ZBrush 2020 What's New Guide

Pixologic™

makers of ZBRUSH®

Welcome

Welcome to the What's New documentation for ZBrush® 2020. While much of ZBrush® 2020 is very similar to other previous releases, there are quite a few new features to help make your ZBrushing even more productive and creative. We hope that the information you find here helps you understand the differences between this release and previous versions of ZBrush®.

This document only covers what's new in version 2020. To learn more about the features introduced in previous releases of ZBrush®, we invite you to read the other ZBrush® What's New Guides, located in your ZBrush installation's Documentation folder.

You're invited to visit our ZClassroom for a huge database of free high quality movies explaining all the main features of ZBrush®. Here you will also find the Artists Spotlight, where famous 3D Artists explain how they use ZBrush®, helping inspire you to create like the pros.

Don't forget to subscribe for free to our ZBrushCentral community to discover tips, view artists' creations, locate useful help for all things related to ZBrush® or post your works-in-progress!

We encourage you to regularly visit our ZBrush® Blog as well as our social media outlets where you will find all the news related to the ZBrush® universe, from the most recent Interview to new plugins or gallery additions.

ZClassRoom Portal: http://www.pixologic.com/zclassroom/

Artist Spotlight: http://www.pixologic.com/zclassroom/artistspotlight/

ZBrushCentral: http://www.zbrushcentral.com/

ZBlog: http://www.pixologic.com/blog/

Pixologic.com: http://www.pixologic.com

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The Pixologic Team

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Mac OS X & Windows Version of ZBrush®

Instead of the Windows Ctrl key, the Macintosh uses the Command (Apple) Key. This documentation will always refer to using the Ctrl key name, although it may sometimes list both as Ctrl/Command. When the Ctrl key is mentioned anywhere in the documentation a Macintosh user will want to use the Command key instead.

The same is true for the Windows Enter key, which the Macintosh calls Return. When seeing the Enter key mentioned anywhere in this documentation, a Mac user will want to use the Return key instead.

The Close/Quit, Hide, Minimize and Maximize buttons are located on the top right in Windows and at the top left on Mac OS X.

ZBrush Localization

ZBrush is available in multiple languages and will attempt to automatically set its language to match that of your operating system, if available. You can change the language at any time in the Preferences >> Languages sub-palette.

We are truly thankful for the efforts of our translators. For this task we decided to enlist ZBrush users as only they can fully understand ZBrush terminology, its methods of working and philosophy. We hope you appreciate their hard (and often tedious) work to bring ZBrush to their languages.

If you wish to translate ZBrush for your language, please refer to the Multilanguage section of the *ZBrush User Guide* and contact solomon@pixologic.com.

Thanks to:

- Chinese: Zhelong Xu
- French: Thomas Roussel
- German: Oliver Milas
- Japanese: Daisuke Narukawa with the help of Katsuhito Fukagawa and MAATEE.
- Korean: Insun Kwon
- Spanish: Victor Marin - Invictus Designs

ZBrush 2020 Whats New Guide - version 1.00

This documentation has been written by Solomon Blair, and Thomas Roussel. Edited by Joseph Drust, and Matthew Yetter.

For all documentation questions and inquiries, please contact us at documentation@pixologic.com.

About ZBrush® 2020

ZBrush sets the industry standard for digital sculpting. Its features enable you to use customizable brushes to shape, texture and paint virtual clay in a real-time environment. When you use ZBrush, you'll be working with the same tools used by film studios, game developers, toy/collectible makers, jewelry designers, automotive/aviation designers, illustrators and artists worldwide.

ZBrush 2020 continues in the path of creativity and productivity with major new features allowing artists to work even faster.

1. Thumbnail

Being able to clearly visualize a model's thumbnail or silhouette is essential for making refinements while designing in 3D, as well as for visualizing new shapes.

Thumbnail View is a small window located at the top left of the ZBrush canvas that allows you to view a mirrored thumbnail image of the model with its selected colors and materials, or to optionally use a Silhouette Mode to view the pure forms.

2. CamView

CamView creates a small 3D figure and links it with whatever model is currently in Edit mode in the ZBrush canvas. This small figure rotates along with the model that you are actively sculpting.

