WaxLab^{3D} v1.0

User Guide

Document Version 1.0.15

Microsoft Windows 64-bit | Mac OS X 64-bit | Linux 64-bit

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Welcome to WaxLab 3D!

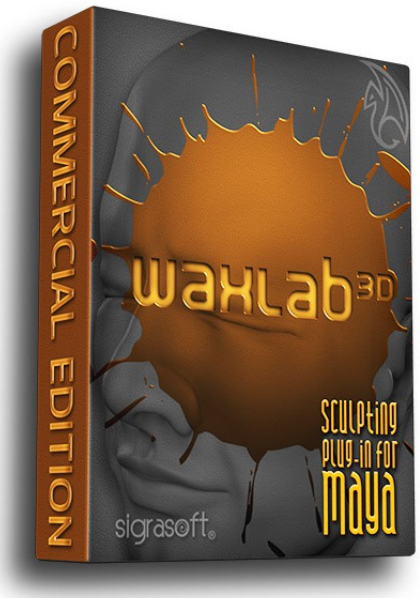
Thank you for choosing WaxLab 3d for Maya! Now you can enjoy the intuitive and fluid sculpting experience WaxLab brings to the the Maya Environment! Use it to create simple fun characters or life-like ones, create organic shapes like trees, plants and animals, create blend-shapes for animation, even create landscapes!

Traditionally, you would create a new lower poly mesh on top of your sculpture afterwords, Waxlab with Maya allows you to control the topology while not restricting you to a specific type. With WaxLab you can use Geo-Link to have your low poly version follow your densely subdivided one. You can use as many Geo-links as you like, simultaneously creating your distance LOD models while creating your detailed normal maps.

WaxLab was designed to be intuitive, so you should have as little a learning curve as possible. But, before you dive in, go over some of the topics covered in this User Guide, it's here to help you get started and will also be here when you want to know more. If you run into any problems, there is a support section including trouble shooting to help, which is always being updated.

This is the first release of WaxLab, but certainly not the last, there will be constant updates to add new features and to improve performance. You can see what is being worked on for the next update in Future Developments.

Installation



The following instructions will guide you though installation of WaxLab 3d. Before installing though, make sure that Maya is shut down, any anti-virus programs are deactivated, and that your user has administrative rights.

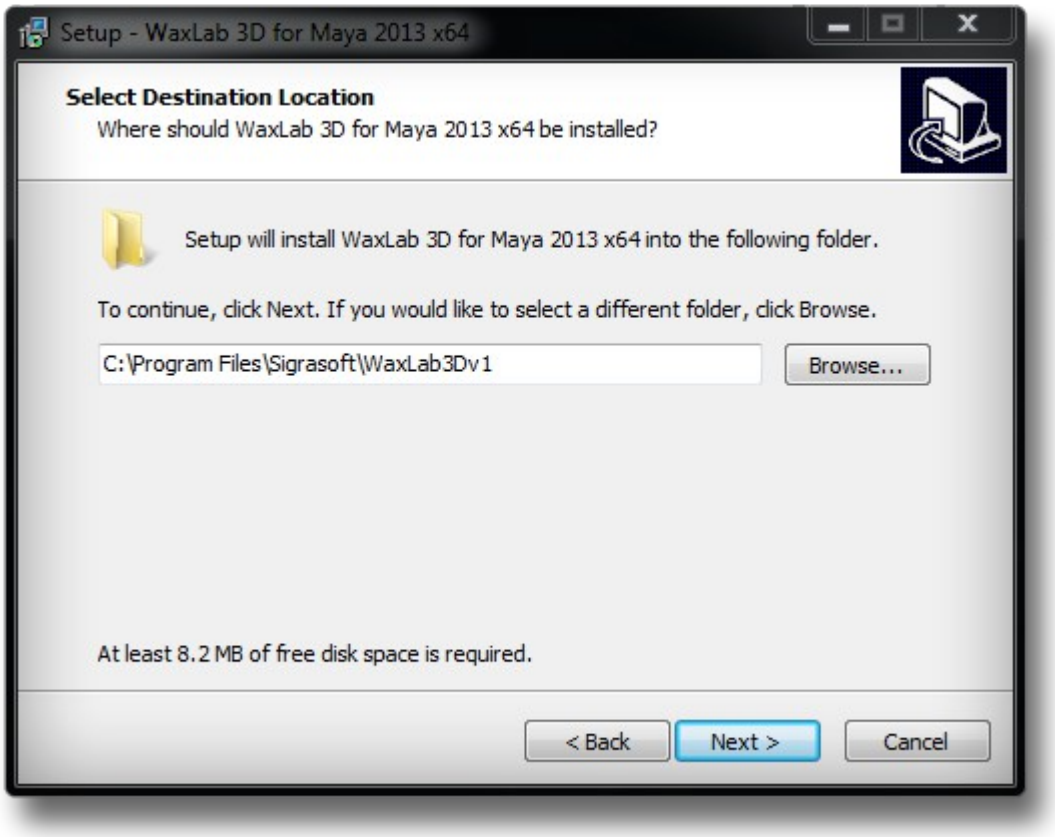
Windows (64-bit) – Installation Executable

Installation Example for Maya 2013 x64 and Windows 7 Professional Edition 64-bit (Installations for Maya 2014 & 2015 are identical)

- **Step One**
  Make sure you have the appropriate setup file for WaxLab and that Maya is not running before installation. Now, navigate to the WaxLab setup file (usually your <user>\downloads\) folder and execute it. When installing on Windows Vista and up, you should receive a User Account Control prompt asking if you want to allow changes to be made from an Unknown Publisher. Click **Yes** to continue to the installation.

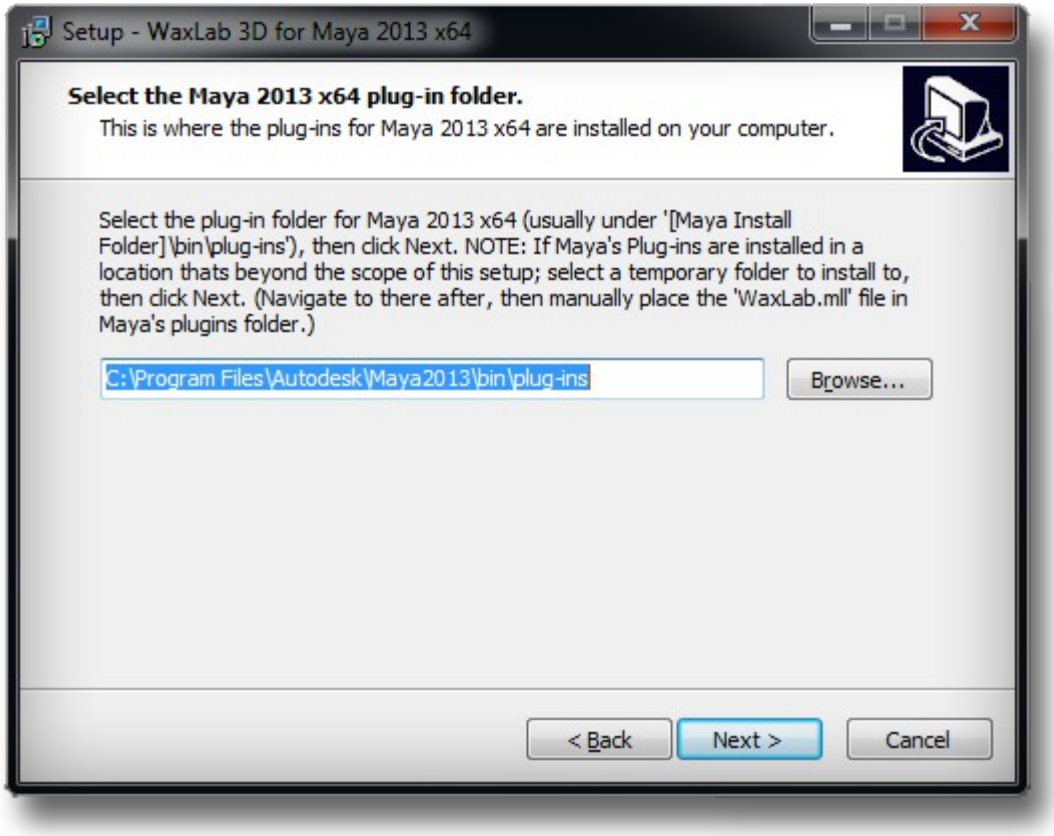
- **Step Two**
  Click **Next >** on the first and second "Welcome" windows, then you must read the **End User License Agreement** and, if you agree to the terms, accept it by clicking **I accept the agreement** and then click **Next.** If you do not agree to the terms of the License Agreement then you must exit the installation via the **Cancel** button.

- **Step Three**
  After accepting the **End User License Agreement** you will now see the **Select Destination Location** window, this will determine the location of the WaxLab program files, the User Guide and the Licensing Software. If you wish to change the path, use **Browse...** and navigate to the desired location. It is important that this is installed on the local machine, otherwise the licensing library might not be found and thus WaxLab will not run.
  Once you are satisfied with the location, click **Next >.**



  **Note: This path will also be stored in the System Registry so the plug-in knows where to look for the licensing software.*

- **Step Four**
  The next window will ask for the location of where the Maya plug-ins are installed. Typically it is located in */bin/plug-ins/* folder within the Maya installation folder. Much like the previous window, if you wish to change the location where the plug-in file "WaxLab.mll" is installed, click **Browse...** and navigate to the location.
  If you are satisfied with the location, click **Next >**.



**Note: If Maya or it's plug-ins are not located on your local machine, but over a network, then you have several options: first you can install the plug-in in a temporary folder then move it yourself, second you can attempt to navigate to the networked location and hope that you have permissions to install there. Lastly, which is for advanced users and IT Administrators, you can download the WaxLab ZIP package from www.sigrasoft.com and move all the appropriate files to their locations manually or create deployment scripts to your networked systems.*

- **Step Five**

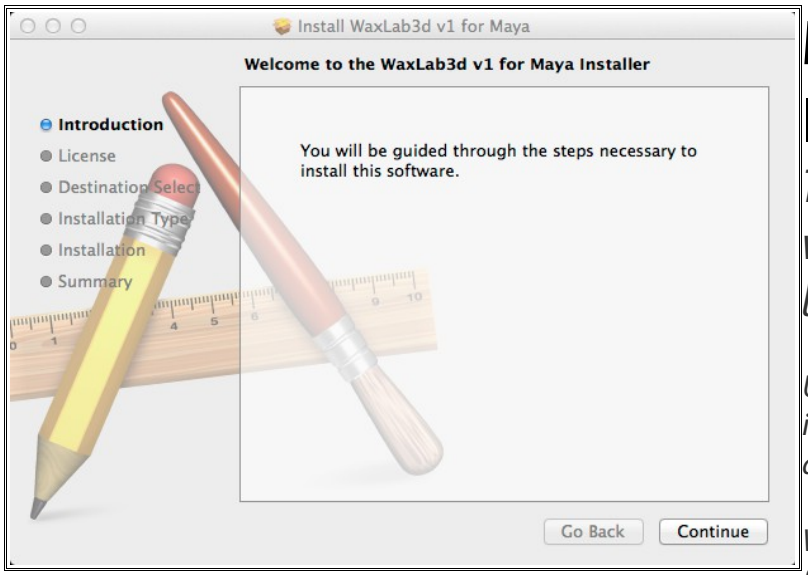
  The next window, "Ready to Install" will show you all the different locations where setup will install to, including two new locations, the "\Program Files\Sigrasoft\WaxLab3Dv1\scripts" folder for scripts and "\Program Files\Sigrasoft\WaxLab3Dv1\scripts\icons" folder for icons. It is important that you do not move these files since the plug-in needs to execute scripts on load, if they are missing, the plug-in will fail to load. It is the same with icons, if they are missing, the scripts will return an error and subsequently, the plug-in will fail to load.

  If you are ready to proceed, click **Install**.

- **Step Six**
  If it is successfully installed, click **Finish**.
  Launch Maya and navigate to **Window→Settings/Preferences→Plug-in Manager** and locate the **WaxLab.mll** file and load it (If there are errors and fails to load, please refer to the trouble shooting section in this manual). The plug-in will now prompt you for your license code or activate the trial period by clicking **Evaluate**. To know more, refer to Licensing section in Getting Started.
  Once you get past that prompt, the plug-in will build it's own shelf called WaxLab, and with that, *You have now successfully installed WaxLab!*
  You can now move on to the Getting Started section.

Windows (64-bit) – Installation Zip Package

If you think you will need more flexibility with the installation, or are having issues with the standard installer not meeting your specific needs, there is a Zip Package available to download. Once you have decompressed it to a folder (Unzipped) there will be an important file called "Readme – Installation.txt" in the root folder. This will give you instructions on where each file in the sub-directories needs to be placed and the registry entries needed in order for WaxLab to work. These instruction are meant of advanced users or administrators so take care to familiarize yourself, online or through help documentation, if you are unsure on how to proceed with any step. Good Luck!



Mac OS X (64-bit) – Installation Package

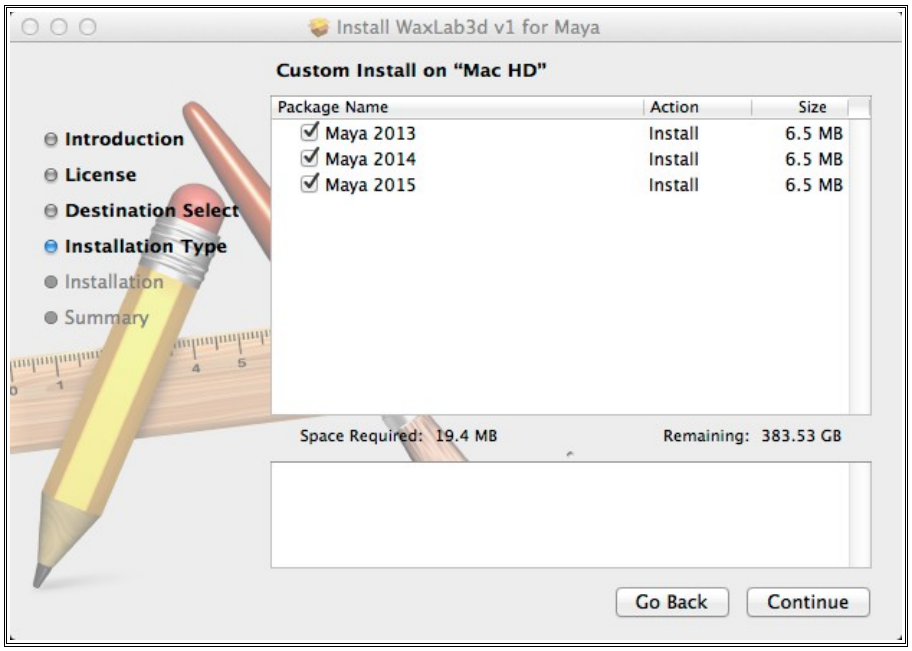
This package contains all Maya versions for installation. Example based on v1.004 release.

