material instancing option the scene Materials node will be added to the selection automatically.

**Export Cameras** - save cameras to the fbx file

**Export Lights** - save lights to the fbx file

**Export Mesh Instances** - will export mesh instances based on the unreal plugin static mesh tags. The mesh whos name matches the tag will be the basis for the exported instances. This mesh must to be visible in the scene.

**Add 180 Yaw Transform** - export with an additional 180 degrees transform in the Z axis

**Add 180 Yaw Mesh** - export with mesh vertices transformed by 180 degrees in the Z axis - needs more testing for use case

**Triangulate** - export meshes as triangulated

**UV2 to Diffuse Channel** - place UV set #2 into the diffuse channel, uncheck to place in the bump channel

**Meshes No Transform** - will export meshes without matrix data

**Mode** - export mode

default - fbx Z up default

worldspace - uses world transform instead of local transform. actors export as null objects. does not use the keyframe only option(result is always baked motion). child items need at least a keyframe at the start and a keyframe at the end of the sequence

3dsmax - Z up mode, does not produce good skeletal mesh exports

udkstaticmesh - good for use with the t3d exporter and the udkmatinee export mode. exports with z up orientation

udkmatinee - special mode for UDK matinee import, matches output to the buggy udk matinee fbx format

ue4cinematic - special mode for UE4 cinematic import, negates the default values for x and y position and rotation, no longer valid for latest ue4 version

**Version** - option to save specific FBX versions:

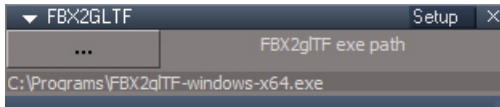
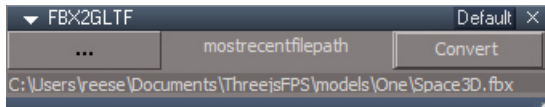
FBX2019, FBX2018, FBX2016, FBX2014, FBX2013, FBX2012, FBX2011, FBX2010, FBX2009

**Export Scale** - scaling multiplier for the export**Export** - saves an fbx file to disk.

press the "Esc" key to cancel a batch export

**Batch File Format** - drop down list of the fbx sdk export formats**Batch Export** - will export items individually instead of into a single fbx file, file names will come from each item**Set Batch Path** - choose a folder to receive the files**Scene Metadata** - define document information values for title, subject,author,keywords,revision,comment

Custom Metadata - Add a script node to the object or scene. Name it "Metadata". Add connectors for integer, number, string or boolean types to store the desired information.

**Open glTF Conversion Panel** - use external tool to convert fbx to gltf files

external tool for fbx to gltf conversion - <https://github.com/facebookincubator/FBX2glTF/releases>

**Usage:**

Setup tab - set the file location for the gltf2fbx tool - one time setup

Select fbx file and press **Convert** to generate a gltf file at the same location

The mesh instancing option looks for a connector named "smStaticMesh". If it's text is the same as the items name then the mesh will be used as the basis for the instancing.

The frame -10 of animation must contain the actor in the default pose.

Not compatible with limbs - unencaps them.

Not compatible with the legacy actors found in the characters library.

IK interpolation on export may be off so extra keyframes or baking the animation may be required.

Exported animations can start at frame 0. Frames before 0 are ignored.

To export a 3rd uv map use the node editor to copy the Editable shape node. Rename the copy as "uv3" and hook it in place of the Editable shape node to edit the uv map 1. When done reconnect the original Editable shape and the plugin will find uv set one on the "uv3" node and use them.

Do not put actors into any groups.

To export 1 clip at a time disable all clips except one. Disable the clip not the track.

A clip named "defaultPose" will be ignored for animation export.

If the mesh has a pivot use the flatten pivot tool on it before exporting.

Base (non-compound) d3d material, vray and lightworks materials will export as a blank default material - use the material converter script to make compound d3d materials that are compatible with the FBX exporter.

Scene instanced materials can be exported via the Material Instancing option.

Animation clips need to have good names, "AnimClip, 1" is a bad name because of the comma and space.

FBX export is not compatible with multi track animations.

If the d3d node has a Name connector it will be used for the material name.

All materials need to have unique good names.

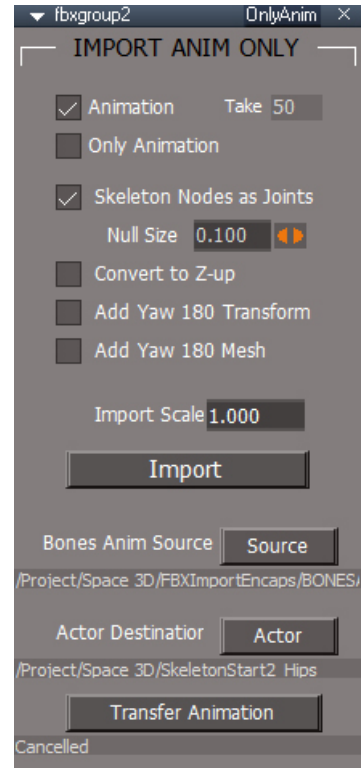
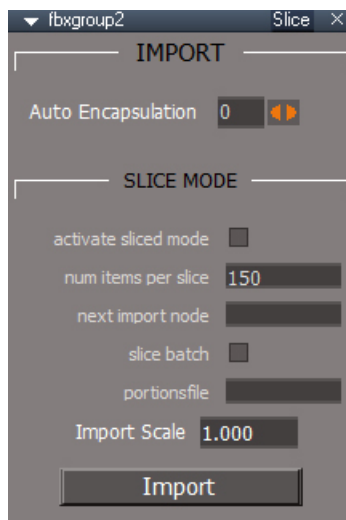
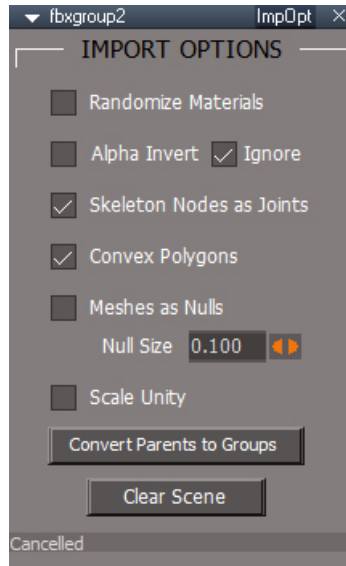
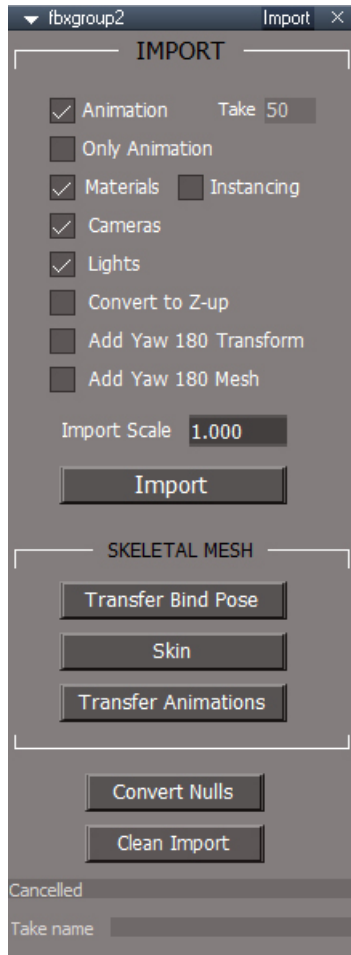
Only convex polygons and triangles will export properly.

LOD group nodes are automatically sorted by vertex count.

The embed media option does not work for images that only exist inside of the trueSpace scene. The images must exist on disk.

Floating vertices may result in bad geometry export. Remove them, optimize triangulation for the mesh or triangulate the face with the floating point.





## IMPORT

**Animation** - loads animation data

**Take** - the number of the animation to import. 0 will read the first one in the file. A value larger than the number of takes will display a series of message boxes to select the take.

Choose a take - Press the "No" button until the desired take is highlighted with "\*\*\*", then press "Yes"

**Only Animation** - read only the animation data for actors

**Materials** - when unchecked only color values are imported

**Instancing** - import as scene instanced materials.

**Cameras** - load cameras from the file

**Lights** - load lights from the file

**Convert to Z-up** - pressing this button will activate the fbx function to convert the imported file to a z up orientation. Uncheck for y up.

**Add 180 Yaw Transform** - add an additional 180 degrees transform to the Z axis rotations

**Add 180 Yaw Mesh** - apply a transform of 180 degrees in the Z axis on the mesh vertices. Requires use of Convert to Z-up? Use for unreal level import so meshes line up and it does not affect the lights and cameras.

**Import Scale** - control overall size of imported objects

**Import** - press to import an fbx, 3ds, obj, dxf, abc or other supported file formats.

**Transfer Bind Pose** - transfer the bind pose from the blue indicators to the skeleton. If it does not line up afterward, run it again.

If the mesh does not line up with the skeleton, fix it manually, before skinning

**Skin** - completes the import process for skeletal meshes by skinning from a data node provided by the plugin

**Transfer Animations** - transfer the animations from the yellow animation indicators to the actor. Always run for non-animated actor out of position This will also transform the actor with no animations when the fbx file has a transformed parent node.

**Convert Nulls** - convert imported objects marked as nulls into truespace nulls, works on the whole scene but limits to those items marked with tempnull

**Clean Import** - delete temporary data, BONESBIND\_ and BONESANIM\_ collections and integrate into the scene removing the temporary FBX group

## IMPORT OPTIONS

**Randomize Materials** - if scene instancing and different materials in the file have identical appearance, truespace will combine them causing material errors. Check to randomly alter the material parameters to keep the materials distinct - needed for some unreal imports

**Alpha Invert** - some files have reverse alpha/transparency values in the materials relative to truespace. Use this option to flip the alpha values imported.

**Ignore** - ignores the alpha value in the imported file

**Skeleton Nodes as Joints** - interpret collada joints as joint and create an extra bone at the last joint in a chain so it can be used as a deformer. Otherwise reads collada joints as bones ignoring the last joint in a chain.

Adds a leaf joint to the end of the skeleton chains.

**Convex Polygon** - creates a polygon from a fan type arrangement of triangles. This is good for most cases. When unchecked concave polygons will import properly, but it is unstable and may crash truespace in some cases.

**Mesh as Nulls** - creates a cube with no materials for each mesh in the file. good for importing large numbers of items where only the transform properties are important

**Null Size** set size of the cubes that represent nulls

**Scale Unity** makes it possible to import actors that have scaled skeletons by forcing a scale of 1. Animations from these scaled skeletons cannot be imported.

**Convert Parents to Groups** - some formats import in a parent child type heirarchy. This button converts these nodes into truespace style groups

**Clear Scene** - delete all items in the scene

## IMPORT ANIM ONLY

**Animation** - loads animation data

**Take** - the number of the animation to import. 0 will read the first one in the file. A value larger than the number of takes will display a series of message boxes to select the take.

Choose a take - Press the "No" button until the desired take is highlighted with "\*\*\*\*", then press "Yes"

**Only Animation** - read only the animation data for actors

**Skeleton Nodes as Joints** - interpret collada joints as joint and create an extra bone at the last joint in a chain so it can be used as a deformer. Otherwise reads collada joints as bones ignoring the last joint in a chain.

**Null Size** set size of the cubes that represent nulls

**Convert to Z-up** - pressing this button will activate the fbx function to convert the imported file to a z up orientation. Uncheck for y up.

**Add 180 Yaw Transform** - add an additional 180 degrees transform to the Z axis rotations

**Add 180 Yaw Mesh** - apply a transform of 180 degrees in the Z axis on the mesh vertices. Requires use of Convert to Z-up? Use for unreal level import so meshes line up and it does not affect the lights and cameras.

**Import Scale** - control overall size of imported objects

**Import** - press to import an fbx, 3ds, obj, dxf, abc or other supported file formats

**Source** - select the BONESANIM\_xxx node that contains the animation to copy and press to set it

**Actor** - select the actor to receive the animation and press to set it

**Transfer Animation** - copy the animation from the fake yellow source skeleton to the actual actor/skeleton

Auto Encapsulation - 0 = off, otherwise makes encapsulations with the indicated number of imported items per encapsulation

activate sliced mode - an fbx file with a large number of items will crash truespace. Use this option to import the file a piece at a time. The resulting meshes can be combined with booleans or encapsulated to reduce the number of nodes in a scene and the next import will load the next section of the file. Use with slice batch for a slightly smoother user experience.

num items per slice - the number of objects that will import when in sliced mode. Each time the import is run this many nodes will import.

next import node - this field keeps track of the next starting point for importing in sliced mode. It will be blank when the last section of the file has been imported. Do not type anything in this field.

slice batch - used to keep track of the current file when in slice mode so the user does not need to use a file dialog between slice imports

Import Scale - size multiplier

Import - press to import an fbx, 3ds, obj, dxf, abc or other supported file formats



**Point Edit Toolbar** open toolbar



*Point Edit toolbar.*



**Align View to Face**



**Lathe**



**Static Sweep**



**True Bevel**



**Selection by Normals**



**Quadrify by Normals**



**Target Weld**



**Normal Move**



**Shear**



**Toggle Object Coordinate Mode**

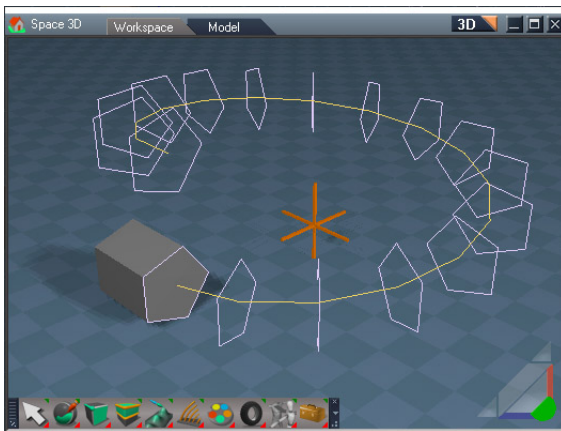


**Axis to Selection**

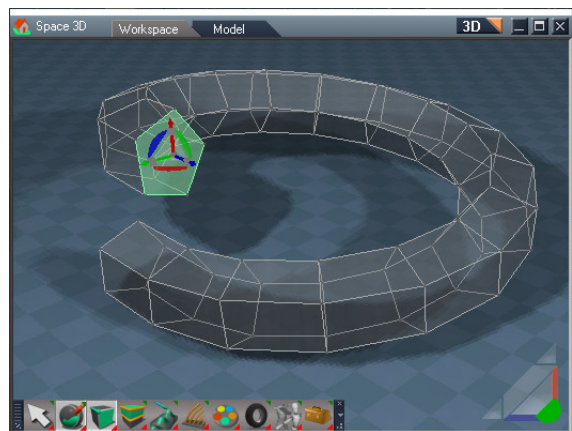


**Align View to Face** - align the 3D perspective view to the selected face or triangle

After alignment the Screen coordinate system can be used to keep transformations parallel to the plane of the selection.




*lathe array*



*lathe complete*



**Lathe** - based on the radial array tool, LMB start the process

 will use up many undo steps

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.

**=** - set the top radius to the radius value

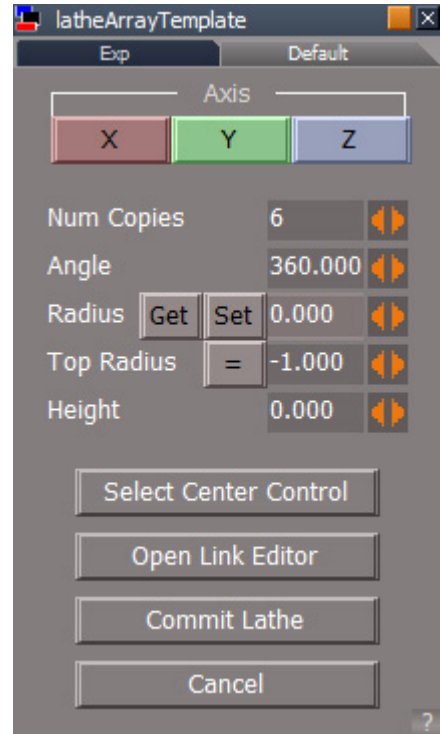
**Height** controls the offset from the plane of the array for spiral effects

**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.

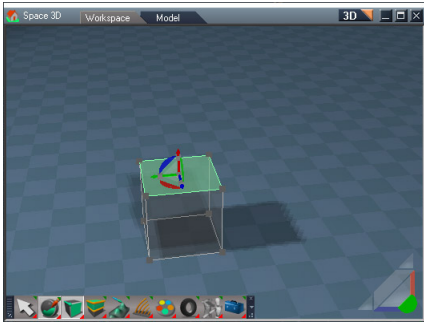
**Commit Lathe** - extrude the face along the array path

**Cancel** Stop lathe and remove working geometry.

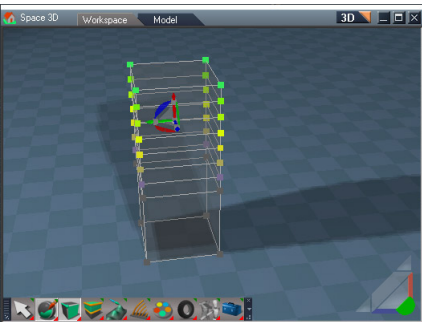




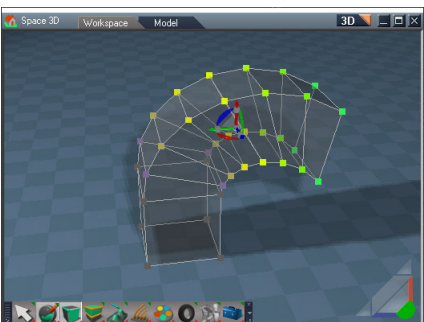
**Static Sweep Plus** is based on the Dynamic sweep tool except that it is not interactive and will have a soft selection when the number of segments is greater than one.



*before sweep*



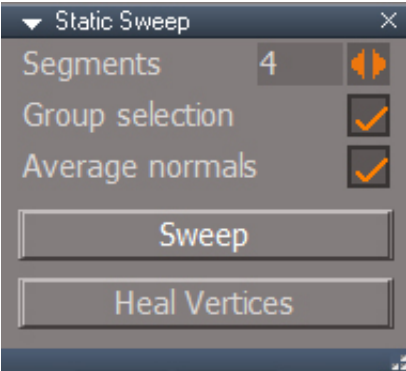
*after sweep and move*



*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
- Sweep** - perform sweep
- Heal Vertices** - heal all vertices of the object, not just the selection

One specific use case for the heal vertices would be when rotating the sweep around one of the edges of the selected face. The heal would merge the overlapping points. Use with caution since the heal vertices will heal the entire mesh.



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.

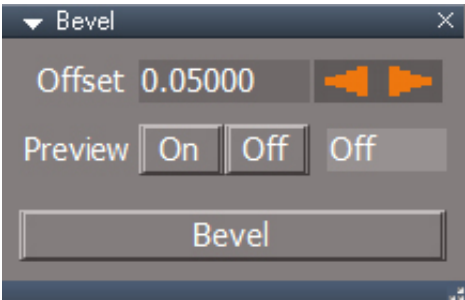


**True Bevel** is an edge bevel tool

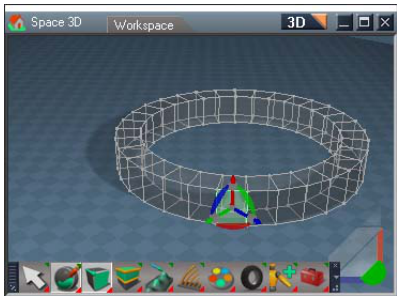


will use up many undos

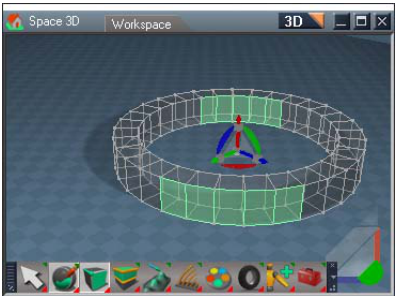
- Make an edge or face selection
- Press the button to open the panel
- Set Offset value and press Bevel
- or
- Turn on Preview
- Drag the Offset control back and forth to see a preview of the bevel.
- Press the Bevel button to commit
- Cleanup any bad geometry created
- The selection can be changed at any time before pressing the Bevel button



**Selection by Normals** - expand face selection to faces that have a common normal direction



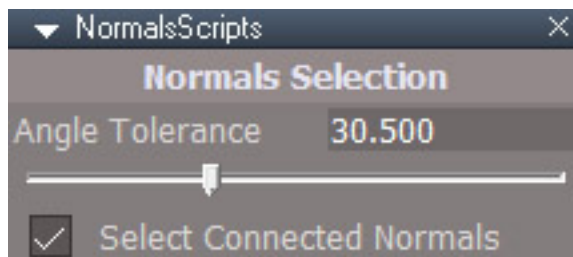
*initial selection*



*select by normal, 30 degree tolerance*



*select by normal, 30 degree tolerance, Select Connected Normals*

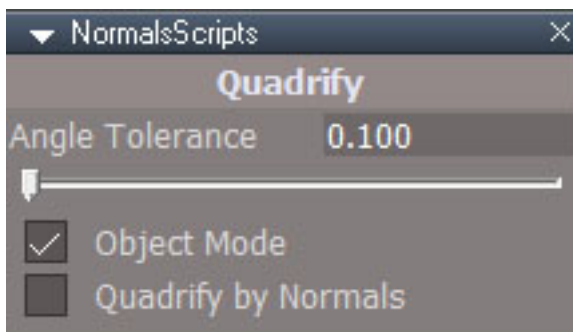


**Angle Tolerance** - the maximum angle for comparison of normals

**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



**Angle Tolerance** - the maximum angle for comparison of normals

**Object Mode** - quadrangulate a selection of objects

**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. This option is not used when Object Mode is active

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 - Object Mode (the default and recommended procedure)

Quadrify by Normals option is ignored  
 choose Object Mode from the panel  
 Select the object(s) to be quadrified  
 Set tolerance - low values will be more accurate, but will run much more slowly  
 high values are less accurate, but will run faster  
 If run with a high tolerance, fix any problems:  
     Quadrify, Object Mode unchecked and run the tool on point edit selections

Quadrify - not by normals ( fast )

Uncheck Object Mode  
 Uncheck the Quadrify By Normals option  
 Select faces or triangles  
 Run the tool

Quadrify - by normals (automatic, slow)

Uncheck Object Mode  
 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

Quadrify - alternate/old procedure

Uncheck Object Mode  
 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



**Target Weld** weld one vertex to another by clicking on them one by one. RMB to exit the tool.



each weld will eat up about 4 or 5 undos.