CamView makes it easy to always know where your model sits within the virtual XYZ space. It also offers an interchangeable one-click navigation view which allows you to switch between orthographic view states. (Front-back-left-right-top-bottom)

There are multiple default presets available to choose from. ZBrush also offers the ability to load any model to create your own custom CamView presets.

3. Draw Draft Analysis

Draw Draft Analysis displays the draft angles of a model for mold making.

Based on a chosen "pull direction," this feature displays whether the draft angles will allow you to remove a model from the mold. It will identify any surfaces that might require correction due to problematic surface angles, providing real-time analysis updates.

4. PolyPaint From Thickness

The From Thickness feature gives you the ability to evaluate the distance between the outer and inner walls of a surface intended for 3D Printing and manufacturing. This information is essential for identifying where corrections might be necessary in the surface areas on the model before final output for manufacturing.

5. PolyPaint From Draft

PolyPaint from Draft generates color based on the draft angle captured by the camera. This feature utilizes the Draw Draft Analysis system together with the ZBrush camera. It generates the draft angles displayed from this Draw Draft Analysis as red and green PolyPaint.

6. Mask by Draft

MaskByDraft uses the Draw Draft Analysis features to generate a mask based on the draft angle captured by the camera.

Generating masks from draft angles offers the ability to extract negative molds for prototyping, as well as providing other modeling and sculpting benefits.

7. Adjust Colors - PolyPaint & Texture Maps

Adjust Colors allows you to make color adjustments based on hue, intensity, contrast, gamma, and tint of a model's PolyPaint assigned to the vertex points themselves, as well as any existing texture Map from UVs.

8. Mask By PolyPaint

Mask by PolyPaint offers the ability to isolate areas for color correction by use of eight Mask by Color channels. Having the ability to mask select PolyPaint give you flexibility to protect areas based on PolyPaint colors, make 3D extractions from masks, as well as many other sculpting and modeling techniques.

9. Sculpt & Paint Morph UV

Morph UV is a feature that morphs a 3D mesh into its flattened (2D) UV shell. While morphed you have the option to sculpt and paint with ZAdd, ZSub, and MRGB information. Once finished, turning Morph UV off will morph the model back into its 3D state with all details applied.

10. DecoCurve Brushes

DecoCurve brushes simulate the effects from the classic 2.5D Deco tool, but as a true 3D sculpting & painting brush. These brushes use Stroke >> Curve Mode functionality to simulate the natural application of an alpha projection onto the surface.

11. From Brush

From Brush evaluates sculpted brush strokes on a surface and captures those details as an alpha. This system offers a highly customizable way to sculpt your own details to repeat on other areas of the model, build alpha brush libraries and more.

12. Hatch Brushes

Hatch brushes offer the ability to apply sculpting strokes in a back and forth motion without picking up your cursor, but only add or subtracting in the forward direction of the stroke. This functionality makes it easy to apply sculpting strokes in a sketch-like fashion. It also reduces adding or subtracting too quickly from a surface, helping give brush stroke precision.

13. HistoryRecall Brush

The HistoryRecall brush gives you the ability to capture the depth position of a model's sculpted details by use of the Undo History timeline, and then project those details onto a completely different model by use of brush strokes.

14. MoveInfiniteDepth Brush

The MoveInfiniteDepth brush allows you to move the surface of the model based on its orientation relative to the camera. Regardless of the model's local coordinates, this brush evaluates the camera's view to establish the depth direction for your brush stroke without the need for other tools such as Masking, or Gizmo3D.

15. No Back & Forth Mode

This mode allows you to apply sculpting strokes in a back and forth motion without picking up your cursor. No matter how you move the cursor, the brush will only add or subtract while moving in the stroke's forward direction. This offers the ability to reduce the amount of detail buildup or overlap that can occur while sculpting in a sketch-like fashion and improves stroke precision.

16. Project Undo History

ZBrush remembers the sculpted and painted details within the Undo History timeline. Project Undo History gives you the ability to go back in time to set a restore point and project this information back into the model. With this feature you can choose any point in the timeline to project back onto the model.