Use this automated installation if Maya is installed on your hard drive and not accessed over a network server.

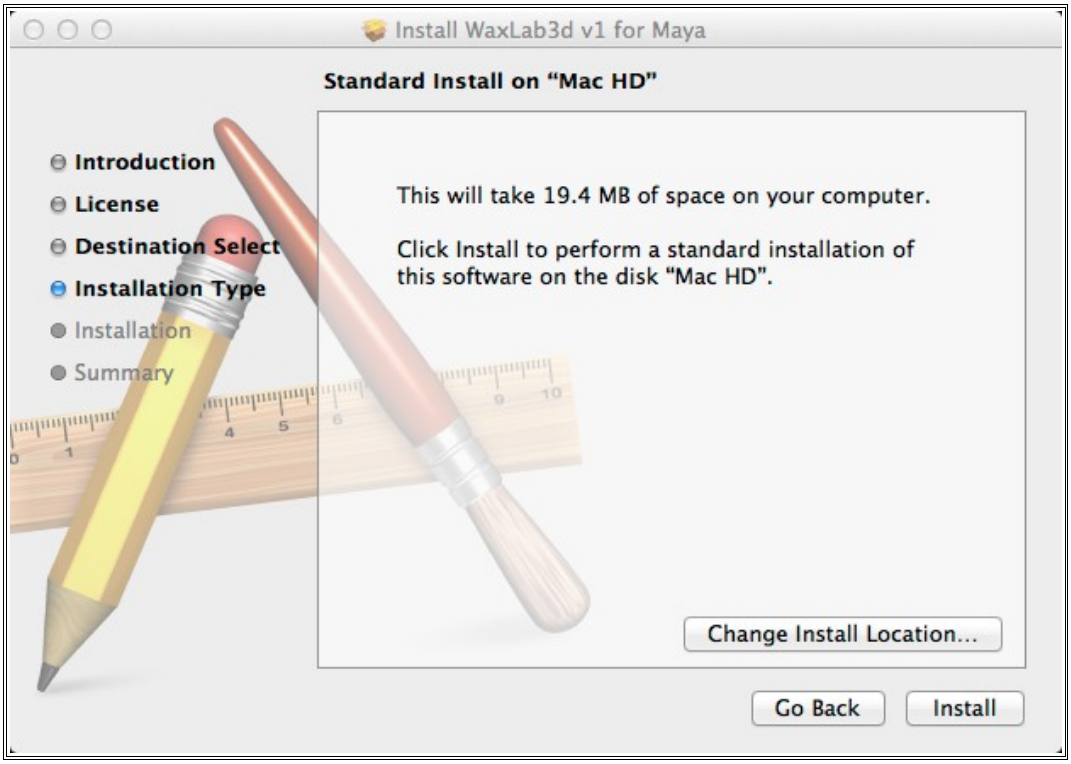
WaxLab 3d v1 for Mac OSX relies on the folder structure: ***/Users/Shared/Sigrasoft/WaxLab3dv1/*** *for* ***user guides, scripts*** *and* ***licensing****, moving or changing this location will cause WaxLab to fail.*

- **Step One**
  Make sure that Maya is not running before installation. Navigate to the WaxLab setup file and double-click to execute.

- **Step Two**
  On the first window click continue, now you will see the Software License Agreement window like the one below. Click continue when you are done reading, then click on Agree to verify that you accept the license agreement.



- **Step Three**
  Now you must choose which installation of Maya you wish to install WaxLab 3d to. The installation will check to see if you do have the selected Maya on your machine. If you do not, setup will not install for that Maya. Once you select your version(s) of Maya, click Continue.



- **Step Four**
  This last screen will inform you of the space requirements for installing WaxLab, click Install to complete the installation. This will install everything that is needed under **/Users/Shared/Sigrasoft/WaxLab3dv1** and place the **WaxLab.bundle** in the different plug-in folders for each Maya installation: **/Users/Shared/Autodesk/maya/20##/plug-ins/** (## being the Maya year version). After starting Maya, start the Plug-in Manager under **Window→Settings/Preferences→Plug-in Manager**, if you don't see it already in the list of selectable plug-ins, click browse and navigate to the **WaxLab.bundle** under your Maya version.

Linux (64-bit) – Installation Package

WaxLab 3d for Linux is only available with a manual/command line installation. Once you download the install package, decompress it and open the contained folder, there will be an important file called "readme-installation.txt" in the base folder. This will give you step-by-step instructions on how to install WaxLab for your Linux distribution. These instructions are meant for users familiar with Linux, so if you are not, please take a moment and look over the web sites listed in the text file for help. If there are any problems, please contact support@sigrasoft.com.

System Requirements

- Autodesk's Maya 2013 x64 (2013 and Up).
- Intel Pentium 4, AMD Athlon processor with SSE3 instruction set support (or higher)
- 4 GB RAM
- 10 MB Hard Drive Space
- Hardware-accelerated OpenGL graphics card (Maya Certified)
- Three button mouse with driver software
- Internet connection (for activation)

Windows (64-bit)

- Microsoft Windows 64-bit OS
  - Windows 8 Professional Edition
  - Windows 7 (SP1)
  - Windows XP Professional x64 Edition (SP2)

Mac OS X (64-bit)

- Macintosh Computer with Intel-based 64-bit processor

Linux (64-bit)

- Fedora 14 & Up – Or compatible distribution.

Recommended System Specs

- 8 GB RAM or Higher
- Intel Core i5 or i7 Processor (or high end AMD / Intel for Windows)
- Wacom Tablet
- Display Resolution greater or equal to1920x1200 *(Development Resolution)*

Test System Specs *(PC: Windows 7 & Linux - Fedora 20)*

- Intel i7 2600k – 3.4 GHz (Turbo @ 4.0 GHz)
- 16 GB Ram (DDR3)
- Wacom Intuos Tablet
- NVidia GeForce 770 GTX

Test System Specs *(Mac: MacBook Pro 15" - Mid 2010, OS X 10.9.3)*

- Intel i5 2.4 GHz
- 8 GB Ram (DDR3)
- Wacom Intuos Tablet
- NVidia GeForce GT 330M

Getting Started

License Activation (Windows, OS X & Linux)

WaxLab licensing utilizes a cloud based activation system, so you must have an internet connection to activate WaxLab.
When you first execute the **WaxLab** plug-in file from the plug-in manager, if you do not receive any errors (see trouble shooting if you do), you will be prompted with an activation window asking for an activation code. There will also be options for Proxy Settings and Evaluate. Proxy Settings is for when you are using a proxy server, if you don't know what that is, you probably don't need to worry about it, otherwise contact your network administrator. If you do not have an activation code, you are welcome to evaluate WaxLab for 30-days by clicking "Evaluate". After you evaluation time has passed, you must purchase an activation code from the website (www.sigrasoft.com) to continue using WaxLab. Once purchased, an activation code will be sent to the email provided during the transaction.

If you have an activation code, input it and press "OK", if correct you will either see an **Activation** window or **Re-Activation** window. The **Activation** window is for first time activation, you will be be asked to input your email and password, this will be stored on the Softworkz server for future re-activations. This is important because it will use this email and password for re-activation verification. The **Re-Activation** window is for when you have re-installed your previously activated WaxLab, you will be asked for the password you gave at first activation and to give a new, unused password. If you have forgotten your password, you can press "Send Password" and your password will be sent to the email address you provided at first activation.

License Activation During Evaluation

If you choose to evaluate first and activate your evaluation at a later time, you can enter your purchased activation code in the **About Window** by clicking the **WaxLab** title button at the top of the sculpt tool settings interface. Once open, press the orange **Activate** button in the bottom right corner, this will open the same licensing activation window as above.

For more information about licensing please see the Licensing FAQ section in this document. For any problems not covered in this manual, please email support@sigrasoft.com

The WaxLab Shelf

When you load WaxLab.mll, it builds a shelf with three buttons on it. You may move these buttons to wherever you like, just keep in mind that they might re-appear every time the plug-in is loaded.

Here are each button and a brief description:

HgtMap *(Shelf Button)*
This opens the bonus tool Heightmap Translator v1.0.
For more information, please refer to the PDF file: Heightmap Translator v1.0 – User Guide.pdf

WaxLab *(Shelf Button)*
Opens and initializes WaxLab for sculpting, but you must have a polygonal object selected. Whenever you use this shelf button, it re-initializes WaxLab.

GeoLink *(Shelf Button)*
Opens the Geo-Link Manager. A button that does the same thing can be found in the Advanced Tab.

The Basics

To get started sculpting you must **first select** a piece of polygonal geometry, for the purpose of this exercise, use a cube with 16 or 32 divisions in each axis.

Once you have created the cube, select it and press the "WaxLab" button that was created for the Waxlab shelf when you loaded to WaxLab.mll plug-in. If a folder is selected for your stencil images, you will then see the thumbnails being read into memory as it constructs the interface.

The WaxLab interface will appear on the left side of the main Maya window, make sure the vertical tab is set to **Sculpt Tool Settings**. *not Tools Settings*. The title bar located at the top is a button that will open the About Window, there you can review the EULA, see the status of your license and version as well as activate or update your copy. All the selectable brushes will be under the "Select Brush" area. *Please read Sculpting Brushes for more information on each brush/tool.*

Vertex Point Cloud – Radius Feedback

Now, when you hover your cursor over the sculpt geometry, you should see a point cloud representation of the vertices that are within the radius around your cursor, that also changes each point's brightness according to the Falloff curve. This will help you easily define the radius as well as see the effects of the Falloff curve.

Reflections

When sculpting general shapes and features on a mostly symmetrical model, a common practice is to use Reflections. Which axis of reflection depends on the selected Up-Axis and which axis your model will be facing down, but generally you want to reflect horizontally across your model/sculpture. Lets say that you have an Up-Axis of Y your model is facing down the positive Z Axis. In this case you should use the X Axis as the reflection. Once you turn the X Axis reflection on, if you hover your cursor on your model you should now see two vertex point clouds moving around depicting each sculpt brush center location and the vertices within it's radius. Every movement and application of the brush will be mimicked and reflected on the opposite side of the X Axis from where your original brush is.
Please read Brush Parameters and Advanced Tab to familiarize yourself before moving on.

Brush Application

Once you've set the Radius, Value, Spacing and Falloff curve to your liking, bring your cursor over your model, click and drag to start sculpting with your selected brush.
Now, depending on your settings you might run into some strange issues right away when first sculpting, *these two are currently the most prominent problems*, along with their solutions:

Copied from the Trouble Shooting Section:

- **Snaking** *(Unintended Rapid Extrusion)*
  One of the problems that you might encounter early on is that your extrusion can to grow rapidly into a snake-like shape. This is because when the Real-Time Display setting is set to Surface, the mesh will update with every brush application, which could be up to 60 times a second on lower density models. What occurs is a looping effect to the same surface area over and over again in a short time, causing the surface to extrude out quickly.
  There are several counter-measures in place to minimize this effect, the first is Spacing. This is the primary reason for the parameter's existence, and like it's description under Brush Parameters, Spacing determines how far must the cursor travel before allowing the next brush application. This cuts down on the rapid-succession of your brush being applied, the root cause of Snaking.

If you would like to avoid using Spacing, there is the second option, switching **Real-Time Display** to **Vtx Grid** *(Vertex Grid)*. The Vtx Grid option sets the surface to update with your changes only when the mouse button (or tablet pen-press) is released. What you see instead, for real-time feedback, is a virtual point cloud of all the vertices that have been affected by your brush. With every drag movement, the sculpt brush will reference the non-updated surface, which then applies the changes and grows it if need be, to the virtual point cloud. Preventing any unwanted rapid applications.

- **Extremely Slow Performance On Any Model Density (Temporary)**
  Sometimes, when beginning to sculpt a model, with a recently opened Maya or New Scene, the real-time performance can crawl to almost 1 brush application every 1 to 3 seconds, when normally it should be much higher, such as 30 applications every second. The fix is simple, keep applying the brush until it goes away; the problem usually does not persist longer than a minute. Worst case scenario, just restart Maya and try again. This is a rather strange bug with a random occurrence, but nevertheless is being looked into, luckily this happens rarely. If this problem becomes a hindrance, please let us know at support@sigrasoft.com.

Smoothing

Smoothing averages the vertices within the radius, with the Falloff curve determining the amount for each vertex. It is available at anytime with any brush by simply holding the SHIFT key when applying the brush.
Apart from softening hard edges, smoothing can help out with a lot of things, such as:

- Topology cleanup: if your edge-loops or polygons are looking disorderly, a little smoothing could clean it up.
- Sphere from cube: if the geometry is light enough, this can quickly turn a cube into a rounded sphere like object.

Topology and Work-flows

Depending on your purpose for sculpting, you might or might not be as concerned with topology. If you're working on assets for video games or for high-end film fx or animation, one of your top priorities might be topology. This probably would be where you start off with a traditional low poly, edge-looped and split poly created character *(there are a number of you-tube videos describing this technique),* keeping the low-poly version as an LOD or in game-asset and then subdivide with Geo-Link and sculpt in detail from there. When you're done, create your UV's and use Transfer Maps... to transfer the detail to normal maps and apply them on the low-poly version.
Other wise, if your rendering for a video project or a proof of concept, you can start quickly with a cube with a bunch of extrudes with divisions. You don't even have to UV the character if you don't want to (if textures are not needed), and go straight from rigging, to animation, to rendering. You can even use WaxLab for your blend-shapes.

WaxLab was made to be simple and easy to use, which usually translates to faster work-flows, and less headaches.

Continue Sculpting ...

Now that some of the basic things have been covered, you are now free to experiment with sculpting in WaxLab! If you wish to know some recommended work-flows, Best Practices is next. For now, maybe try to make a character head from your cube? *TIP: To quickly create the general shape of a sculpt, try using Grab with a large radius, an Ease In/Out curve and X Reflection on.* Always check back with www.sigrasoft.com for updates and tutorial videos. This concludes the Getting Started portion of the User Guide, the next section will take an in-depth look at each of the different WaxLab settings.

Note: At the moment, WaxLab is strictly polygonal sculpting, although you can use it to sculpt the polygonal hull of a poly-subdivision proxy model. Please feel free to write to me if you have the need to have NURBS or Real Subdivision sculpting, I could put it on the list for the next release. Email to: *suggestions@sigrasoft.com*
For any other problems that come up when sculpting and their possible solutions, please refer to the Trouble Shooting section.

Mac OSX - Maya 2013 x64 - Viewport 2.0 Crash Warning

Currently a bug exists in Maya 2013 (x64) for Mac OSX when working in Viewport 2.0 that causes a freeze/crash. WaxLab can expedite this crash, or in other words, WaxLab can make this crash happen faster than if you were to get there without using WaxLab. Fortunately, this bug is fixed in newer versions of Maya (2014, 2015). As a general precaution, avoid using Viewport 2.0 in Maya2013 when modeling, especially when using WaxLab 3d.

