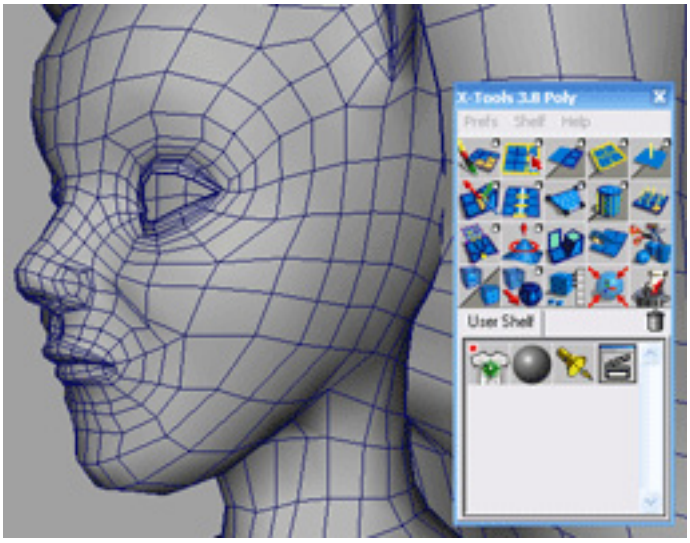
X-Tools 3.8

Documentation



Introduction and License:

X-Tools was created to be the ultimate toolbox script for Maya. The most common and powerful tools used in Maya have been grouped into themes for easy and logical access. To speed up workflow, Many common squences have compressed into one step. Other related functions have been loaded to context sensitive buttons that do different functions in different selection modes.

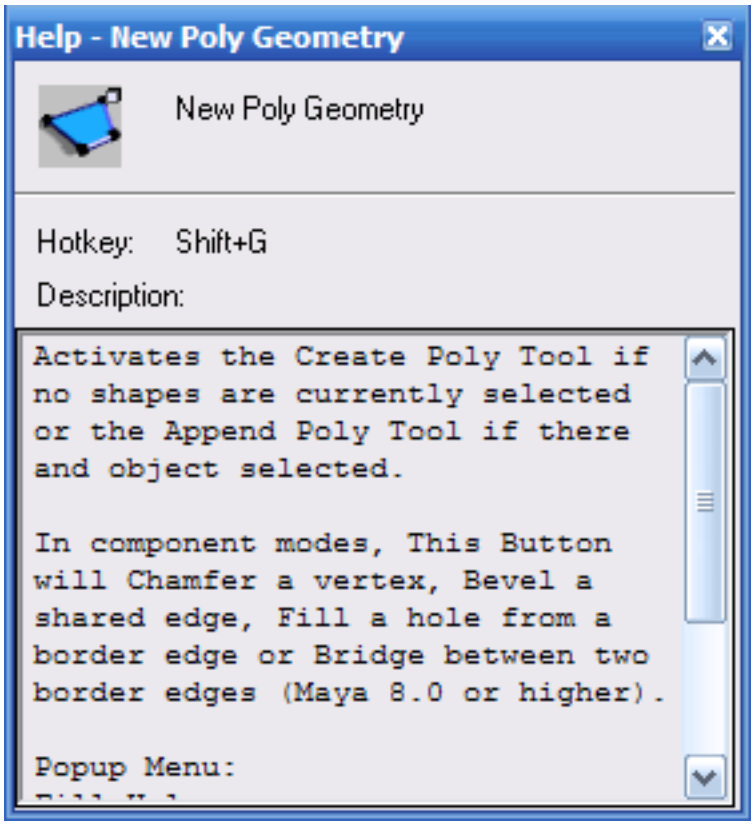
X-Tools 3.8 and higher are presented as Shareware. It is the result of hundreds of revisions and give you access quick access to tremedous range of Maya's functions and tools. I definetly feel it's worth **$20**. If you agree then go to www.andrews3dbrain.com/xtools.html and click the "Donate" buttom on the X-Tools Page. Your payments will encourage me to continue to develop and expand X-Tools.

Index:

X-Tools Help: return to index

Besides this document, X-Tools has several built-it help features.

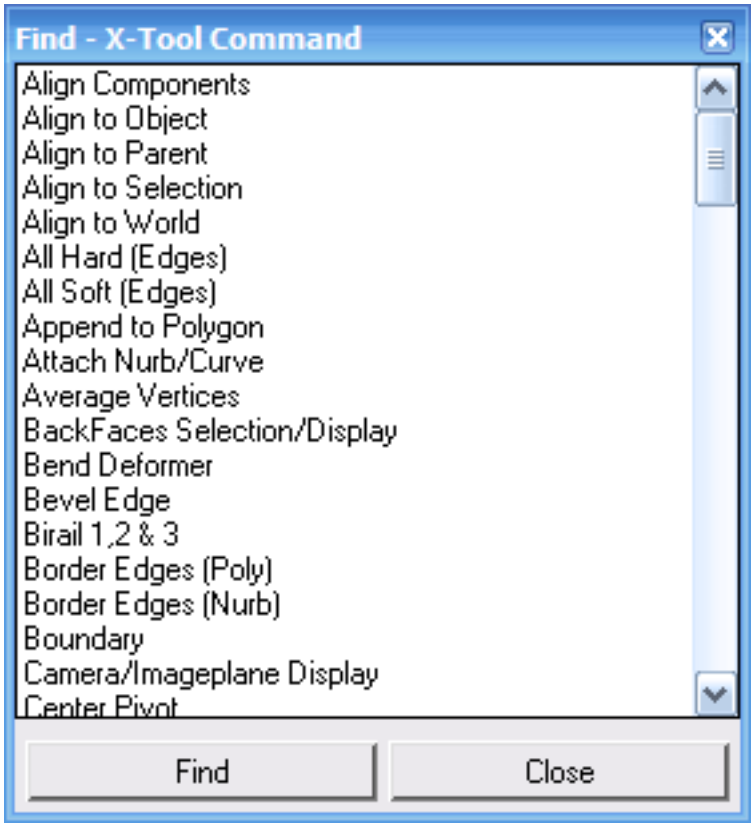
Help Mode:



The Help Mode Window.

When "Help Mode" is turned on, a Help Window will be displayed. The window will update with help information when an X-Tools button is clicked, an will continue to update with new help information when other buttons are clicked. The Help Window will stay open until the "Help Mode" is switched off. The HelpWindow describes all functions that depend on different selection modes. The details on double-click functions and popup menus are also listed.

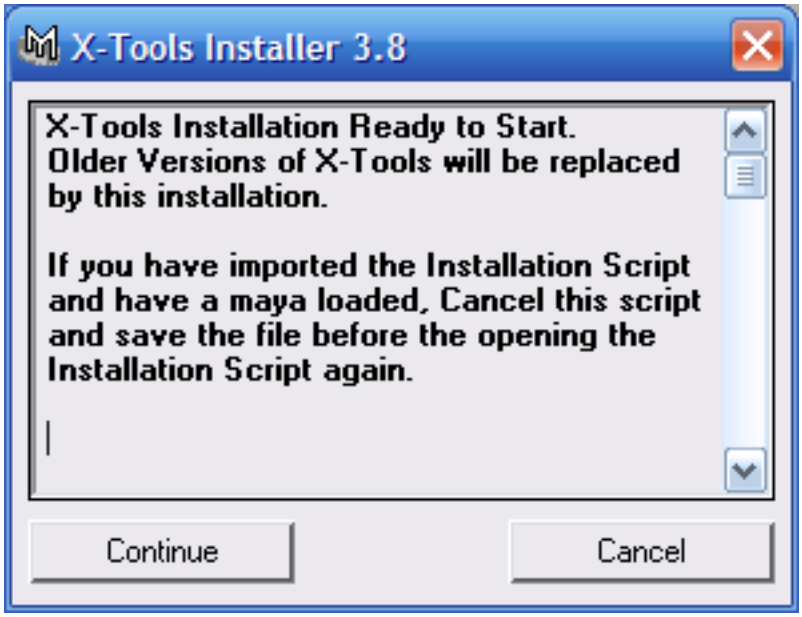
Find Command:



The Find Command Window.

An alphabetical list of all X-Tools commands is available in the Find Command Window.

X-Tools Installation: return to index



The Installer Script.

You can let Maya Automatically install X-Tools by openning the maya file: "**xtools_installer.ma**" that's located in the **X-Tools3.8** installation folder. This file contains a interactive script for walking the user through the X-Tools installation process. The installer file must be openned through from the Maya File Menu. It Can not be doubled clicked on the desktop or dragged and dropped onto the Maya application. It is also important to not change the contents of X-Tools installation folder.