17. XTractor Brushes

XTractor brushes give you the ability to capture surface details into an alpha to be re-used for further sculpting with XTractor or other brushes. Each XTractor brush type uses a different method to capture the sculpture details, as well as using the same method to reapply the captured surface details for quick and easy use.

18. Fade Opacity

Adjust the strength of color displayed on the model by use of the Fade Opacity slider.

Whether you have PolyPaint applied to a surface or UVs with a texture map, you can change the visibility of those colors in order to better focus on the sculptural aspects of the model.

19. Other Additions

Find in this section all the various other additions and changes made in ZBrush 2020.

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INSTALLATION UPGRADING & ACTIVATION

All the steps you need to install or upgrade ZBrush, as well as to leverage its activation system.

This is the useful information that you will need to know when installing and upgrading ZBrush® on your computer. This chapter also describes the activation and deactivation process. Understanding how the activation system works will help you avoid difficulties should you upgrade your computer, reinstall your operating system, etc.

I System Requirements

Recommended:

- Operating System: Windows Vista or newer. Mac OS X 10.7 or newer. (32-bits or 64-bits for either platform.)
- CPU: Pentium D or newer (or equivalent such as AMD Athlon 64 X2 or newer) with optional multithreading or hyperthreading capabilities.
- 6 GB recommended.
- Disk Space: 750 MB for ZBrush, plus 16 GB for the scratch disk.
- Pen tablet: Wacom or Wacom compatible.

Notes:

The scratch disk may be a different drive from where ZBrush is installed.

Having ZBrush and its scratch disk running on an SSD drive will result in improved performance.

Minimum System Requirements:

- Operating System: Windows Vista or newer. Mac OS X 10.7 or newer. (32-bits or 64-bits for either platform.)
- CPU: P4 or AMD Opteron or Athlon64 Processor. (Must have SSE2 -- Streaming SIMD Extensions 2. All CPU's from 2006 or later support SSE2.)
- RAM: 1024 MB (2048 MB required for working with multi-million-poly models).
- Disk Space: 750 MB for ZBrush, plus 8 GB for the scratch disk.
- Monitor: 1280x1024 monitor resolution set to 32-bits or Millions of Colors.

II Installation and Activation

ZBrush installation is based on an installer application, which is similar on both Windows and Mac OSX operating systems.

After downloading the ZBrush installer you can run it to be guided through the activation process.

For all the information about the process of the installation and activation, please read the "**Install_and_activate_ZBrush.pdf**" located in the ZBrush documentation folder or available to download at our Download Center: http://zbru.sh/docs or visit our online documentation website; http://zbru.sh/onlinedocs

It is **HIGHLY RECOMMENDED** that you make a backup copy of the installer after you have downloaded it. Download links are valid for two downloads or seven days, whichever comes first. Our Support staff is happy to renew your download link at any time but we also know from experience that people often need to reinstall on an evening or weekend when there is nobody available to assist you.

Special notes for Mac users:

1. The download is a Disk Image (DMG) file which mounts to be like any other disk on your computer. In some cases, a Finder window does not automatically open after mounting the DMG. If that happens, you will find it within your Devices list. Opening that will then allow you to run the installer itself.
2. Upon running the installer you may receive a message to the effect that it is from an unknown publisher. In this case you will need to disable Gatekeeper before you will be able to run the installer. Apple explains how to do this here: http://support.apple.com/en-us/HT202491

III Upgrading

Depending on your current ZBrush version and what you need to upgrade to, there are two upgrade paths available:

- Using a full installer to perform a “clean” install of a fresh new copy of ZBrush. This does not require any earlier version to already be on your computer.
- Using an upgrader (downloaded from our Download Center or through the Auto Upgrader system) which will duplicate your current ZBrush folder and then upgrade the copy without affecting your current installation.

The full installer takes longer to download, but is greatly preferred. Using it avoids any possible permissions issues. Also, if there are any problems with your current ZBrush installation (even those you might not be aware of), an update will copy those problems to the new installation! The full installer avoids that possibility. You will still be able to manually copy any desired files from the old installation to the new one.

If you do wish to use the update process instead of the full installer, please read the Auto Update chapter of this section.