Best Practices

Save Often!

You never know what might happen in the next few minutes, perhaps a power outage, program or operating system instability, even hardware failure! Saving often and in incremental file-names can be a huge asset to your process. Perhaps you want to go back to a certain point and start form there? Not a problem, since you have saved at several key points during your sculpting session!

Start Lite

When beginning your sculpt, it's wise to start with a lighter mesh, like with a cube with just 4k vertices. This way you can create the general shape quickly since smoothing reacts very quickly and on a large scale. If you start with a dense cube, with say 30k vertices, smoothing will have less of a global effect and will be limited to hard corners and edges.

Override Vector → Center Normal T. Average

This little feature can be very useful, it's an Override Vector, standing for Center Normal Time Average, and it forces the Extrude Brush Vector to commit to the surface normal over time rather than instantaneously. This allows for smoother action when sculpting on complex or bumpy surfaces. Try it, you will see.

Delete Construction History

Construction History can cause problems with sculpted meshes if you are not careful. WaxLab applies sculpting as tweaks to the mesh shape and avoids inserting itself into the dependance graph to speed up interactivity. A large dependency graph can not only slow down interaction, it also can cause problems when changing a setting up the chain, such as a mesh subdivision amount. For this reason it's best to delete history when you're read y to sculpt or go back into sculpting with WaxLab. Future releases will attempt to integrate the dependency graph again.

Compatible Stencil Images

On top of the base Maya image formats, WaxLab added 16-bit per channel TIFF and PGM formats. A single 16-bit channel can hold over 65,500 levels of brightness versus only 256 levels in a single 8-bit channel. This provides a much higher resolution when using an image brightness for vertex height values.

Performance Improvements for Dense Meshes

Sculpting can demand some highly detailed meshes, while there are performance improvements always in the works, there are some things you can do to help keep your experience smooth.

- ### Separate Meshes wherever possible.

  If working on a character and you are sculpting the whole mesh at once, WaxLab has to iterate through each vertex on the entire mesh, even if your just working on the leg or hand. If you can separate the specific mesh you are working on from the whole body (and not move it), you could set the mask to full (with a gradation to zero) on the connecting vertices so that they don't move. When finished, combine the meshes together, link up the points, then delete history.

- ### Use Real-Time Vertex Display

  One of the problems with high-density meshes is that Maya can take quite a few CPU cycles to update the mesh, this can make interaction slow. Vertex Display → Vtx Grid was created to help with this, it updates a point cloud with your real-time changes until you release the mouse button to commit them to the mesh. Apparently it is faster to update virtual points in an overlay than it is to send it to the Maya API to update.

Undo Size

It is tempting to have a very large or infinite undo size to be able to go back if you make a mistake or want to experiment with an idea, but WaxLab stores every vertex position, to every brush application for the undo request. So if you are working on a dense mesh, this can require a large amount of memory. It's best to keep the undo size to a reasonable fixed amount, the amount is really up to you and what your system can handle, but here are some suggestions for the average system (4GB Memory):

Undo Size	Vertex Count
100-60	1k → 50k
60-40	50k →200k
40-20	200k →500k
20	>500k

Hotkeys

WaxLab provides Hotkeys of most UI parameters and menus. You can find them in **Window → Settings/Preferences →Hotkey Editor**, under **Categories** as **WaxLab**. Each assignable Hotkey command can be edited. For example, if you wish to alter the amount of change that occurs for each press, you would replace, in the command, the number in the statement $fVal = 5.0 to $fVal = 10.0 or $fVal = 1.0. If you have a specific Hotkey or behavior in mind, please feel free to contact us at support@sigrasoft.com with your suggestion.

Sculpting Brushes

In the WaxLab window "Sculpt Tool Settings" under Select Brush, there are twelve icons to choose from, the first six are surface manipulation brushes and next four are various masking tools, and the last two are stencil related. More information about what each button does is presented in this section.

Select Brush

Extrude
Extrude is an essential and versatile sculpting brush within Waxlab. By default, Extrude moves the vertices in the direction of which the center surface normal is facing, but there are many surface normal options to choose from. To learn more, check out Vector Override.

Bulge
Bulge translates vertices along their individual normal. By taking into account the falloff curve and that normals change when surrounding vertices do, the results can form a bubble or close up seams.

Pinch
The Pinch brush is typically used to emphasize a hard edge. Like a vertex vacuum, Pinch pulls all the surrounding vertices within its radius towards the center. With the falloff curve effecting the influence, this gives the effect of pinching.

Grab |Grab-Rotate | Grab-Scale
Three tools in one, Grab, Grab-Rotate and Grab-Scale translates, rotates and scales vertices respectively with the radius and falloff curve dictating influence. To Grab simply click and drag on your model, to Grab-Rotate hold the CTRL key down while using Grab. Finally, to Grab-Scale hold the CTRL and SHIFT key down while using Grab. You can move between rotate and scale by holding and releasing the SHIFT key while in use. Grab is also influenced by the Stencil, Mask and Reflections.

TIP: To quickly create the general shape of a sculpt, try using Grab with a large radius, an Ease In/Out curve and X Reflection on.

Flatten
The Flatten brush can be used to create roads on a height-mapped landscape or a hardening surface like body armor on your character. Flatten brings the vertices, within its radius, together to a common plane while using the falloff curve to determine the influence it has over each vertex.

Smear
By translating vertices, within a radius, in the direction of the brush's surface movement, and with a falloff curve determining vertex influence, you get the Smear brush. While looking similar to the smearing effect in most popular paint programs, this tool can help bring expression to faces, exaggerate shape animation or skew modeled objects.

Mask
The Mask brush applies masking, according to the mask value attribute and falloff curve, to the vertices within its radius. Masking in Waxlab freezes the movement of vertices, completely or a varying amount, from other Waxlab brushes. This allows the user to focus on sculpting another portion of the model while knowing that the masked section will not be accidentally disturbed or altered.

Mask Toggle On/Off
This toggles the Masking feature On or Off. The masking applied to the model is still stored in memory, but only as long as Maya is running; closing your scene, deleting your sculpt, or closing Maya flushes the masking cache.

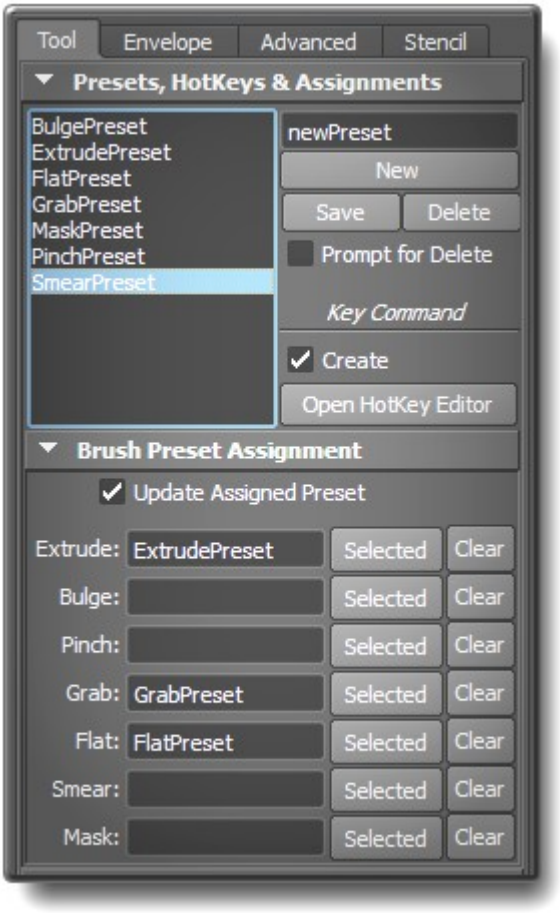
Invert Mask
The Invert Mask Tool reverses which vertices are masked and which are not - on the sculpt mesh. This can be useful for when you want to mask a surrounding area *(revealing only a portion)*, so instead of painting all of the vertices around this area, you can apply the mask to the desired work area, then invert it, switching the masked and unmasked areas.

Clear Mask
This clears the mask from the sculpt mesh.

Stencil
The Stencil tool can be used to apply the specific detail in an image as a sculpt on your mesh. It overlays any image in a special perspective camera view, which then influences all brushes in Waxlab when they get applied to a mesh. Referencing the gray-scale of an image, the sculpt value scales with the brightness value of the image, with white being full value pass-through and black being zero value.

Refresh Stencil Image
This refreshes the stencil image. Use this when the image is changed outside of Maya and needs to be reloaded into the stencil buffer.

Tool Tab



Presets, Hot-Keys & Assignments

Waxlab can store all your parameter settings to be recalled with either a selection from the preset menu, a brush selection or a hot-key button press.
From the top left of the layout, going clockwise:

Preset Selection List
Lists all the presets (.wls) in the preset folder:
"My Documents\maya\WaxLabPresets\"

New Preset Name Field
Set the name of the new preset to be created when you press the **New** button.

New *(Button)*
Stores all the current parameters and falloff curve in a new preset with the name given in the above field.

Delete *(Button)*
Deletes the selected preset file in the **Preset Selection List**.

Save *(Button)*
Saves all the current parameters and falloff curve to the selected preset in the **Preset Selection List**.

Prompt for Delete *(Check Box)*
This is a delete preset fail-safe, if checked, a prompt will appear asking if you want to delete the currently selected preset.

Create *(Check Box)*
If checked, a corresponding hot-key command will be created at the moment a new preset is created. The hot-key will also contain the same name as the preset.

Open HotKey Editor *(Button)*
Opens the **Hot-Key Editor**, for quick access.

Brush Preset Assignment

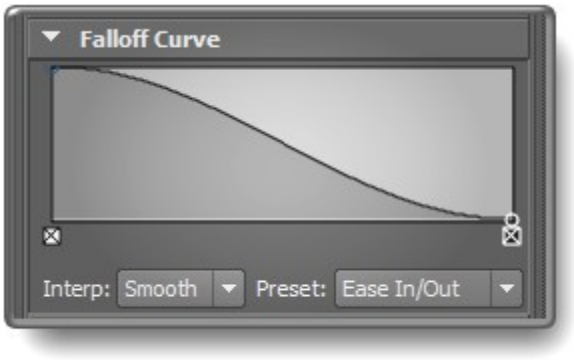
When a brush is selected, the interface looks for any preset assignments made here and loads them; allowing for custom settings for when a brush is selected.

Each line in Brush Preset Assignment is laid out (left to right):
Brush Name | Chosen Preset Name | Selected (button) | Clear (button)

Pressing the **Selected** button will set the selected preset as the Brush's preset. Each time you select the brush, this preset will load. If the **Update Assigned Preset** is **on**, the assigned preset with the current brush will be saved before stitching to another assigned preset. Pressing **Clear** will clear the preset from the brush and no preset will load when selecting the brush.

Falloff Curve

When a brush gets applied to an area, the Falloff curve is a key parameter that other parameters get filtered through, dictating how much influence the brush has over a vertex at a given distance. This provides the means of creating unique shapes when sculpting. Every Maya curve has a floating point precision of 32-bits, providing over 4 billion points of vertical reference accuracy.



Editing the Falloff Curve
Editing the Falloff curve is like editing any curve within Maya, you can add, move and delete points, as well as change the slope interpolation of those points through the "Interp" menu. You can see your changes to the Falloff curve when you hover over your model, the vertex points within the volumetric radius around your cursor changes brightness according the vertical point on the curve.

Preset *(Menu)*
The preset menu contains commonly used curves to easily access. When a user edits the curve directly, it switches to the user preset to be stored, then it can be recalled by selecting the user preset again if the previous one was predefined.

Brush Parameters

These parameters govern the brush's surface manipulation.
From the top to bottom:

Radius *(Slider)*
The distance from the cursor to the furthest point. How large the brush can reach over the model's surface.

Value *(Slider)*
This determines how much, for every application of the brush, will the brush influence each vertex from the center to the edge of the radius. This parameter gets filtered through the Falloff curve.

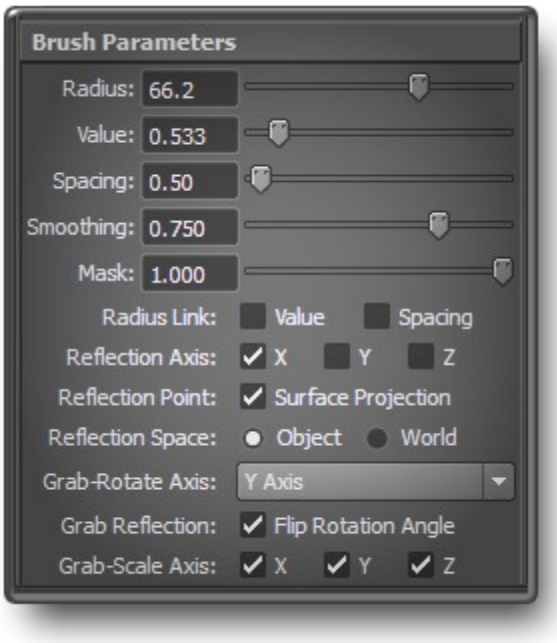
Spacing *(Slider)*
Spacing determines how much distance must there be before the next application of your brush is allowed. This exists to cut down the Snaking effect. The setting is dependent on real-time application rate and also the Value and Radius settings, so play around with the Spacing parameter to get a feel for it.

Mask *(Slider)*
This determines the amount of Masking to be applied when using the Mask brush.

Smoothing *(Slider)*
Normally set to 0.750, this exists as an actual value setting for Smooth. Be aware though, setting a value above 1.10 (by typing in the field) can result in random spiking artifacts, which is the reason smoothing has a separate value setting.

Radius Link *(Check Box)*
This links both Value and Spacing to Radius, allowing for simultaneous adjustments of all sliders involved (Radius, Value and/or Spacing) when any of them are changed.

Reflection Axis: [ ] X [ ] Y [ ] Z *(Check Box)*
When any of the axis are activated, all of the brush's movements and actions are reflected across that axis. Each of the axis can be simultaneously active, providing up to 8 individual brush points at once.



Reflection Point: [ ] Surface Projection ***(Check Box)***
If your model is not symmetrical (a-symmetric), a reflected point might be far away from the surface to be effective. This is where you can project the reflection to the closest point on the surface, essentially moving the reflection onto the surface allowing for increased influence from your reflected brush.

Reflection Space: o Object o World ***(Option)***
The brush can be reflected in either Object space or World space. Object space will provide reflections that exist around your Model no matter where it is in your scene. Where as World space will reflect around the scene's origin, which might be ineffective if your model is away from the origin.