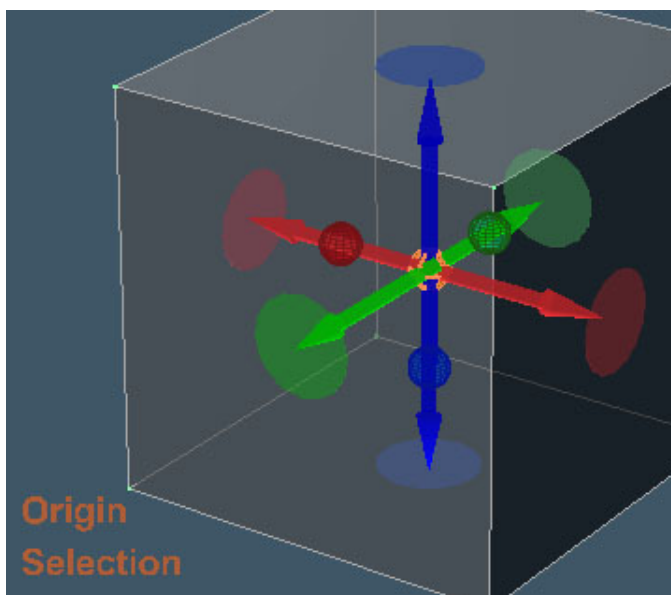
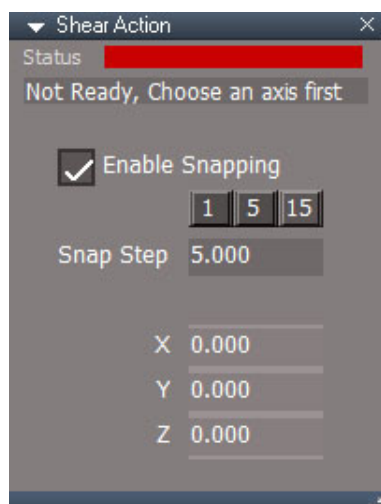


**Normal Move** will move a vertex selection in the direction of their normals.  
 Left button drag the mouse in the 3D view to increase or decrease the offset value. RMB to open the sensitivity panel.  
 RClick to exit the tool. LClick to reset the move



## Shear

move a vertex selection in shear directions.



### Usage:

Make a point edit selection and zoom in to see it well. The widget size is determined by the selection size.

Start the shear tool.

Rotate the view if needed to get good access to the controls.

Lock/select an axis using the sphere controls.

Choose a center for the shear. The default is the selection center.

Use the arrow controls to shear the selection.

### Panel Controls

**Status** - changes to Green color and "Ready" after an axis is locked/chosen

**Enable Snapping** - vertex movement(in degrees) will be in steps instead of smooth

**1/5/15 Buttons** - quick presets for the snapping for 1,5 and 15 degree steps

**Snap Step** - the angular distance the vertices move when snapping is enabled

X,Y,Z- display of the shear value in degrees

### Widget Controls

**Arrows** - shear in the mesh local X,Y,Z directions (RGB=XYZ)

**Spheres** - lock/select the axis for shearing - required before using the arrows to shear

**Center** - orange shear center indicator, default is the center of the selection

**Circles** - set the center for the shear operation at the bounding box extents

**Origin** - set the mesh origin as the shear center

**Selection** - set the selection center as the shear center

Circle positions will correspond to the bounding box of the selection, except for a zero size edge will have some set offset

### Notes:

The tool does not play well when the mesh has a pivot.

45 degree shear is good for right angle turns.

The arrows are in local space, so the apparent positive and negative directions can appear reversed when dragging.

Single plane/face selected(sketchy note)

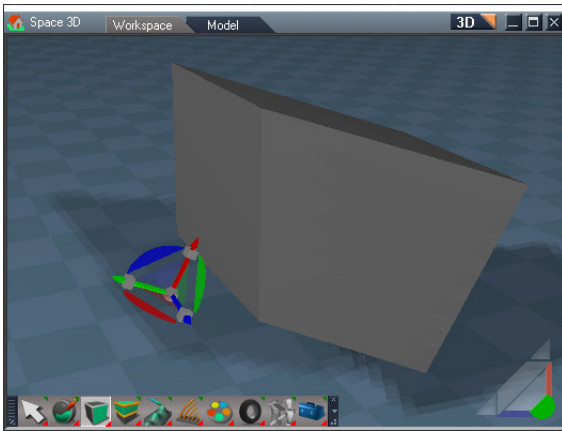
- lock parallel to the face to get twisting style shear from the other parallel axis and lean using the perpendicular axis
- the locked will define the moved points, so if z locked then top and bottom will move, if y locked then left and right will move
- lock perpendicular to face and move center perpendicular circle will give sliding, like translation

Single edge selection(sketchy note)

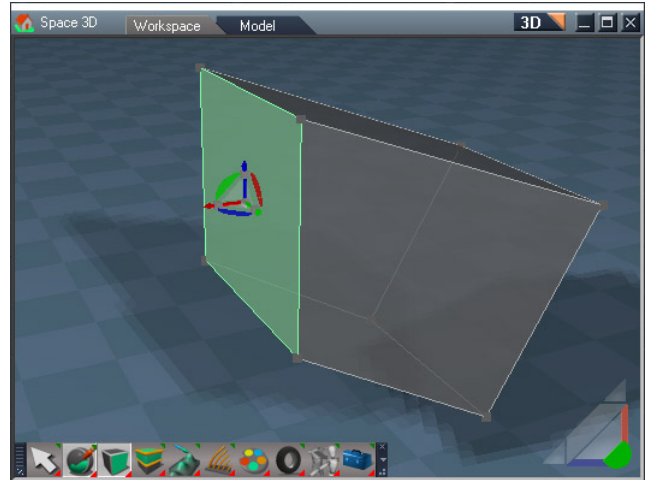
- lock direction and center on same locked axis circle bbox min or max
- pull on perpendicular to move out
- pull on parallel to slide along edge direction

Object face not in line with any local axis(sketchy note)

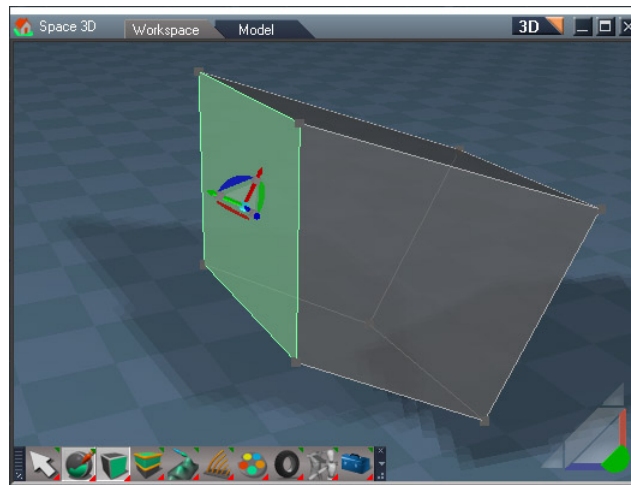
- 1.snap pivot to face with rotation(or face with rotation to center)
- 2.object coord nav so can see change
- 3.use flatten axis tool, uu version has option to remove the pivot, can also manually disconnect and remove the Pivot node



*object rotated in Y, object coord nav widget*



*face selected point edit widget normal object mode  
aligned to the selection*



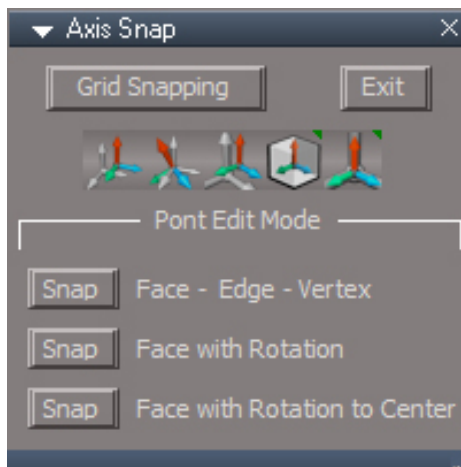
*mesh object coord mode, widget same orientation as  
in object nav widget object mode*



**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.



Note that this should be toggled off before using the tangent coordinate mode.



*Axis to Selection Panel*



**Axis to Selection** move pivot to the selection  
RMB open axis snap panel

**Grid Snapping** - turns on grid snapping, click again to turn off

**Exit** - turns off grid snapping and closes the panel

5 generic axis buttons

**Snap** - Face - Edge - Vertex = move the axis based on the point edit selection

**Snap** - Face with Rotation = move the axis to the face and orient to the selected face

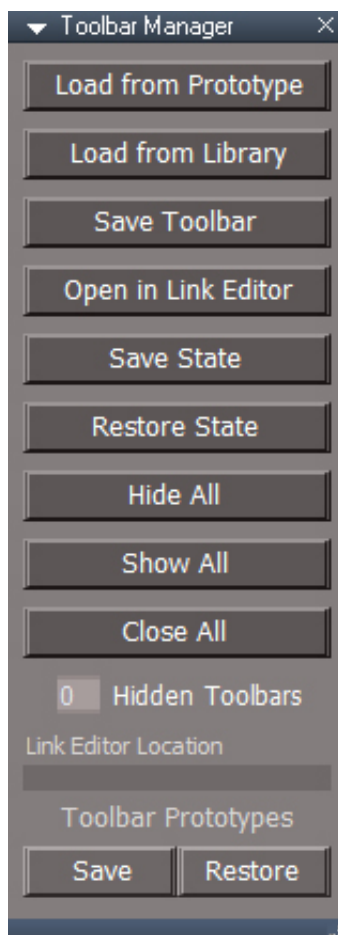
**Snap** - Face with Rotation to Center = move to the center and orient to the face selection



## (Green) Toolbar Manager



LMB = open the Toolbar Manager panel  
RMB = Open All toolbars in the toolbars library



**Load from Prototype** - opens the Toolbar Prototypes panel for opening a toolbar from the prototypes store

**Load from Library** - opens the User Toolbar Library panel for loading toolbars from the toolbars library

**Edit Params** - press the button and double click on a toolbar to edit the parameters that define it. Prototype is the only required field. The prototype and description will show in the toolbar prototypes panel and library panels

**Save Toolbar** - press the button and double click a toolbar to save it in the toolbar prototypes encapsulator. The Edit toolbar panel will open if the toolbar does not have a prototype defined for it

**Open in Link Editor** - double click a toolbar to open it in a link editor window. This also works for window frames by changing the size of the window

**Save State/Restore State** - save the configuration of the open toolbars and later restore them after any changes may have been done. One use case is for switching layouts. Save the state, switch layouts and then restore to recover the toolbars.

**Hide All/Show All** - show and hide the open toolbars.

**Close All** - close all the toolbars

Hidden Toolbars is an indicator to show if any toolbars are hidden

Link Editor Location will display path to the toolbar or window opened using the Open in Link Editor

**Save** - if the toolbar existed at the end of the installation time of the unofficial updates it will be restored and then the toolbar prototypes will be saved

**Restore** -

Built in toolbars are stored in the Toolbars Prototype Encapsulator. This tool enables you to create toolbars that live in that encapsulator. The advantage over normal user created toolbars is that they can be saved and reused independent of the layouts and they can be hidden when switching from workspace to modelspace. The opened toolbar is assigned to the active window, so it does not float above all other windows and toolbars. Almost any toolbar available in trueSpace can be loaded at any time.

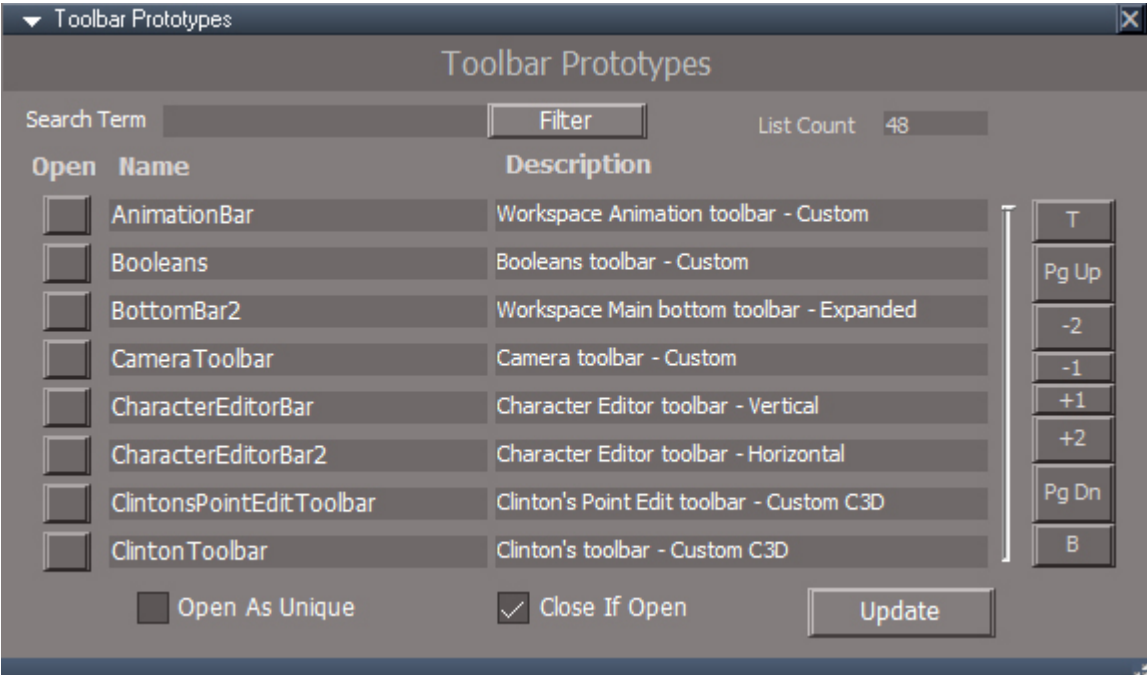
#### Basic Usage:

- create a toolbar by the normal drag and drop process
- run Save Toolbar
- give it a unique prototype name - names that start with underscore will go to the top of the list
- Save Prototype button to save to the toolbar library and main toolbars storage

#### OR

- Load from Prototype
- check Open as Unique so you create a duplicate toolbar instead of editing the existing toolbar
- navigate up/down with the buttons on the right
- click the button on the left to open the new duplicate toolbar
- make desired changes to the toolbar
- Save Prototype button to save to the toolbar library and main toolbars storage

See Chapter 2, section 2.4, of the original docs for information on toolbar modification and manipulation.



**Search Term** - interactively filter the list of toolbars based on the names and descriptions

**Filter** - press if the search stops updating, if the search gets stuck clear the text and press the button

**Open Buttons** - press the buttons on the left of each line to open the corresponding toolbar

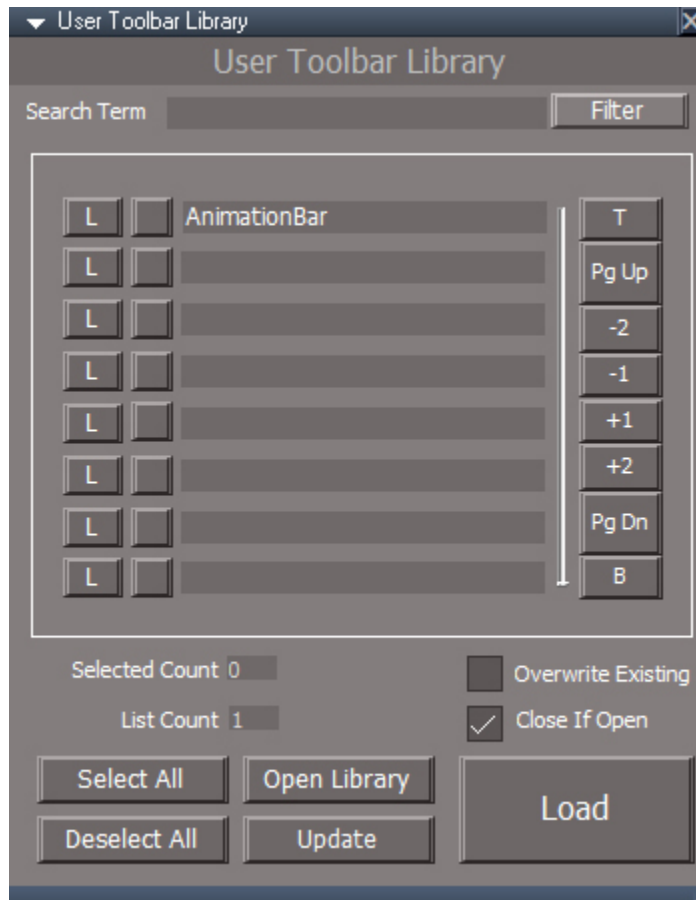
**Open as Unique** - when checked the Open Buttons will create and open a copy of the toolbar

**Close If Open** - if the toolbar is already open it will be closed before opening the toolbar

**Update** - will update the list and clear a stuck search term.

**List Navigation Buttons** - T=top, B=bottom, PgUp/PgDn move up or down 8 items(1 page), -2/+2 move up or down 2 lines, -1/+1 move up or down 1 line

The slider indicates the position in the list. It does not update the list in any way.



**Search Term** - interactively filter the list of toolbars based on the names and descriptions

**Filter** - press if the search stops updating, if the search gets stuck clear the text and press the button

**L** - press the buttons on the left of each line to load the corresponding toolbar

**Blank Button** - add the line to the selection of toolbars to load, "x" indicates a selected line

**List Navigation Buttons** - T=top, B=bottom, PgUp/PgDn move up or down 8 items(1 page), -2/+2 move up or down 2 lines, -1/+1 move up or down 1 line

The slider indicates the position in the list. It does not update the list in any way.

Selected Count

List Count

**Overwrite Existing** - when loading will overwrite any existing toolbars

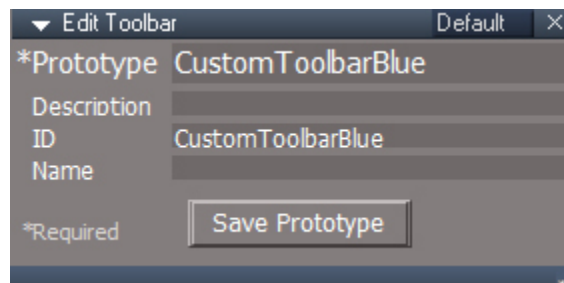
**Close If Open** - if the toolbar is already open it will be closed before opening the toolbar.

**Select All/ Deselect All** - mark all in the list as selected or not selected.

**Open Library** - opens the user toolbar library in the stack view.

**Update** - will update the list and clear a stuck search term.

**Load** - loads and opens the selected toolbars from the library



Edit the toolbar parameters to define the prototype and other optional values. The prototype will be the name of the node created. The description will appear the toolbar prototype panel list. ID and Name are additional parameters whos use in the prototype system, if any, is unknown.

Save Prototype - will save the toolbar to the prototypes encapsulator and give the option to save to the user toolbars library.

Gold Toolbar



Gold/Clintons Toolbar



Align



Dimensions



Mirror Matrix



Radial Modeler



Deformers



Locking



Point Clone



Parenting



Mesh Origin



Radial Array



Remove from Group



Layers v4



Grid Array



Add Group 3D



Statistics



Particles



Add Group 2D



Web Server



Constraints



Un-Parenting



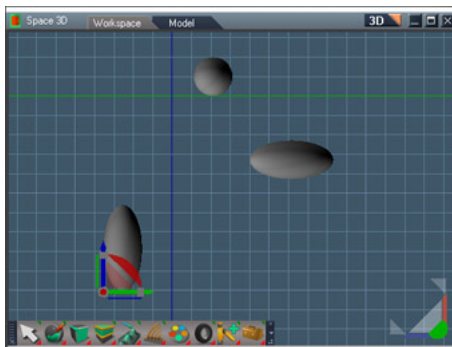
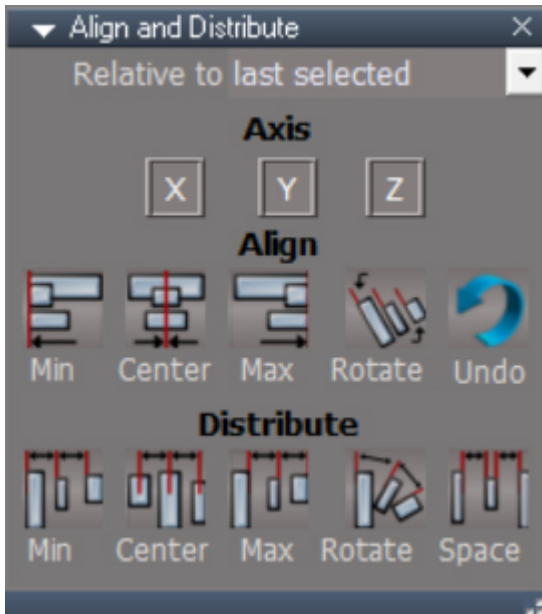
Restore Custom Scripts



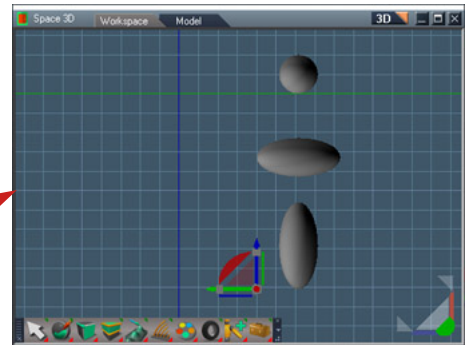
**Restore Custom Scripts** - if the scripts in this toolbar stop working, press to restore them to a working state.



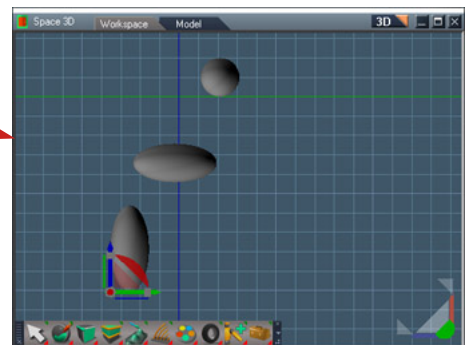
*will erase undo history*



*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:

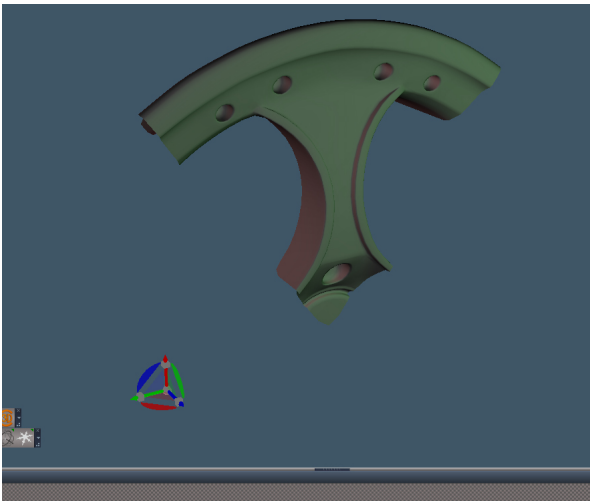
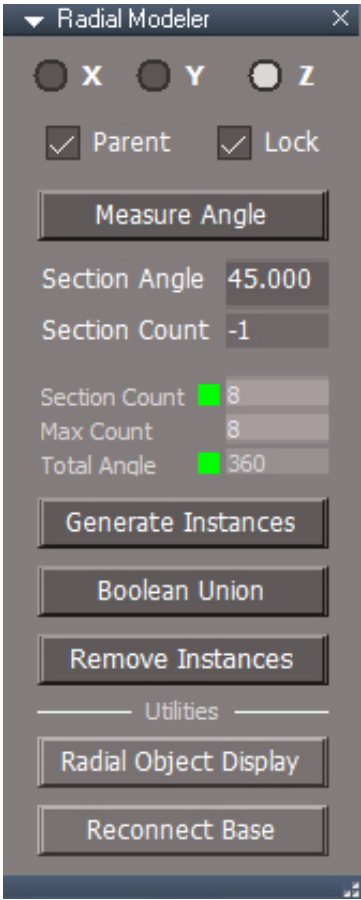
runs the undo command repeatedly the same number of steps it took to align the selection

only 1 multiple undo

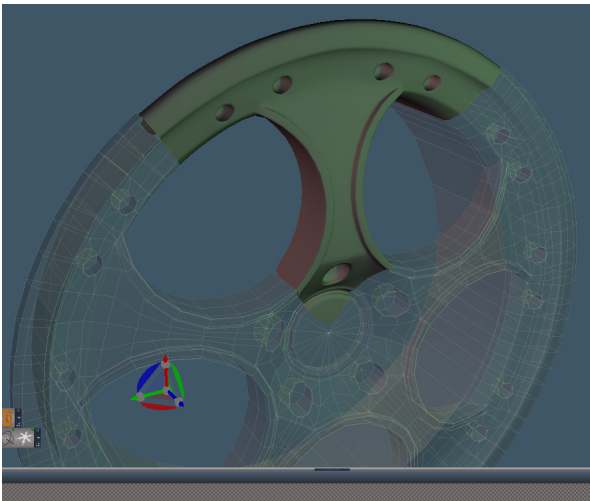
must be run immediately for best results



**Radial Modeler** - is like mirror modeler but with radial shape. Any modeling operations on the source will be copied to the radial instances.