For those Maya users that are comfortable installing scripts, installing X-Tools is fairly easy. X-Tools can by manually installed by placing the following files and folders in the following locations:

- **xtools.mel** in the user scripts folder.
- **xtool_icons** folder in the the user prefs/icons folder.
- This user scripts folder will eventually contain **xTools_UserPrefs.mel** and **xTools_UserShelf.mel** which are saved by X-Tools itself. These files will have to be copied, if X-Tools is being moved to another machine. Here are some examples of the user scripts and prefs folder locations based on different platforms:

Windows

- <Logon Id>/My Documents/maya/8.5/scripts
- <Logon Id>/My Documents/maya/8.5/prefs/icons

Mac

- <Logon Id>/library/preferences/alias/maya/8.5/scripts
- <Logon Id>/library/preferences/alias/maya/8.5/prefs/icons

Linux

- /usr/aw/userconfig/maya/8.5/scripts
- /usr/aw/userconfig/maya/8.5/prefs/icons

Removing X-Tools: return to index

X-Tools can by easy removed by deleting the following files and folders from the following locations:

- **xtools.mel** from the user scripts folder.
- **xtools_UserPrefs.mel** from the user scripts folder.
- **xtools_UserShelf.mel** from the user scripts folder.
- **xtool_icons** directory from the the user prefs/icons folder.

The instalation script also adds an X-Tools start icon to the "custom" shelf (if there is one). This can easy be removed by draging it to the shelf trashcan on the far right of the shelf bar.

New Features (since version 3.5) return to index

New Interface:

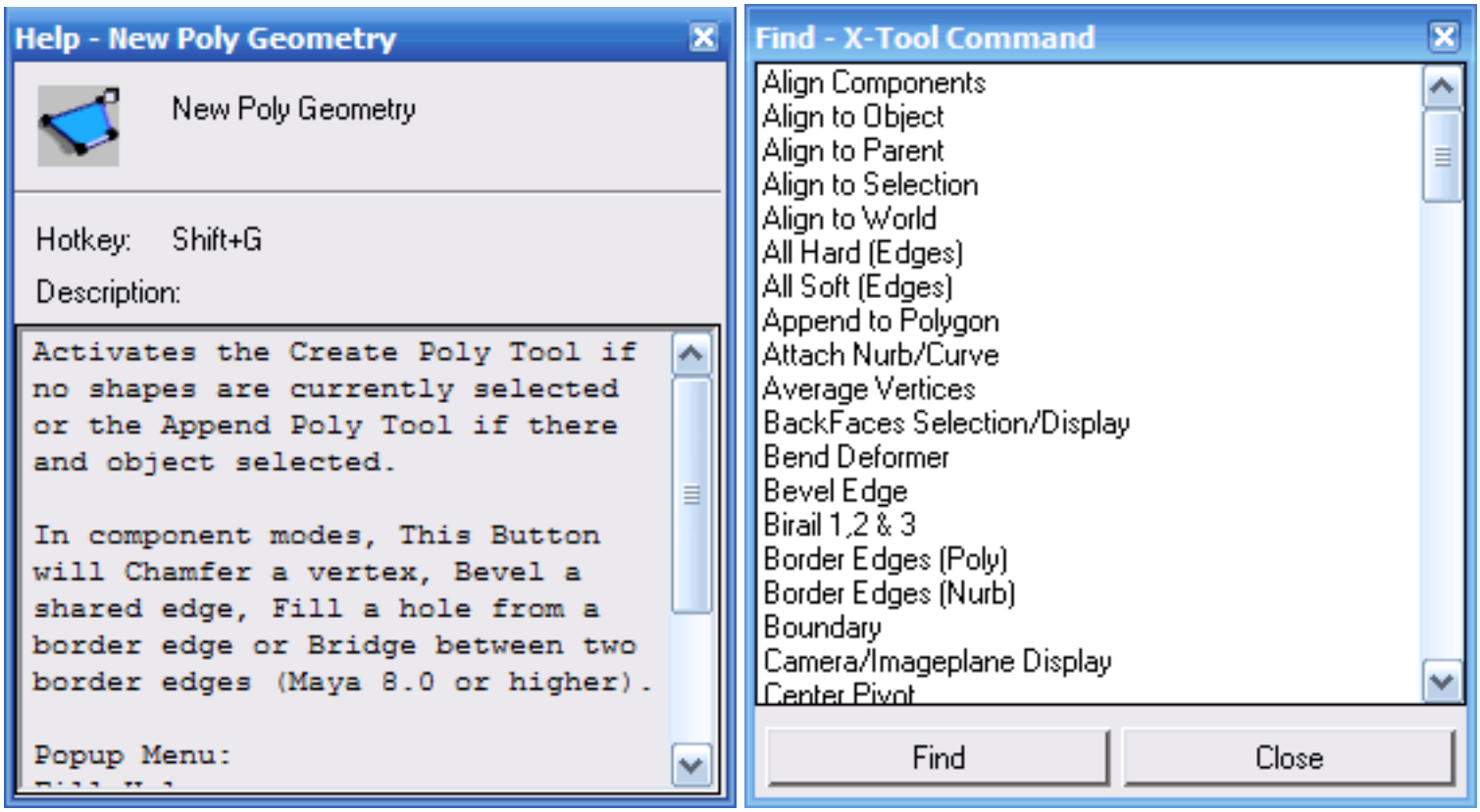
X-Tool has been completely rewritten for better compatibility and portability. It's interface has been simplified by removing shelf tabs and 3D beveled buttons. X-Tools no longer redraws its interface every time the tools are changed. The window title updates to identify its current mode; Poly, Nurb or Help. Most X-Tool Buttons that are context sensitive automatically update their icon image to match their current function. Other Additions to the interface include:

- More Mini-Windows.
- Better Sculpt Mini-Window.
- Sculpt Hotkeys off by default.
- X-Tools Hotkeys off by default.

Improved Installer File: return to index

The xtool_installer.ma file is part of the installation directory. It can be loaded like any standard maya file and will automatically install the X-Tools script and icons directory to the appropiate locations. The new version will not overwrite any maya preferences. It will also add a X-Tools start icon to the Custom Shelf if one is there is Custom Shelf Tab available, see Installation

Improved Help:



With the help mode on, you can find out everything about a button by just clicking on it. A find command has been added if you're looking for a particular function but can't find it.

New and Improved Tools:

Many tools have been improved since 3.5. Others are brand new. Here's a list:

- Improved Mirror Geometry function
- Stand on Grid
- Auto Sizing for Brush Tools
- Aligning the Rotation and Scale Manipulators
- Auto Align Mode
- Improved Loop and Ring Selection
- Buttons with a Second Function
- Insert Loop and Polygon Split Tool Swapping
- Improved New Poly Geometry Button
- Copy and Paste Pivot Points
- Placing a SoftMod at a Component Location
- Selecting Half a Shape
- Multi-Edge Loop Splitting
- Center Selection/Align Component
- Interactively Changing Normal Length
- Switching Maya's Interactive Tool or Interactive Shape Creation

Improved Mirror Geometry function:


Mirror Geometry now takes its merge threshold from current Merge Vertice threshold. Mirror Geometry has been moved to the Poly Join (combine) popup menu.

Stand on Grid:

 Stand on Grid function has been added to place any object on the grid. The function is found in the Freeze Transform popup menu.

Auto Sizing for Brush Tools:

 X-Tools will Automatically set the radius of these tools, (Sculpt, Paint Select, Softmod) when the are activated from X-tools. The Radius is based on your current camera distance from the active shape. The closer you are to the active shape, the smaller the radius will be.

Aligning the Rotation and Scale Manipulators:

 It's now possible to align the Scale and Rotate Manipulators to match a custom alignment of the Move Manipulator. The function can be found in the Align to Selection pop-up menu.

Auto Align Mode:

 The Auto Align feature will align the Move Manipulator to normal or a selection every time that selection is changed. This is particular handy while using the arrow keys. The Auto Align mode can be set in the Align Mini-Window. This features is currently only available on X-Tools for Windows.

Improved Loop and Ring Selection:

 Loops, Rings, Borders, Loop Paths etc can all be selected with same select button. Once a loop is selected, you can select the ring by clicking the button again. You can select Loop/Ring Paths simply by selecting two edges. X-tools will give you the shortest loop or ring selection between the two edges. The Loop Selection Tool is found on the poly toolset.

Buttons with a Second Function:

 becomes 

 becomes 

 becomes 

The buttons above have another function if clicked a second time while not changing the selection. Select Loop/Border will toggle to Select Ring, Align to Selection will toggle to Align to World, Center Pivot will toggle to Center Pivot to World, (The Origin).

Insert Loop and Polygon Split Tool Swapping:

  The Insert Loop and Split Polygon button are similar tools; One is quicker while the other is more custom. Because it's common to use both tools at the same time, they have been tied into one button. You can swap between the two by using the Insert Edge/polygon split popup menu.

Improved New Poly Geometry Button:

 The New Poly Geometry Tool does even more based on the current selection. If one border edge is selected it will fill hole, If two are selected it will make a bridge (maya 8.0 and up). It will Chamfer a selected vertex or Bevel a selected edge.