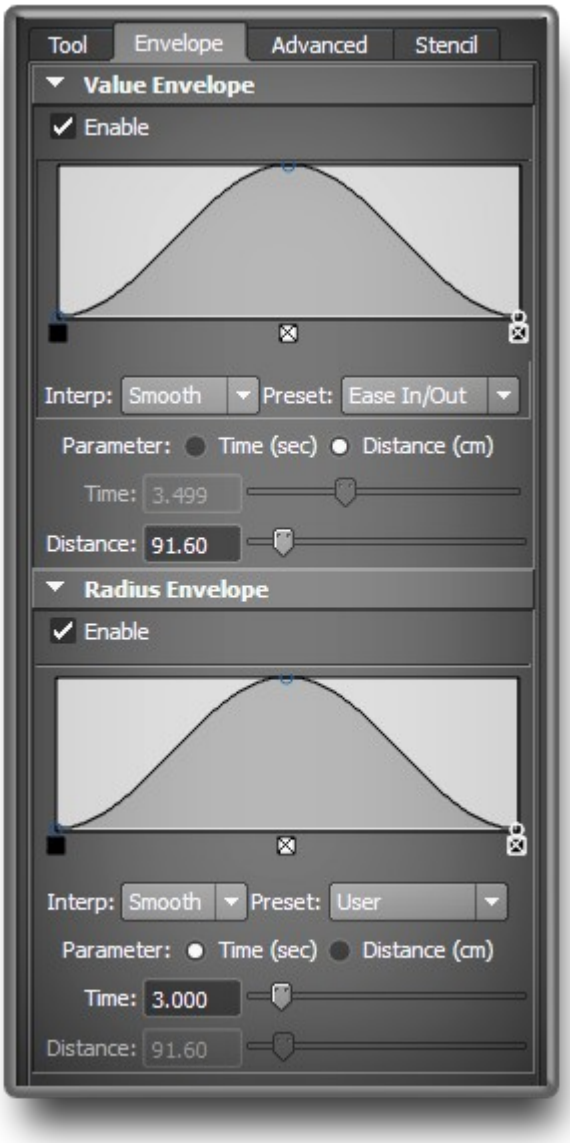
Grab-Rotate Axis ***(Menu)***
This menu determines what axis would you like to rotate around when you are in grab-rotate mode.
Choices are:

- X Axis - *Rotates around the X Axis*
- Y Axis - *Rotates around the Y Axis*
- Z Axis - *Rotates around the Z Axis*
- Camera View - *Rotates around the look-at vector in your current view-port.*
- Center Normal - *Rotates around the facing direction vector of the center face.*

Grab Reflection: [ ] Flip Rotation Angle ***(Check Box)***
When a rotation is reflected, it will rotate in the opposite direction. By enabling this option, you are flipping the reflected rotation, effectively rotating in the same direction as the original.

Grab-Scale Axis: [ ] X [ ] Y [ ] Z ***(Check Box)***
By Default, these are all active, by disabling an axis, you are locking out that axis from the Grab-Scale tool.

Envelope Tab



Value and Radius Envelopes

An envelope in Waxlab can adjust either the Value and/or Radius over time or distance, relative to the user adjustable envelope curve. This mimics the ability of a tablet which can control the application of the brush through pressure mapping, varying the radius and value as desired.

[ ] Enable ***(Check Box)***
Enables the Envelope and it's interface for Value and Radius.

Envelope Curve

The vertical component of this curve is representative of the amount the affected parameter (Radius or Value) is let through. The horizontal component of this curve is representative of the selected Time or Distance. When the cursor is first pressed to begin sculpting, the envelope is read left to right over time or distance traveled from the starting point.

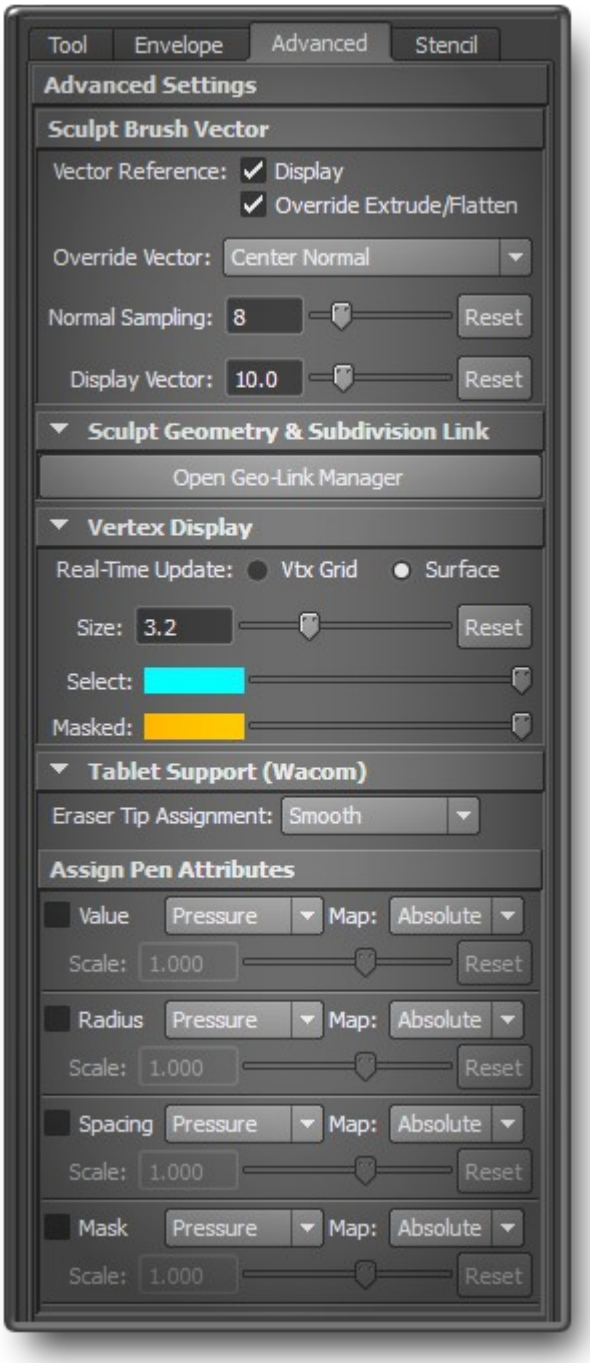
Interp "Interpolation" (Menu)
This changes the slope of the selected point on the curve.

Preset ***(Menu)***
Here you can select from a number of predefined curves to save time making them. Once you edit the curve, it will switch to the user defined preset for storing and recalling.

Parameter: o Time (sec) o Distance (current unit) ***(Option)***
This selection will determine the horizontal component of the envelope curve. If Time is selected, the envelope will span over the time set by the slider of the same name. If Distance is selected, the envelope will span over the traveled distance, set by the slider of the same name.

Advanced Tab

Sculpt Brush Vector



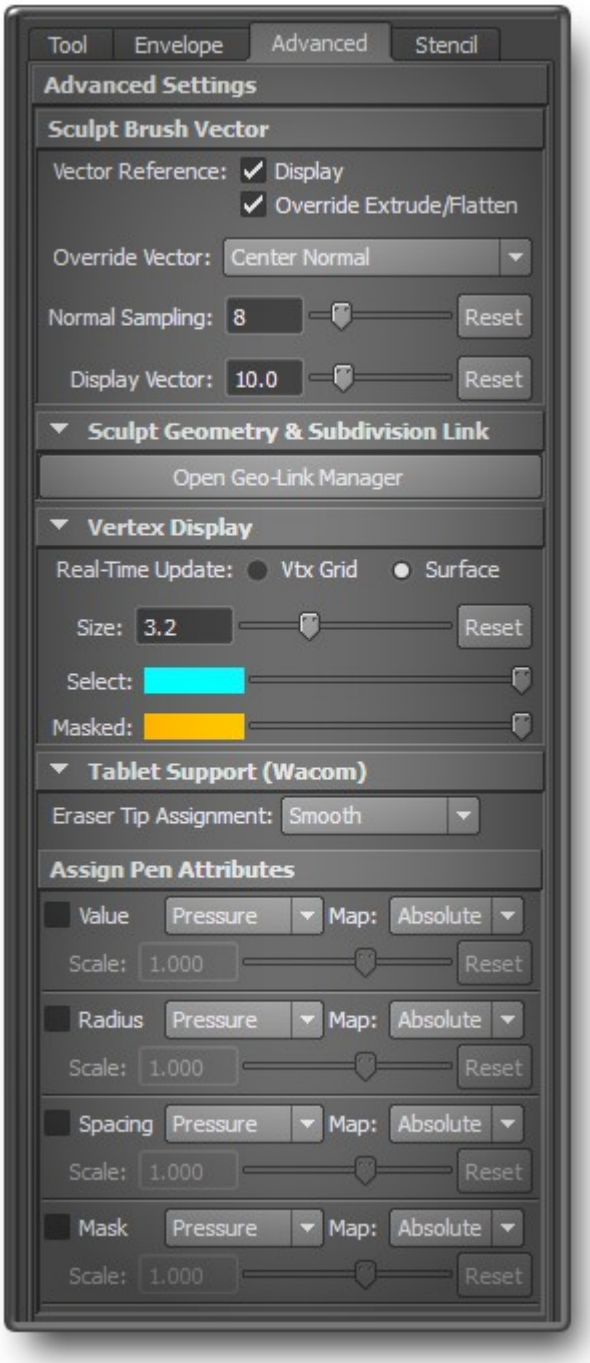
Vector Reference: [ ] Display *(Check Box)*
When enabled, displays a line depicting the Normal (facing direction) vector of the brush on the surface, which is also the center of the brush radius. With the exception of the Grab and Mask brush, this is the direction in which the surface will be manipulated when the selected brush is applied. In the case of the Smear brush, this vector will display the direction of the cursor movements, so often you will see the line perpendicular to the view-port.

Vector Reference: [ ] Override Extrude/Flatten *(Check Box)*
This is an important feature that allows for additional functions of the Extrude or Flatten brushes. When enabled, the Extrude or Flatten brushes use the Vector direction selected in the Override Vector menu for manipulating the vertices within the Radius. Refer to the Override Vector Menu for more.

Override Vector (*Menu*)
This provides a selection of different brush vector options that are used when Vector Reference: Override Extrude/Flatten is enabled. Choices are:

- X Axis – *Lock Brush Vector to X Axis*
- Y Axis – *Lock Brush Vector to Y Axis*
- Z Axis – *Lock Brush Vector to Z Axis*
- Camera View – *Set to the look-at vector in your view-port.*
- Center Normal – *Default for Extrude, use the normal found at cursor as the vector.*
- Vertex Normal – *Default for Bulge, transform each vertex along their own normal, which change direction as they transform; giving a balloon effect.*
- First Normal – *Use the normal found when the mouse button is first pressed to sculpt as the vector, for the duration of the brush application, until the button is released.*

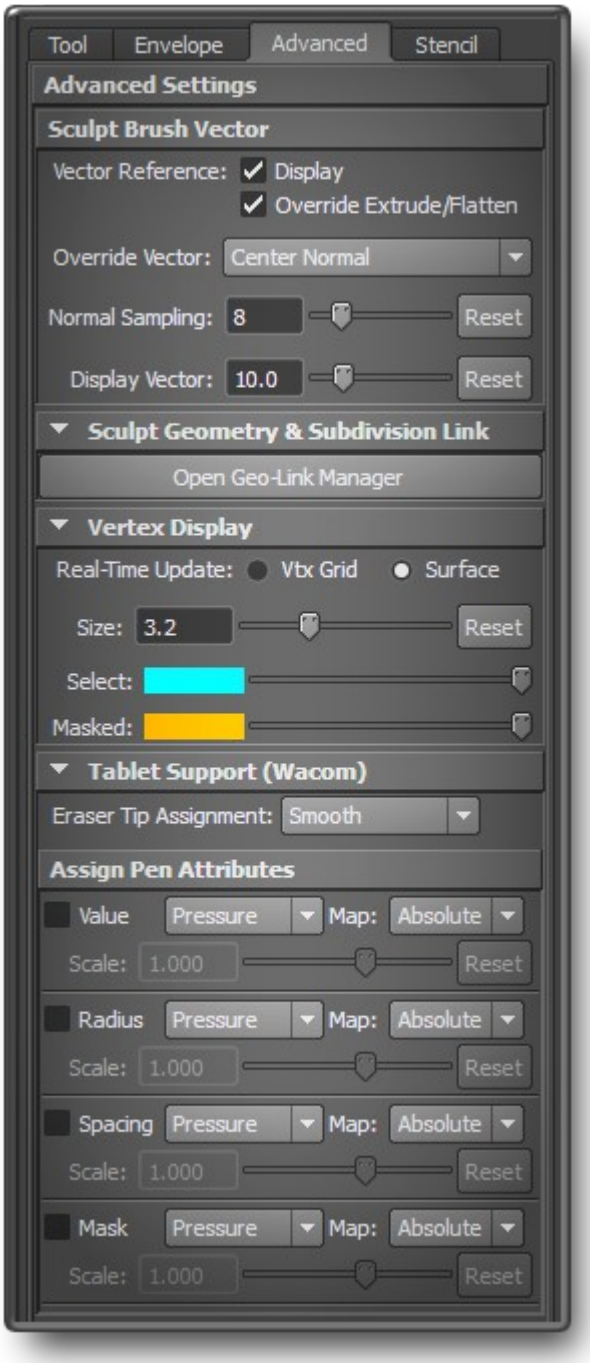
- Cursor Direction – *Default for Smear brush, uses the vector from last cursor position.*
- Normal Average – *Uses the average vector from all the normals found in the Radius (can be slow).*
- Normal Weighted Average – *Uses the average vector from all the normals found in the Radius, filtered through the falloff curve to apply a weight to each normal (can be slower).*
- Center Normal T. Average – *Recommended to ease sharp variations in geometry. Creates a new brush vector by averaging a new center normal sample over previous center normal samples. The number of Center Normal samples to average over can be set by the Normal Sampling slider (below).*



Normal Sampling *(Slider)*
This slider sets the Time value (T.) for the Override Vector: Center Normal T. Average. If the number is set higher, for instance 20, then the brush normal would take up to 20 applications to equal to the surface normal. If Vector Reference: Display is on, you can see this effect by just hovering over sharply changing topology; the line would appear to slowly adapt to the surface changes. The lower the number the faster the brush normal adapts to the surface one. Play around with this setting to find what best suits your needs.

Display Vector *(Slider)*
This slider sets the length of the line that represents the Vector Reference

Sculpt Geometry & Subdivision Link



Open Geo-Link Manager *(Button)*
Please refer to the Geo-Link Manager Section.

Vertex Display

Real Time Update: o Vtx Grid o Surface
Changes between real-time interactive display settings for when brushes are applied to the model's surface. The Vtx Grid (Vertex Grid) option sets the surface to update with your changes only when the mouse button (or tablet pen-press) is released. What you see instead, for real-time feedback, is a virtual point cloud of all the vertices that have been affected by your brush. With every brush application, the brush will reference the non-updated surface, which then applies the changes to the virtual point cloud, which will grow in size if needed. The Surface option allows the mesh to update with every instantaneous brush application, which is every time the brush breaks the Spacing threshold.