*Before Radial Modeler applied.  
Model has the origin at the bottom. Mirror Modeler and subdivisions have been added to the model.*



*After Radial Modeler applied.  
Section Angle of 72 degrees (360/5) was used.*

*Setup Section*

**X Y Z** - choose the axis for the radial modeler

**Parent** - parent the segments so they will move with the base mesh

**Lock** - radial segments cannot be selected in the 3D viewport

**Measure Angle** - select 2 points to measure the radial section angle. The middle of the angle is from the geometry origin.

**Section Angle** - size of the section to be copied into the full 360 degree circle

**Section Count** - set the number of sections including the original source mesh, -1 is automatic default value

**Generate Instances** - create the mesh instances

**Boolean Union** - will setup the radial segments to join with the base mesh and start the boolean union tool.

**Remove Instances** - delete the empty instance after boolean is complete or delete to abort the radial modeler.

*Utilities Section*

**Radial Object Display** - show the render options for the instances object in the stack view.

**Reconnect Base** - use to repair the radial modeler relationship after SDS has been added to the base mesh.

*Status Display Section*

**Section Count** - number of sections, green will generate all possible sections, dark green less than all sections will generate, red invalid value

**Max Count** - maximum number of sections that will fit within the 360 degrees limit

**Total Angle** - extents of the radial sweep, green full 360 degrees will be used, dark green 360 is possible but setup for less, yellow less than 360 degrees is possible using the current section angle value

Red in any field indicates an invalid parameter

Usage:

Edit a mesh so it fits in a radial pattern

Set the section angle

Press Generate Instances

Now when editing the mesh the radial copies update

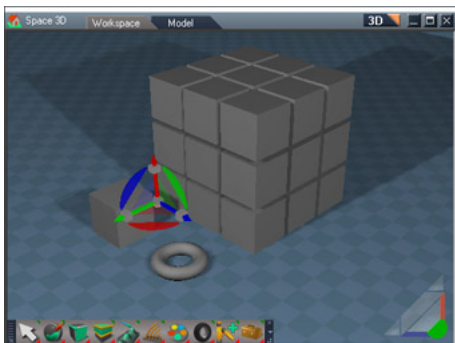
Press Prepare for Union to setup and start the boolean union tool

Select the radial segments one by one to merge them into the original mesh

Delete Instances to remove the empty instance container



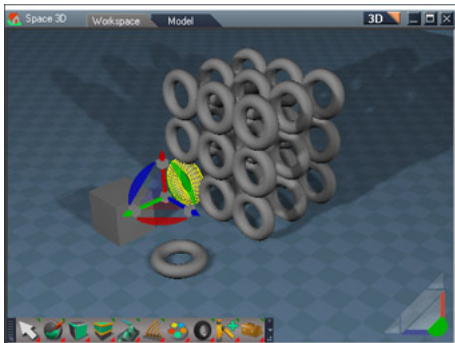
**Grid Array** - Distribute copies of an object into a 2 or 3-dimensional block in world coords. RMB create in local coordinates of the object



*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

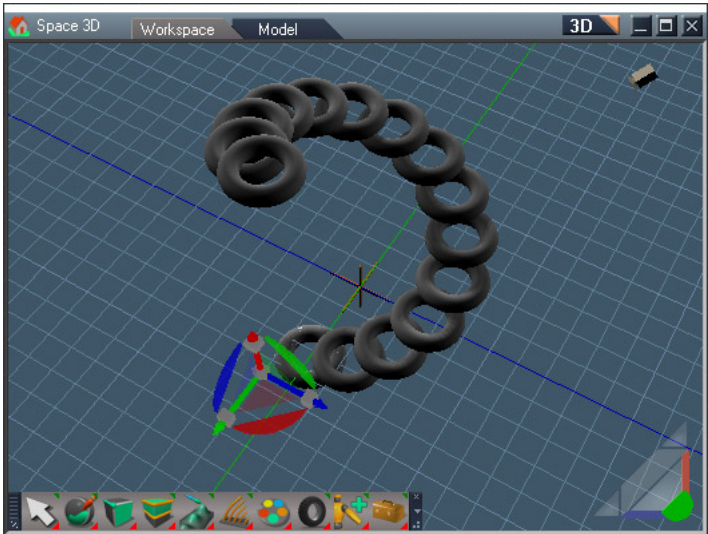
Activate the boolean Merge geometry tool - set for Flatten result and do not Keep drill object

Select the final array element then exit the tool

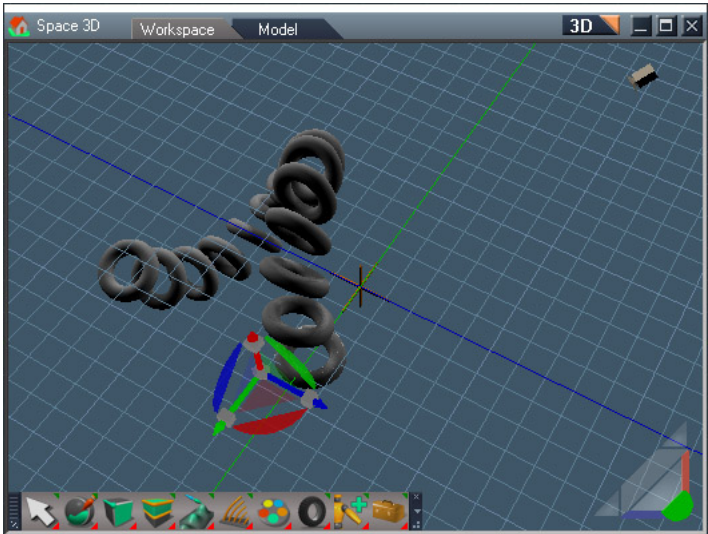
Run the 3D Unencapsulate tool



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



*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

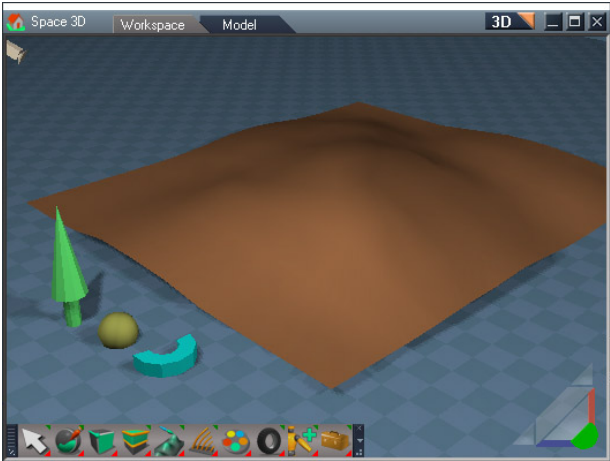
Press the Disband Array button

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

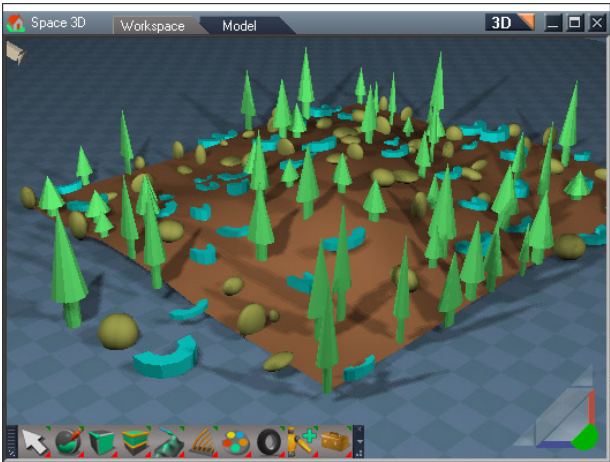
Activate the boolean Merge geometry tool - set for Flatten result and do not Keep drill object

Select the final array element then exit the tool

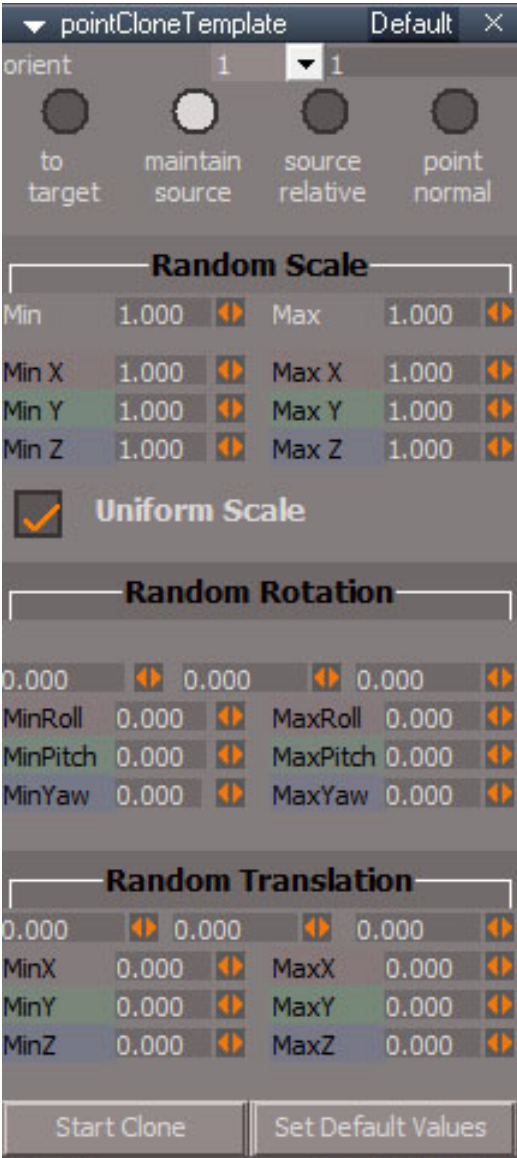
Run the 3D Unencapsulate tool



*before*



*after*



## Usage

- Push the button to open the panel
- Set the desired options
- Select one or more items to clone then add the target item to the selection (ctrl + lmb)
- Press the "Start Clone" button



**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.



## 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

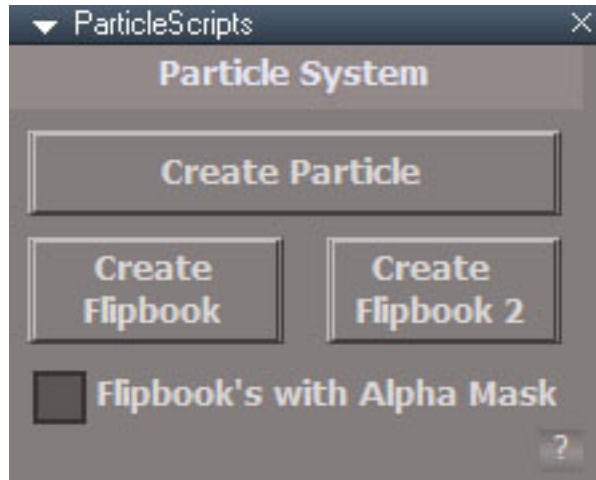
**MaxX, MaxY, MaxZ** - sets maximum translation values individually

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

**Set Default Values** - reset the controls



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



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

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 the red color channel to define the transparency

**Create Flipbook 2** to create a particle system based on an animated material that uses alpha channel or the red color channel to define the transparency and is modified by the particle Fade In and Out settings



will erase undo history when button is pressed

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

 The Particle System is made to work with D3D Renders only.

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.

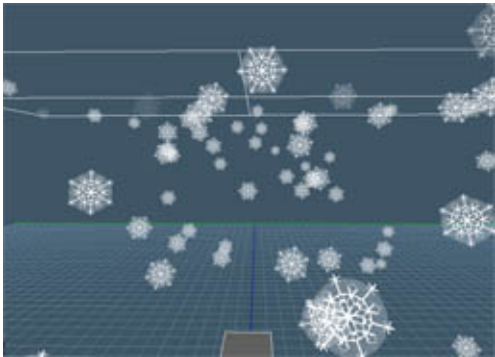
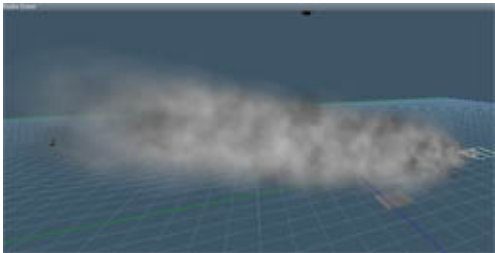
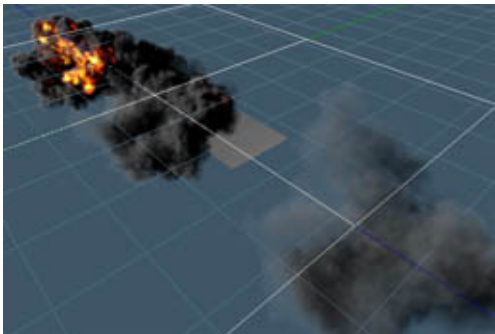
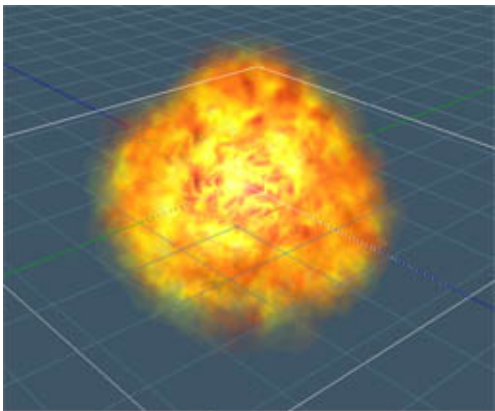
Flip Book Image Count = FlipBook TexCoordShader (Width Count \* Width Count)

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



▼ ParticleScript Reactive

Default

×

Active

☒

Start Time

0.000

Frame Rate

30

Point Emitter

Directional

☐

Omnidirectional

☐

Emission Radius

0.000

Spread Angle

0.000

Mesh Emitter

Triangles

☐

Vertices

☐

Randomize

☒

Use Mesh Normals

☒

Emission Rate

3.000

Life

2.000

Life Range

0.000

Alpha

1.000

Fade In

0.000

Fade Out

0.000

Motion

Speed

5.000

Speed Range

0.000

Inherit Velocity

0.000

Spin Rate

0.000

Spin Rate Range

0.000

Initial Spin Range

0.000

Size

5.000

Size Range

0.000

Initial Size

0.000

ScaleIn

0.000


ScaleOut

0.000

**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

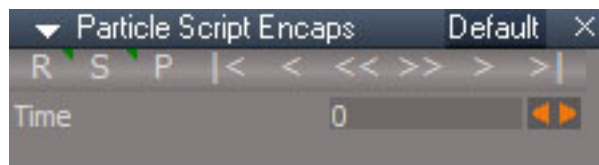
**Size Range** - random variation in the size of the particle at birth

**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

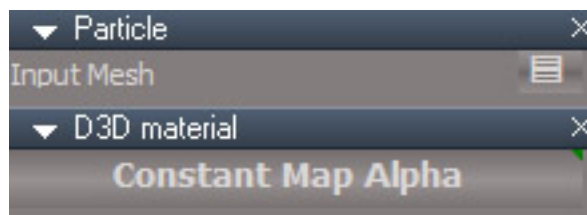
< - set current frame to the previous frame

<< - set current frame to the previous keyframe

>> - set current frame to the next keyframe

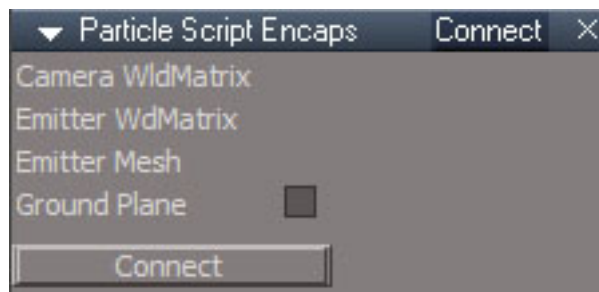
> - set current frame to the next frame

>| - 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.

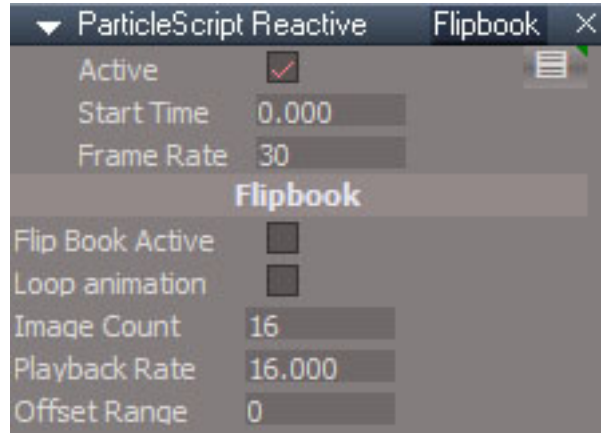
Go inside the group

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.

 *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**  $\text{m/s}^2$  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

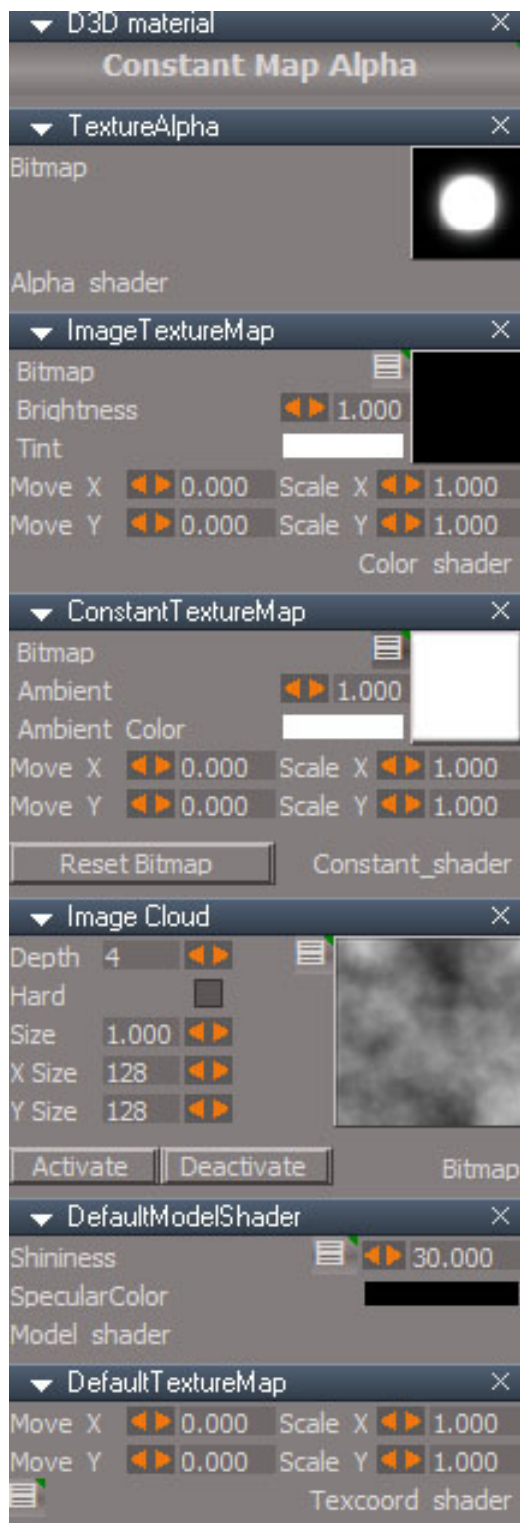
**Loop Animation** repeat animation or kill particle when flipbook is complete

**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.

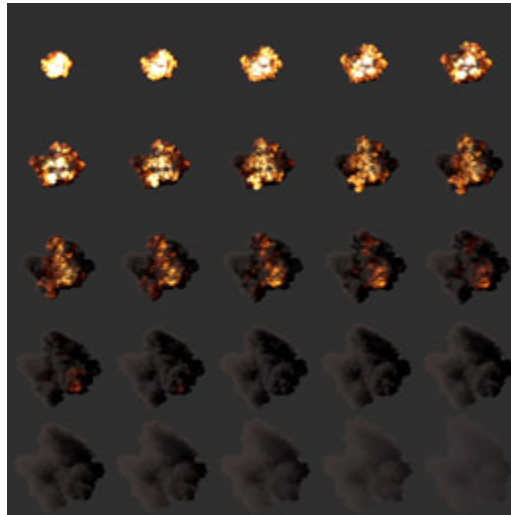
**ImageTextureMap** - image to apply to each particle. This aspect of the material will respond to scene lighting.

**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 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 image counts for the sprite sheet are setup in 2 places:

Particle Script Reactive Flipbook panel, page 169

**Image Count** = total number of images in the flipbook

Flipbook material Flipbook TexCoordShader section, page 172,173

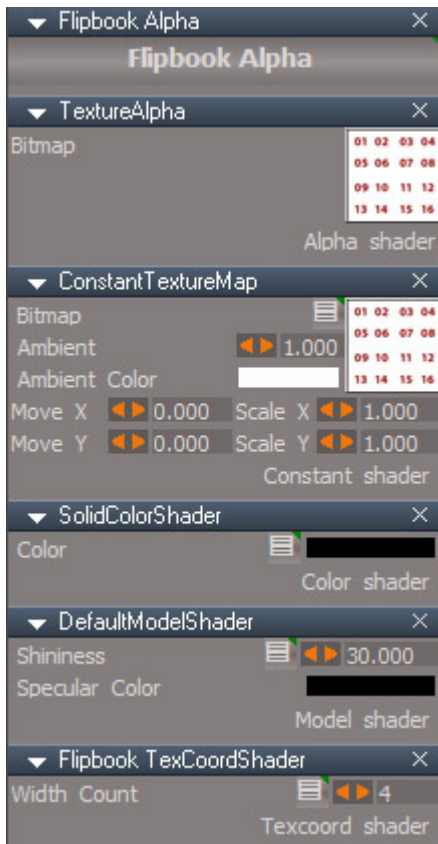
**Width Count** = number of images in the vertical or horizontal direction

The materials used in the flipbooks is similar to the Constant Map Alpha material in the previous page. The biggest difference is the **Flipbook TexCoordShader**.