IV Auto Update

ZBrush includes an Auto Update system which can check with the Pixologic® servers at your request to see if a new minor update is available.

This process is initiated manually and is voluntary. It is recommended that you run it from time to time to see if a new update is available.

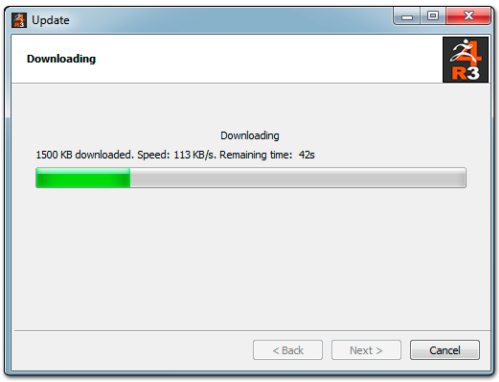
1. Auto Update In Action

The Auto Update is a separate application named ZUpgrader.exe (.app for Mac users), located at the root of your ZBrush folder.

This program can be executed by itself and when you wish to check for a new update or upgrade. Make sure that ZBrush is closed, then simply double-click ZUpgrader to run it.

An installer-like window will open. From there, simply follow the steps to check for any available updates. The application will tell you whether or not something is available for download.

- If no update is available, the software will automatically quit.
- If an update is available, the software will start the download. When the update has finished downloading, it will be launched automatically and guide you through the installation.



Auto Update in action.

The update installer is similar to the ZBrush full install process. Just follow the steps to install the new components. The Auto Updater will automatically place all files in their proper locations. When installation is finished the updater will close and you can launch ZBrush to enjoy the new features or changes.

You will also find the update's installer as a new program in the root of your ZBrush folder. You can keep it for future use or simply delete it. We recommend that you keep the most recent update and delete any older ones.

Note:

Each new update will include all items since the most recent ZBrush version release. This means that if you've just installed ZBrush you will not need to download multiple updates – a single download will be all that's necessary to bring your installation up to date.

V UN-INSTALLATION

This process completely removes ZBrush from your computer.

Un-installation process:

1. In the ZPlugin menu, choose Web Deactivation and proceed with license deactivation as explained above. If you do not deactivate prior to un-installation, the un-installed machine will continue to count against your serial number and potentially prevent you from reactivating!
2. On Windows, use the Windows Control Panel uninstall utility and follow the steps. On Mac OS X, simply move the Applications/ZBrush folder and the Users/Public/Pixologic folder to the Trash.
3. During the un-install process, depending on the Version of ZBrush you are using, the Uninstaller may ask you if you want to keep your GoZ files. Always answer “Yes” if you are removing an older version of ZBrush after having upgraded. If you answer “No”, GoZ won’t work anymore because most of its components will be deleted by the un-install process.
4. After the un-installer has finished, check the location where ZBrush had been installed. There will often be extra files which remain. You can delete those folders if you do not intend to use ZBrush on this computer again.

Note:

With the exception of GoZ and the various files in the ZBrushData shared/public folder, ZBrush doesn’t write files outside its own directory.

VI Support Registration

It is required to have a current Support account at http://support.pixologic.com in order to receive technical support for ZBrush. This account is free.

If your purchase was of ZBrush 4R5 or earlier, you won't have a Support account unless you specifically created one yourself! Having activated an earlier version of ZBrush is not the same as having a registered Support account. The Support system is an independent platform. It does not use any existing log-ins that you might have for ZBrushCentral, Cleverbridge or any other ZBrush-related sites.

Note:

Purchases of ZBrush 4R6 and later required having a Support account to be able to complete the purchase or get your serial number. If your first version was ZBrush 4R6 or later, you will have a Support account already and can skip this section.

If you have not already registered on the Support site:

1. Go to https://support.pixologic.com.
2. Click the Register icon.
3. Enter your email address and whatever password you would like to use for the Support site. These will become your login info for the future.
4. Fill in your system information. We need this info in order to respond to your support requests more efficiently.
5. Also provide your ZBrush 4x serial number for your copy of ZBrush. This information identifies you as someone who has actually purchased a ZBrush license. (If you have upgraded from an earlier version of ZBrush 4, your serial number will remain unchanged. All versions of ZBrush 4x use the same serial number.)
6. After you submit the form you will receive a confirmation email at the address you used to register. Follow the instructions in that email to complete your registration.