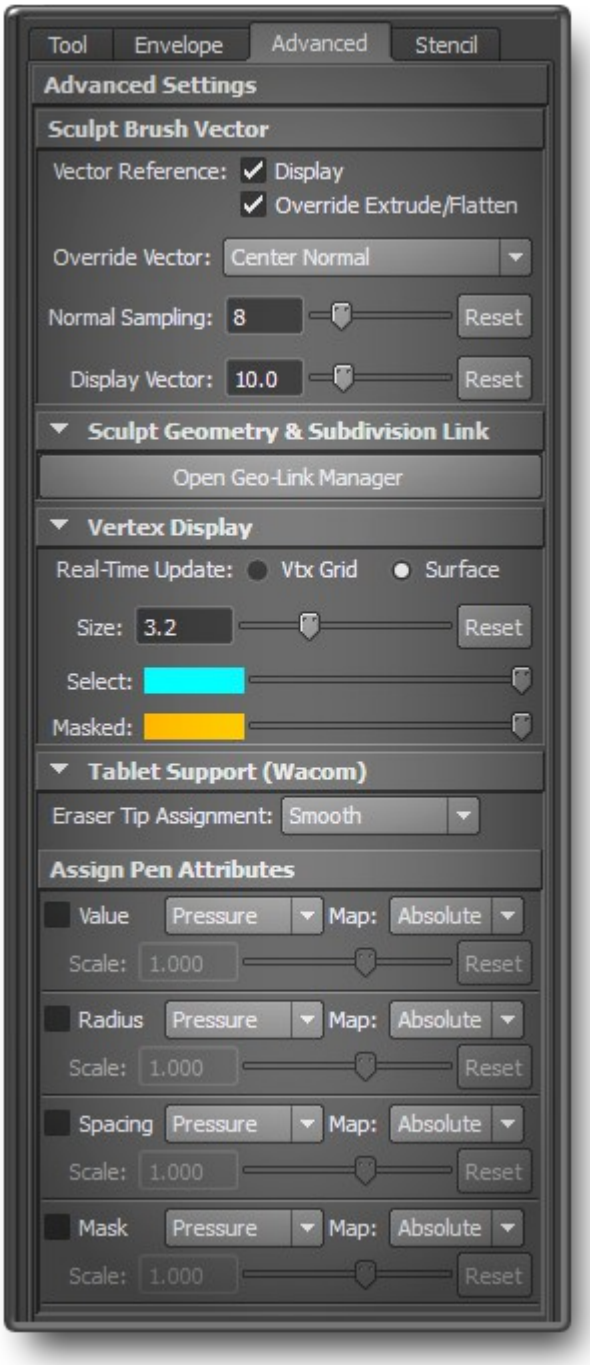
Size *(Slider)*
This sets the size, in pixels, of the overlaid vertices in the current Maya view. This to be able to see the vertex cloud easily, but if the number is set too high, they might obscure your model or other vertices.

Select *(Slider)*
This sets the color* of the overlaid vertices as you hover over the model with your cursor.

Masked *(Slider)*
This sets the color* of the Masked vertices, only visible when Mask is enabled.

**Note: If you wish to change the color, remember the brightness of the color gets adjusted to indicate either the Falloff curve or Mask influence, so pick a color that can be bright and dark.*

Tablet Support (Wacom)



Waxlab is compatible with Wacom Tablets, which could be advantageous since parameters can be assigned to the pressure or tilt of the tablet's pen.

Eraser Tip Assignment *(Menu)*

Assigns a brush to the eraser end of the tablet's pen. If available on your tablet, the pressure will be also read.

Assign Pen Attributes

This maps the attributes of the tablet's pen to any four of Waxlab's parameters: Value, Radius, Spacing and Mask. You can choose to map either **Pressure** or **Tilt** with an **Absolute** or **Relative** relationship, that also gets filtered through a **Scale** parameter.

Mappings (Map: *Menu*)

When the Pen is in use, this determines the relationship it has with the selected parameter:

Absolute

Maps zero pressure to zero parameter, and full pressure to the parameter's current setting. For example, if Value was enabled, set to 2.0, and given a Pressure assignment, then:

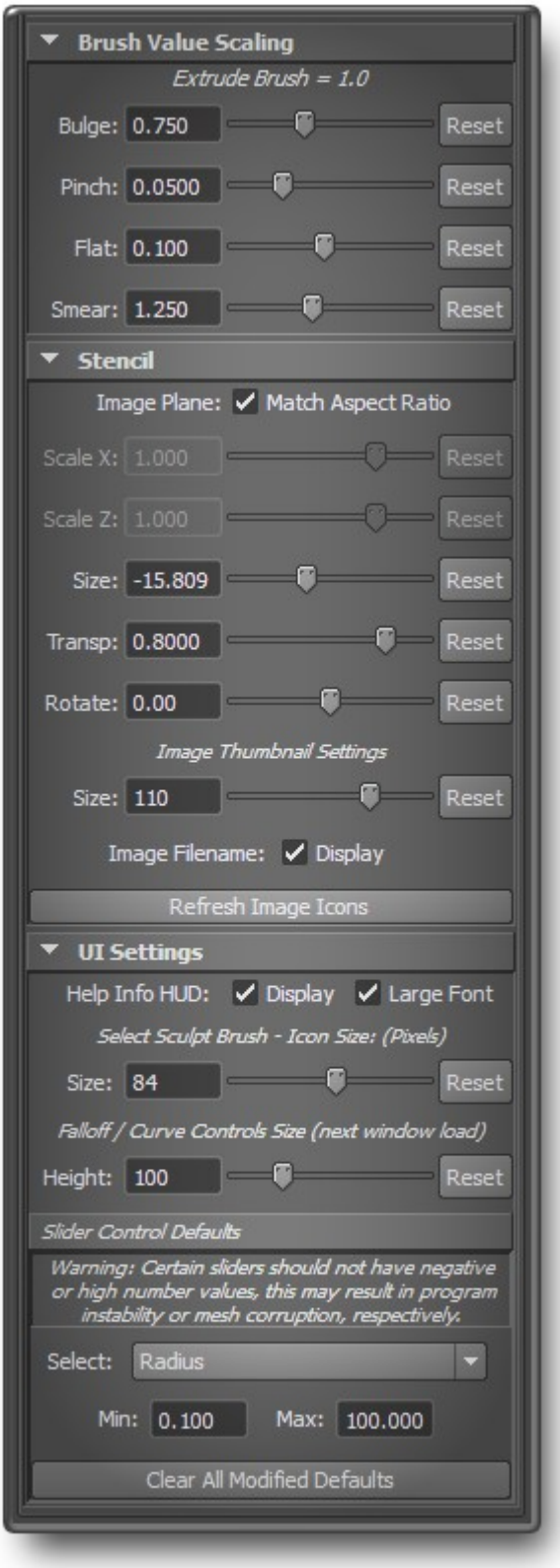
Full Pressure → Value = 2.0
½ Pressure → Value = 1.0
¼ Pressure → Value = 0.5
No Pressure → Value = 0.0

Relative

Maps zero pressure to the parameter's current setting and full pressure to twice the parameter's current setting. For Example, if Radius was enabled, set to 50.0, and given a Pressure assignment, then:

Full Pressure → Radius = 100.0
½ Pressure → Radius = 75.0
¼ Pressure → Radius = 62.5
No Pressure → Radius = 50.0

Scale *(Slider)*
Every Pen attribute mapping passes through this Scale parameter, which provides the ability to increase, decrease or even invert their relationship. When combined with the different Mappings of Relative or Absolute, you can create new types of brush behaviors.
For example: Setting Radius with a Scale of -1.0 with a Pressure mapping of Relative can give an effect of shrinking the Radius as the pressure gets higher. Alternatively, if you wanted to exaggerate the pen pressure, set a scale of 2.0 or higher with either Absolute or Relative mappings.



Brush Value Scaling

There are two reasons for this section. The first is to reduce the difference when switching between brushes, so you don't have to keep re-adjusting the Value parameter with each new brush selection. The second is a necessary reduction, otherwise the brush would be unusable.

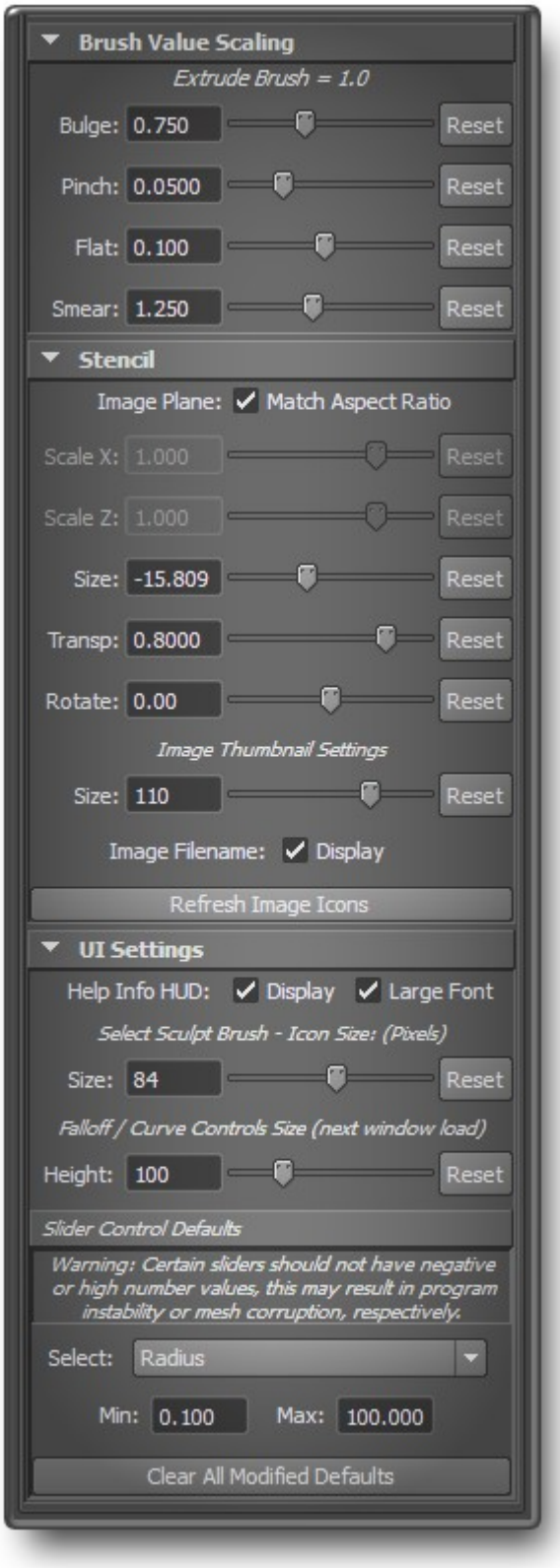
Bulge *(Slider)*
Normally set to 0.750, this exists to make switching between Bulge and other brushes seamless, without having to touch the Value setting.

Pinch *(Slider)*
Normally set to 0.050, this needs to be a low scale otherwise the brush would be unusable. Of course, you have the option of typing in a high number, use at your own risk.

Flat *(Slider)*
Normally set to 0.10, this needs to be a low scale otherwise the brush would be unusable. Of course, you have the option of typing in a high number, use at your own risk.

Smear *(Slider)*
Normally set to 1.25, if the number is set high, it would look as if your pushing out vertices at a high rate, which could be difficult to manage.

Stencil



The Stencil is actually a quad polygon, parented to a custom perspective camera, and also has a material for transparency and a file node to reference the image file. When you activate the Stencil through the Select Brush icon menu, the current camera settings are copied over to a custom perspective camera, which the viewport is then switched to. Most options here adjust transformations and transparency of the Stencil polygon.

Image Plane: [ ] Match Aspect Ratio
Not all images have the same aspect ratio, which is the relationship between the vertical and horizontal size (or in this case, pixel resolution). Disabling this leaves the stencil as a 1:1 square and stretches the images to fit. Enabling this re-sizes the stencil to match the aspect ratio.

Scale X *(Slider)*
If Match Aspect Ratio is Disabled, this slider is for setting the vertical size of the stencil polygon.

Scale Y *(Slider)*
If Match Aspect Ratio is Disabled, this slider is for setting the horizontal size of the stencil polygon.

Size *(Slider)*
This translates the stencil closer or farther along the z axis, relative to the custom camera.

Transp *(Slider)*
This adjusts the transparency of the material assigned to the Stencil polygon. Set this high to be able to see your model better, set low to see your stencil image better.

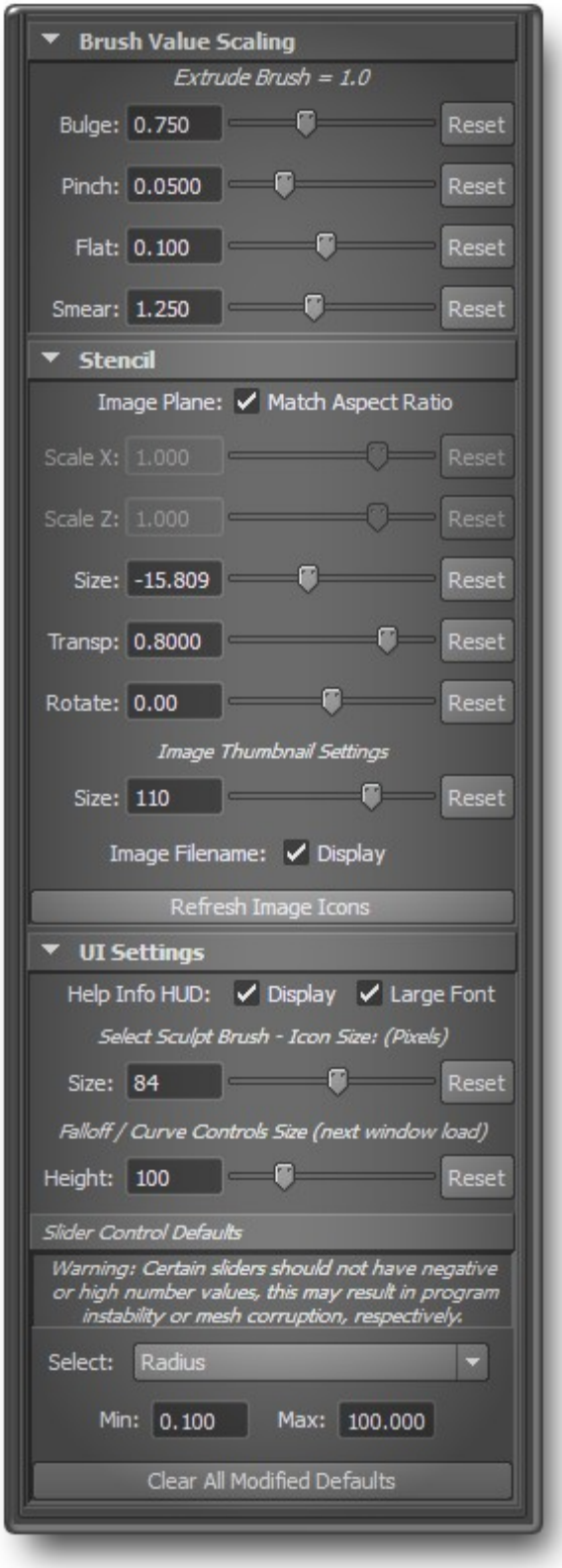
Rotate *(Slider)*
This rotates the Stencil polygon.