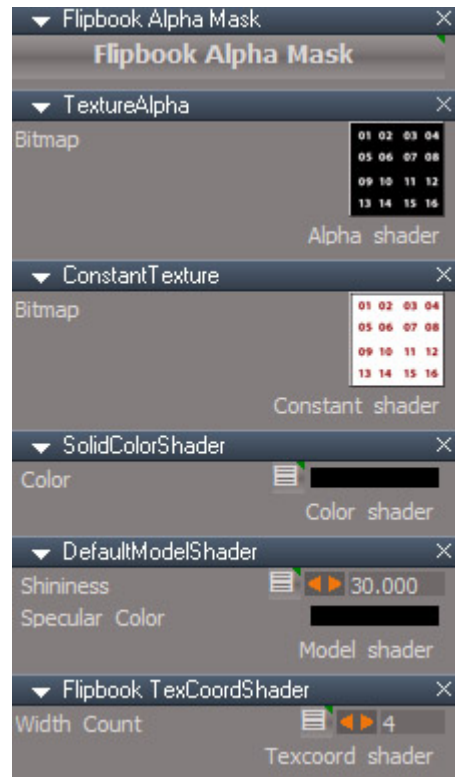
**Width Count** - set to the number of frames in one row from left to right in the animated sprite sheet.



The flipbook image must have an equal number of rows and columns for the sprite animation frames.



*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*

**TextureAlpha** sets the transparency of the image.

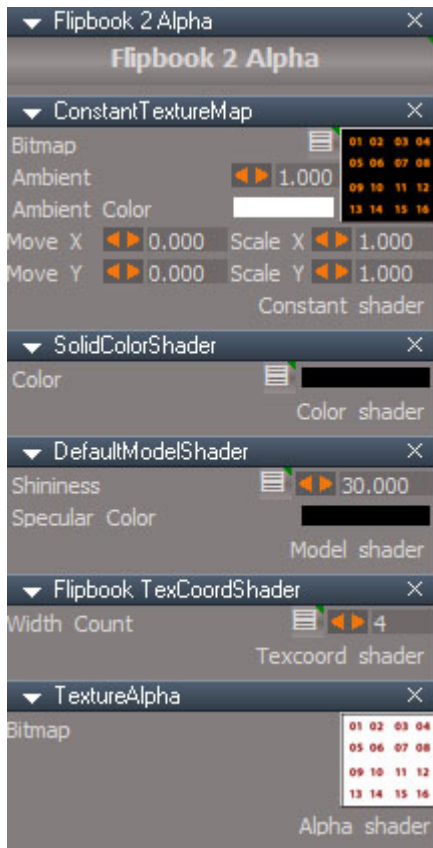
**ConstantTextureMap** and **ConstantTexture** set the color of the image.

**Width Count** - set to the number of images in the horizontal direction of the flipbook texture.

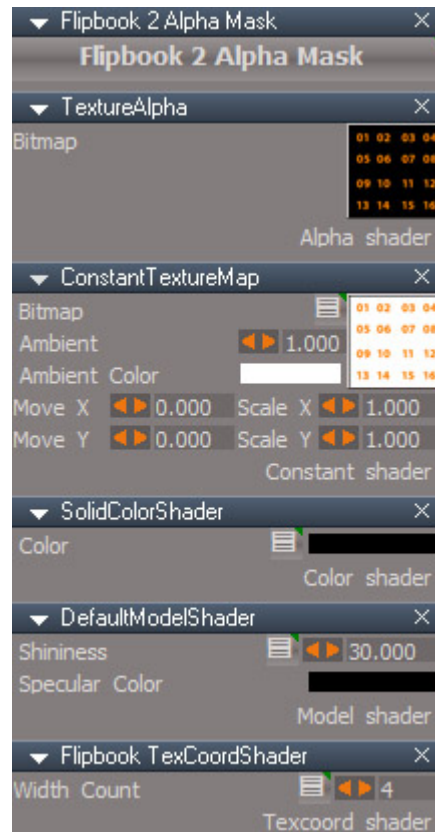
**SolidColor** and **DefaultModel** shaders can be used to tint the color of the image and makes the material respond to lighting changes.

The Flipbook Alpha and Flipbook Alpha Mask 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 image alpha 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

**TextureAlpha** sets the transparency of the image.

**ConstantTextureMap** and **ConstantTexture** set the color of the image.

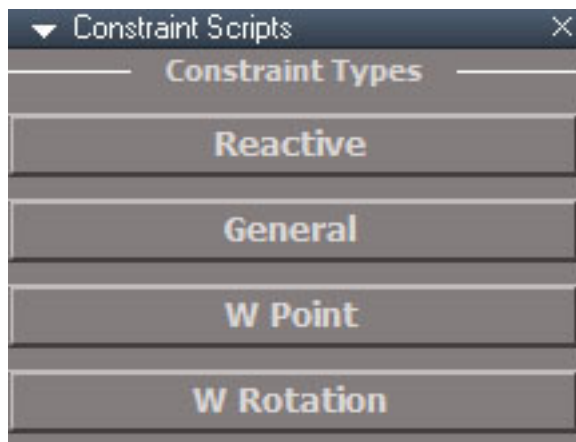
**Width Count** - set to the number of images in the horizontal direction of the flipbook texture.

**SolidColor** and **DefaultModel** shaders can be used to tint the color of the image and makes the material respond to lighting changes.

The Flipbook 2 Alpha and Flipbook 2 Alpha Mask 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

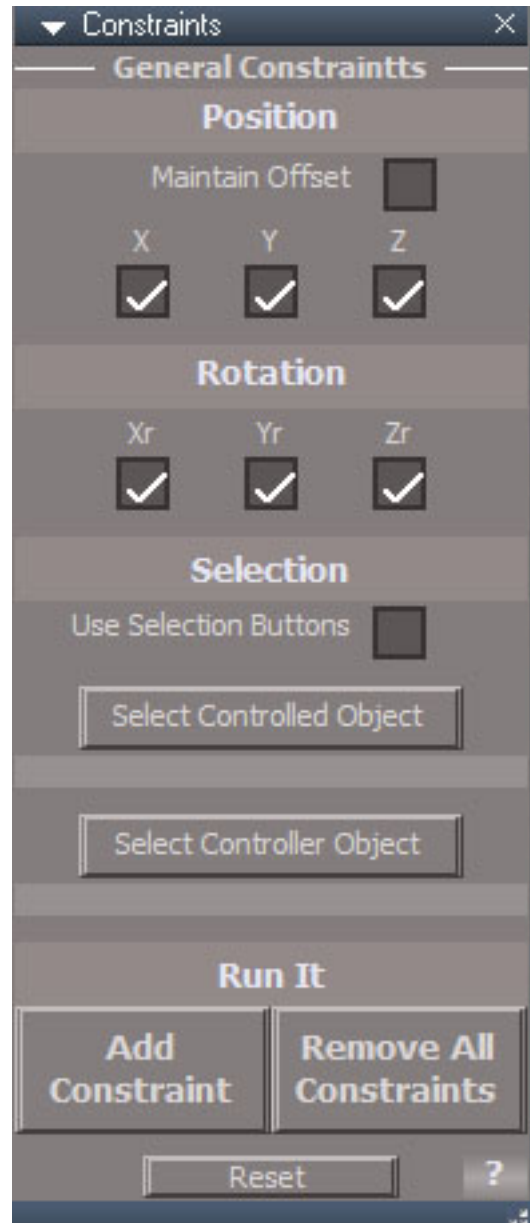
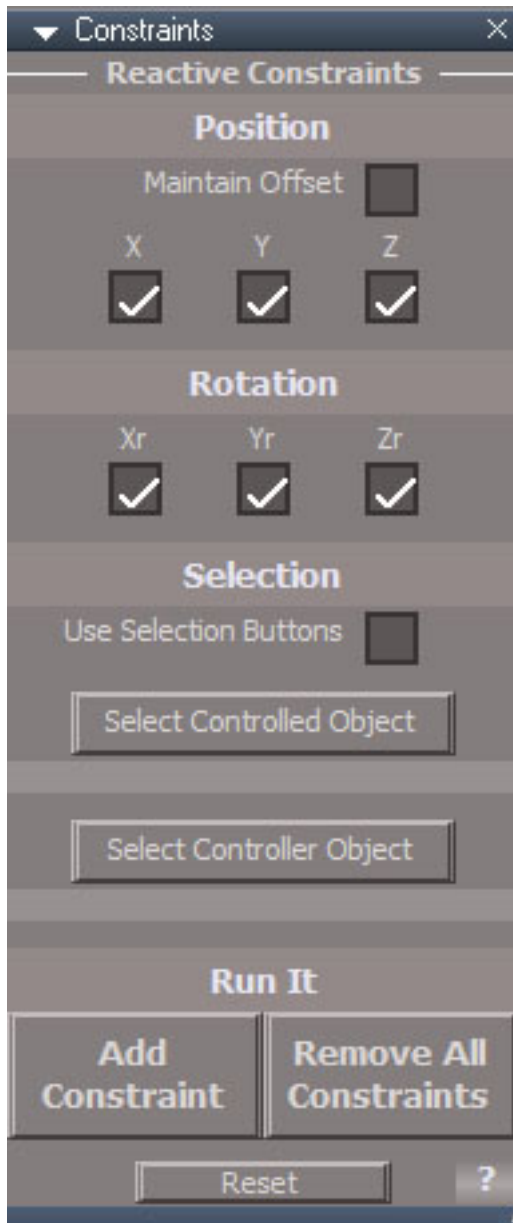
- Only works with scene level items. Does not work with grouped objects.
- Free axes are available for animation keys.
- No need to bake animation before rendering
- Limited to 8 constraints per object.

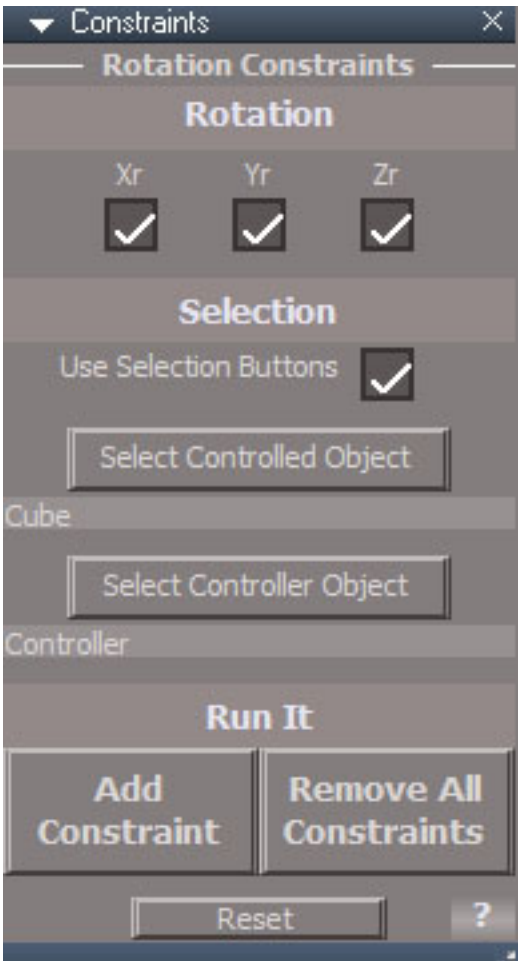
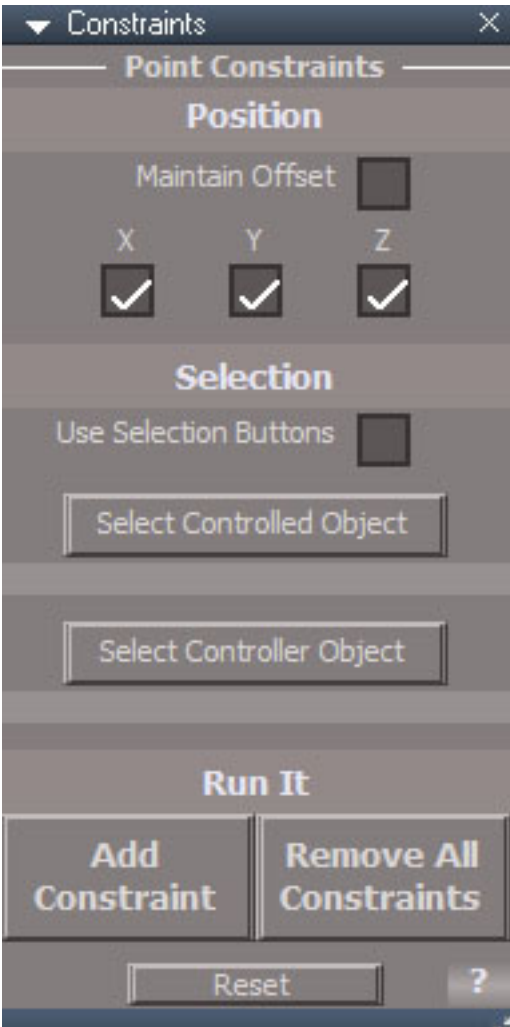
### General

- 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.







## 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

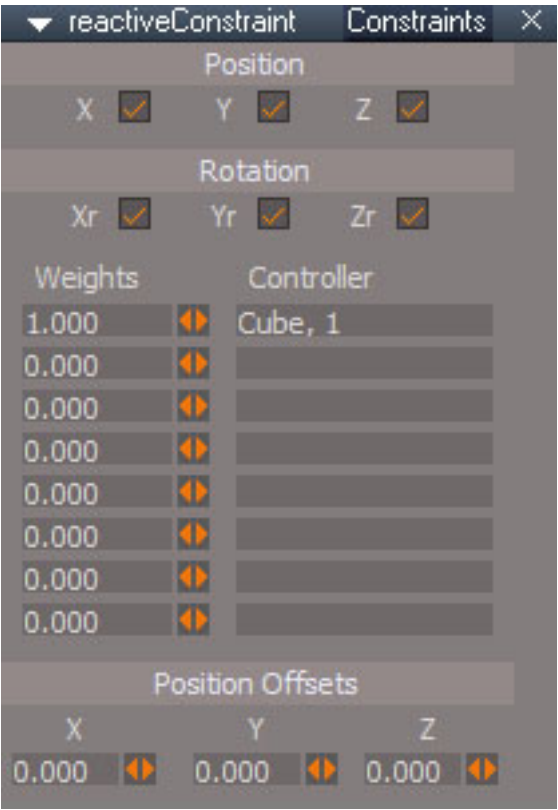
select an object that is being constrained

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.

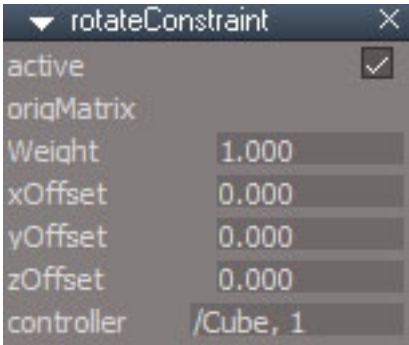
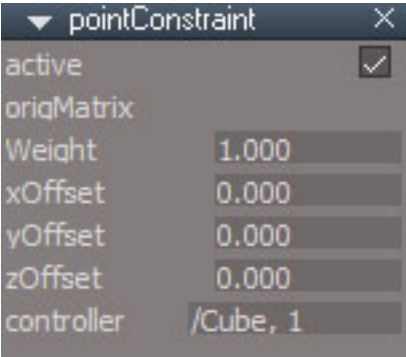
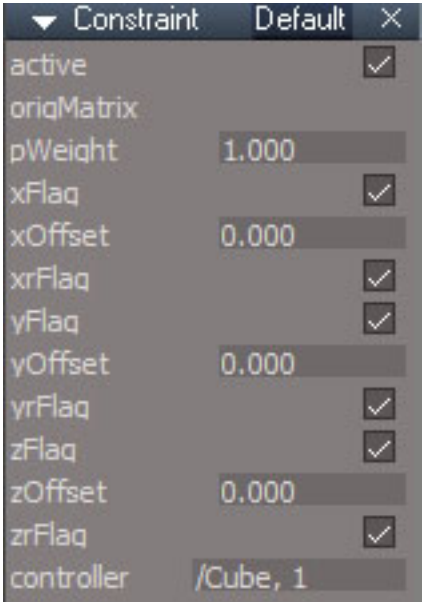


Reactive Constraint Controls

- 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 node names



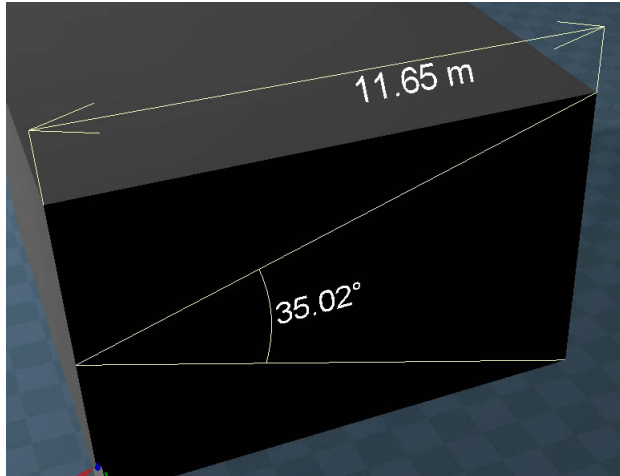
### Widget based Constraint Controls

- 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.



**Dimensions** - add linear and angle dimensions to the scene and to scene objects  
RMB open the dimensions toolbar



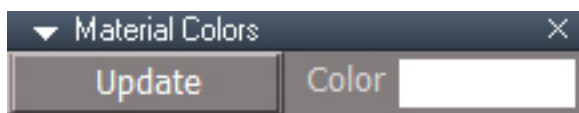
The dimensions tool can be used to create measurement objects in the scene. They are assigned to the measured objects or to the scene when the measurement is between scene objects. These measurements are created between point selections. Select single points to dimension between points, select both points of an edge to use the middle of the edge, select all the points of a face to use the center of the face as the dimension point.



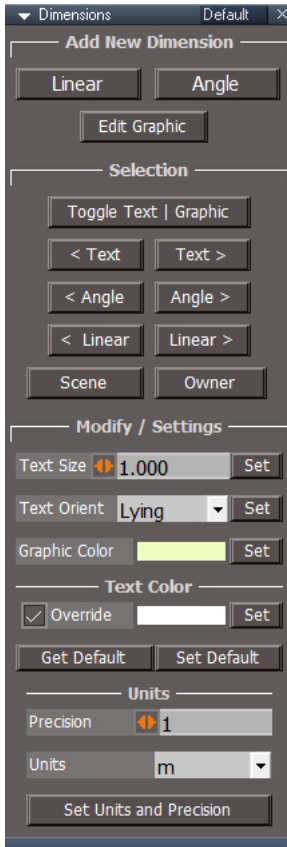
*Also DimLinear and DimAngle*

Left Button: LMB = display the owner name on the dimension component / RMB = Select the dimension owner

Right Button: LMB = Open - Object Render Attributes Settings for the dimension component



Text Material Colors - [Update] LMB = Sets the D3D & Vray Color



### Usage:

Press the toolbar button to open the dimensions panel

Press Linear for a straight line measurement or press Angle for an angle measurement

For linear there will be 2 selections and 3 for angles.

For each selection:

LMB click to select a point

LMB drag to paint a selection

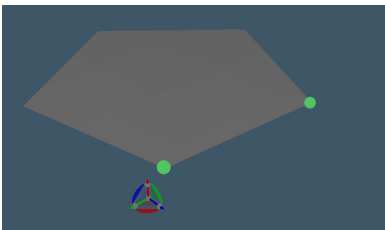
Ctrl+LMB to add to the selection

Shift+LMB to remove from the selection

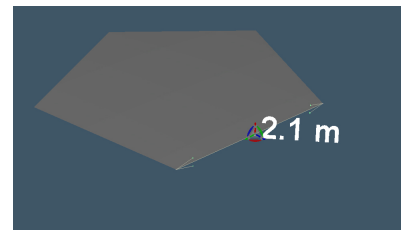
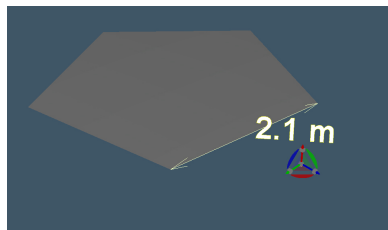
RMB click to confirm the selection and finish the tool or move on to the next selection.

After the dimension is created its text component will be selected for editing.

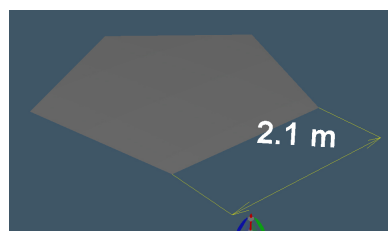
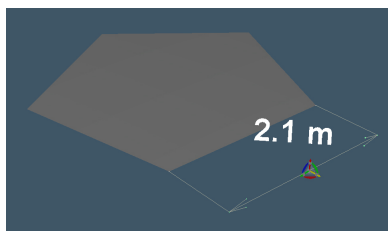
Edit Graphic is used to point edit the lines, arrow and arcs of the selected dimension. When pressed it will take the mesh into point edit mode and pre-select some vertices.



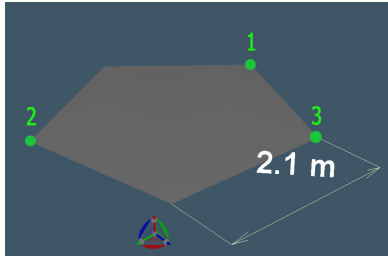
L-click and R-click on each point to create the dimension



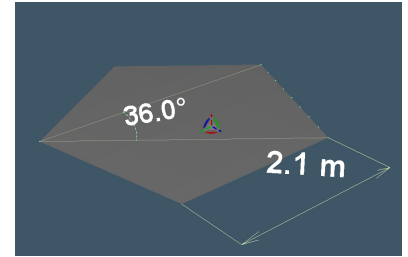
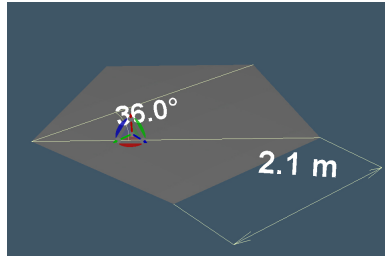
edit graphic enters pe mode with all arrow points selected



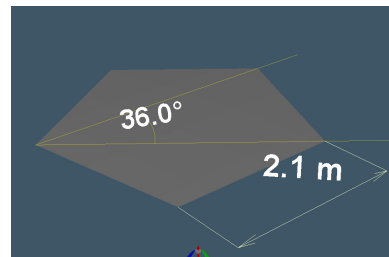
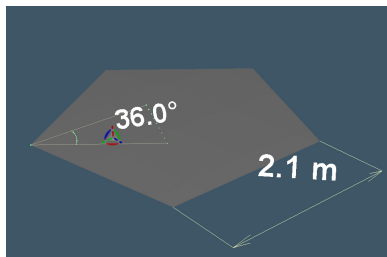
move selected points to reveal connecting lines



L-click and R-click on each point in order to create the angle



edit graphic enters pe mode with all angle points selected



Ctrl+Rmb on the scale cube to size from the corner, can also select just the arc points to move the arc in and out

## Add New Dimension

**Linear** - select the start and end for a linear dimension. A scene dimension is created if the select points are not all on the same object

**Angle** - select the first arm end, the center corner of the angle and the second arm end to create an angle dimension. A scene dimension is created if the select points are not all on the same object

**Edit Graphic** - edit the mesh for the selected dimension. Linear type will select all the points needed to create an offset for the dimension. Angle type will select all the vertices so they can be scaled from the origin, shortening or lengthening the arms.

The text of the dimension will be selected after creation so it's alignment can be adjusted. Object coordinate system may be better for any text transforms.