If you have already registered on the Support site:

You do not need to change any information.

At any time, you can go to https://support.pixologic.com to view your past tickets or create a new one.

VII Backward Compatibility of ZBrush Files

ZBrush files are not backward compatible, which means that your files created with the most recent version of ZBrush won't be compatible with any older version.

For example, if you have a file that you'd been working on with ZBrush 2019 and then save it using ZBrush 2020, you will no longer be able to open it in version 2019.

Different versions of ZBrush can be used together with GoZ due to the fact that its main components have remained the same, but it's not possible to work on the same project between multiple versions of ZBrush at the same time. Once a file has been created or saved in a newer version of ZBrush, it will not be able to be opened by any earlier version.

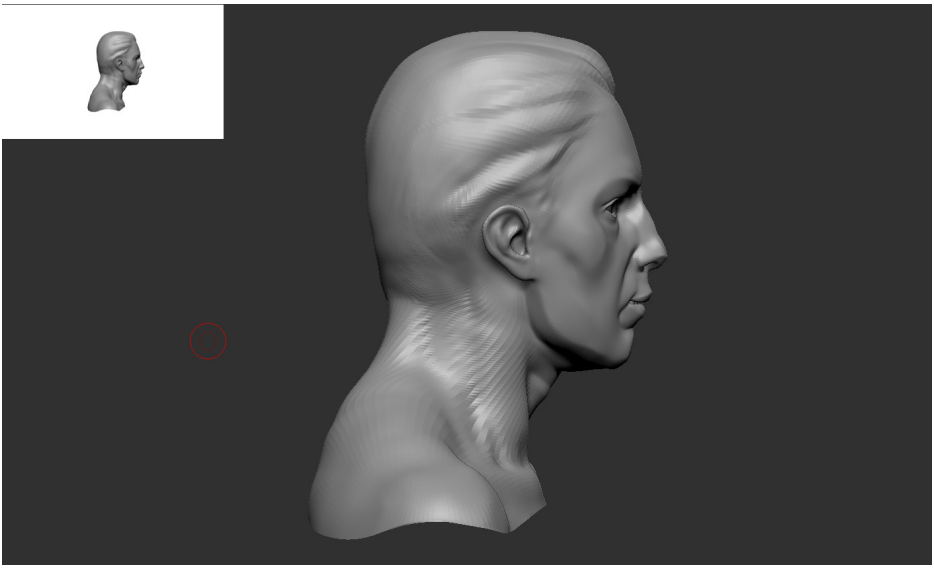
GoZ cannot get around this restriction. It can be used to open files from earlier versions of ZBrush but it cannot be used to send files to an earlier version. The only way to get a file into an earlier version of ZBrush than it was last saved in is through the OBJ format.

THUMBNAIL

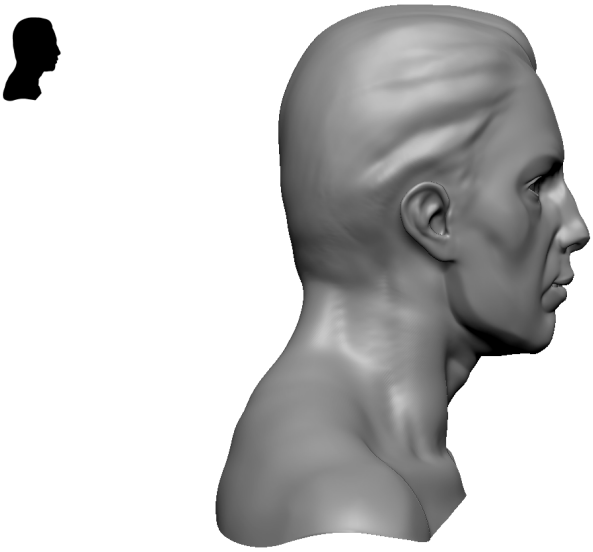
Visualize a model's thumbnail or silhouette in the ZBrush canvas

Being able to clearly visualize a model's thumbnail or silhouette is essential for making refinements while designing in 3D, as well as for visualizing new shapes.