Image Thumbnail Settings

Size *(Slider)*
This sets the thumbnail size for the image selection under the Stencil Tab.

Image Filename: [ ] Display
Enables or disables displaying the filename along with the image's thumbnail.

Refresh Image Icons *(Button)*
Rebuilds the Stencil Tab UI by reading in the thumbnails created from the images in the selected folder. Good for when an image has been edited and you wish to see the new image thumbnail.



UI Settings *(User Interface)*

Help Info HUD: [ ] Display [ ] Large Font
The Heads Up Display is located on the lower left portion of the camera view and gives simple instructions on which brush you have selected as well as what the SHIFT and CTRL Key modifiers do. Display toggles the visibility and Large Font enables the use of a large text font.

Select Sculpt Brush – Icon Size(Pixels)

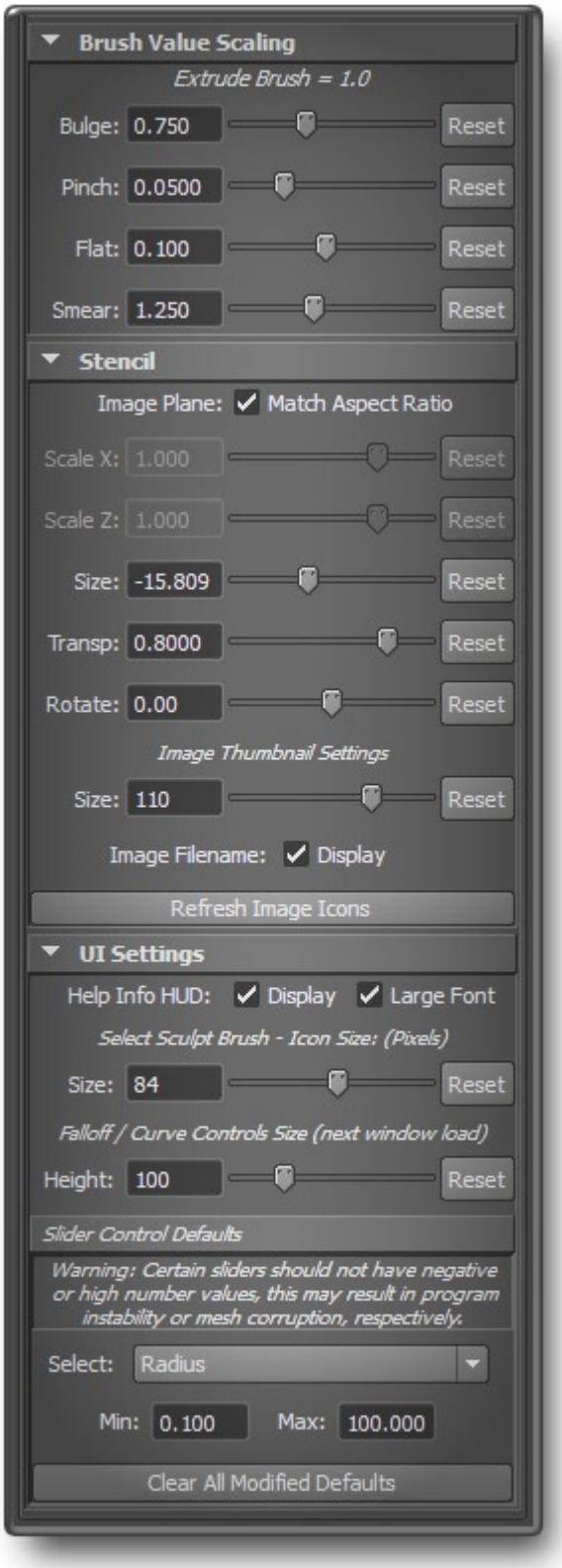
Size *(Slider)*
This sets the icon size for the brush selection at the top of the WaxLab window.

Falloff / Curve Controls Size

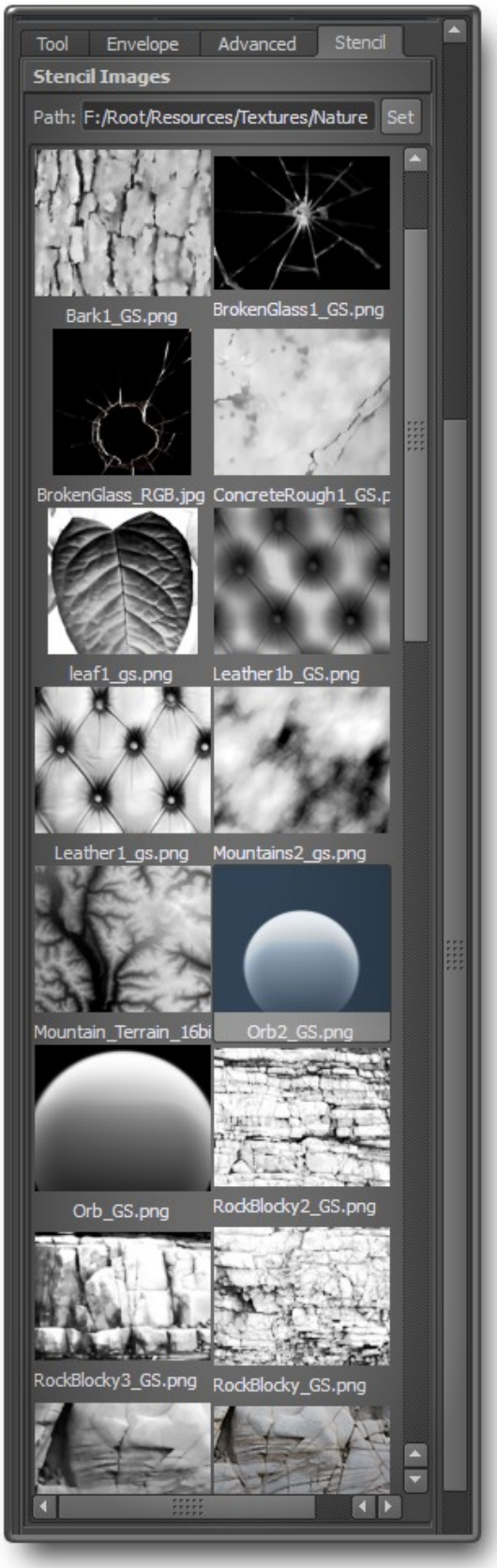
Height *(Slider)*
This sets the vertical size all the curves in the WaxLab window. By default the setting is 100, but if you are having trouble getting all the Tool Tab parameters to fit in one window, reducing this number can help. You must reload the Waxlab settings window by pressing the shelf button.

Slider Control Defaults

Most sliders in Waxlab can be adjusted to have a range different from the default settings you currently see. If you find yourself setting a slider higher or lower than what is available in the slider section (by accessing the field portion) more than once, then perhaps you should change it here. Be aware though, some sliders are set to a range on purpose and pushing a setting beyond a scope could lead to artifacts or program instability.



Stencil Tab



Stenciling
Stenciling is used to transfer the detail of an image onto your sculpture. While overlaying an image in a special perspective camera view, the stencil image influences any brush in Waxlab when it gets applied to a sculpt mesh. By referencing the gray-scale, the vertex movement scales with the brightness of the corresponding location in the image, with black being no movement.
As you would read in the advanced section, the stencil itself is a polygon with a material and file node attached to it. The important thing to know is that the material and file node is strictly used for reference (in this version), changing the material to reference one of the many procedural textures in Maya will not reflect on your model when used in conjunction with the Stencil. Waxlab has an internal method of dealing with images, one of which adds the ability to read 16-bits per channel tiffs, which is important for height information, such as Geo-Tiff.

*NOTE: Remember to **turn on Hardware Texturing** under **Shading** in your viewport to see the stencil image!*

Stencil Images

This section displays all the images found within the folder that was set in Path. Here you can choose by clicking on the image and if the stencil is not active, the stencil will activate itself.

Path *(Text Field)* – Set *(Button)*
This sets the Stencil image path. When the set button is pressed a window comes up similar to a file window. You don't need to select a file, just

navigate to the directory and press Save. Each time the directory changes, thumbnails are generated, depending on the size and amount of files this could take a moment, once they are done though, they are reused every time Waxlab reloads. To save time, have one directory that contains your stencil images and copy your images into that one, that way only a few thumbnails are generated at a time.

Preparing Images for Stenciling

A few things should be covered when preparing an image to use with Stenciling in WaxLab. *Note: Examples are for Adobe Photoshop. If you don't have access to this program – a free, open source image editor called GIMP might have similar filters.*

High-Res Image Noise

You can use any compatible image for Stenciling, unfortunately without knowing how it works, the results might not be what you would expect. When you apply a brush with stenciling on, each vertex will have a corresponding pixel within the image. If the image has a high resolution, the color value you see on the stencil overlay (polygon) might not be the corresponding pixel within the image. With high-res images, you likely cannot see the pixel detail on your screen, so what seems to be a soft gradation might actually be, at close up, a little noisy *(which likely was created by the camera sensor at acquisition)*. This is probably not the desired effect, so to reduce or eliminate the unwanted noise you can try following in Adobe Photoshop:

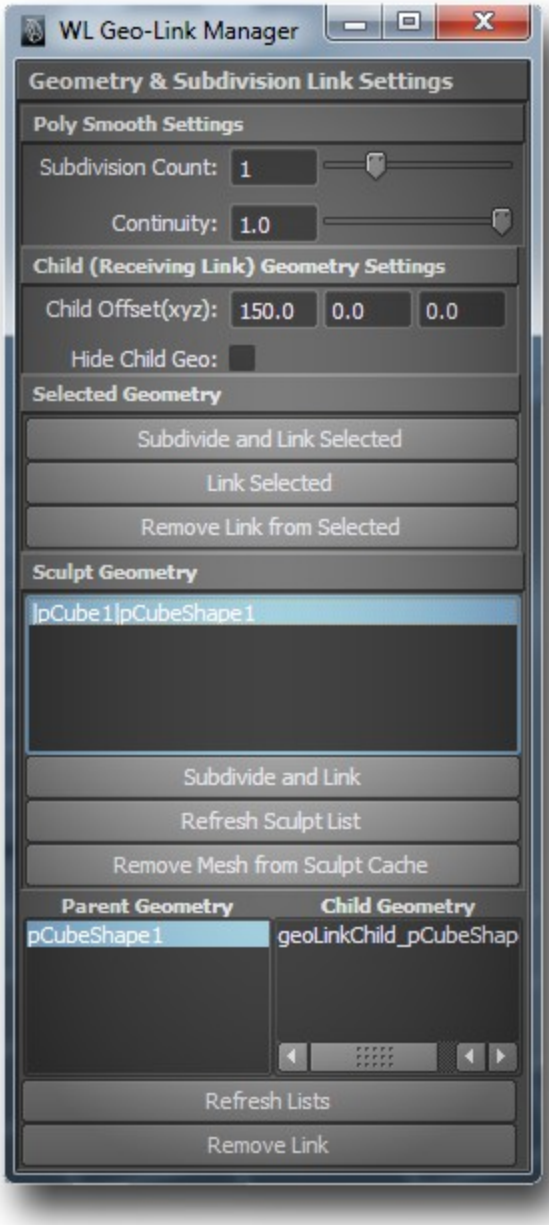
- Surface Blur Filter: Filter →Blur →Surface Blur...
  - A Radius setting of 5 Pixels and a Threshold of 30 levels seems to work best.
- Dust and Scratches: Filter →Noise →Dust and Scratches …
  Use if you need even more cleanup...
  - A Radius with either 1 or 2 should work, any higher and it might be too much.
- Lower the resolution, so what you see is what gets applied. Of course this lowers the detail and definition of the image with it, so use your discretion in what works best for you.

Gray-scale

You can use color images with Stenciling, but since it gets converted to gray-scale anyway, you might want to consider doing this to get an accurate idea of the stencil image. Also be sure to adjust the levels to best suite your needs.
To do this, in Adobe Photoshop try:

- Image →Mode →Grayscale *(Converts from RGB Color to Gray-scale)*
- Image →Adjustments →Levels … *(Adjusts the range of light to dark)*
  With Levels this you can:
  - Maximize the range between light and dark.
  - Increase or decrease the gray variation.
  - Completely wash out (eliminate) bright or dark variations if need be.

Geo-Link



A common practice in 3d sculpting is to create high-density meshes for detail and apply that detail as normal maps on low-density meshes. The Geo-Link deformer allows geometry of an equal or lesser number of vertices to follow a parent geometry's shape. Once a link has been initialized, every child vertex will then follow it's own corresponding parent vertex, in relative local space.

Read First: The Geo-Link Process
When you begin the linking process, it first makes a duplicate of the selected mesh, then the original mesh becomes the **parent** and the duplicate one the **child**. The original mesh is then subdivided according to the **Poly Smooth Settings** parameters. The Geo-Link deformer is then applied, linking each child vertex to the closest parent vertex, in local space. Then the child mesh gets translated according to the **Child Offset** parameter fields, this helps you to see your changes on the child mesh. You can repeat this process as many times as you like but

Geo-Link Manager

This window creates new Geo-Link deformers and manages existing ones.

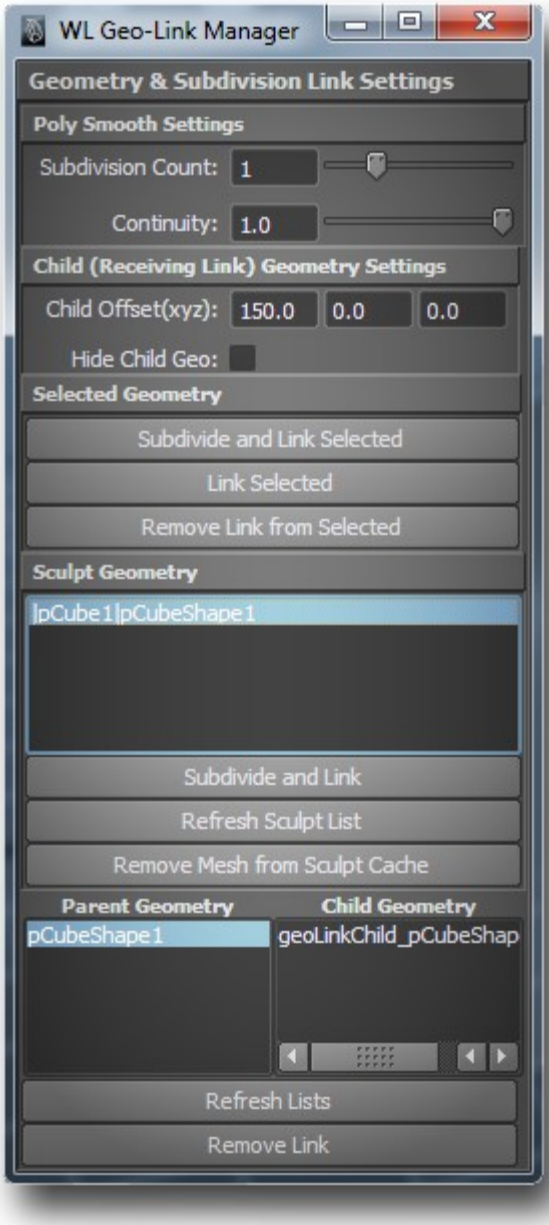
Geometry & Subdivision Link Settings

Poly Smooth Settings

Basically a condensed version of the settings in Mesh →Smooth, these settings are for when you press the **Subdivide and Link** or **Subdivide and Link Selected** button.