## Selection

**Toggle Text / Graphic** toggle selection between the mesh and text object for a dimension

**< Text --- Text >** - select previous or next dimension text object

**< Angle --- Angle >** - select previous or next dimension angle object

**< Linear --- Linear >** - select previous or next dimension linear object

**Scene** - select the scene

**Owner** - select the object the dimension belongs to

## Modify / Settings

**Set** - buttons to modify the selected dimension object

**Text Size** - size of dimension text.

**Text Orient** - set the 3D text to *Lying* or *Standing*

**Graphic Color** - color for non-text dimension objects

**Override** - use this color input for the text, otherwise use the color defined in the internal text template.

**Get Default** - copy the text template color into the override color

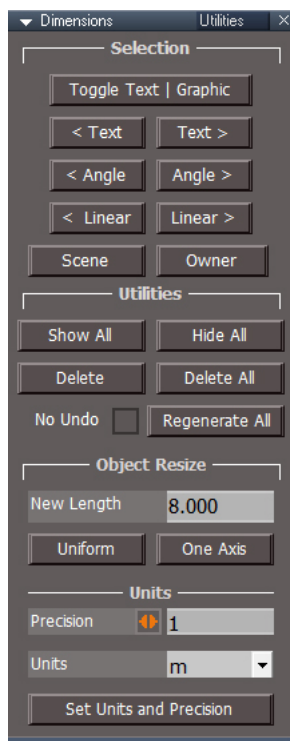
**Set Default** - copy the override color into the text template

**Precision** - number of decimal places

**Units** - m, cm, mm, ft, ft-inches

**Set Units and Precision** - modify the selected dimension object

## Utilities



**Show All** - show all hidden dimensions for the selected object

**Hide All** - hide all dimensions for the selected object

**Delete** - remove the selected dimension

**Delete All** - remove all dimensions for the selected object

**No Undo** - the Regenerate All will use up more than 48 undos, this option clears the undo history to avoid an unstable state for the dimension object

**Regenerate All** - remove all dimensions and recreate them from the stored dimensions data object. Used to fix dimensions when an object is scaled or transformed in some way or to replace the style of the objects dimensions.

**New Length** - replacement value for the selected linear dimension for the object

**Uniform** - scale object to match the New Length

**One Axis** - if the dimension is along an objects axis direction, scale non-uniformly to match the New Length

Precision - number of decimal places

Units - m, cm, mm, ft, ft-inches

Set Units and Precision - modify the selected dimension object

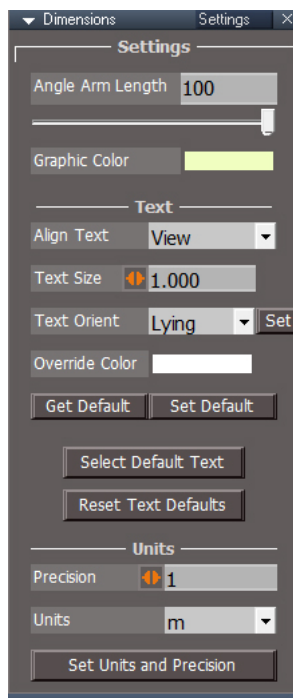
Any manual modification to text alignment and graphic point edits will need to be repeated after a Regenerate All run.

Object Resize is not for scene dimensions between objects.

Object Resize will set all dimensions of the object to the same units.

Regenerate All can be used on point edited meshes. Only change the shape of the mesh. No geometry can be added or removed from the mesh during the point edit session.

## Settings



**Angle Arm Length** - create angle arms to 100% or less of selected points length

**Graphic Color**

**Align Text** - create dimension text aligned to one of three options

**None** - aligned with the world x axis facing up in the z axis

**Dimension** - rotated to follow the direction of the graphic

**View** - default, rotated to face the viewer

**Text Size** - size of dimension text.

**Text Orient** - lying or standing, this setting is important when used with the Align Text options of Dimension and None

**Override Color** - use this color input for the text, otherwise use the color defined in the internal text template.

**Get Default** - copy the text template color into the override color

**Set Default** - copy the override color into the text template

**Select Default Text** - select the text template for editing default settings

**Reset Text Defaults** - reset parameters for the text template object

**Precision** - number of decimal places

**Units** - m, cm, mm, ft, ft-inches

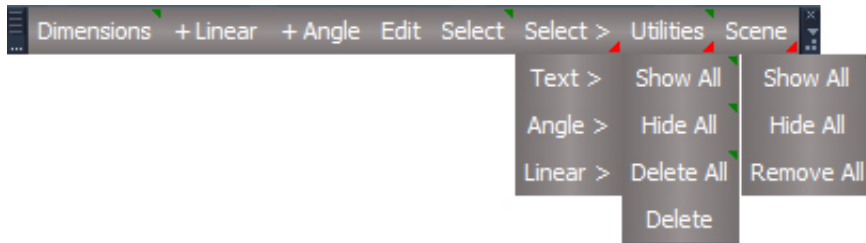
**Set Units and Precision** - modify the selected dimension object

The dimension scripts use a template object to define the look and style of the text used. The text parameters in the ui will be used to create the text. All other settings like font will come from the template. Since there is no direct link between the template and the ui, there are buttons to copy some of the parameters to and from the template. This way you can set the template the way you like and use it as a kind of default text with the ui to override the common settings used in the dimension text.

Dimension graphics are not visible in offline renders.



## Dimensions Toolbar



**Dimensions** - open the dimensions panel default aspect, rmb switch to utilities panel after the panel is already open, subsequent lmb will not switch to the default aspect

**+Linear** - add a linear dimension

**+ Angle** - add an angle dimension

**Edit** - point edit the selected dimensions graphic component

**Select** - toggle selection between the dimension text and graphic components, rmb select the object the dimension is assigned to

*Select >* open select next subtoolbar section

**Text >** - select next text component

**Angle >** - select the next angle graphic component

**Linear >** - select the next linear graphic component

*Utilities* open the utilities subtoolbar section, rmb select the scene

**Show All** - show all dimensions for the selected object, rmb select dimension owner

**Hide All** - hide all dimension for the selected object, select dimension owner

**Delete All** - remove all dimensionions for the selected object, select dimension owner

**Delete** - remove the selected dimension

*Scene* open the scene subtoolbar section

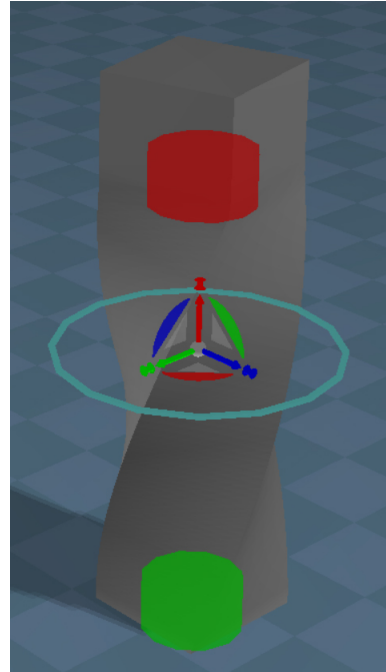
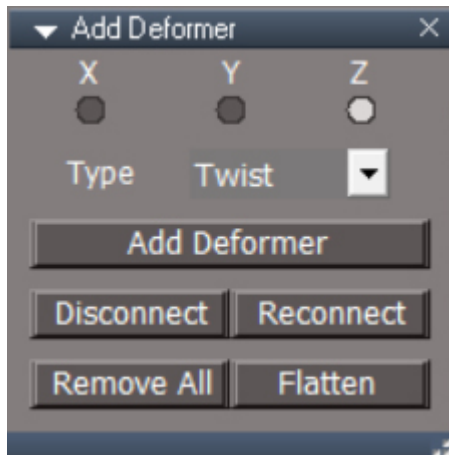
**Show All** - show all hidden dimensions in the scene

**Hide All** - hide all dimensions in the scene

**Remove All** - remove all dimensionions in the scene



**Deformers** - Widget based bend, squash, taper and twist deformers.



1. select a well divided mesh
2. press the button to open the deform scripts panel - RMB=stack panel, LMB=floating panel
3. **Type** to choose Bend, Squash, Taper or Twist
4. select an axis - **X, Y or Z**
5. press **Add Deformer** to add the new deformer to the mesh object
6. use the widget and controls to control the deformations
7. **Remove All** - remove all deformers from the object
8. **Flatten** - remove all deformers and apply the deformations to the mesh. Also use to clean invalid deformation nodes caused by point editing.
9. **Disconnect** - disconnect the deform nodes so that point edit or SDS operations can be performed
10. **Reconnect** - reconnect the deform nodes to reactivate deformations

## Widget Controls

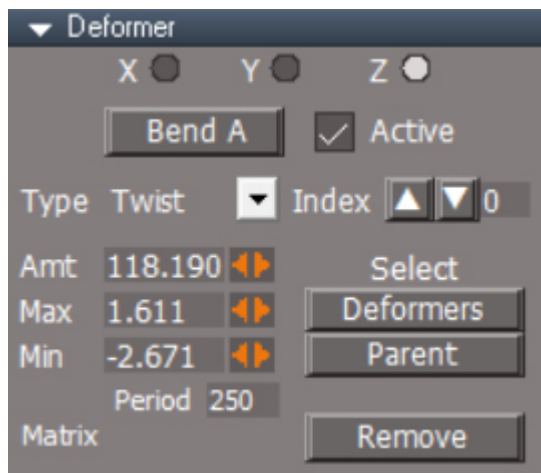
red cylinder to control the maximum influence region

green cylinder to control the minimum influence region

center ring to control the amount of deformation

center location/rotation to control the center of the deformation

nubs to switch the deformation axis



Deformer Controls:

XYZ axis indicator

**Bend A/B** - use to change the direction of the Bend deformer

**Active** - can be used to turn off the deformation

**Type** - change the type of the deformer

**Index** - use the up and down arrows to control the order of deformations

**Amt** - amount of deformation

**Max** - control maximum point for the region of influence on the original mesh

**Min** - control minimum point for the region of influence on the original mesh

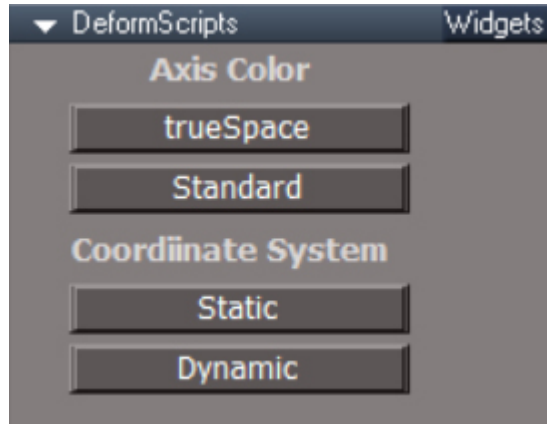
**Period** - time in mS between mesh updates - needed to prevent slow non-stop mesh updates

**Deformers** - select the deformer to activate deformer widget mode / select the next deformer. If the deformer is already selected it will select the next deformer.

**Parent** - select the owning object to get out of deformer mode, 3D shortcut is up arrow key or just select any item in the 3D view

Matrix - right click to reset the deform matrix

**Remove** - remove this deformation



Axis Color

**trueSpace** colors green=X, blue=Y, red=Z

**Standard** colors RGB correspond to XYZ

Coordinate System

**Static**

**Dynamic**

Notes:

Swapping the Max and Min values will reverse the Taper deform direction

multiple deformers can be chained

heavy meshes will deform slowly and bog down the system

the Bend A/B button may be needed for the Bend deform to work as expected

works with NURBS, primitives, meshes, mesh simplifier, SDS(with care)

select the mesh object inside an object that has hair

Disconnect Deformers before point editing or adding/removing SDS

will work with SDS, but Disconnect Deformers must be run before point editing or SDS

changes, failure to disconnect can result in a crash

if point edit results in invalid deformation panels, use Flatten to fix it



**Deformers** - change the shape of a mesh, bend, squash, taper and twist deformers



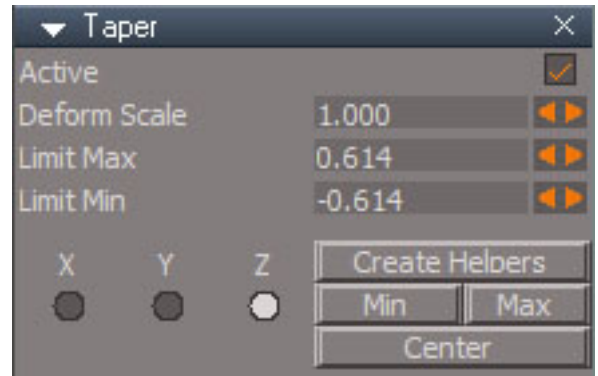
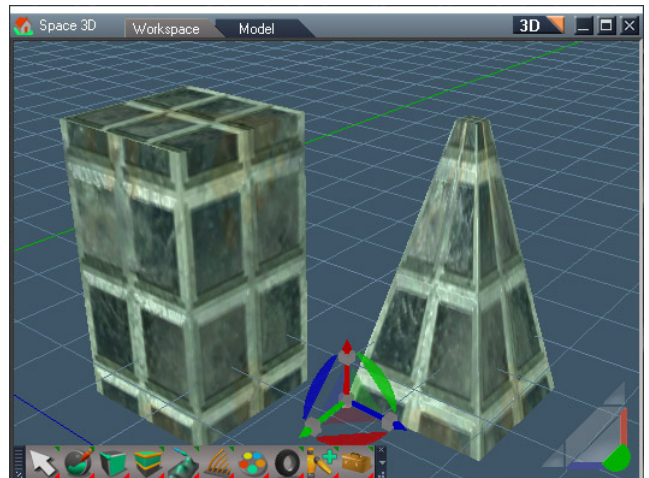
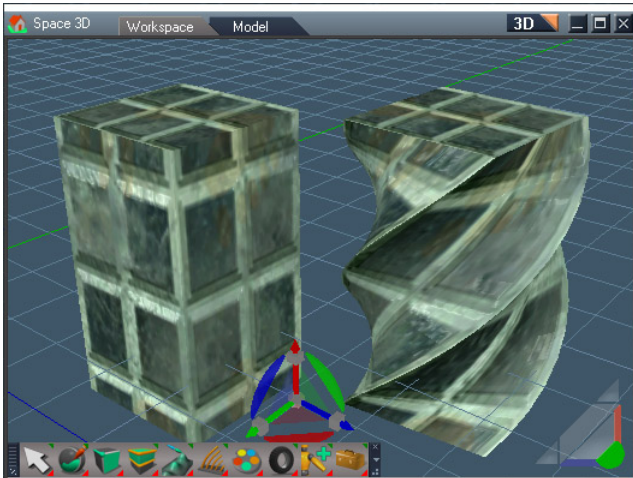
select a well divided mesh

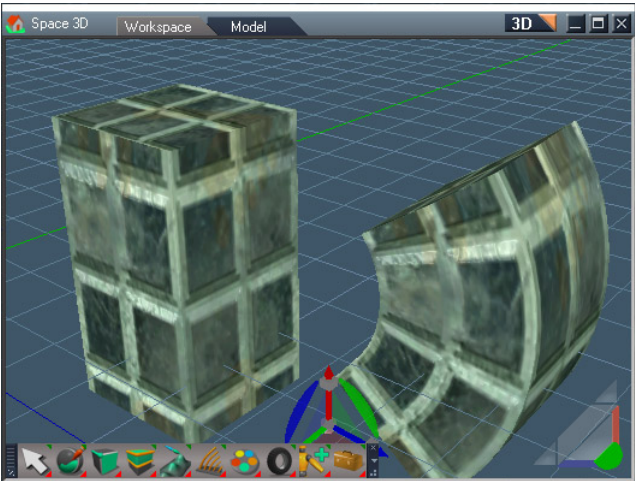
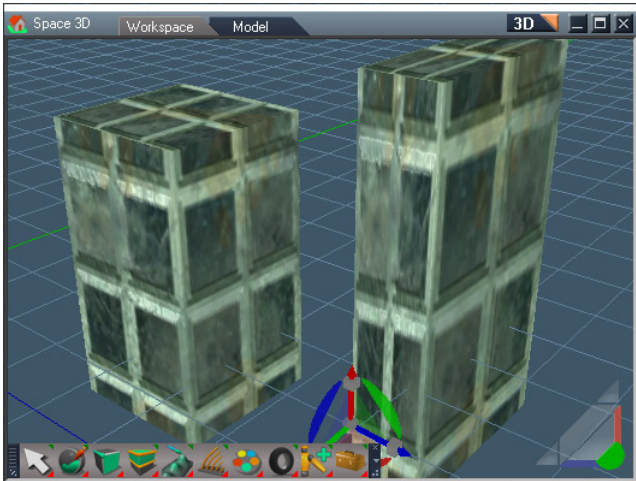
press the button to open the selection panel

choose Bend, Squash, Taper or Twist

select an axis - X, Y or Z

press Add to add the deformer to the mesh object





▼ Squash

Active

☒

Deform Scale

1.000

◀▶

Limit Max

0.614

◀▶

Limit Min

-0.614

◀▶

X

Y

Z

Create Helpers

Min

Max

Center

▼ Bend

Active

☒

Curvature

0.000

◀▶

Limit Max

0.614

◀▶

Limit Min

-0.614

◀▶

X

Y

Z

Create Helpers

Min

Max

Center

## 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.

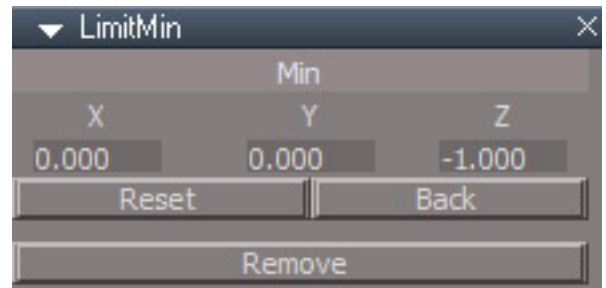
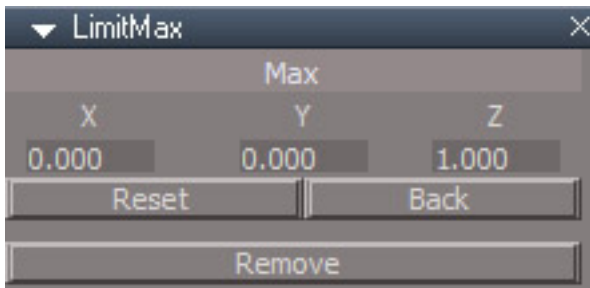
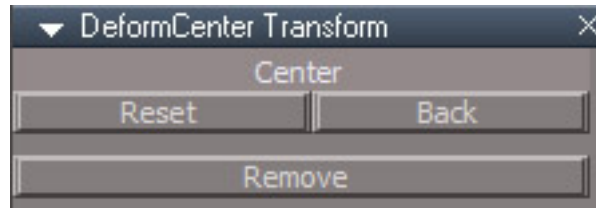
The active region will default to the mesh size. Set the region of influence with the Limit Min and Limit Max controls.

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

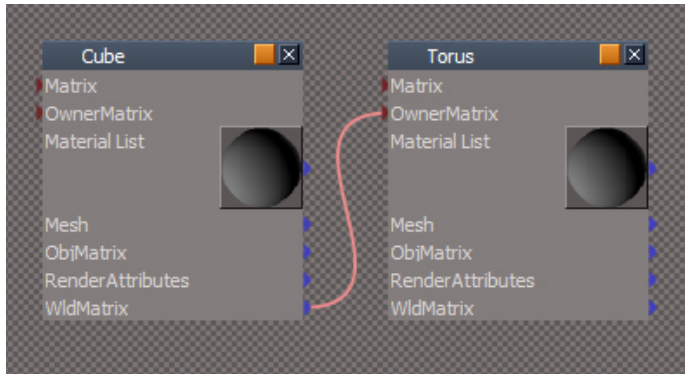
**Back** - selects the deform node and associated with the helper

**Remove** - removes the corresponding helper

If you remove an individual helper the corresponding selection button on the deform node will not do anything.



## Hierarchy Tools



A parent child relationship is created when the WldMatrix of one object, the parent, is connected to the OwnerMatrix of another object, the child. When connected in this way the child will inherit the parent objects rotation, location and scale the same way a 3D group member inherits rotation, location and scale from the group.



**Parenting** - creates a parent child relationship between objects.

Select the child objects then add the parent object to the selection and press the button. Parenting structures do not export to non-trueSpace formats like Collada(dae) and X.



**Un-Parenting** - remove a parent child relationship

Select the child objects to be unparented and press the button



**Add Group 3D** - add to an existing 3D group as a 3D member

Select scene objects then add a 3D group object to the selection and press the button. The objects will be added to the group with 3D encapsulation.



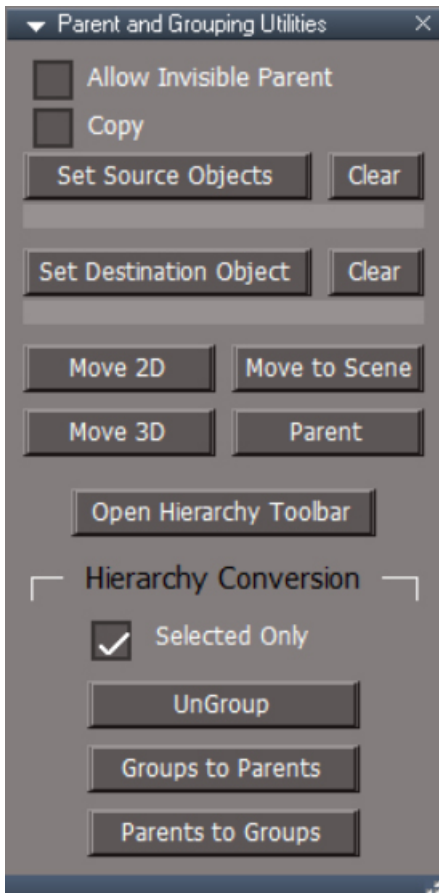
**Add Group 2D** - add to an existing 2D or 3D group as a 2D member

Select scene objects then add a group object to the selection and press the button. The objects will be added to the group with 2D encapsulation.



**Remove from Group** - remove from an existing 2D or 3D group

Select scene objects which reside inside a 2D or 3D group and press the button. The objects will be removed from the group and placed at the scene level.



**Allow Invisible Parent** - normal parenting occurs between 2 objects that share an encapsulation, like the scene. This option enables the ability to parent objects at different encapsulation levels. The connection does not show in the link editor, it is invisible.

**Copy** - when enabled objects will be copied instead of moved into and out of groups.

**Set Source Objects** - preselect the selected objects as the children for parenting or subobjects for grouping functions below.

**Set Destination Object** - preselect the selected object as the parent for parenting or encapsulation for grouping functions below.

**Clear** - clear the preselection for source and destination.

**Move 2D** - same as **Add Group 2D**, except it will use the source objects if they are defined above and will use the destination object if it is defined above. pow.

**Move to Scene** - same as Move2D except the destination is always the scene.  
Will not work with objects outside of the 3D view.

**Move 3D** - same as **Add Group 3D**, except it will use the source objects if they are defined above and will use the destination object if it is defined above. pow.

**Parent** - same as **Parenting**, except it will use the source objects if they are defined above and will use the destination object if it is defined above. pow.