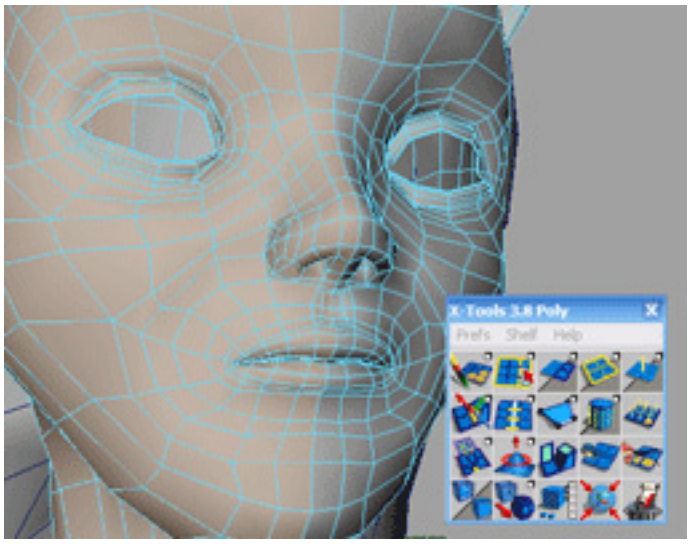
Copy and Paste Pivot Points:

 Pivot Point locations can be copied (in world space) from one object to another or from a component selection to another object. These functions can be found under the Center Pivot popup menu.

Placing a SoftMod at a Component Location:

 A SoftMod Handle can be placed precisely at a vertices or other component selection. This function can used as a fall-off move. It's also an alternate to placing a Softmod on the shape which is intuitive but not as precise. This function is in the Deforming/Sculpting pop-up menu.

Selecting Half a Shape:



Selecting half your character.

 It's possible to quickly select half the faces of a shape, (a character for example). See the Select Half Mini-Window. This function is located in the Artisan Paint Select Face pop-up menu.

Multi-Edge Loop Splitting:

 The Split Edge Tool will now split multiple selected edges in half.

Center Selection/Align Component:

 Centering works on objects or components. You can center or align an object to the origin by any one, two or all three axis. This is also a great way to center the components of half a object (a character for example), before mirroring. This powerful function can be found under the Freeze Transform popup menu as Center Selection and the Align to Selection popup menu where it is known as Align component.

Interactively Changing Normal Length:

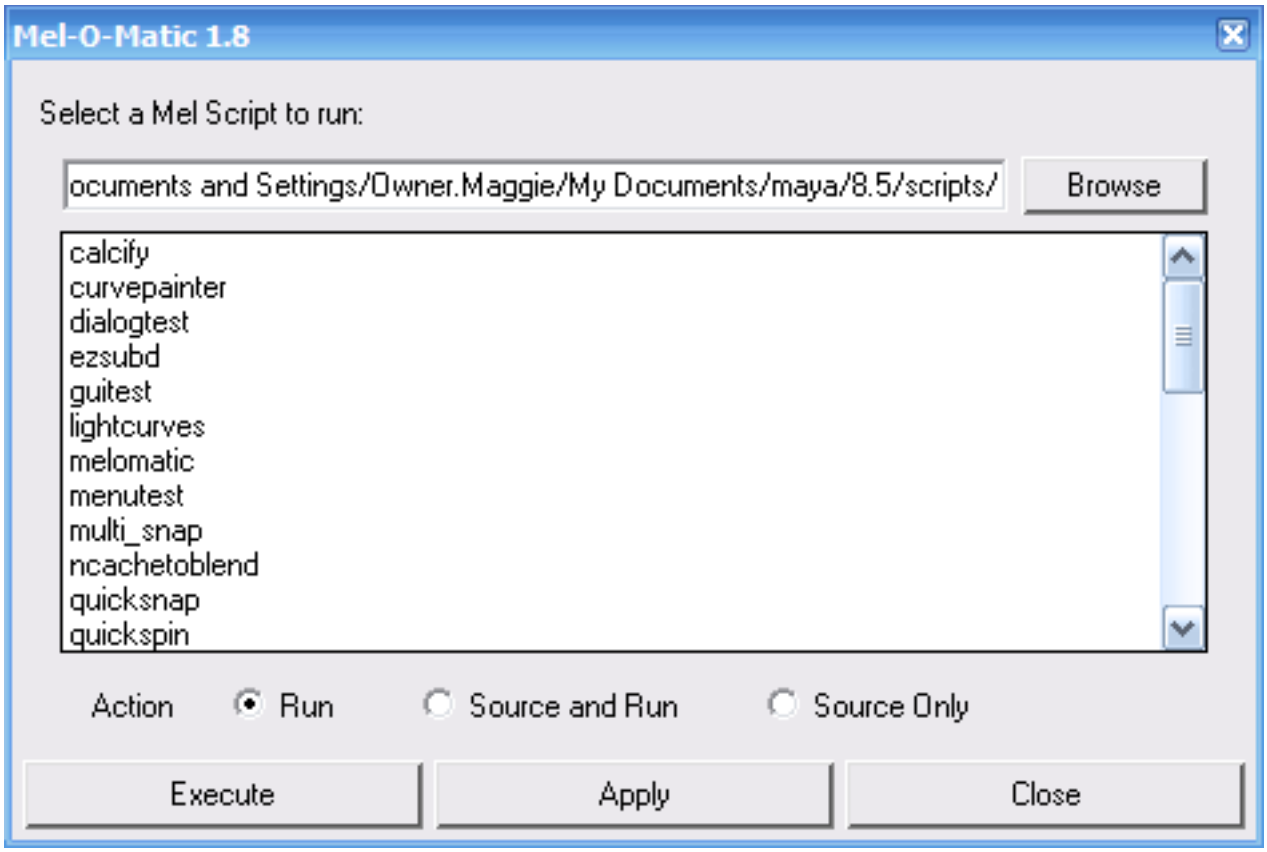
 You can interactively adjust the length of normals on very large or small objects by using a slider gadget. Double Click on the Toggle Normal Display button to get Normal Mini-Window a slider control for the normals length.

Switching Maya's Interactive Tool or Interactive Shape Creation:

You can now choose to turn the interactive help messages on or off. This option is in the Prefs Menu. You can also toggle freeform (Interactive) shape creation on or off. This option can be found in the New Geometry Poly or New Geometry Nurb pop-up menus.

Removed Features: return to index

The following features have been removed and will return in X-Tools version 4.0:



- The Melomatic is an easy way of keeping track of mel scripts. It opens a window with current list of mel scripts in the scripts folder. Melomatic can still be run by typing "xmelomatic" in command line.
- Load Shelf - Loading the contents of an existing Maya Shelves into the X-Tools User Shelf.

Other Removed Features:

The following were removed in order to keep the interface simple:

- Shelf tabs for different tool sets. Changing Toolset are now controlled through the Prefs menu.
- 3D look for the tool buttons - nice but mostly took up extra space.
- Soft Mod/Sculpt Toggle button - too confusing. Soft Mod is now on Deforming, (Sculpt) button popup menu.
- X-Tools no longers requires an extra message window to indicate that the Help Mode is on. The X-Tools Window changes the window title to show that Help Mode is on.

Other Changes: return to index

- The User Shelf File is now saved in the User Scripts Directory instead of the Shelf Directory.
- HotKeys are now set to "off " by default unless the preferences have been previously saved.
- Brush Scripts for brush hotkeys and interface updates are still of part of X-Tools but are turned off by default.
- The Delete History Button does not double as a Delete Edge Button when only edges are selected. The function is still available in the Delete History pop-up menu.
- Poly Shape Primitive Toolbox now accessed from New Poly Geometry Popup Menu.
- Mirror Geometry function moved to the Poly Join (Combine) popup menu.
- Center Selection can found under the Align to Selection popup menu as Align Components. It is still availble under the Freeze Transform popup as Center Selection.
- You can now open the Edge and Face Toolboxes by double clicking open the insert loop/poly split and the New Face buttons respectively. The tool options for Insert Loop or Poly Split options can still accessed by double clicking on the insert loop button again.

X-Tool Menus: return to index

X-Tools currently has three menu headings: Prefs, Shelf, and Help. Here are menu items grouped by menu headings:

Prefs: (Preferences)

- Iconify - Iconifies The X-Tools Window.
- HotKeys - Switches the predefined predefined Hotkeys on or off. The hotkeys assignments can be found in the Help Window. See Help Mode. X-Tools Hotkeys are not permanent and will not interfer with Hotkeys. See X-Tool Hotkeys. X-Tool Hotkey are off by default.
- BrushScripts - A Brush Script is used to update the Radius field in the Sculpt Mini Window and to allow the user to switch between sculpt modes using Sculpt Hotkeys. BrushScripts are off by default.
- Poly Tools - Sets X-Tools to display Poly Tools. This is the Default.
- Nurb Tools - Sets X-Tools to display Nurb Tools.
- Tool Messages - (For Maya 8.0 and Higher) Switchs the Interactive Help mesages on or off. The default is off.
- User Shelf - Switches the User Shelf on or off. The Default is Off.
- Save Prefs - Saves the Current Preferences to xtools_UserPrefs.mel in the scripts folder. This file will be used to set the preferences when ever X-Tools is restarted.

Shelf: (Note: These menu items are only active if the User Shelf is Displayed).

- Clear Shelf - Clears User Shelf.
- Save Shelf - Saves contents of User Shelf in file called xtools_UserShelf.mel in the scripts folder.

Help:

- Help Mode - Turn on Interactive help mode. Clicking on button will open Help Window
- Find Command - Displays a list of all X-Tool Commands. Selecting one item will open the Help Window for the Button

where that item can be found.
- About X-Tools - Displays Info about X-Tools.