Thumbnail view is a small window located at the top left of the ZBrush canvas that allows you to view a mirrored thumbnail image of the model with its selected colors and materials, or to optionally use a Silhouette Mode to view the pure forms.



Thumbnail View at top left of image



Thumbnail in Silhouette Mode at top left of image

I How Thumbnail Works

Draws a thumbnail window at the top left of the ZBrush canvas. This view uses the same dimensions as the ZBrush document. As you rotate and move the model around the canvas, the Thumbnail View model will update in real-time.

The Thumbnail View will have Silhouette Mode enabled by default. This assigns a black silhouette to the model, with a white background. This mode's purpose is to let you see how the model's overall shape reads, without any surface details getting in the way.

When Silhouette Mode is disabled, Thumbnail View will simply displays a miniature version of the model, complete with whichever colors and materials are currently assigned to it, placed against a white background. This mode is especially useful for seeing how the model's details read from a distance.

II Thumbnail Functions

All thumbnail settings can be found in the Preferences >> Thumbnail sub-palette.

Thumbnail

Turns Thumbnail view on or off

Silhouette Mode

Turns Silhouette Mode on or off. When Silhouette mode is off, Thumbnail View will switch to using color and materials.

Size Slider

Controls the size of the thumbnail view.

Magnify Slider

Increases the pixel zoom in the thumbnail view.

Export Thumbnail

Exports the thumbnail view.

Import

Imports an image into the background of the silhouette allowing for silhouette matching to reference.

Background

Controls the background color of the view.

Note:

If you are using Silhouette Mode, click and drag the background color to pick from the color palette. This will automatically adjust the color of the model and the background as complementary color tones.

III Thumbnail Hotkeys

Thumbnail Magnify

Shift + click + drag thumbnail window to adjust magnification.

Import Thumbnail Background Image

Click once on thumbnail view to open the texture import window. In this view an image can be imported and will be assigned to the thumbnail view background.

Move/Pan Thumbnail Background Image

Move/Pan Thumbnail Background Image
Alt + drag on thumbnail background to pan/move the image.

Scale Thumbnail Background Image

Alt + drag, while holding cursor down, let go of Alt key to enter image scale mode.

Assign Document Snapshot to Thumbnail Background

Ctrl + click on thumbnail view to take a snapshot of the ZBrush canvas and assign as a background to thumbnail view.

CAMVIEW

3D camera navigation and orientation display

CamView creates a small 3D figure and links it with whatever model is currently in Edit mode in the ZBrush canvas. This small figure rotates along with the model that you are actively sculpting.

CamView makes it easy to always know where your model sits within the virtual XYZ space. It also offers an interchangeable one-click navigation view which allows you to switch between orthographic view states. (Front-back-left-right-top-bottom)

There are multiple default presets available to choose from. ZBrush offers the ability to load any model to create your own custom CamView presets.

1 How CamView Works

The CamView object that rotates along with your model is comprised of 40 images which together create 360 degrees of rotation to associate with your active 3D model as it rotates in XYZ space. As the model rotates in the ZBrush canvas, this feature will display images at the nearest angle of rotation. In effect, this gives a dynamic point of reference without the extra overhead of a true 3D model that must be drawn in tandem with what you're actually sculpting.

The default XYZ controllers are displayed as red, green, and blue cones. These cones can be clicked to orient the model along each axis.

Clicking the red X axis cone once will shift to the left camera view of the model. Clicking a second time will shift to the right camera view of the model.

Clicking the green Y axis cone once will shift to the top camera view of the model. Clicking a second time will shift to the bottom camera view of the model.

Clicking the blue Z axis cone will shift to the front camera view of the model. Clicking a second time will shift to the back camera view of the model.

Note:

The default orientation of the model is based on using the front view of any model associated with the blue Z Axis line facing towards the camera.

When creating custom CamView presets, it is important to ensure that the model faces front along the blue Z axis line. Otherwise, the CamView XYZ cones will not display orthographic views correctly when clicked.

II CamView Functions

CamView On

Turns CamView On or Off.

Next

Cycles through existing CamView presets.