**Open Hierarchy Toolbar** - open floating toolbar with all functions readily available.



Hierarchy Conversion - change the type of hierarchy

**Selected Only** - operate on the currently selected objects. Uncheck to run on the whole scene.

**UnGroup** - convert 3D grouped objects to individual items.

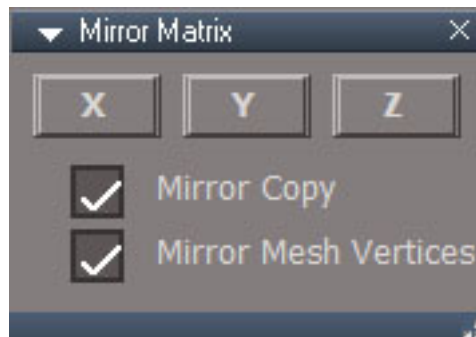
**Groups to Parents** - convert 3D group objects to parenting hierarchy.

Parents to Groups - convert parenting hierarchy to 3D groups.



**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 and NURBS objects.



Set the options as desired, select a scene object then press one of the X, Y or Z buttons.

**Mirror Copy** - make a copy and mirror it

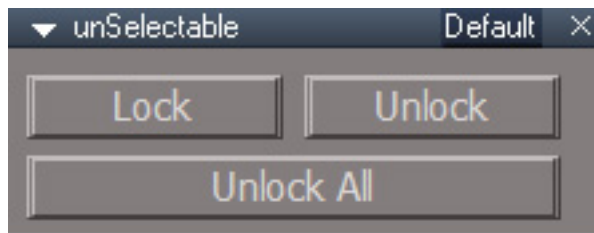
**Mirror Mesh Vertices** - a mesh requires that the vertices are updated for a full mirror effect. Can be disabled to only mirror the matrix values. This option is ignored for cameras and lights.



**Lock** - locks the current selection from basic 3D viewport selection  
RClick - open panel



**Unlock** - unlocks the current selection for 3D viewport selection  
RClick - unlock all




*RMB panel for Lock*

### 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

 Alt + LMB will temporarily override widget based locking in the 3D view.

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.



**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 )

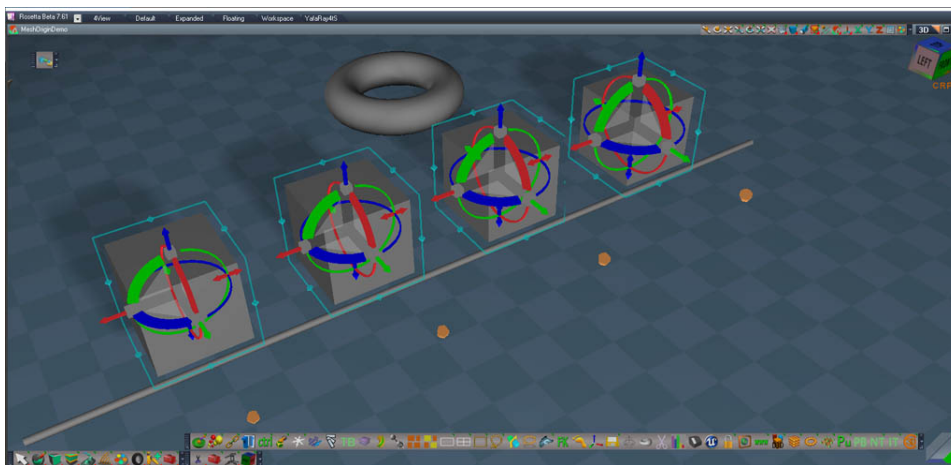
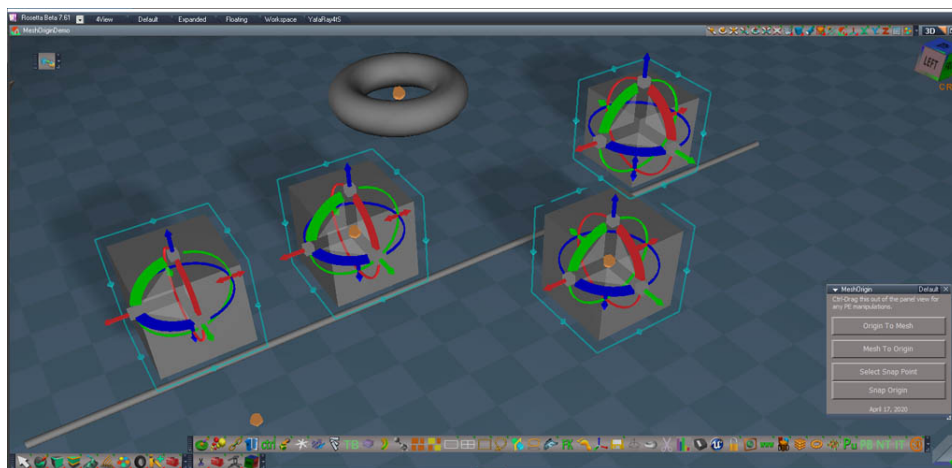


Image shows 4 identical boxes that have been point edited to move the origin away from the center of the mesh vertices.

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

**Origin To Object** - move the origin to the center of the mesh vertices or group.

**Object To Origin** - move the mesh vertices or group center to the origin

**Origin To PE Selection** - move the origin to the point edit selection

**Set Origin Widget** - use a widget to select the point and snap on exit

**Widget Set Snap Point** - use a widget to select the point for snapping

**Set Snap Point** - save the selected object location or point edit selection for snapping

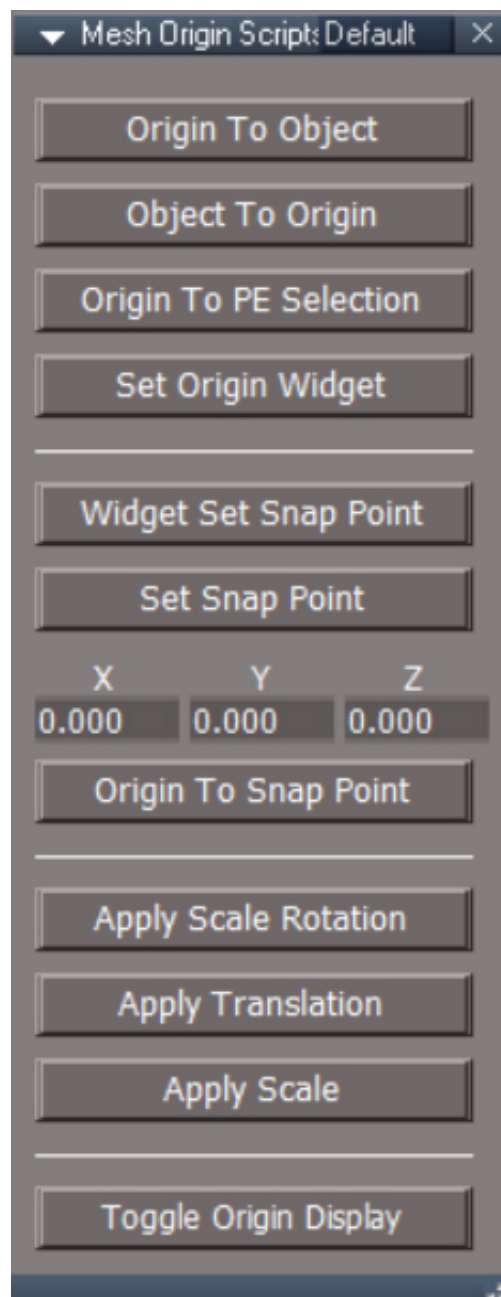
**Origin To Snap Point** - move the origin to the previously selected point.

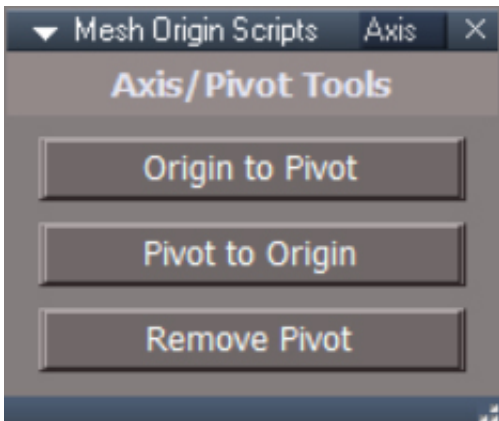
**Apply Scale Rotation** - set scale to (1,1,1), shear to (0,0,0) then set rotation to (0,0,0)

**Apply Translation** - set translation to (0,0,0)

**Apply Scale** - set scale to (1,1,1) and shear to (0,0,0).

**Toggle Origin Display** - turn the origin display indicator off and on





Usage:

**Origin to Pivot** - flatten the axis

**Pivot to Origin** - move pivot to the origin

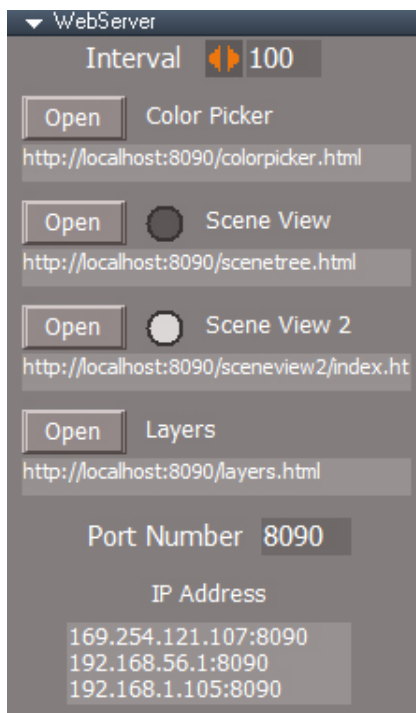
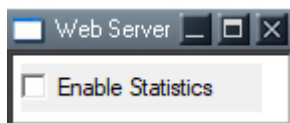
**Remove Pivot**

These tools are not for use with parented objects. Unparent first.

Works with simple group objects - no groups made up of other groups

The Apply Translation will drift if the objects matrix has shear values.





## Web Server

The web server is used to drive a UI system based in web technologies. It includes a photoshop style color picker, a scene tree view and a layers system. The pages served will run in modern browsers and the layers UI will also run inside of a trueSpace window panel as long as the version of Windows is newer than XP.

The Mongoose Embedded Web Server will open in a reduced window, top center of the screen.

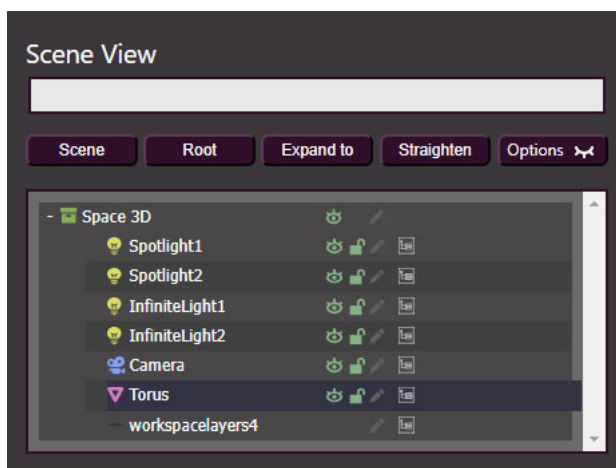
**Enable Statistics** will send data to the Statistics panel to update the information displayed

The RMB panel has a control for **Interval** which controls how often the server runs. Default is that it runs every 100 milliseconds. If run on an extremely slow computer the value can be increased to a maximum of 400 milliseconds. In most cases this value can be left as is. If it is changed it must be altered before starting the server.

The **Open** buttons will open the default system browser to one of the 4 pages that are served or the address can be copied and pasted into any available web browser. If a port conflict is found the **Port Number** can be changed.

- ① If the web server is exposed to the local network the pages can be run from other computers, tablets and cell phones by replacing "localhost" with the IP address of the computer running trueSpace.

**Scene View 2**      Scene View 2 is an updated version of the Scene View.



## Action Buttons

**Scene** - refresh/load with the scene as the top level node

**Root** - refresh/load with the Kernel root as the top level node

**Expand to** - open the tree to the currently selected node

**Straighten** - when the display columns get out of alignment realign them

**Options** - display options for the tree view

## Rows

Icon indicating the type of object - see below

Object name - click to select, double click to rename

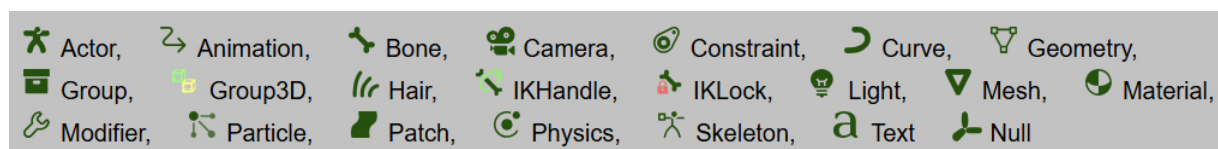
Visible/Hidden indicator - click to show or hide the object,

if you get unexpected results ctrl+click to run in intensive mode

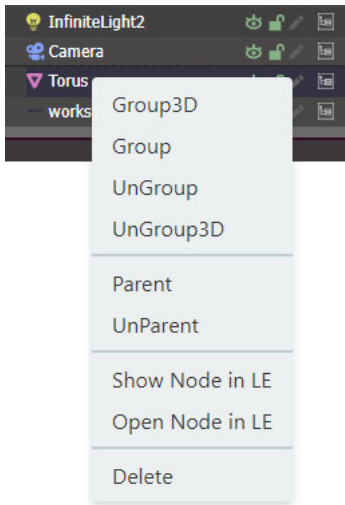
Locked/Unlocked indicator - click to lock or unlock from 3D viewport selection

Notes - add or edit an existing note for the object. Gray = no note, Green = has note, Yellow = note previewed at the top.

Load subobject - load children and expand the tree for this row



Scene View 2 does not work in Windows XP.



row selections:

ctrl + lclick to toggle selection of items  
 shift + lclick select a range from the previous selected node to last selected node

**Group3D/Group/Ungroup** - all correspond to encapsulation controls in truespace

**UnGroup3D** - same as Ungroup but will cleanup connections and remove the transform node , UU required

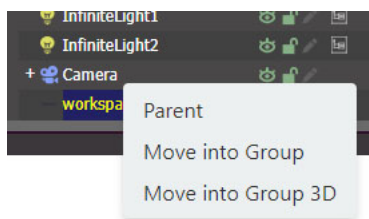
**Parent** - ctrl click to choose the children and parent nodes, right clicked the node that will be the parent

**UnParent** - select the child node(s) and remove them from the parent

**Show Node in LE** - centers the node in the LE view

**Open Node in LE** - open and look inside the node in the LE view

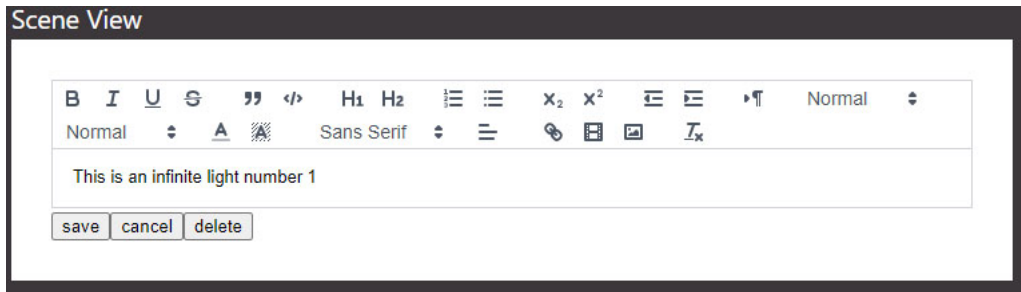
**Delete** - remove the node(s) from the scene, if node is a parent node it will also remove the children



**Parent** - drag selected nodes onto the new parent node

**Move into Group** - drag selected nodes onto another node to move them into it

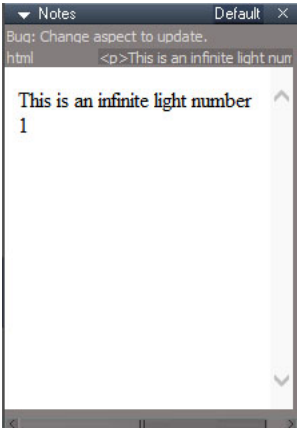
**Move into Group 3D** - move into group for 3D objects with matrix connections



click the notes icon to open the note editor and create or edit a note

- save** - save the note
- cancel** - cancel any changes and exit the note editor
- delete** - remove the note

if the selected object has a note, the notes will display at the top.



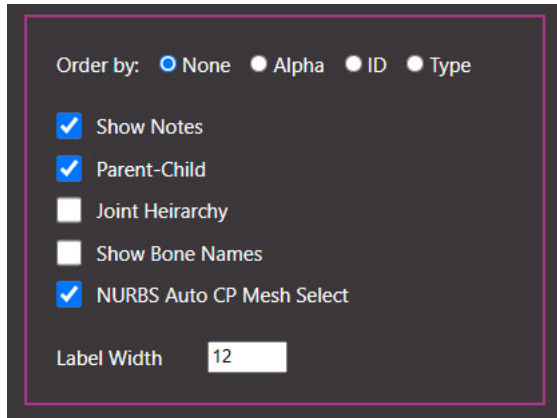
When an object is selected it's note will display in the trueSpace panel view

Not all of the formatting will translate to the tS panel display.

The panel can be ctrl-dragged out of the panel and it has options for various sizes

- Default*
- Wide*
- ExtraWide*
- WideTall*
- ExtraWideTall*

The Scene View does not need to be open to see the note. A simplified version of the note can be viewed inside tS without the page open



## Options

**Order by:** - arrange alphabetically, by trueSpace node ID or by the type of object.

**Show Notes** - uncheck to hide the notes section at the top. The notes editor will still open as needed.


**Parent-Child** - display parent child relationships

**Joint Heirarchy(Hierarchy)** - display actor skeleton structures instead of group structure, bones will not be visible

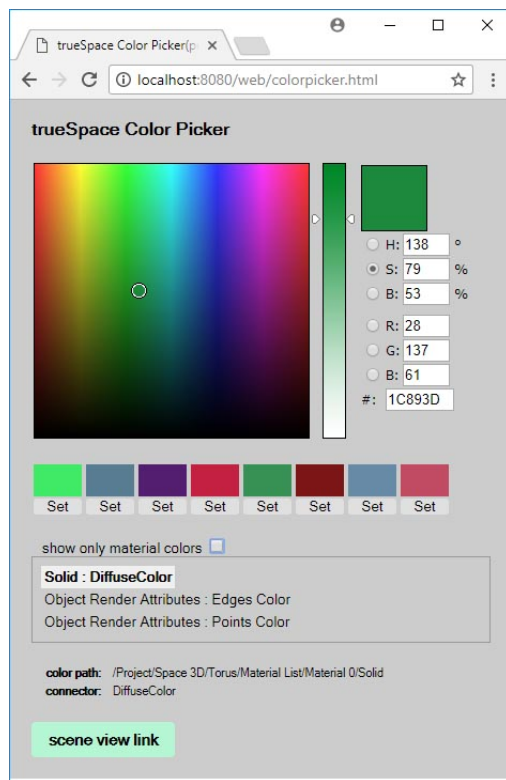
**Show Bone Names** - the name of the child bone of the joint will show at the end of the row when Joint Hierarchy is active.

**NURBS Auto CP Mesh Select** - when selecting a NURBS object it's control point mesh will be selected instead so it can be edited or transformed in the 3D viewport.

**Label Width** - increase the value to prevent long object names from taking more than 1 line

 You may want to turn off the display of parent-child relationships in the Scene View 2 when using the dimension objects. All dimension objects are "invisible" parented to their owners.

## Color Picker



Use Firefox, Edge or Chrome browsers

It is more difficult to use when the browser window overlaps the trueSpace window. Dual monitors are recommended for ease of use.

Use the color picker controls to alter the color in truespace interactively. The page will not detect color changes from truespace.

The color swatch. Click the color to load it into the picker and apply it to the selection. Press Set to save the current color into the swatch.

**show only material colors** - nodes outside of a material collection will be ignored. Uncheck to see render attribute and light colors.

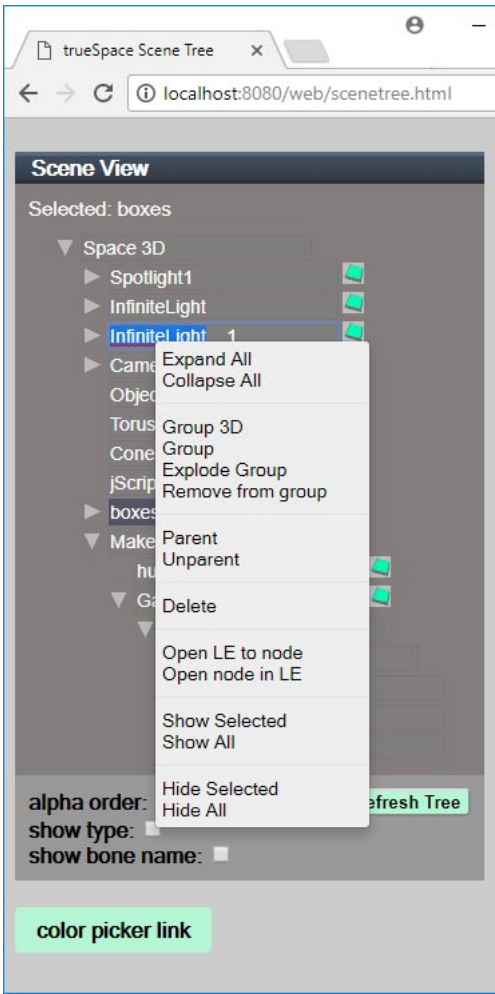
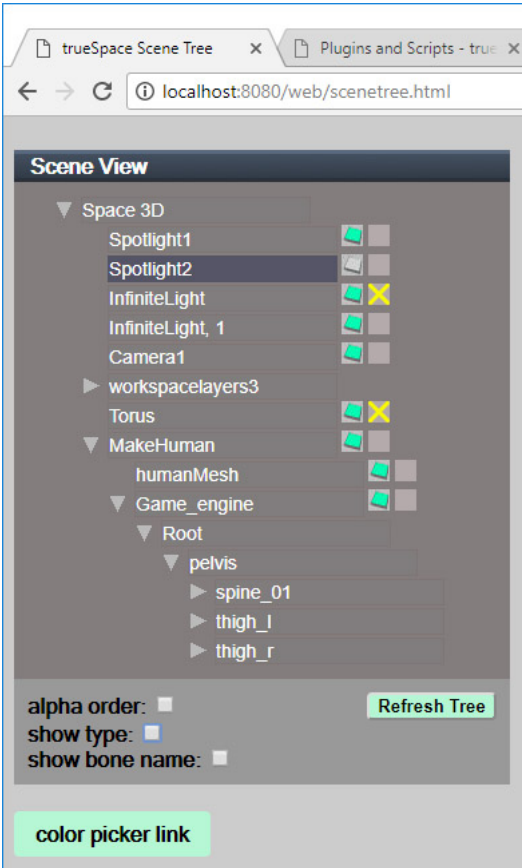
Next is a clickable list of node/connector combinations that can be edited. By default only material colors show in the list

**color path:** shows the full path of the node where the current edit color lives inside truespace

**connector:** shows which connection on the node will be edited

**scene view link** - a link to the scene view page



Scene View



Use Firefox, Edge or Chrome browsers

It is more difficult to use when the browser window overlaps the trueSpace window. Dual monitors are recommended for ease of use.

The top item in the view is the scene node.