X-Tool Hotkeys: return to index

X-Tools two kinds of hotkeys; Button and Sculpt. Button Hotkeys are associated with specific buttons while Sculpt Hotkeys allow you to change Sculpt modes while on-the-fly. Each is described in more detailed below. In addition, the "g" hotkey will repeat any X-Tool command just like the standard Maya commands. This includes both pressed buttons and popup menus.

Button Hotkeys: return to index

Each X-Tool Polygon Button has a Hotkey assigned to it. A button's Hotkey can found in the Help Window when Help Mode is on. All Hot keys require a Shift Key to be pressed with the Hotkey. The Shift was chosen because Shift Hotkeys are rarely used. However X-Tools Hotkeys can be turned on and off at will through the X-Tools Prefs Menu. Even when they are on, they don't overwrite factory or user Hotkeys settings and are not saved in Maya's user Hotkey file.

Sculpt Hotkeys: return to index

X-Tools allows you to change sculpt modes with a hotkey. Hold down Shift before making a brush stroke and the Sculpt Tool will change to a Smooth Mode. Hold down Ctrl before making a brush stroke to toggle between pull and push. The Mode will be set before the brush stroke begins and there's no need to hold the hotkey once the mode is set.

X-Tool Features: return to index

X-Tools is divided into four sections: Poly Tools, Nurb Tools, a User Shelf and Mini-Windows. In Poly and Nurb Tools each button represents a theme that's related to it's main function, so similar functions can be found a button's popup menu. The User Shelf is an extra Custom Shelf that you can fill with you own tools that aren't a part of X-Tools. X-Tool Mini-Windows gives you fast access to tools that wouldn't fit in the X-Tools interface.

Poly Tools: return to index

The Poly Tools.

The Layout of the Poly and Nurb Tools are similar to promote a fluid transition. In fact, the Toggle Display, Sculpt, Ungroup, Freeze Tranform, Center Pivot and Delete History Buttons do not change as you switch from one toolset to another.

The buttons have been loosely arranged according to function. The first row of the Poly Tools is mostly concerned with selection and display. The second row manipulates a selection which is often similar to the buttons that are directly above. For Example, The Insert Loop Button is right below the Select Loop Button, and The Confrom Normal Button is right below the Toggle Normal Display Button. The third row of Poly Tools is related to the PolyMesh manipulation while the bottom is

concerned with the actual Poly shape.

Here is a listing of the Poly Tool Buttons:

-  Paint Select Face
-  Edge (Loop/Border) Selection
-  Toggle View Display
-  Toggle Component Display
-  Toggle Normals
-  Align to Selection
-  Insert Edge
-  New Poly Geometry
-  Toggle Edge Hardness
-  Conform Normals
-  Merge Vertex
-  Deforming (Sculpting) Poly
-  Extrude Poly Component
-  Poly Join (Conbine)
-  Poly Break-Apart
-  Sub-D/Poly Toggle
-  Smooth Poly mesh
-  Freeze Transforms
-  Center Pivot
-  Delete Construction History

Paint Select Face: **return to index**

 Activates the Paint Select Tool for a selected polyshape. The Default mode is face, but you can change it to any other component mode.

Double Click - opens the Paint Selection Mini-Window.

Pop-Up Menu:

- View Selected - Toggles the display of unselected faces.
- Lasso Selection Tool - Activates the Lasso Selection Tool.
- Object Mode - Returns the current shape to Object Mode.
- Select All Meshes - Selects all polyshapes in the curent scene.
- Select Custom Faces - Opens the Select Face Mini-Window.
- Select Custom Vertices - Opens the Select Vertices Mini-Window.
- Select Half Mesh - Opens the Select Half Mini-Window.

Edge Selection: **return to index**

 Selects the loop or border of any selected edge. If no edge has been selected, a mouse click activates the Loop Selection Tool. A second click will switch the edge selection to a ring selection.  Loop, Border and Ring Paths can selected by selecting two edges. X-Tools will try to connect two edges in path before it selects the entire loop structure. If no edges are selected then the button activates the Select Loop Tool. Repeates clicks with nothing selected will cycle the tool through Select Lop, Select Ring and Select Border.

Double Click - opens the Loop Spacing Mini-Window for custom Loop Selection.

Pop-Up Menu:

- Convert to Vertex - Converts the current selection to the contained vertices.
- Convert to Face - Converts the current selection to the contained faces.
- Select FacePath - Selects the faces shared by an edge's ring.
- Loop to Curve - Makes a curve shape from the loop of a selected edge.
- Select Border Edges - Selects all border edges of any selected polyshape.
- Select Unmerged Edges - Selects any unmerged edges.

Toggle View Display (Poly): **return to index**

 Toggles Wireframe on Shaded mode on or off.

Double Click - Opens the Display Poly Mini-Window for setting common display options.

Pop-Up Menu:

- X-Ray -Toggles X-Ray mode on or off.
- Wholeface Select- Toggles whether polygons can be selected by wholeface or face centers.
- Backface Culling - Toggles backface, (face that face away from the camera) display.

- View Selected - Toggles the display of unselected faces.
- Show All Meshes - selects all polyshapes in the curent scene.

Toggle Component Display: return to index

 Toggles both soft and border edges on or off.

Double Click - Displays the options for Custom Polygon Display.

Pop-Up Menu:

- Toggle Soft Edge - Toggles the display of Soft Edges for current shape.
- Toggle Border Edge - Toggles the display of Border Edges for current shape.
- Toggle Vertex - Toggles the display of Vertices for current shape.
- Toggle Face Centers - Toggles the display of Face Centers for current shape.

Toggle Normals: return to index

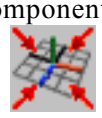
 Toggles normal display on or off.

Double Click - Opens the Normals Mini-Window to set normal length

Pop-Up Menu:

- Long - Sets the length of displayed normals for selected shape to long.
- Medium - Sets the length of displayed normals for selected shape to medium
- Short - Sets the length of displayed normals for selected shape to short.
- Tiny - Sets the length of displayed normals for selected shape to very short.
- Half - Havles the length of displayed normals for selected shape.
- Double - Doubles the length of displayed normals for selected shape.

Align to Selection: return to index

 Aligns the Move Manipulator to face in the direction of any selected component's normals. A second click will realigning the Move Manipulator back to it's default orientation, (world space). 

Double Click - On the Windows Version a double click opens the Align Mini-Window. This function is not available on Mac and Linux versions at this time so a double click open the options for Move Tool.

Pop-Up Menu:

- Align Pivot - Aligns Move Manipulator to world space system, which is the default.
- Align to Object - Aligns Move Manipulator to the orientation of the selected shape.
- Align to Local - Aligns Move Manipulator to the orientation of the selected shape's parent.
- Transform Component - Activates the Transform Component function. This is known as the Move Component function on Maya 7.0.
- Align Components - Opens the Center Mini-Window.

Insert Edge: **return to index**

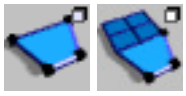
 Splits any selected edge (and it's Edge Ring) eactly in half. The actual position of the split can be adjusted in the Channel Box afterwards. If no edge has been selected, the button activates the Split Edge Ring Tool.

Double Click - Opens the Edge Toolbox Mini-Window.

Pop-Up Menu:

- Radial Ring Split - Inserts a new loop around any selection. Components can be vertice, edges,or faces. and can be any number.
- Swap to Split Polygon Tool (or Swap Insert Edge Loop Tool) - This function allows you to swap the primary function of this button between Insert Edge Loop and Split Polygon tools.
- Cut Face - Activates the Cut Face Tool
- Edge ToolBox - Opens the Edge Toolbox Mini-Window.

New Poly Geometry: **return to index**

 Activates the Create Polygon tool or the Append to Polygon Tool if a polyshape is already selected. In Component mode, this button will perform the following functions based on the current selection type:

-  Chamfer when vertices are selected.
-  Bevel when edges are selected.
-  Fill Hole when a border edge are selected.
-  Bridge when two border edges are selected (Maya 8.0 or higher).

The button image will change automatically to represent a change in function.

Double Click - Opens the Face Toolbox Mini-Window.

Pop-Up Menu:

- Fill Hole - performs polymesh Fill Hole function.
- Chamfer - Performs Chamfer Vertex function.
  Bridge - Performs Bridge function (Maya 8.0 or higher).
- Face Toolbox - Opens the Face Toolbox Mini-Window.
- Create Polyshapes - Open the Polyshapes Mini-Window.
- Interactive - Toggles the interactive mode for polyshape creation on or off.
- Make Live/Not Live -Toggles the a Live Mode on or off.

Toggle Hardness: return to index

 Toggles a Hard edge to soft or Soft Edge to hard. This works on multiple selected edges up to 1000. Beyond 1000 there is a noticable slow down, so at 1000 eges or more, this button performs an All Soft Function. If Maya is object mode, this button also performs an All Soft function.

Double Click - Displays the custom options for hard/soft edges.

Pop-Up Menu:

- All Soft - Makes all selected edges soft.
- All Hard - Makes all selected edges hard.
- Keep 15 Hard - Softens all selected edges greater than 15 degrees.
- Keep 30 Hard - Softens all selected edges greater than 30 degrees.
- Keep 45 Hard - Softens all selected edges greater than 45 degrees.
- Keep 90 Hard - Softens all selected edges greater than 90 degrees.