Subdivision Count
How many divisions per polygon for the subdivided parent mesh.

Continuity
The value you enter here determines the degree of smoothness for the subdivided mesh.



Child (Receiving Link) Geometry Settings

Child Offset (xyz): (Field) (Field) (Field)
These fields are coordinates for the child geometry to offset after the linking process. The corresponding fields are X Axis then Y Axis then Z Axis.

Hide Child Geo: [ ] *(Check Box)*
If enabled, this will hide the child geometry after the linking process, by setting visibility to 0.

Selected Geometry

This section applies it's processes to the selected mesh.

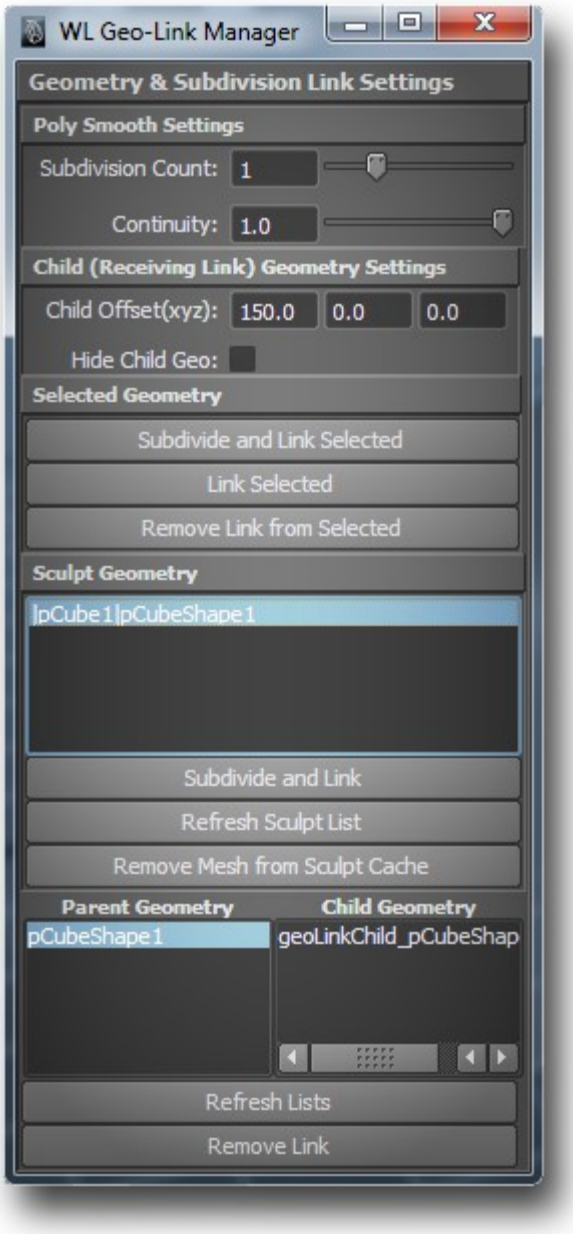
Subdivide and Link Selected *(Button)*
This executes the linking process on the selected mesh. Since the subdivision is

Link Selected *(Button)*
This button executes a linking process that does not have the subdivision step, allowing that function to be handled yourself.
Two meshes must be multi-selected beforehand, the first selected must be the parent mesh, and then the child.
Keep in mind that the child mesh can have any vertex count, as long as it's equal or less than the parent's. This allows you to have different vertex groupings in order to keep detail in certain areas while still having a lower count. This must be done before linking.

Remove Link from Selected
This removes the link from the selected meshes. Two meshes must be selected, first the parent, then the child. This works similar to selecting the two meshes from the Parent and Child Geometry Lists.

Sculpt Geometry

This section allows you select and apply linking to already registered sculpt geometry.



Sculpt Geometry *(Scroll List)*
When Waxlab gets a mesh for sculpting, it assigns it a unique GUID that gets registered. This becomes a reference for all relevant sculpting data that is stored along with it. This list contains all the geometry currently registered as sculpt meshes within WaxLab. Here you can select the different sculpt meshes to apply the linking to without having to find it and select it in your viewport. This list also provides extra management with the ability to remove a reference and it's relevant data from Waxlab's cache.

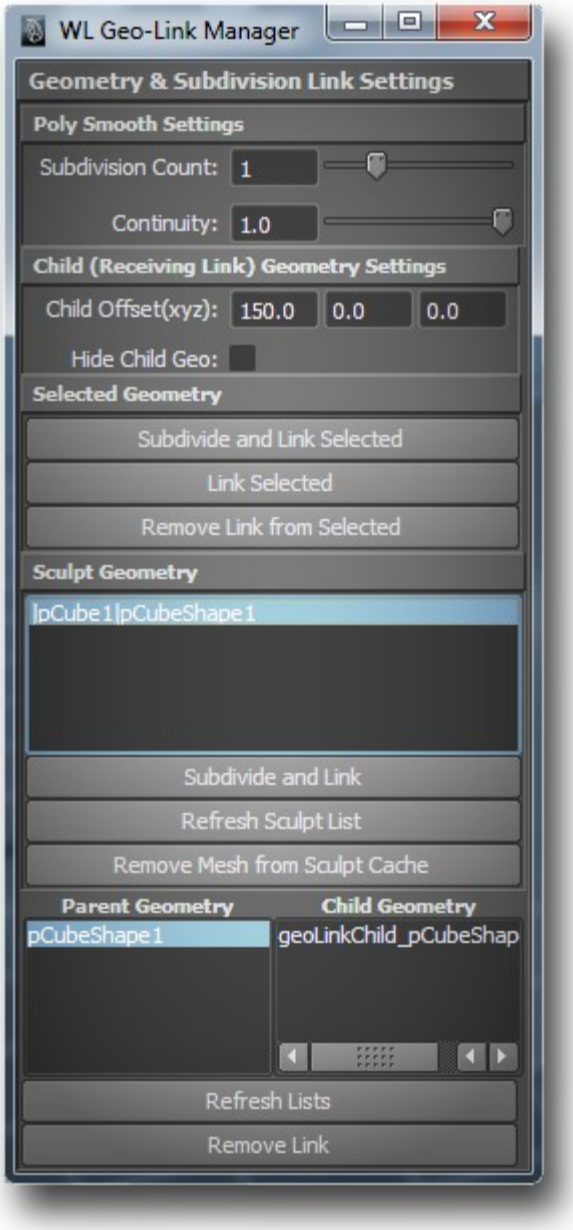
Subdivide and Link *(Button)*
Applies the linking process (with subdivide) to the registered sculpt mesh in the Sculpt Geometry List.

Refresh Sculpt List *(Button)*
Use this when you have changed scenes or have deleted sculpt meshes while having this window open, even minimized. This will refresh the Sculpt Geometry List to properly reflect the scene's contents.

Remove Mesh from Sculpt Cache *(Button)*
This is reserved for special cases, like If you are done sculpting and wish to free up some memory (Waxlab can take up quite a bit, depending on the Undo number).

Removing Links

When you want to remove the link, its important that you remove it through the **Geo-Link Manager** so that hidden settings are re-configured or removed. If you stop the link by just removing the deformer, you will run into problems in the future when sculpting or linking with that particular mesh. To Remove a link, first press the **Refresh Lists** button second from the bottom, so the **Parent Geometry** list can populate itself, if it hasn't already, then select the parent mesh in that list that you wish to detach from. The **Child Geometry** list will then populate itself with all the linked child geometries of the selected parent mesh, from here you can select the corresponding child mesh to remove the link from. Once you have the child and parent selected, press the **Remove Link** button.



Additional Technical Stuff

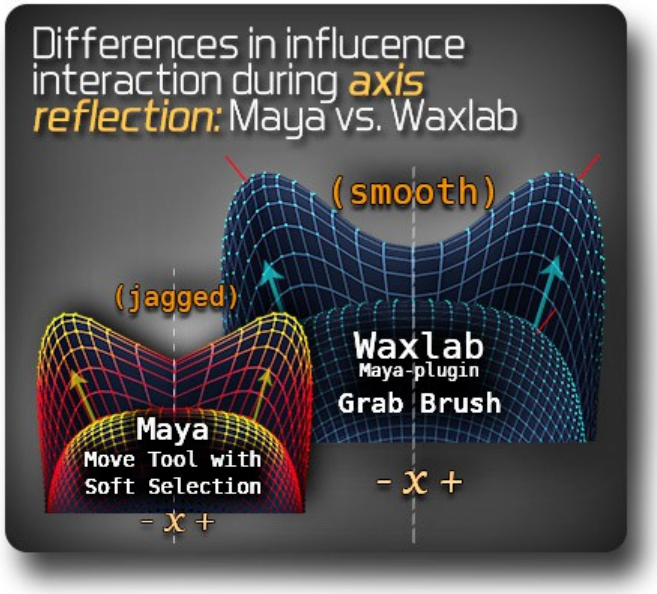
Grab Brush vs. Soft Selection

If you're wondering why the grab brush exists when you can simply use base Maya's soft selection with transform tools, here why:

Reflections

Reflections in WaxLab, are handled a little differently than in Soft Selection. With soft selection, when manipulating the vertices in an area where two or more spheres of influence intersect (or overlap) each other, the vertices that lie along the plane of intersection are treated differently than the others. This causes a crease to form in the middle, usually on the zero plane if reflecting at origin, which can be difficult to deal with.

With WaxLab, the vertices that lie at along the plane of intersection are treated the same as the others, and since overlapping reflections cancel each other out, those vertices only move along the plane of intersection, maintaining symmetry.



No topology or UV Rules

In a nutshell, topology is the way the polygons are constructed and organized to make up the surface, UV's are mapping coordinates for that surface so the renderer knows how textures should be applied. the Most sculpting packages use a combination of sub-division surfaces and displacement maps to create geometric detail, this also requires specific topology and UV mapping. While this will eventually be available in future releases of WaxLab, the first goal was to be able to use any geometry, with no concern over UV's or topology. This allows for geometry to be directly manipulated and, in combination with Geo-Link, without the need to re-topologize. You can create a head or body the traditional low poly way, then subdivide using Geo-Link to create detail while the low-poly version maintains the general shape. Then create your UV's and use Transfer Maps... to create the normal maps for the low-poly version.

Trouble Shooting

This section attempts to provide the answers to problems that might come up when using WaxLab in Maya. Please keep in mind though, some of the errors might be a problem within the Maya program itself, independent of WaxLab, so use discretion on where you should be looking for help with your problem. Also, if you don't find the answer below or anywhere else, remember that sometimes the problem can be fixed by either restarting Maya, re-installing Waxlab from the executable or granting Administrative rights to Maya. If all else fails, and you cannot find the solution here or anywhere else, contact us at support@sigrasoft.com.

1. WaxLab.mll will not load!

Windows

When loading **WaxLab.mll** through the **Plug-in Manager**, if you run into problems you might get one of several different errors, preventing it from loading. Most of the errors will provide the reason and some even the solution, so check your script editor window on the bottom right of your screen to see the Maya message history.
If you not sure what is wrong, here are some things to check:

- Licensing **dna.dll** problem:
  - The licensing needs access to the internet for validation, for more information on Licensing and its requirements, please refer to the Licensing FAQ.
  - If Maya or it's plug-ins are being loaded over a network and not from your local machine, talk to your network administrator and make sure the WaxLab files are accessible and that you have the appropriate access rights.
  - If the Registry Entries are missing, WaxLab.mll will not be able to find the Licensing or Script files when it loads. You should also see an error saying that it cannot find the files. So, if you see this error or think it is that case, try re-installing. If that does not help, you could try to enter them manually, there is a batch file in the the **Waxlab Zip Package** from the **downloads** section on the website, but please look at the **read-me** text file within the zip package first.
  - If you are using Windows Vista, 7 or 8, You might need administrator rights to access the licensing file. Try running Maya in **Administrator Mode**. You can change it in the shortcut under **Compatibility → Privilege Level → Run this program as an administrator**.
- Missing script or icon files? Try re-installing.
- Are you using the correct Maya/WaxLab version? Each **WaxLab.mll** binary file is compiled specifically for each version of Maya, a version mismatch will definitely cause problems, make sure you have the correct version of WaxLab from the downloads section at http://www.sigrasoft.com/. Unfortunately, certain technologies that WaxLab relies on are not available in previous versions of Maya's API before 2013,

so attempting to run **WaxLab.mll** on older versions will cause serious errors and possibly crash the Maya program.

- You might not have had administrative permissions when installing, first check and make sure you do under Control Panel →User Accounts. If you did not, change it and re-install WaxLab.

Mac OS X

When loading **WaxLab.bundle** through the Plug-in Manager, if you run into problems you might get one of several different errors, preventing it from loading. Most of the errors will provide the reason and some even the solution, so check your script editor window on the bottom right of your screen to see the Maya message history.
If you not sure what is wrong, here are some things to check:

- Licensing **libdna.dylib** problem:
  - The licensing needs access to the internet for validation, for more information on Licensing and its requirements, please refer to the Licensing FAQ.
  - Does the folder structure **/Users/Shared/Sigrasoft/WaxLab3dv1/licensing** exist? This is a hard coded path that WaxLab for OSX needs to find the licensing files. If it does not exist, try re-installing, if it does, check that you have permission to write to the folder.
- If Maya or it's plug-ins are being loaded over a network and not from your local machine, talk to your network administrator and make sure the WaxLab files are accessible and that you have the appropriate access rights.
- Missing script or icon files? Try re-installing.
- Are you using the correct Maya/WaxLab version? Each **WaxLab.bundle** file is compiled specifically for each version of Maya, a version mismatch will definitely cause problems, make sure you have the correct version of WaxLab from the downloads section at http://www.sigrasoft.com/. Unfortunately, certain technologies that WaxLab relies on are not available in previous versions of Maya's API before 2013, so attempting to run WaxLab on older versions will cause serious errors and possibly crash the Maya program.