Visible and hidden icons match the truespace modelside layers - light blue/green is visible  , white is invisible  . Click to switch visibility

Object locking is indicated by a yellow cross  , click to make an object unselectable

Click item names to select/rename

Ctrl-click to toggle selection of items

**alpha order:** arrange in alphabetical order instead of creation order

**Refresh Tree:** for when the tree gets out of sync with the truespace scene

**show type:** displays the node type - light, camera, skeleton, group etc.

**show bone name:** displays the child bones of the joints. click the bone name to select the bone

**color picker link** - open the color picker page

## Right click context menu:

**Expand/Collapse All** - expands and collapses the child elements of a node recursively, can be slow for complex hierarchies

**Group3D/Group/Explode Group/Explode 3D Group** - all correspond to encapsulation controls in truespace, an open link editor window can interfere with the grouping functions because it will wait for the user to type a name for the group

**Parent** - ctrl click to choose the children and parent nodes, right clicked the node that will be the parent

**Unparent** - select the child node(s) and remove them from the parent

**Delete** - remove the node from the scene

**Open LE to node** - centers the node in the LE view

**Open node in LE** - look inside the node in the LE view

**Show Selected/Hide Selected** - show or hide the selected nodes

**Show All/Hide All** - show or hide all nodes in the scene



items that show in the scene view

- lights
- cameras
- mesh
- script
- groups
- skeleton
- parenting

items that do not show in the scene view

- anything outside of the scene node
- sub-nodes materials, render objects, pivots, transforms
- bones are presented as a part of the joints
- combination of grouping and parenting - the nodes will show but the heirarchy will not be correct

truespace actions that do not update the web view

- add a new object to the scene
- grouping
- parenting unparenting

does not expand the tree to the selected item

ctrl-click does not work with bone selection. only one bone can be selected at a time

bone selection does not display as the selected item, it will show the bones parent joint



**Object Statistics** -LMB open Object panel, RMB open Default panel.

▼ Object Statistics Scene [X]

	Counts
Camera	0
Light	4
Geometry	0
Other	2
Vertex	0
Edge	0
Triangle	0
Quad	0
Ngon	0
Face Total	0
Triangles	0
<input type="button" value="Update"/> <input type="checkbox"/> Active	

*Scene panel*

▼ Object Statistics Object [X]

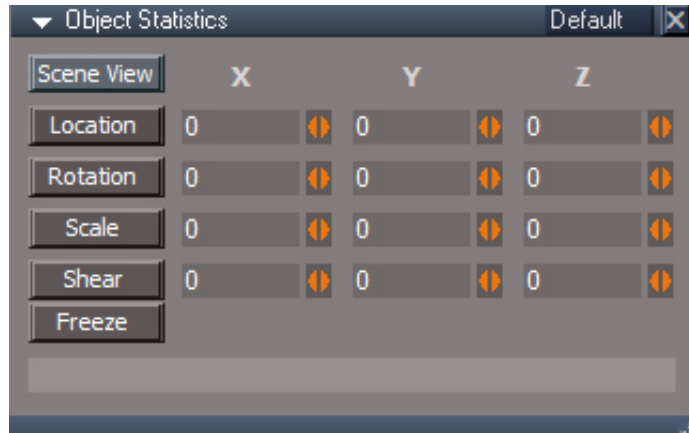
	Counts	Selected
Vertex	0	0
Edge*	0	0
<input type="button" value="Tri"/>	0	0
<input type="button" value="Quad"/>	0	0
<input type="button" value="Ngon"/>	0	0
Face Total	0	0
Triangle	0	
Object	7	1

*Object panel*

▼ Object Statistics Matrix [X]

	X	Y	Z
Matrix			
Location	-0.000	0.000	-0.000
Rotation	0.000	-0.000	0.000
Scale	1.000	1.000	1.000
Owner Matrix			
Location	0.000	0.000	0.000
Rotation	0.000	-0.000	0.000
Scale	1.000	1.000	1.000
Pivot Matrix			
Location	0.000	0.000	0.000
Rotation	0.000	-0.000	0.000
Scale	1.000	1.000	1.000
<input type="button" value="Update"/> <input type="checkbox"/> Active			

*Matrix panel*

*Default panel***Usage:**

Left click the button for mesh statistics as well as a count of scene objects

The scene view, web server or node list view must be running to update the mesh info panel.

Choose the Object Matrix Stats in the Scene View 2 for matrix updates

Choose the Object Mesh Stats in the Scene View 2 for mesh data count updates

Choose the Statistics in the Web Server View for mesh and matrix updates

Choose the Statistics in the Node Scene View for mesh data count updates, no matrix updates are provided by this window

Point Edit selection buttons

Tri to select triangles

Quad to select 4 sided polygons

Ngon to select polygons with more than 4 sides

Object is the count of top level scene items

Edge\* means that edge counts are accurate except for point edit selection counts

Triangle Selected counts not included - bad data from tS

choose the pivot mat tab to display the pivot matrix aspect

the matrices require the Update button to refresh the information

choose the Info tab to open an info type panel that works with the object Matrix instead of it's world space matrix.

choose the Scene tab to display the scene data counts

Press "Scene View" to open the Scene View 2 window if it's not already open and then activate it's matrix option

Enter values for location, rotation and scale

Location, Rotation and Scale buttons will reset the values.

The Name is not an editable input

Only works with the first selected object. Multiple selections are ignored.

Press Update to update the counts

object stats values are only valid if something is selected in the scene

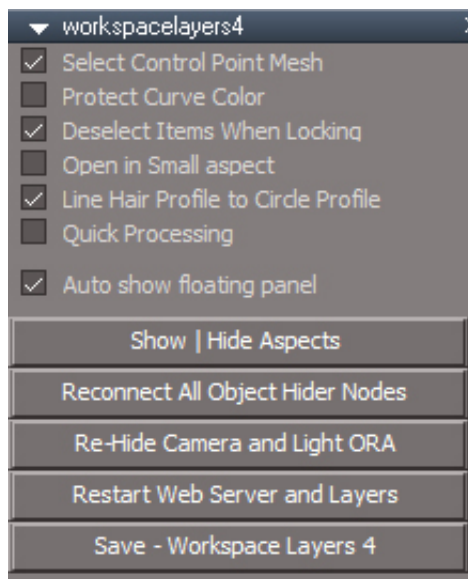
Edge\* means edge selection counts are not accurate

Node List View will not update the matrix data

The "Other" count includes group objects and non-renderable items at the scene level



**Layers v4** - This button will start the web server and open the layers window.



**Select Control Point Mesh** when active will automatically select the control point mesh for NURBS objects.

**Protect Curve Color** the color of a NURBS curve will not be changed by layer assignment.

**Deselect Items When Locking** when locking a layer any selected items in the layer will be deselected.

**Open in Small aspect** automatic switch the panel to the small aspect.

**Line Hair Profile to Circle Profile** convert incompatible Line hair profiles to Circle profiles.

text of link to use with external web browsers - this is required for Windows XP

**Quick Processing** much faster and less reliable with limited group support, use with a busy slow scene

**Auto show floating panel**

**Show | Hide Aspects**

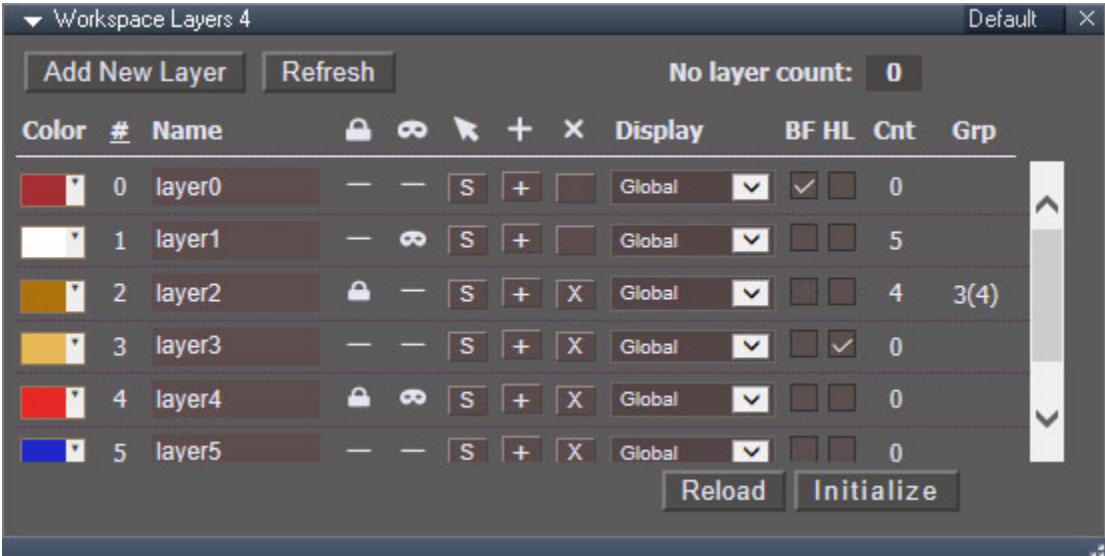
**Reconnect All Object Hider Nodes** reconnect the Object hider for cameras and lights that have them.

**Re-Hide Camera and Light ORA** hides the exported object render attributes panel for lights and cameras.

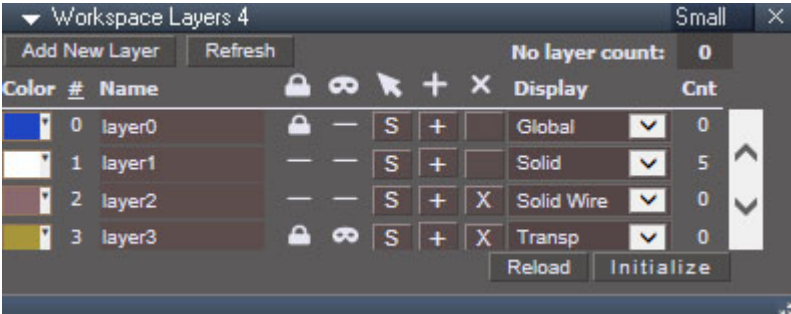
**Restart Web Server and Layers** restarts the web server and reopens the layers window.

**Save - Workspace Layers 4** - save the options as new defaults

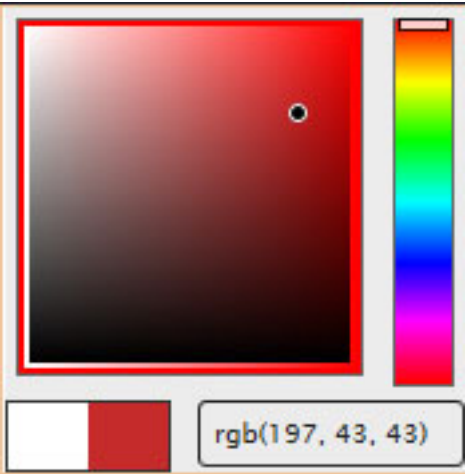
Shift + L opens Workspace Layers 4. Note: A 3D Window must be active



Workspace Layers 4 HTML control default view



Workspace Layers 4 HTML control small aspect



Layers Color Picker

**Add New Layer** - create a new layer with the lowest available number for the id

**Refresh** button is for updating the display after deleting, 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.

**# and Name** column headings can be used to sort the layers

The color control is for setting the wireframe color of a layer. Click outside to commit the selected color.

**Name** assign a layer name.



**Lock** make items unselectable in the 3D view



**Hide** make items invisible in the 3D view



**Select** - select all the objects in the layer.



**Add to layer** - add selected objects to the layer.



**Remove** - all layer members will move to layer 0 without changing their appearance to match layer 0

**Display** has options for:

**Global, Solid, Solid Wire, Transp, Transp Wire, Wireframe** - layer display modes are global/object mode off, solid, solid wire, transparent, transparent wireframe and wireframe.

**Backfaces(BF)** - additional display options to show back faces in transparent and transparent wire display modes.

**Hidden Lines(HL)** - additional display options to show hidden lines in transparent wire display mode.

**Cnt** - a count of all the visible objects in the layer including group members but not including the groups themselves.

**Grp** - number of groups and the number of items in the group. Format is "#groups(#items in the groups)"

**Reload** - same as pressing the refresh button on a web browser.

**Initialize** - set the layer to the initial state based on the scene objects.

## Group Notes:

The group counts make it easier to visualize the size of a layer selection. Ex 1 group with 98 visible parts, select by layer will only select the 1 group.

Groups inside other groups will add to the group count

Actors are groups

Bare skeletons are counted as groups with 0 members

Skeletons are created on layer 0

A simple actor added to a layer will count as 1 group with 2 members, the skeleton and the mesh

The tank girl with handles sample will show as group 1(0) when loaded into a scene with 3 no layers objects. It will show as 2(4) when added to a layer. The groups are the actor and the mesh group, the items are the 3 meshes and the skeleton

Characters from the library will be made up of meshes in one layer or no layer and their skeletons in another layer. Adding them to a layer will combine the counts based on their structure/hierarchy

The Bobby sample with hair added to a layer shows as group count of 3(4), remove the hair and count is 2(2) so hair was a group with 2 items

If a group contains NURBS it will not show in the group counts because NURBS are special custom groups that are not compatible with normal render attributes processing in trueSpace

Complex group relationships will require some interpretation to make sense of the group counts.

The script will read modelspace layer numbers, but not the wireframe color.

The internal html window does not work in windows xp

layer 1 is the default layer for workspace, layer 0 is the default for modelspace

NURBS are special custom groups that count as standalone items

new scene items don't inherit the layer 1 appearance automatically

line profile hair will disappear when an object is added to a layer, changing the hair profile from line to star or circle fixes this.

The color picker text input will not update the preview color. This does update the preview when running from an external web browser.

 Boolean operations will remove all layer data from the object.





# Blue Toolbar



**Open Camera Toolbar**



**Custom First Person Navigator**



**3D View Widget**

*same icon as Isometric view*



**Animation Panel**

*same icon as the Anim View button*



**Sequence Player**



**Scene Animator FX**

*same icon as Scene View*



**Background**



**Transform Object**



**Replace Objects**



**Shear Transform**

*same icon as the PE Shear*



**JScript Create and Autoload**



*Camera Toolbar*



**Eye Camera View**



**Camera View**

*same icon as Set Camera view*



**Camera Views 1 - 6**



**Perspective view from camera**



**Create camera at perspective view**

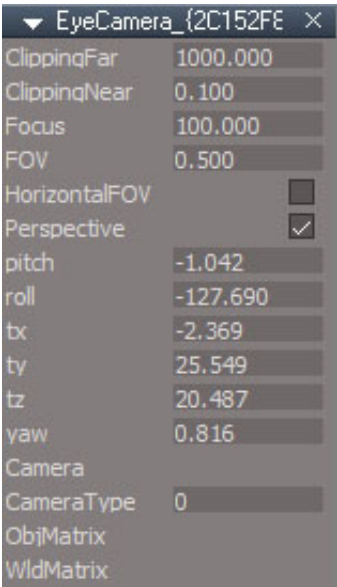


**Move object to perspective view**



**Convert Camera**

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"



**Cycle Camera view** - switch the 3d view to each of the scene cameras in turn with each click of the button.



**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(~28.6 degrees).



**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.



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



**Move object to perspective view** - the active 3D view must be a perspective view. Copies the camera transform to the selected object.



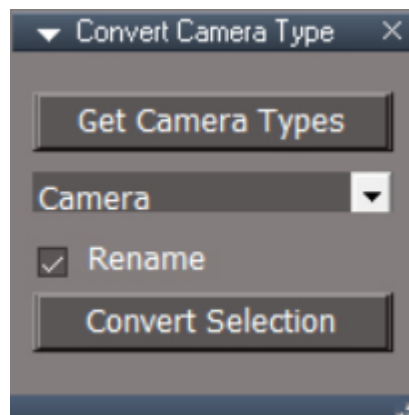
**Convert Camera**

**Get Camera Types** -

Type Dropdown - Camera, Camera1, EntryPoint, Yafaray Camera

**Rename** - rename to the type of camera

**Convert Selection** - convert and deselect.



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

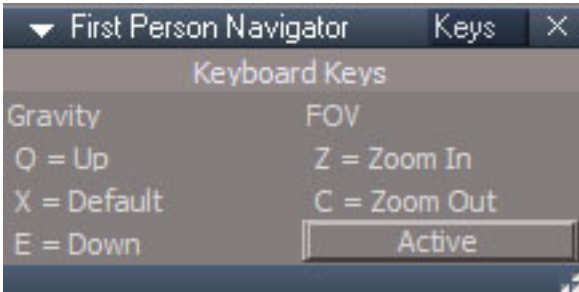
RMB - Activate | Deactivate FPN

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

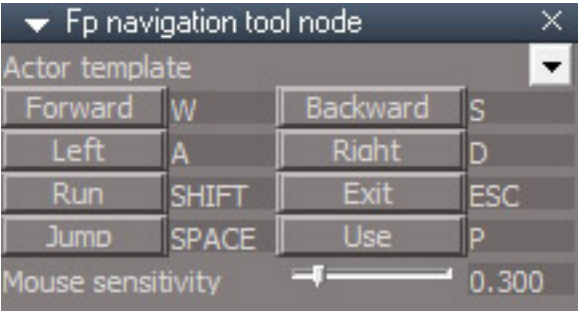
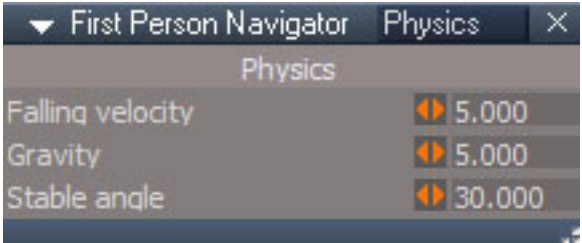
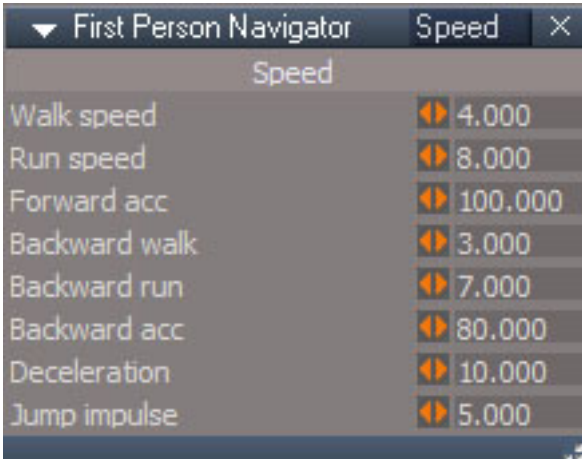
Benefits:

- 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*

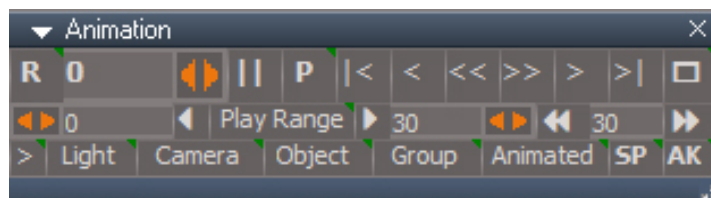




**Animation Panel** - load animation panel node into the scene if it does not already exist and then opens the panel. Does nothing if the panel already exists. If the panel is closed then you must use RMB to open it again.

RMB open the panel if it exists in the scene.

*same icon as the Anim View button*



### Top Row - left to right

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

Current frame number and scrubber

**||** - pause animation

**P** - play/stop 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

open/close button



Middle Row left to right

Start frame scrubber and input

◀ - reset start

**Play Range** - play/stop range playback, RMB shrink play range

▶ - reset end

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 - left to right

> - select next object, RMB select previous object

**Light** - select next light, RMB unselect

**Camera** - select next camera, RMB view camera

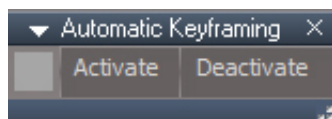
**Object** - select next 3D object, RMB unselect

**Group** - select next 3D group, RMB select next 3D child

**Animated** - select next animated object, RMB unselect

**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.

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



[More Information](#) also see section 9.2.7

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.



**Sequence Player** RMB open the panel



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

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

Frame - current image frame

**Play** - play and pause the sequence

**Pause** -

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

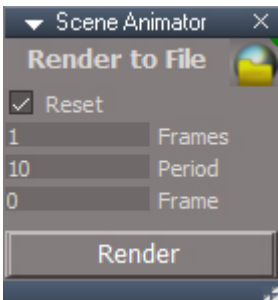
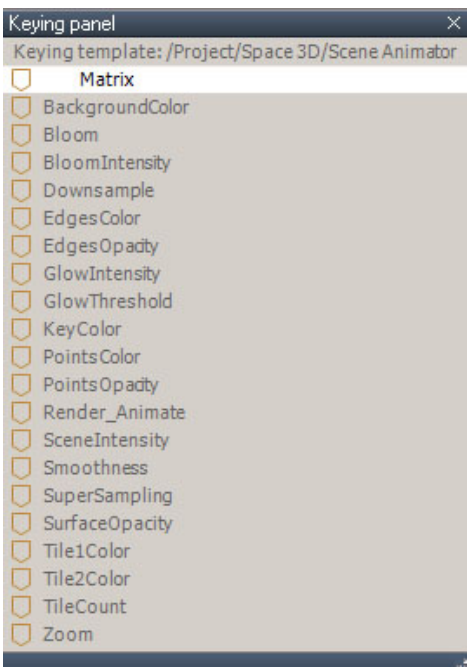
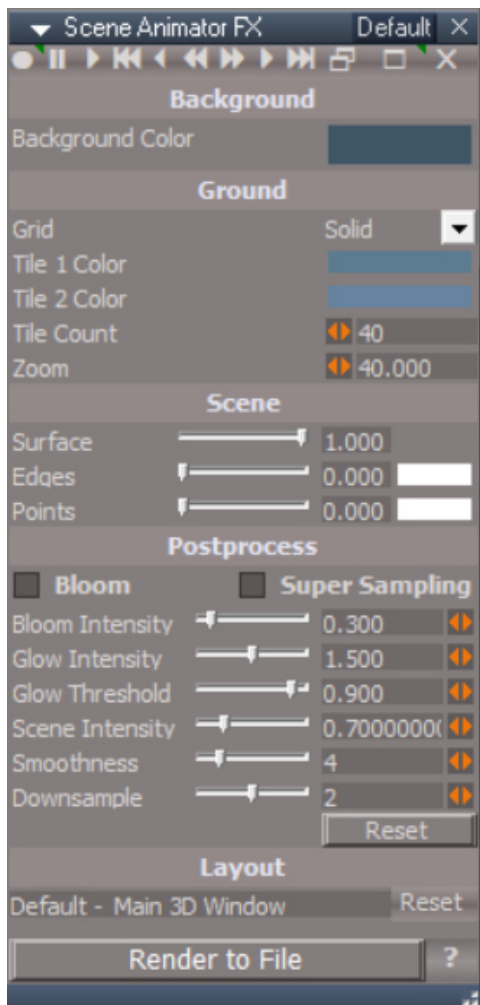
Bitmap - tiny display of the sequence



**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.

**Use the Layout - Reset button on first use**



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

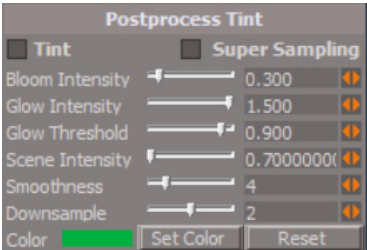
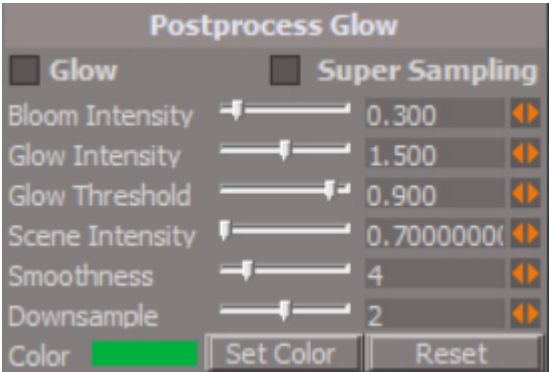
## Post Process and Render

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

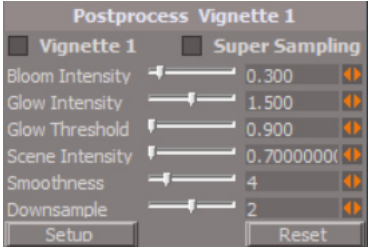
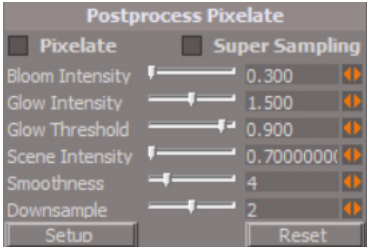
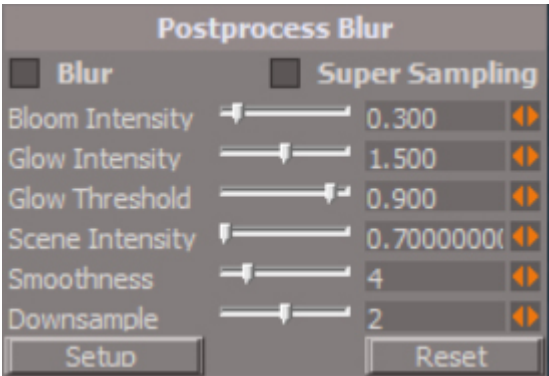
**Set** - sets up the post process values for glow effects. Scene Intensity is set to 301, 300 for glow + 1 for regular scene intensity. Glow threshold will be set to a value that corresponds to the KeyColor.