Conform Normals: return to index

 Sets normals of a contiguous shape to face the same direction as a selected face.

Pop-Up Menu:

- Flip Normal - Reverses the normal of the selected face to the opposite direction.
- Set to Face - Resets the Normal face perpendicular to the surface of the face. Although rare, this function can occasional fix normal errors that occur during modeling.

Merge Vertices: return to index

 Performs a Merge Vertice on selected components or shapes.

Double Click - Displays the options for the Merge Vertice.

Pop-Up Menu:

- Merge to Center - Merges selected vertices into one vertex.
- Collapse - Converts any selection into a single vertice.
- Collapse Ring - Selects any edges associated ring and collapses it.
- Split Vertice - Separates a vertice so that each shared face has it's own, (opposite of Merge).
- Merge Edge Tool - Activates Merge Tool.
- Select Unmerged Vertices - Selects any vertices that are within the merge vertice tolerance.
- Custom Vertices - Open the Select Vertice Mini-Window.

Deforming (tweaking) Poly: **return to index**

 Activates the Sculpt Geometry Tool for a selected shape.

Double Click - Open the Sculpt Option Mini-Window.

Pop-Up Menu:

- Soft Mod Tool - Activates the Soft Mod Tool.
- Lattice - Creates a Lattice Deformer on a selected shape, vertices or control vertices.
- Wrap - Creates a Wrap Deformer on a selected shape, vertices or control vertices.
- Cluster - Creates a Cluster Deformer of selected vertices or control vertices.
- Non Linear Deformers - Opens the Deformers Mini-Window.
- Softmod at Selection - Places a Softmod at center of a component selection but applies it in object mode. Can be used as an alternate to the regular softmod tool where placement is intuitive but not precise.

Extrude Poly Component: **return to index**

 Activates either Extrude Face or Edge depending on the current selection type.

Pop-Up Menu:

Faces Together - Toggles the settings for keeping ajoining faces together.

Poly Join (Combine): **return to index**

 Performs a quick and complete polymesh combine; a Combine Polygon, a Delete History, and a Conform Normals.

Pop-Up Menu:

- Group - Performs a group function.
- Parent - Performs a ungroup function.
- Mirrror Geometry - Opens the Mirror Geometry Mini-Window. Performs a mirror geometry function using the merge tolerance of the Merge Vertice Function.

Poly Break-Apart (Extract): **return to index**

 Performs an Extract Face, a Delete History, an UnGroup and finishes by selecting the newly extruded geometry, centering the pivot, and activating the move tool. In onbject mode, this button swaps to an ungroup/unparent function.

Pop-Up Menu:

- Extracts Duplicate Faces - Performs the same list of functions as above except it duplicates the selected faces first. The result is the same but the orignal shape remains untouched. This popup menu item swaps with Separate depending on the selection mode.
- Separate - Perfoms a one click Polygon Separation by doing the following; a Polygon Separation, a Delete History, and an UnGroup.
- UnParent - Performs and Unparent function.
- UnGroup - Performs an Ungroup function.
- Faces Together - Toggles the Settings for Keeping ajacent faces together during extrudes.

Sub-D/Poly Toggle: return to index

 Toggles any selected shape between a PolyMesh and a SubDivided Suface Base Mesh. Only the Base level of the sub-divided surface is converted to a polymesh. Details on other levels will be lost in the conversion. Note: Not all Polymeshes can be converted to Sub-divided Surfaces.

Here's a short list of reason why a polymesh won't convert to a sub-Divided Surface:

- Internal winged vertices
- Ajoining faces with reversed normals
- Unmerged vertices
- Unmerged edges
- Shared vertices with no shared edges.

Pop-Up Menu:

- Custom Vertices - opens the Select Vertice Mini-Window.
- Sub-Div Clone - Produces a Sub-Divided Surface which is linked to the orignal Poylgon by Construction History. The UV Texture Coordinates are also copied. This makes Sub-Divided characters easier to create by rigging the original polyshape and hiding it on a separate layer.
- Select Internal Winged Vertices - Selects vertices that have only two connected edges and are not part of a border Edge. (see above)
- Select Unmerged Edges - Selects unmerged edges. (see above)
- Polygon Cleanup - opens the polygon cleanup options.

Smooth Poly Mesh: return to index

 Performs a Polysmooth function.

Double Click - Opens the smooth mesh options.

Pop-Up Menu:

- Average Vertices - Performs an Average Vertice function.
- Smooth Proxy Options - Displays the options window for creating a Smooth Proxy.
- Subdivide Faces - Performs a Subdivide Faces.

Freeze Transforms: return to index

 Performs a Freeze Tranformation on the shape.

Pop-Up Menu:

- Duplicate - Creates a Duplicate of the selected shape.
- Mirror Copy - Opens the Mirror Copy Mini-Window.
- Instance - Creates an Instance of the selected shape.
- Duplicate Special/Duplicate Options - Diplays the option window for the duplicate function.
- Center Selection - Opens the Center Mini-Window.
- Stand on Grid - Aligns the bottom of any selected shapes with the XZ grid.

Center Pivot: return to index

 Moves a selected shape's pivot point to it's geometric center. A second click will result in moving the pivot point to the center of the world. This will be indicated by the button changing to  .

If the Button is clicked while the shape is in component mode then the location of the pivot point in component mode is transferred to be the shape's new pivot point.

Pop-Up Menu:

- Center X+ - Moves the pivot point to the center of the X plus side of the Bounding Box.
- Center X- - Moves the pivot point to the center of the X minus side of the Bounding Box.
- Center Y+ - Moves the pivot point to the center of the Y plus side of the Bounding Box.
- Center Y- - Moves the pivot point to the center of the Y minus side of the Bounding Box.
- Center Z+ - Moves the pivot point to the center of the Z plus side of the Bounding Box.
- Center Z- - Moves the pivot point to the center of the Z minus side of the Bounding Box.
- Copy Pivot - Stores the current point location in memory.
- Paste Pivot - Pastes any memorized pivot point to any selected shape.

Delete History: return to index

 Deletes History of selected shapes. X-Tools Deletes the history even in component or highlighted modes.

Pop-Up Menu:

- Delete All History - Deletes all history nodes in the scene.
- Delete Empty Groups - Deletes groups with no children shapes.
- Delete Edge - Deletes Edge and associated vertices that are not shared.
- Delete Construction History Shapes - Deletes shapes that are part of the construction history have a influences on the selected shapes.
- Delete Loop - Deletes the loop asociated with the selected edge.
- Delete Image Planes - Deletes all camera imageplanes.

Nurb Tools: return to index

The Nurb Tools.

The Layout of the Poly and Nurb Tools are similar to promote a fluid transition. In fact, the Toggle Display, Sculpt, Ungroup, Freeze Tranform, Center Pivot and Delete History Buttons do not change.

The buttons have been loosely arranged according to function. The first row of the Nurb Tools is mostly concerned with selection and display. The second row manipulate a selection which is often similar to the button that's directly above. For Example, The Insert Iso-Parm Button is right below the Select Iso-Parm Button. There are no softedge or conform issues with nurbs so these have been replaced with the New Curve and Project Curve buttons respectively. The third row of Nurb Tools is related to Nurb manipulation while the bottom is concerned with the actual shape.

Here is a listing of the Nurb Tool Buttons:

-  Paint Select CV
-  Iso-Parm (Edge) Selection
-  Toggle View Display (Nurb)
-  Toggle Component Display
-  Reverse Normals
-  Align Manipulator (Move Normal Tool)
-  Insert Knot/IsoParm
-  New Nurb Geometry (Boundary)
-  New Curve
-  Project Curve
-  Stitch Nurb

-  Deforming (Sculpting) Nurb
-  Extrude Nurb Component
-  Attach Nurb
-  Nurb Break-Apart
-  Convert to Polygon
-  Rebuild Nurb
-  Freeze Transforms
-  Center Pivot
-  Delete Construction History

---

Paint Select CV (Control Vertex): return to index

 Activates the Paint Select Tool for a selected polyshape. The Default mode is CV (Control Vertex), but you can cchange to any other component mode.

Double Click - opens the Paint Selection Mini-Window.

Pop-Up Menu:

- Lasso Selection Tool - Activates standard Lasso Tool.
- Object Mode - Returns the current shape to Object Mode.
- Select All Curves - Selects all curves in the Maya scene.
- Selecrt All Surfaces - Selects all Surfaces in the Maya scene.

Iso-Parm (Edge) Selection: return to index

 Selects a nurb edge, (Iso-parm Boundary). Repeated clicks will rotate the selection.

Pop-Up Menu:

- Selects All Edges - Selects all four Boundary Edges.

Toggle View Display (Nurb): **return to index**

 Toggles Wireframe on Shaded mode on or off.

Double Click - Opens the Display Nurb Mini-Window for setting common display options.