Linux

When loading **WaxLab.so** through the Plug-in Manager, if you run into problems you might get one of several different errors, preventing it from loading. Most of the errors will provide the reason and some even the solution, so check your script editor window on the bottom right of your screen to see the Maya message history.
If you not sure what is wrong, here are some things to check:

- Licensing **libdna.so** problem:
  - The licensing needs access to the internet for validation, for more information on Licensing and its requirements, please refer to the Licensing FAQ.
- If Maya or it's plug-ins are being loaded over a network and not from your local machine, talk to your network administrator and make sure the WaxLab files are accessible and that you have the appropriate access rights.

- Have you followed the instructions in the readme-installation.txt file when you first installed WaxLab3d carefully? Skipping a step or failing to properly complete one would absolutely cause WaxLab and/or it's Licensing to fail.
- Missing script or icon files? Try re-installing.
- Are you using the correct Maya/WaxLab version? Each WaxLab.bundle file is compiled specifically for each version of Maya, a version mismatch will definitely cause problems, make sure you have the correct version of WaxLab from the downloads section at http://www.sigrasoft.com/. Unfortunately, certain technologies that WaxLab relies on are not available in previous versions of Maya's API before 2013, so attempting to run WaxLab on older versions will cause serious errors and possibly crash the Maya program.

I Still cannot get WaxLab to Load! (Windows)

If you are still encountering problems getting WaxLab to load, try installing from the ZIP Package download-able from the website. Since it's a manual process, you will be able to make sure everything gets set in the right place.
Be sure to read the **"Readme – Installation.txt"** located in the root of the zip archive before you begin.

2. Maya crashes!

Windows - When loading WaxLab.mll

If you have the proper version of WaxLab for your Maya and you followed the instructions carefully, there is an extremely rare crash problem that happens with no indication why. The only known solution is to restart Maya and load **WaxLab.mll** again, maybe even a second or third time. If it's still happens, try restarting your computer or re-installing Waxlab. Again, this is very rare. Contact us ASAP if this does not clear up for you.

Mac OS X - When Using Viewport 2.0 (Maya 2013 x64)

Currently a bug exists in Maya 2013 (x64) for Mac OSX when working in Viewport 2.0 that causes a freeze/crash. WaxLab can expedite this crash, or in other words, WaxLab can make this crash happen faster than if you were to get there without using WaxLab. Fortunately, this bug is fixed in newer versions of Maya (2014, 2015). As a general precaution, avoid using Viewport 2.0 in Maya2013 when modeling, especially when using WaxLab 3d.

3. My Stencil image gets applied upside-down!

Reload the Stencil's image.

4. Nothing happens when I apply the brush to the surface!

- Check to see if you are in **Component Mode**, you **must be in Object Mode** to sculpt.
- Check if any **Envelopes** are enabled, usually the starting value is zero so nothing will happen at first. Either move your brush around, adjust the curve or disable the envelope.
- Make sure nothing is obstructing your view. Perhaps a polygon you cannot see in front of your sculpt mesh in wire mode?
- Are you using a polygonal mesh? NURBS or real-subdivision surfaces are not sculptable in Waxlab, yet.
- It could be that you are actually experiencing the Trouble Shooting problem #8 *"Unusually or Painfully Slow Performance On Any Model Density",* which would probably be an extreme version of it. In which case, just follow the instructions given.
- If none of the above works, try restarting Maya.

5. Smoothing is making my mesh grow spikes!

The smoothing scale setting has the option to increase it past 1.0, if it is pushed higher, you might encounter a problem that causes the exact opposite of smoothing, noise! This noise can manifest in the form of multiple spikes on your surface. The fix is simply to turn down the smoothing scale until the noise spikes don't appear anymore. This is why the smoothness scale does not go past 1.0 by default.

6. A bunch of vertices on my model just disappeared!!!

Sometimes, albeit rarely, when using the grab-rotate tool, the selected vertices you just manipulated disappear and leave a big hole in your model. Undoing also does not help to bring them back! This is a strange anomaly, one that is currently being looked into. Unfortunately, you must reload your model, but that's not a problem since you save often... right?

7. Snaking (or Unintended Rapid Extrusion)

One of the problems that you might encounter early on is that, when extruding, the mesh surface grows rapidly outward into a snake-like shape. This is because when the Real-Time Display setting is set to Surface, the mesh will update with every brush application, which could be up to 60 times a second on lower density models. What occurs is a looping effect that compounds onto the same surface area in a short time, causing the surface extrusion to exponentially accelerate outwards.
There are several counter-measures in place to minimize this effect, the first is Spacing. Like it's description under Brush Parameters, Spacing determines how far must the cursor can travel before allowing the next brush application. This cuts down on the rapid-succession of your brush being applied, the root cause of Snaking, which is the main reason why Spacing exists.

The other counter-measure for Snaking is switching **Real-Time Display** to **Vtx Grid** *(Vertex Grid)*. The Vtx Grid option sets the surface to update with your changes only when the mouse button (or tablet pen-press) is released. What you see instead, for real-time feedback, is a virtual point cloud of all the vertices that have been affected by your brush. With every drag movement, the sculpt brush will reference the non-updated surface, which then applies the changes to the virtual point cloud. Any brush application will be to the same, non-updated surface, preventing the compounded extrusion effect.

8. Unusually or Painfully Slow Performance On Any Model Density

Sometimes, when beginning sculpting on a model, with a recently opened Maya or New Scene, the real-time performance can crawl to almost 1 brush application every few seconds, when normally it should be much higher. The fix is simple, keep applying the brush until it goes away ... if it still persists, then re-apply and be patient. The problem should never exist longer than a minute of application, after that, the performance will resume to its normal speed. This is a strange problem that happens very rarely, and the reason is hard to pin down, nevertheless it is being looking into.

Check for Updates!

It's important to check back for software and document updates at http://www.sigrasoft.com/.

Licensing FAQ

What is Activation?

Activation is a set of simple and quick steps taken upon installation in order to begin using your application. If you've used Microsoft Windows XP, Microsoft Office or many of the Adobe products you have already used a similar activation system. When your application is installed it contacts a central server across the internet to 'activate' your software and tie it to the provided activation code (which is printed on the box and CD case labels, or provided by email).

This anti-piracy system helps protect your investment in our software and enables us to continue its development at a competitive price. The license protection and monitoring system is managed by software_DNA from softWORKZ Innovation Inc. This system does not collect any details about you or your computer during license activation and re-activation. You may optionally enter your email address for password retrieval if ever you lose your password. Unlike other activation systems, the software_DNA system does not tie your license permanently to your computer hardware. Instead, your license is tied to your activation code and password that you define. As a result, you will have no problem re-activating your software after reformatting your hard drive, after upgrading hardware components in your computer, or when you move your software to a new computer. However, activation and re-activation does require an Internet connection. This Internet connection can be on a different computer from where your application is installed.

I have entered my code correctly and have an Internet connection, why is the application saying I have to do an off-line activation?

Your application cannot reach the activation server. You may be using a proxy server or have a firewall (Windows XP/Vista firewall, ZoneAlarm, BitDefender, etc.). Make sure you have given permission for your application to access the Internet in your firewall (see question below) or if you are using a proxy server ensure that the proxy server settings are correct in the activation dialog.

To verify if you have an Internet Connection, access the Internet using Microsoft's Internet Explorer (please use IE for this test). If IE can connect, than look for a proxy or firewall.

I have entered my code and password correctly with a new password to do a re-activation, why is the application not being re-activated

Verify that you have an Internet Connection (by browsing using Microsoft's IE). Your new password must be a new and never-used password. Verify that you have not previously used this password with this activation code.

How often will my application connect to the activation server via the Internet?

Your application uses the Internet when it is first installed, when it is re-activated (such as after a disk reformat and reinstall, or if the software is moved to a new computer). The application may also do a quick check with the server when you run the application. software_DNA includes an anti-fraud system that disables activation codes in cases of credit-card charge-back or refund. Unless you are using offline activation (see below), your application will need to connect to the Internet at least once a month to verify the license status. When an activation code is revoked, the software remains in trial mode until a new, valid activation code is provided.

Will my application work if I don't have an Internet connection?

Yes, there is an offline activation method available. If no Internet connection is found during activation, or the activation server is not reachable, the software will ask you to do offline activation. The software will provide step-by-step instructions, where a file is written to disk that you move to a computer that does have Internet access (or email access). You can move this file via LAN, floppy disk, CD-R or USB key. You can use your Internet browser (on a machine that does have Internet access) to visit a special page to upload this file and receive another file in return. If you do not have any working browsers then the file can be emailed to our tech support (note there may be a delay in the return of the file depending on the time of day and week).

Does the internet connection speed affect activation? Will dial-up access work?

The amount of data transferred during activation is very small. Any stable internet connection will work. Slower connections such as dial-up access may take slightly longer to complete the activation steps.

During activation what information is passed to the server?

No personal information or information about your computer configuration are transferred. There is a one-way hash* of some machine configuration data, your chosen password, and the optional email address sent to the server. Your application may have an optional registration page and if you choose to fill that out, that information is also transferred during the first activation. If you do not provide the optional information (email address and registration information) then no personal information will be transferred. We suggest you do not use one of your important personal passwords for the activation password, or a password that personally identifies you.

*One-way Hash: Codes that identify parts of the computer are put through a special function (called a 'one way hash') that turns the codes into one code number that is unique to your computer but cannot be deciphered (or reverse engineered) to determine what those components are. Only this hash value is sent to the activation server and not the details on the computer parts.

Can I move the application to another computer?

Yes, this can be done easily. It is simply a matter of uninstalling the application on one computer, reinstalling the application on the new machine, and reactivating the software. If you have remembered your password this will be a fast and easy process.

What is the password for?

The password uniquely identifies your license. You will need the password if you ever need to reactivate your software (such as after a disk reformat and reinstall or moving the software to a new machine). We suggest you do not use one of your important personal passwords for the activation password or a password that personally identifies you. The password has to be changed and be new (never-used) each time you re-activate the software.
We suggest that you write the password down on your activation code label (box or CD case) or in some other permanent location.

What is the email address for and is it mandatory?

The email address on the activation and reactivation dialogs is optional. You will be able to activate even if you do not provide an email address. If you do provide an email address, it can be used to retrieve a lost password. If you do provide the email address it will not be used for marketing purposes or sold / provided to any third party. If you do provide an email address we recommend it be one that will be active for some time.

What if I have forgotten my password and did not provide an email address (or my email address is no longer valid)?

During a reactivation the previously provided password is required. If the password has been lost and cannot be recovered (because an email address was not provided, or the email address is no longer valid) you will need to contact our support via email or by phone. We will be happy to reset your password.

Will changes to my computer cause my application to stop working?

There are no changes that will cause a permanent disabling of the software. Major changes (disk reformat being one such major change) will mean that you need to reactivate the software. If you have your password this will be a fast and easy process.

What happens if Sigrasoft or softWORKZ suspends service or goes out of business?

Your activated application will continue working without the Activation server, although new activations or re-activations will not be possible. Both Sigrasoft and softWORKZ will ensure that a patch will be made available ASAP to resolve this. Either a version with a replaced activation system or a version with no activation will be provided.

I wish to do an online activation but my firewall is set up to block such requests. What are the firewall settings?

The following is the information that you need to setup your firewall:
Main server IP address: reg1.softworkz.com
Backup server IP: reg2.softworkz.com
Backup server IP: reg3.softworkz.com
Port: 80 (Standard HTTP)
Domain: softworkz.com

Why is an activation system required at this time?

Software companies around the world have come to realize that activation-type copy-protection systems provide a reasonable solution to the problem of piracy while at the same time respecting customers by not burdening them with a hard-to-use licensing system. Reducing piracy means that the software vendor can use steady revenues to further improve the product and guarantee business continuation. It is unfortunate that piracy exists because we know the majority of our customers follow the license terms but it is a fact of life in this digital age. We trust that this new system will be virtually transparent for the majority of customers.

Softworkz Licensing and Heartbleed Bug Security

News broke of a wide-reaching security vulnerability known as the Heartbleed bug. Heartbleed affects OpenSSL, used by a majority of web sites to securely send data.
We're pleased to assure you that your security is not and has not been at risk, since we do not use OpenSSL encryption.

Version Changes & Fixes

Here you will find a list of changes and fixes made to each release of WaxLab 3d (v1).

Windows Versions

WaxLab 3d v1.00075 (build date: 04-10-2014)

- First Official Release

WaxLab 3d v1.0018 (build date: 06-11-2014)

- Added: **Activate** button to **About Window** to enter purchased commercial code. *This fixes bug where user must wait till evaluation period expires to enter code.*

WaxLab 3d v1.0021 (build date: 06-16-2014)

- Added: check for update online, an **Update Available** button and an option to disable version checking.

WaxLab 3d v1.0026 (MEL Scripts Update)

- Fixed: When switching off Vector Reference Override, Brush Locks to X-Axis.

Mac OSX Versions

WaxLab 3d v1.0040 (build date: 07-14-2014)

- First Official Mac OSX Release
- Contains all fixes from Windows version plus a number of small changes to be reflected back.

Linux Versions

WaxLab 3d v1.0045 (build date: 08-09-2014)

- First Official Linux Release
- Contains all fixes from Windows version plus a number of small changes to be reflected back.

Future WaxLab Developments

Here is a list of features that are currently planned for the next update of Waxlab 3d v1. These updates will be available free of charge to owners of version 1, until the release of version 2; which will be available at a discounted rate to existing customers upon released.
If you have any comments or ideas about what you think the next feature or improvement should be, please feel free to drop us an email.

Version: 1.1

- **Performance Improvements:**
  - **Multi-Threading**
    Currently WaxLab is single threaded for initial development, multi-threading is currently top priority to increase interactive performance. First up is leveraging multi-threading, next is either Open CL or CUDA based GPU acceleration.
  - **UV Mode**
    Implementing an optional UV Mode can improve performance but also allow implementation of a normal map sculpting mode.
  - **Dependency graph integration**
    Currently Waxlab's sculpting is applied as tweaks to the geometry for interactive speed. With the implementation of multi-threading, there should be enough processing power to re-integrate the dependency graph node.

Version: 1.2

- **New Features:**
  - **Normal Map Sculpting**
    Converts sculpting to normal map as it gets applied.
- **… Got suggestions?** Let us know!

Contact

Please contact us with any problems or questions you have. Any comments or suggestions for future software updates or developments are always welcome.

- **General Sales Inquires** *(including educational and volume discounts)*
  sales@sigrasoft.com

- **General and Technical Support**
  support@sigrasoft.com

- **Suggestions and Comments**
  comments@sigrasoft.com

www.sigrasoft.com

Sigrasoft Incorporated is a Canadian owned and operated software development company located in Vancouver, BC.

Credits

Programming, Scripting and User Guides by
Stefaan Sorensen
ssorensen@sigrasoft.com

Alphabetical Index