**Reset** - return values in the Postprocess section back to default values

The Postprocess section changes depending on the aspect of the panel.



Tint same ui



Pixelate, Vignette 1,2,3 same ui

Layout

**Reset** - 3D view appearance default values for Background, Ground and Scene section and sets up to use the Default aspect

**Render to File** - opens the Render to File panel.

**[?]** - open Render to File Alert for instructions

## 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.

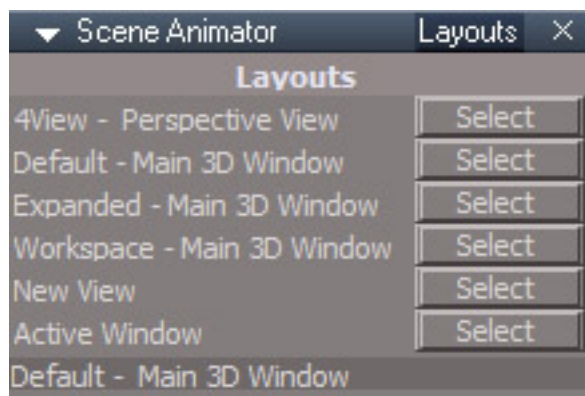
## How to use the Scene Animator Render to File

Set - Render to file  
Frames - Amount of frames to Render  
Render

Uncheck - Reset to continue rendering frames from the last rendered frame

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*

**4View - Perspective View Select** - use the upper right 3D window of the 4View layout

**Default - Main 3D Window Select** - use the main 3D window of the Default layout

**Expanded - Main 3D Window Select** - use the main 3D window of the Expanded layout

**Workspace - Main 3D Window Select** - use the main 3D window of the Workspace layout

**New View Select** - use the 3D window opened from the Main View Toolbar, pg 26 Open New 3D View

**Active Window Select** - setup to use the active window and open the Default Scene Animator tab in a floating window.

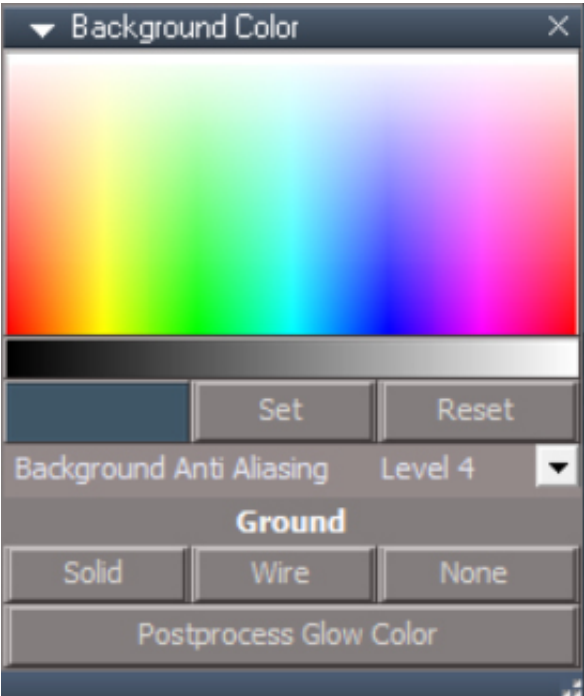
Floating layout - use Default - Main 3D Window Select

trueSpace6 layout - use Default - Main 3D Window Select

YafaRay4tS layout - use Default - Main 3D Window Select



**Background**







**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.

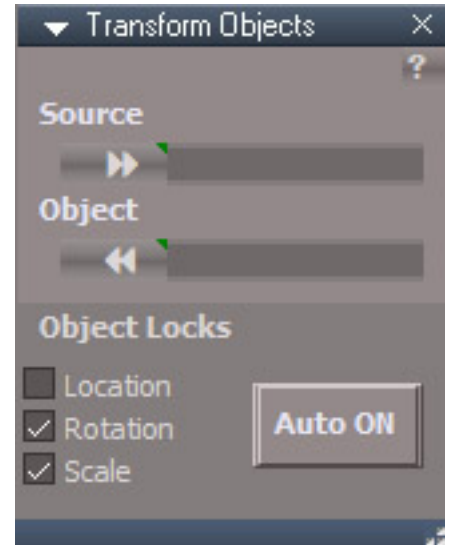
Run from the panel:

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

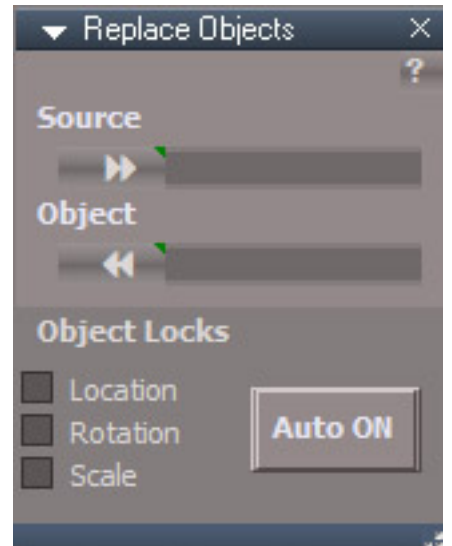
press the Source button

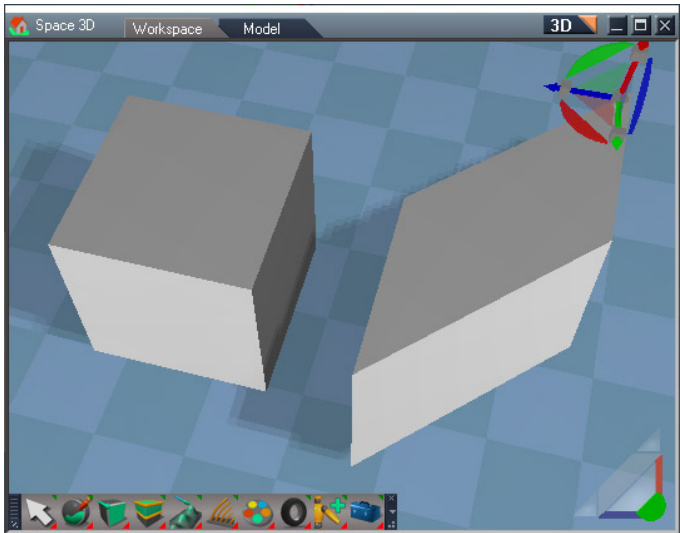
Select another object

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.



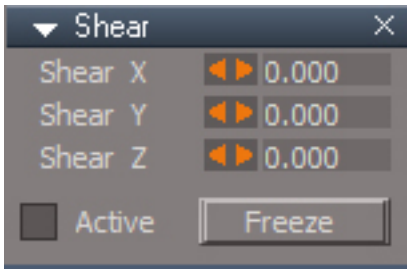


*Right box has had a shear value of 1.0 applied in the X direction.*



**Shear** - open the Shear panel

*same icon as the PE Shear button*



Select an object and open the panel.  
The current shear values of the selected object will update the display.  
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.

**Active** - when checked the shear values will update with selection changes

If the shear values are changed outside of this panel the object will need to be reselected to update the displayed shear values.





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

Note: To add and open a jScript Command or JScript Object inside an object in the Link Editor  
With the Link Editor in focus, select a node inside the object, LClick or RClick the Open JScript toolbar icon

## Miscellaneous Toolbars

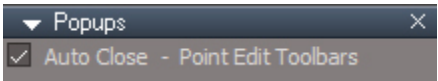
Additions not assigned to the Red, Blue or Gold toolbars

# Popup Toolbars

CTRL SHIFT V = View Toolbar  
CTRL SHIFT O = Object Navigation Toolbar

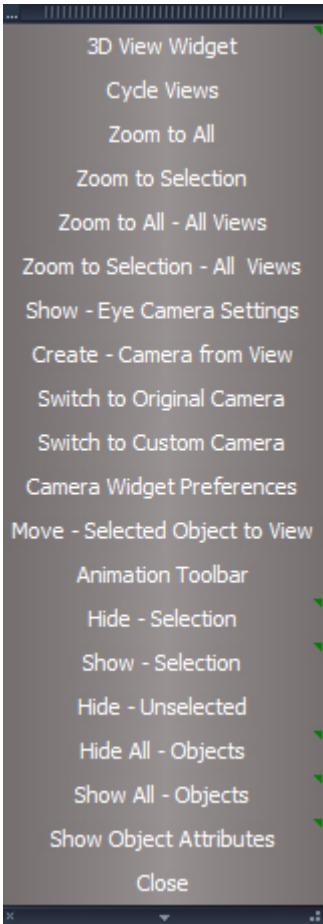
SPACE = Point Edit Toolbar  
SHIFT SPACE = Point Edit Toolbar 2

CTRL SPACE = Popup Toolbars Toolbar  
CTRL SHIFT P = Point Edit Widget Toolbar  
CTRL SHIFT L = Light Toolbar

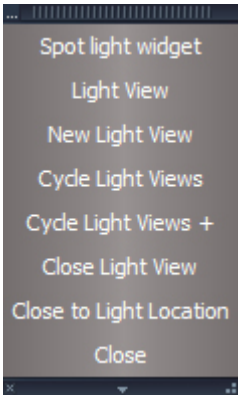


Uncheck **Auto Close** to make the PE toolbars open faster after the first run

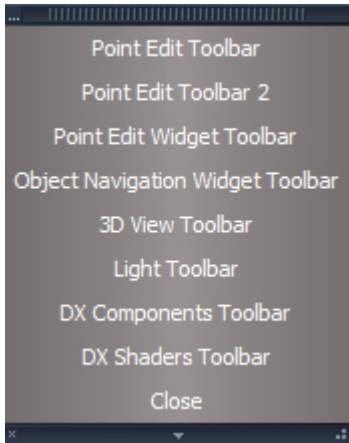
Point Edit Toolbar and Point Edit Toolbar 2  
RMB open the Popups options panel



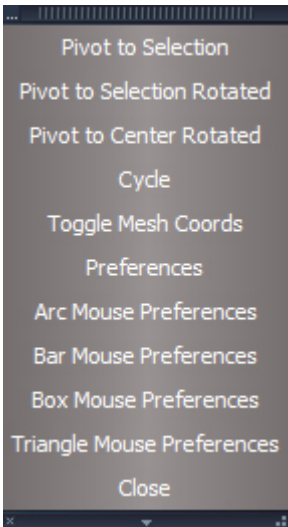
*View Toolbar*



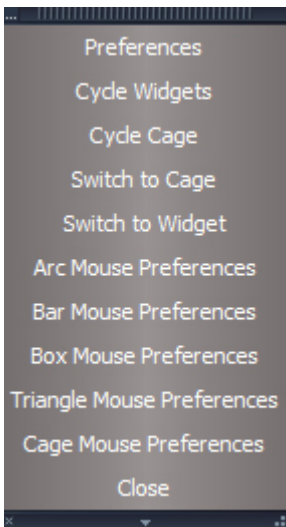
*Light Toolbar*



*Toolbars Toolbar*



*Point Edit Widget Toolbar*



*Object Navigation Widget Toolbar*

*Point Edit Toolbar**Point Edit Toolbar 2*

RMB point and edge selection modes to also convert the selection

The Point Edit Toolbars are used to quickly select modeling tools via a shortcut. After a tool is selected the toolbar is hidden automatically for fast access. It can be fully closed by clicking on one of the blank buttons.

When used with shortcuts the Point Edit Toolbar opens centered on the mouse position and the Point edit Toolbar 2 opens to the right of the mouse position. There is also a some variation in the buttons included and their arrangement in each toolbar.

SPACE = Point Edit Toolbar

SHIFT SPACE = Point Edit Toolbar 2

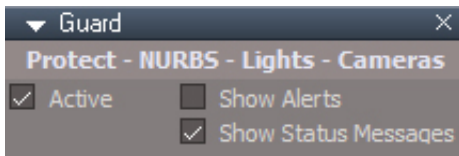
Point Edit Toolbar and Point Edit Toolbar 2

RMB open the Poupups options panel



**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.

## Guard / Protect



The Guard script prevents tools from acting on certain object types in order to prevent damaging these items or even crashing trueSpace. It operates on cameras, lights and NURBS object selections. The Guard has 4 modes of operation:

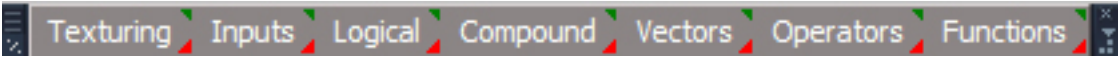
- deselect all objects before running the command
- cancel running the command
- modify the selection before running the command
- deselect some objects before running the command (this mode not currently used)

**Active** - if unchecked run the tools without the Guard

**Show Alerts** - use alerts for feedback messages

**Show Status Messages** - use the status line for feedback

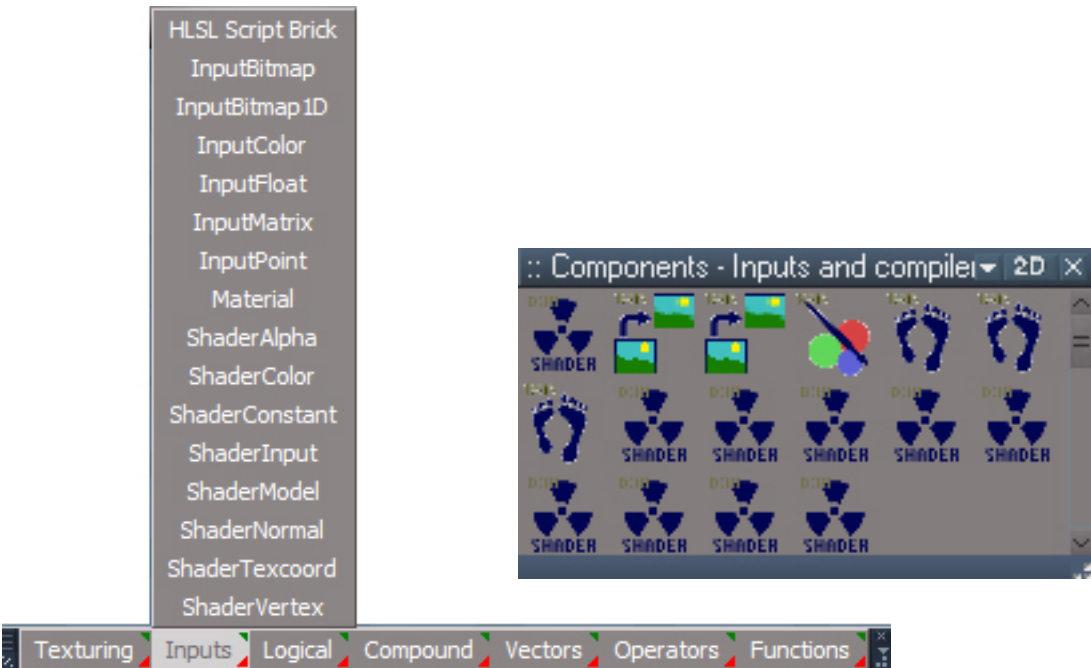
**SHIFT + C** open the dx material **components** toolbar at the mouse location



**SHIFT + S** open the dx material **shaders** toolbar at the mouse location



advanced editing tools [More Information](#)



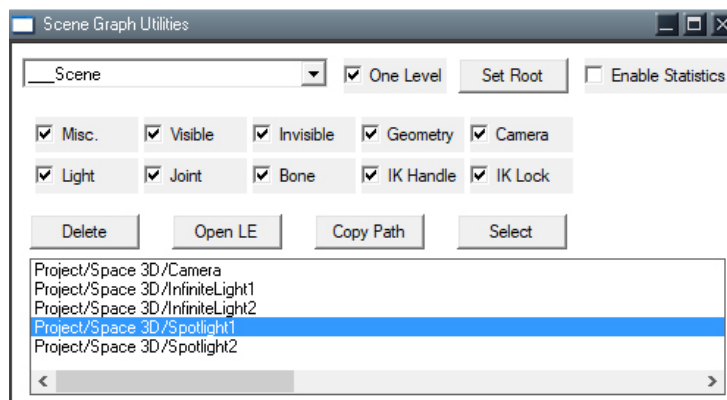
Navigate to your DX Shader in the Link Editor and with the Link Editor window active, select a component from the toolbar menu to load it into the link editor or RMB to open the component library and drag items out of the library into the link editor.



## Scene Graph Utilites (Legacy)

Run using the command node found here:

/Scripts/CustomCommands/SceneView/openNodeGraphView



The listbox has an unusual selection method. To select an item you left click then right click. For multiple selections drag or use combinations of shift and ctrl.

The **root level dropdown** list holds bookmarks. "\_\_\_Scene" is the scene level and "\_\_\_Root" is the top level in truespace.

**One Level** checkbox will display only one level of nodes at the current root level. When unchecked it will display all the child nodes and their descendants.

**Set Root** button is used to add a bookmark and set the root level to that bookmark. To remove a bookmark select the node and press the Set Root button

**Enable Statistics** - seccion changes will update the Statistics display



**Object Statistics**

[More Information](#)

The **Misc, Geometry, Light ...** checkboxes act as filters. If it's not checked then it won't show in the list.

**Misc** is a catch all for items that don't fit into the other filter categories.

The **Visible** and **Invisible** filters only work for One Level lists.

To get a list of invisible objects, check One Level and uncheck Visible and check Invisible.

**Delete** to delete the selection

**Open LE** button to open the link editor to a node

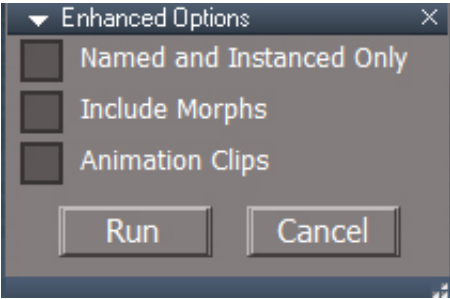
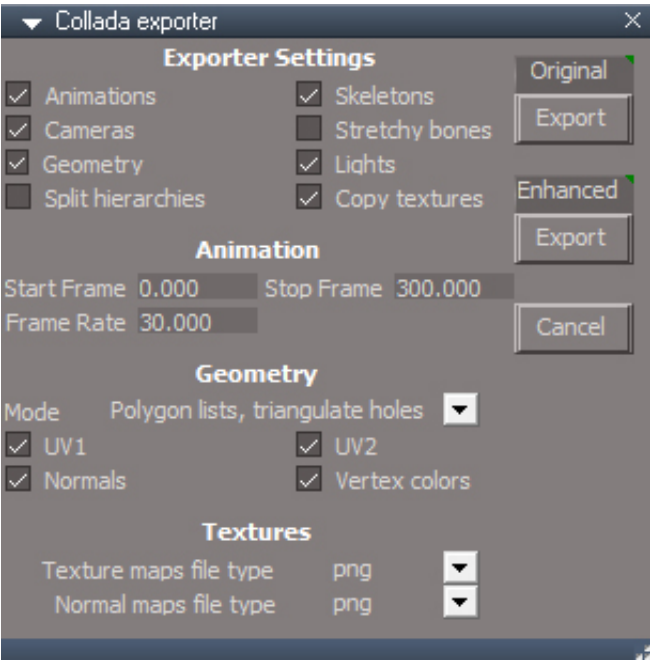
**Copy Path** button will copy the full path of the selected node to the windows clipboard.

**Select** button will select the scene items based on the chosen items from the list. Right click in the list after making the choice will also select the nodes.

# Appendix C

## Collada export enhanced

Modify the exported dae file so that the textures and the collada file are in the same folder. Exports animations for light color, spotlight cone angle and camera fov and fixes texture file paths. Fixes the export of vertex colors. Fixes normal map export so it is compatible with other software. Supports parenting structures. Adds support for scene instanced materials. Export constant color and texture materials as emission materials. Angle animations compatible with Blender. Fix ambient and area lights. A copy of the collada file is modified and placed into the texture folder if textured materials were used otherwise the original collada file is altered.



**Original** - RMB material converter

**Export** - original tS export

**Enhanced** - RMB material converter

**Export** - open Enhanced options panel after export is complete

**Include Morphs** - mesh and actor morphs will be added to the file

**Name and Instanced Only** - materials are defined as scene instanced and have a unique and valid Name parameter assigned to each of them

**Animation Clips** - write animation clips from the story view

**Run** - update the collada file

Enhanced export only works when using the file menu to save collada files. Drag and drop to a library will not work.

Image file names processing will only be used on compound materials.

The name of the materials can be set by adding a node that has a "Name" input connector and exporting that connector to the D3D material node.

Animation clips will define names for different sections of the animation blocks exported by trueSpace.

If Copy textures option is selected and textures are used in the materials, on export the enhanced version of the dae file will be created in the folder with the textures.

Objects in truespace need to be named. Automatic names like "Torus, 1" cannot be reverse matched from the Collada file for material processing.

Mesh objects with axis applied needs to be flattened before export when the object is animated. DIFFUSEMAP, ALPHAMAP and NORMALMAP Input usage must be set properly for each kind of texture bitmap. The usage is used by the trueSpace exporter to determine the type of texture exported, so if you have a "diffuse" use on an "alpha" image it will export as diffuse.

A color texture is required before emission or specular textures will export, a small black color texture can be used.

All morphs must be at 0 values for the export.

When exporting clips, assign unique names to all animation clips.

Do not overlap clips. If they do overlap export 1 clip at a time in different files by disabling all clips except for one.

Set the default pose for actors before exporting with morph targets, otherwise the pose will be included in the morph definitions.