Pop-Up Menu:

- X-Ray - Toggles X-Ray mode on or off for the active camera view.
- Suface Display - Toggles Curve Display on or off for the active camera view.
- Curve Display - Toggles Surface Display on or off for the active camera view.
- Show All Curves - Unhides any hidden curves.
- Show All Surfaces - Unhides any hidden surfaces.

Toggle Component Display (Nurb): **return to index**

 Toggles CVs (Control Vertices), on or off for selected nurb shapes.

Double Click - Displays the options for Nurb component Display.

Pop-Up Menu:

- Edit Points - Toggles Edit Points on or off for selected nurb shapes.
- Normals - Toggles Normals on or off for selected nurb shapes.
- Hulls - Toggles Surface and Curve Hulls, on or off for selected nurb shapes.
- Patch Centers - Toggles Surface Patches on or off for selected nurb shapes.

Reverse Normals: **return to index**

 Reverses direction for Nurb Surfaces and Curves. This results in reversing normals for nurb surfaces.

Double Click - Displays the options for reversing surface direction.

Align Manipulator (Move Normal Tool): **return to index**

Activates the Move Normal Tool. It can be used with CV's and Vertices.

Double Click - Displays the options for the Move Tool.

Pop-Up Menu:

- Align to World - Aligns Move Manipulator to the world coordinate system, (the default).
- Align to Object - Aligns Move Manipulator to the coordinate of the selected shape.
- Align to Parent - Aligns Move Manipulator to the coordinate of the selected shape's parent.
- Align Pivot - Aligns a shape's Rotate and Scale Pivot to match a the Move Manipulator.
- Align Components - Opens the Center Mini-Window to Align components with the world axis.

Insert Knot/IsoParm: return to index

 Inserts a Knot for a selected curve or Iso-Parm for a selected surface.

New Nurb Geometry (Boundary): return to index

 Creates a Nurb Boundary Surface out of 3 or 4 connected nurb curves. Nurb Curves must touch at their end points, and the resulting Nurb is based on the order on which the curves are selected.

Pop-Up Menu:

- Revolve - Makes a revolved Surface out of the selected curve.
- Square - Similar to Boundary, but with more options for tagency with adjacent surfaces.
- Loft - Lofts the selected curves into a surface based on the order of selection.
- Nurb Toolbox - Open the Nurb Toolbox Mini-Window.
- Create Nurb Shapes ... - Open the Nurbshapes Mini-Window.
- Interactive - Toggles the interactive mode for nurb shape creation on or off.
- Make Live/Not Live -Toggles the a Live Mode on or off.

New Curve: return to index

 Activates the EP (Edit Point) Curve Tool . If a component is selected, clicking the button will duplicate the the selection into a nurb curve. Possible selections types include, Iso-Parms, Trim Curves, Projected Curves and Polygonal Edges.

Double Click - Displays the options for Nurb Curve Tool.

Pop-Up Menu:

- CV Curve Tool - Activates the CV (Control Vertice) Curve Tool.
- Close Curve - Perform the Close Curve function.
- Circle - Create a Nurb Circle.
- Curve Toolbox - Opens the Curve Toolbox Mini-Window.

Project Curve: return to index

 Projects selected curve(s) onto selected nurb(s).

Pop-Up Menu:

- Trim - Trims a Nurb Surface based on projected curves.
- UnTrim - Reverses a Trim function.
- Project Intersection - Produces projected curves that represent the intersection between the select surfaces.
- Nurb Boolean Tool - Activates the Nurb Boolean Tool in an intersection mode.

Stitch: return to index

 Performs a Global Stitch on selected Nurb geometry.

Double Click - Displays the options for the Stitch Function.

Pop-Up Menu:

- Snap CV to Center - Move all selected CV's to a common center.

Deforming (tweaking) Nurb: return to index

 Activates the Sculpt Geometry Tool for a selected shape.

Double Click - Open the Sculpt Option Mini-Window.

Pop-Up Menu:

- Soft Mod Tool - Activates the Soft Mod Tool.
- Lattice - Creates a Lattice Deformer on a selected shape, vertices or control vertices.
- Wrap - Creates a Wrap Deformer on a selected shape, vertices or control vertices.
- Cluster - Creates a Cluster Deformer of selected vertices or control vertices.
- Non Linear Deformers - Opens the Deformers Mini-Window.

Extrude Nurb Component: return to index

 Interactively extrudes Nurb Iso-Parm (edge), Curve or Nurb Shape. This function works with multiply Iso-Parm selections.

Pop-Up Menu:

- Extrude on Path - Extrudes one or a series of curves along the last curve selected.

Attach Nurb: return to index

 Performs an Attach Curve or Nurb Surface depending on the selection. In the case of curves, a series of more than two can be selected at the same time. The curves will be attached in the order of selection.

Double Click - Displays the options for the Attach Curve or Nurb Surface Function depending on the current selection.

Pop-Up Menu:

- Group - Performs a group function.
- Parent - Performs a Parent function.

Nurb Break-Apart (Detach): return to index

 Performs a Curve or Nurb Surface detach depending on whether the selection is Curve Point or Iso-Parm. This button also acts as unGroup or unParent in object mode.

Double Click - Displays the options for the Detach Curve or Nurb Surface Function depending on the current selection.

Pop-Up Menu:

- UnGroup - Performs a ungroup function.
- UnParent - Performs a Parent function.

Convert To Polygon: return to index

 Hides the Nurbs Surface and then converts it into a Polygon Mesh using the Standard method with three polygon faces per Nurb Span. Hiding the original Nurb Surface makes easier view of the new polygon surface. The number of faces can be adjusted settings in the history area.

Double Click - Displays the options for "Nurb to Poly" conversion.

Rebuild Nurb: return to index

 Rebuilds a Curve or Surface. If one curve or surface is selected then a rebuild is performed with a **Uniform Option** with twice the number of spans as the orignal. If more than one curve (or Surface) is selected then the curves, (or Surfaces) are rebuilt with the **Match Knots Option**. All the curves and Surface will have the same number of knots (or spans) as the last Geometry selected.

Double Click - Displays the options for Curve or Nurb Surface Rebuilding.

Pop-Up Menu:

- Toggle Surface Degree - Toggles the degree of the selected curves or surfaces from 1st to 3rd degree. The geometry is rebuilt with the **Uniform Option** as part of the process.

Freeze Transforms: return to index

 Performs a Freeze Tranformation on the shape.

Pop-Up Menu:

- Duplicate - Creates a Duplicate of the selected shape.
- Mirror Copy - Opens the Mirror Copy Mini-Window.
- Instance - Creates an Instance of the selected shape.
- Duplicate Special/Duplicate Options - Diplays the option window for the duplicate function.
- Center Selection - Opens the Center Mini-Window.
- Stand on Grid - Aligns the bottom of any selected shapes with the XZ grid.

Center Pivot: [return to index]

 Moves a seleced shape's pivot point to it's geometric center. A second click will result in moving the pivot point to the center of the world. This will be indicated by the button changing to  .

If the Button is clicked while the shape is in component mode then the location of the pivot point in component mode is transferred to be the shape's new pivot point.

Pop-Up Menu:

- Center X+ - Moves the pivot point to the center of the X plus side of the Bounding Box.
- Center X- - Moves the pivot point to the center of the X minus side of the Bounding Box.
- Center Y+ - Moves the pivot point to the center of the Y plus side of the Bounding Box.
- Center Y- - Moves the pivot point to the center of the Y minus side of the Bounding Box.
- Center Z+ - Moves the pivot point to the center of the Z plus side of the Bounding Box.
- Center Z- - Moves the pivot point to the center of the Z minus side of the Bounding Box.
- Copy Pivot - Stores the current point location in memory.
- Paste Pivot - Pastes any memorized pivot point to any selected shape.

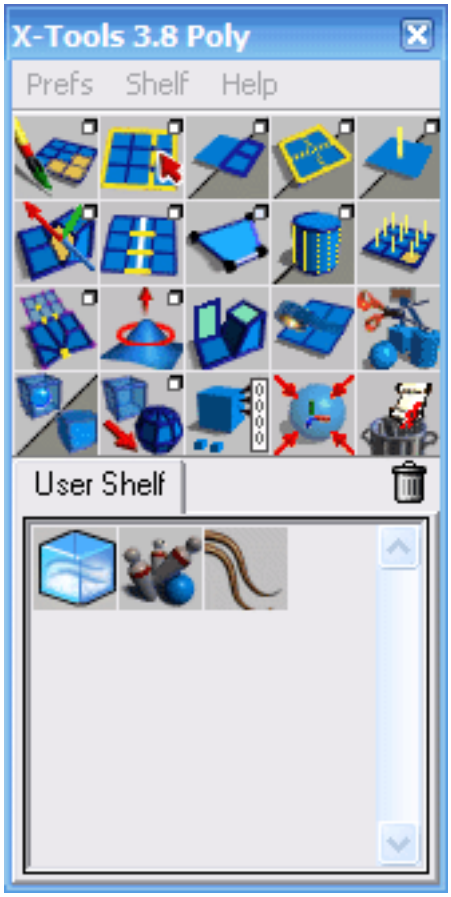
Delete History: [return to index]

 Deletes History of selected shapes. X-Tools Deletes the history even in component or highlighted modes.

Pop-Up Menu:

- Delete All History - Deletes all history nodes in the scene.
- Delete Empty Groups - Deletes groups with no children shapes.
- Delete Construction History Shapes - Deletes shapes that have a construction that influences the selected shapes.
- Delete Image Planes - Deletes all camera imageplanes.

The User Shelf: return to index

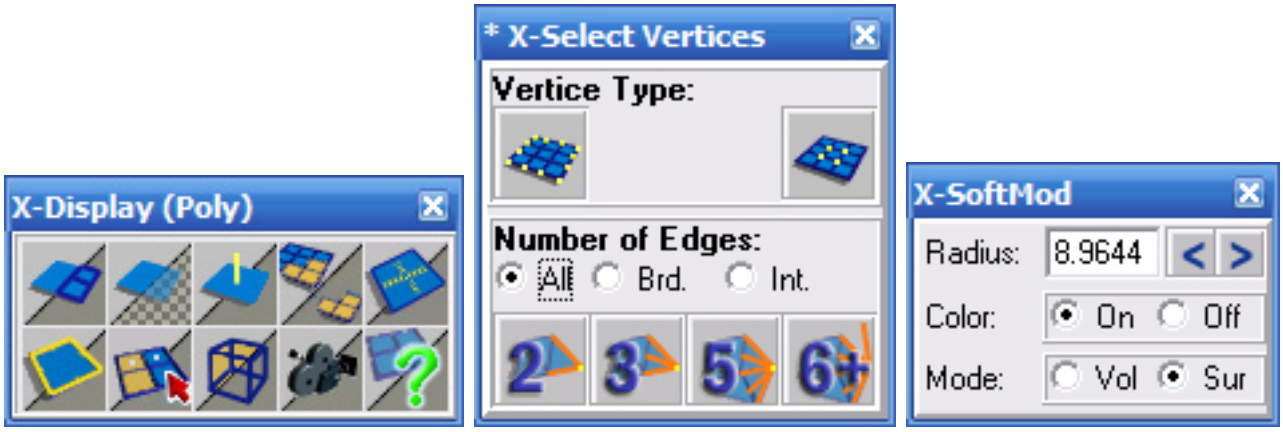


X-Tools with the User Shelf.

The User Shelf Allows users to add icon tools of their own choosing. Adding new icons fairly easy. The icons can be dragged from other shelves, or new icons can be created on an active shelf by holding down the Shift and Control Keys while selecting a menu item. Individiual icons can be deleted by dragging them to the Trashcan.

The entire User Shelf can be Cleared by selecting "Clear Shelf" from the Shelf Menu. Save Shelf saves the contents of the shelf to a file called xtools_UserShelf.mel to user scripts folder. X-Tools automatically saves the user shelf when it's display is turned off, but X-Tools does save the user shelf when X-Tools is closed or restarted.

X-Tool Mini-Windows: return to index



X-Tools includes a collection of Mini-Windows around 20) that adds functionality to the main X-Tools window. Some Mini-Window are compact versions of tool options, some are a group of tools that have no room in X-Tools Popup menus, while others act as Option Boxes. For organization, all Min-Window titles begin with "X". A "*" in front of the window title indicates that it's an option box and that it will close automatically when a option is chosen. Here's a list of the X-Tool Min-Windows:

X-Auto Align: (windows only) **return to index**

The Auto Align Option Window, (Windows only).


Accessed by double clicking the Align Manipulator button.

This turns on the function that automatically realigns the move manipulator to the current component selection. This is particulary useful for tweeking vertice by using the mouse or arrow keys to change a vertex selection and have X-tools realign the move manipulator automatically. This is currently the only function that is exclusive to the Windows version of X-Tools.

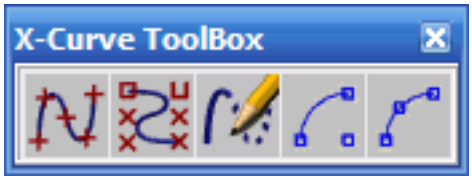
X-Center: [return to index]

The Center Mini-Window.

  Accessed from the popup menu of the Align Manipulator and Freeze Transforms buttons.

The Center Mini-Window can center (align) selected shapes or components to the world axis. Shapes or Components, can be centered to any single or combination or axis. It can be accessed from two popup menus because it can work with both shapes and components.

X-Curve Toolbox: [return to index]



The Curve Toolbox Mini-Window.

 Accessed from the popup menu of the New Curve button.

The Curve Toolbox Mini-Window gives quick access to Nurb Curve Tools. The Tools are: EP Curve Tool, CV Curve Tool, Pencil Tool, 2 Point Arc and 3 Point Arc.

X-Deformers: [return to index]

The Deformers Mini-Window.

 Accessed from the popup menu of the Sculpt Tool button.

The Deformers Toolbox Mini-Window gives quick access to Non-Linear Deformers. The Deformers are: Bend, Flare, Sine, Sqwash, Twist, and Wave.

X-Display (Nurb): return to index

The Display Window for Nurbs.

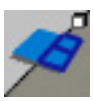

Accessed by double clicking Toggle View Display Button.

This window toggle various display modes for both objects and camera view. The icons match up the following functions:

- 
Toggles Wireframe on Shaded display mode for active camera view.
- 
Toggles X-Ray display mode for active camera view.
- 
Toggles Normal display for any selected nurb shapes.
- 
Toggles CV (Control Vertice) display for selected nurb shapes.
- 
Toggles Edit Point display for selected nurb shapes.
- 
Toggles Surface Center display for any selected nurb shapes.
- 
Toggles curve display for active camera view.
- 
Toggles Surface display for active camera view.
- 
Toggles Camera and Image Plane display for active camera.
- 
Toggles Hull display for selected shapes.

X-Display (Poly): return to index

The Display Mini-Window for Polygons.


Accessed by double clicking the Toggle Display view button.

This window toggle various display modes for both objects and camera view. The icons match up the following functions:

-  Toggles Wireframe on Shaded display mode for active camera view.
-  Toggles X-Ray display mode for active camera view.
-  Toggles Face Normal display for any selected poly shapes.
-  Toggles Isolate Select mode for any selected poly faces.
-  Toggles Soft Edge display for any selected poly shapes.
-  Toggles Border Edge display for any selected poly shapes.
-  Toggles Wholeface Selection.
-  Toggles Backface display for active camera view.
-  Toggle Camera and Image Plane display for active camera.
-  Toggles Poly Info hud display.

X-Edge Toolbox: **return to index**

The Edge Toolbox Mini-Window.

 Accessed from the popup menu of the Edge Ring Split button.

The Face Toolbox Mini-Window gives quick access to common edge tools which are not all on the main X-Tools Window. The Tools are: Split Polygon, Bridge, Insert Edge Loop, Radial Split, Cut Face, Flip Edge, Spin Edge, Bevel and 3-5 Quad Split.

All tools except Spin Edge and 3-5 Quad Split are standard Maya tools. Spin Edges allows you rotate and edge between two quads. It is similar to a spin faces function but the you select the edge and not the shared faces. Repeated clicks will roll the edge back to it's original starting point. Spin Edges also allows for mulitple edge selections. 3-5 Quad Split inserts a edge turning a triangle and 5 sided n-gon into 3 quads. To use 3-5 Quad Split, you need to select edge that's between the triangle and a 5 sided n-gon.

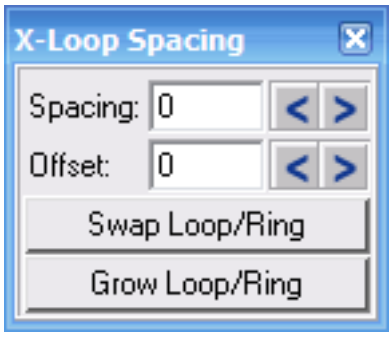
X-Face ToolBox: [return to index]

The Face Toolbox Mini-Window.


Accessed from the popup menu of the New Poly Geometry button.

The Face Toolbox Mini-Window gives quick access to common face tools that are not on the main X-Tools Window. The Tools are: Fill Hole, Bridge, Poke Face, Triangulate, Quadrangulate, and Wedge.

X-Loop Spacing: [return to index]



The Loop Spacing Selecion Mini-Window.


Accessed by double clicking the Select Loop/Border button.

This window allows you to adjust a loop selection to include spacing and an offset. You can swap a loop for a ring selection or grow a loop or ring from a previous selection.

X-Mirror (Copy): [return to index]

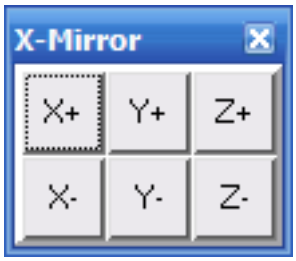
The Mirror Copy Mini-Window.


Accessed from the popup menu of the Freeze Transform button.

The X-Mirror Mini-Window allows you to make a mirror copy in one step. All selected objects are copied (or instanced) and negatively scaled in the selected direction. If new objects are duplicates their transforms are frozen, and if they are polyshapes,

their normals are reversed. Finally, the history is deleted.

X-Mirror (Geometry): **return to index**

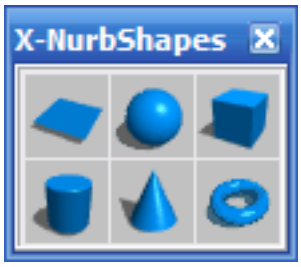


The Mirror Geometry Mini-Window.


Accessed from the popup menu of the Combine Plus button.

This window controls a better version of the Mirror Geometry function for polyshapes. The default merge tolerance for the standard Mirror Geometry is 0.1 grid units which is too course and vertices of small polygons may get merged by accident. This Window activates a Mirror Geometry function that uses the same merge tolerance as the standard Merge Vertex.

X-Nurbshapes: **return to index**

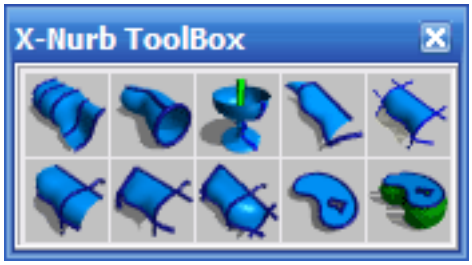


The Nurb Shape Mini-Window.


Accessed from the popup menu of the New Nurb Geometry button.

The Nurbshapes Mini-Window gives you access to create the nurb primitives shapes. The list is as follows: Plane, Sphere, Cube, Cylinder, Cone, and Torus.

X-Nurb Toolbox: **return to index**

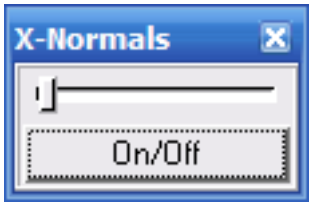


The Nurb Toolbox Mini-Window.


Accessed from the popup menu of the New Nurb Geometry button.

The Nurb Toolbox Mini-Window gives quick access to common nurb tools which are not all on the main X-Tools Window. The Tools are: Loft, Extrude, Revolve Boundary, Square, Birail 1, Birail 2, Birail 3, Planar and Bevel Plus.

X-Normals: return to index

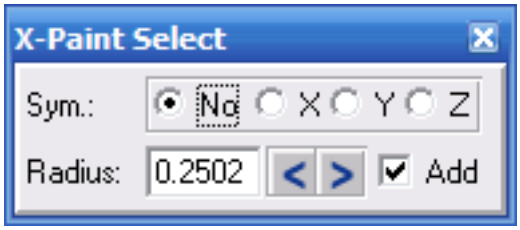


The X-Normal Window.


Accessed by double clciking the Toggle Normal Display Button.

This window gives you a graphic slider to control the length of the normal and includes an on/off switch.

X-Paint Select: return to index

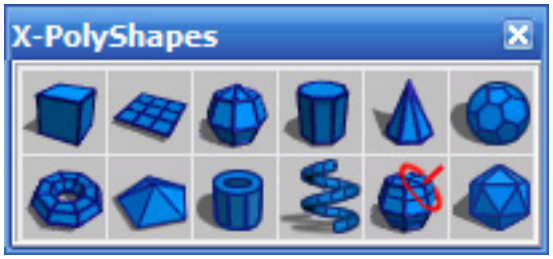


The Paint Selection Mini-Window.


Accessed by double clicking the Artisan Paint Selection button.

The Paint Select Mini-Window give you quick control over the brush radius. Like The Softmod and Sculpt Tools, X-Tools will automatically set an appropriate radius. The arrow buttons on the right side of the radius gadget will half or double the size of the radius. In addition, this window offers quick access to the paint selection symmetry and whether the consecutive selections are additive.

X-Polyshapes: return to index

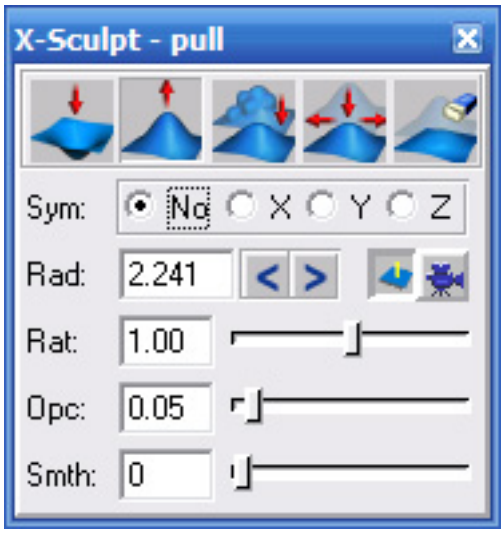


The Polyshape Mini-Window.


Accessed from the popup menu of the New Poly Geometry button.

The Polyshapes Mini-Window gives you access to create the poly primitives shapes. The list is as follows: Cube, Plane, Sphere, Cylinder, Cone, Torus, Pyramid, Tube, Helix and Sculpt Primitive Sphere. The Sculpt Primitive Sphere is a smoothed cube that vertices with high numbers of shared edges. For Maya 8.0 and higher theres also a Soccer Ball, Plantonic Solid Primitive.

X-Sculpt: **return to index**



The Sculpt Option Mini-Window.


Accessed by double clicking the Sculpt Tool button.

The Sculpt Mini-Window puts the most useful options of the Sculpt Tool in one compact window including reflection modes, sculpting direction and common brush parameters such as radius, opacity and smoothness are within easy access. The small button to the right of the radius value will instanly half or double the brush's current radius.

X-Tools also adds one more control called Brush Ratio (Rat), which is refers to the brush's shape, (or **ratio** of brush's maximum displacement divided by the its radius). X-Tools automatically maintains the brushes maximum displacement and links it to the brushes radius in order to keep the brushes shape the same.

The default value of 1.0 makes for a perfectly spherical round brush, which is great standard for sculpting. Smaller Brush Ratios will make flatter brushes while a Bush Ratios greater than 1 will make a sharper brush. This ratio will be maintained while the Sculpt Mini-Window is open. It is even maintained if you change the brush radius by using Maya "b" hotkey.

However, adjusting the brushes radius without using X-Tools requires that Brush Scripts be turned on in the X-Tools Prefs Menu. In addition to updating X-Tools on the current brush size which is essenstial for X-Tools to maintain the same ratio. Brush scripts allow you to change sculpt mode on the fly.

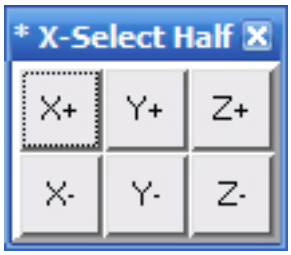
X-Select Faces: **return to index**

The Select Faces Mini-Window.


Accessed from the popup menu of the Artisan Paint Selection button.

The Select faces Mini-Window allows for custom selection of faces on a polyshape. You can select faces based on their edge total, Triangles, Quads, and N-gons (5 sides or more). You can search for non-trianglable and Lamina Faces. You can also make a random selection.

X-Select Half: [return to index]

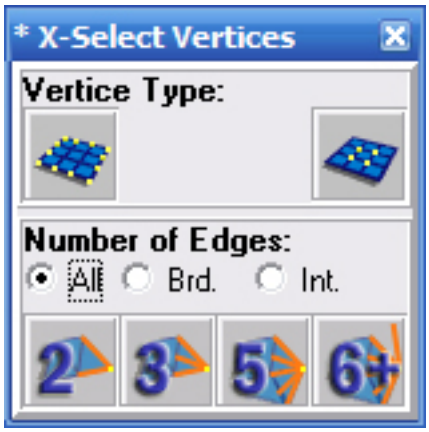


The Select Half a Polymesh Mini-Window.

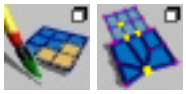

Accessed from the popup menu of the Artisan Paint Selection button.

This option selects half of the faces of any selected poly shapes. Clicking a button in the window will chose the axis and the direction. The selection is based on the shapes bounding box and not on pivot point or world space. This makes it easy to select half the faces of a character that's slightly off symmetrically or not in the center of the world.

X-Select Vertices: [return to index]

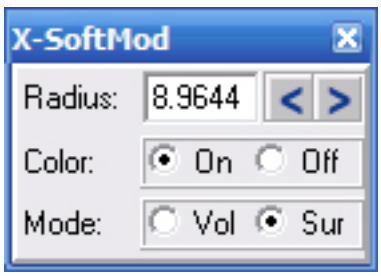


The Select Vertices Mini-Window.


Accessed from the popup menus of the Artisan Paint Selection or Merge buttons.

Select Vertices Mini-Window allows for custom selection of vertice on a polyshape. You can select all border or all internal (shared) vertices. You can also select all vertices that connect to a certain number of edges; 2, 3, 5, or 6 or more. If you select vertices by connected edges, you can also designate whether those vertices are just border edges, internal, or both.

X-SoftMod: [return to index]



The Softmod Option Mini-Window.


Accessed from the popup menu of the Sculpt Tool button.

The Softmod Mini-Window gives you quick control over the Softmod radius. Like The Paint Select and Sculpt Tools, X-Tools automatically sets an appropriate radius. The arrow buttons on the right side of the radius gadget will half or double the size of the radius. For Maya 8.0 and higher, you can also turn Color Mode on or off. You can also set the mode as Volume or Surface.