Size

Controls the size of CamView as it is displayed in the ZBrush canvas space.

Make CamView

Creates a custom CamView from a selected ZTool.

III Selecting & Storing CamView Defaults

1. CamView presets are found in Preferences >> CamView SubPalette.
2. Click the Next button to cycle through existing default presets.
3. Adjust the Size slider as desired for visual scale.
4. Store the selected presets as default with Preferences >> Config >> Store Config. (Ctrl/Command + Shift + I)

IV Creating a Custom CamView

1. Load a ZTL of choice onto the canvas, in 3D Edit Mode.
2. Disable visibility for any SubTools that you do not wish to be included in the custom CamView.

3. Ensure that the ZTool is oriented so that the front of the model is facing the camera along the Z axis blue line on the floor grid.

Note:

Enable the floor grid with Shift + P to verify orientation.

4. Click Preferences >> CamView >> Make CamView. ZBrush will capture a series of 40 images, storing them as an image in the Texture palette.
5. The CamView will now be set to your model of choice.
6. To store this custom CamView as a default preset, export the selected texture to this location:

C:\Program Files\Pixologic\ZBrush *Latest Version folder\ZStartup\CamView

MacHD/Applications/ZBrush *Latest Version folder/ZStartup/CamView

DRAW DRAFT ANALYSIS

Analyze draft angles within your model surfaces.

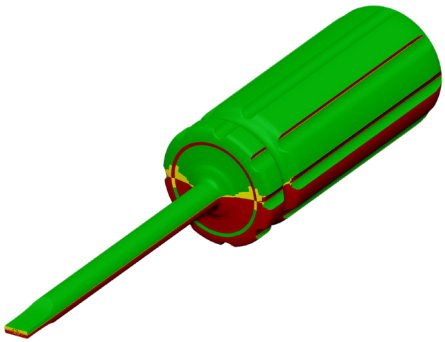
Draw Draft Analysis displays the draft angles of a model for mold making.

Based on a chosen 'pull direction,' this feature displays whether the draft angles will allow you to remove a model from the mold, and identify surfaces that may require use of ZBrush model tools to make corrections to any problematic surface angles with real time analysis updates.

I How Draw Draft Analysis Works

When Draw Draft Analysis is turned ON, ZBrush analyzes the draft angles of the visible SubTool and establishes a pull direction based on the current camera position.

You have the option to reposition the model by use of the camera and/or gizmo3D and then select a new pull direction. Selecting a pull direction will lock the draft angles into place, allowing you to then rotate the model freely so that you can look for any problematic surfaces.



An example model being viewed in Draw Draft Analysis Mode

Once the pull direction is established, the model will be viewed in 3 primary colors: Green, Red, and Yellow.

GREEN - Good along the positive vector.
YELLOW - Good along the negative vector.
RED - Bad along either vector.

II Draw Draft Analysis Functions

Draft Angle

This slider adjusts the draft angle relative to the camera view. When the Draft Angle slider has been adjusted, the SetDir button must be pressed to display draft angle changes from the pull direction.

SetDir

The set direction button updates the pull direction of the draft angle relative to the camera.

InvDir

The inverse direction button reverses the current pull direction/draft angle.

III Draw Draft Analysis in Action

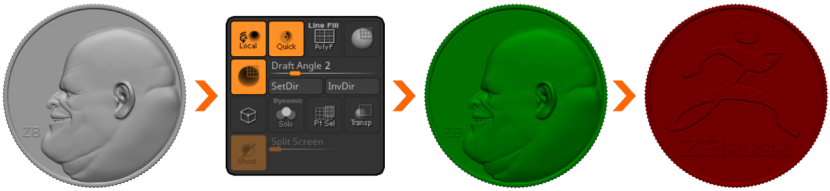
This example demonstrates a coin that will be output to generate a mold from its surface. Using Draft Analysis, follow these steps to identify any problematic angles that require correction before output.

1. Rotate and position the model in top orthographic view using LMB/RMB camera navigation. (*Press the Shift key while rotating to lock to orthographic top view of the coin.)
2. Turn on Transform >> Draw Draft Analysis. ZBrush will capture the “pull direction” based on this orthographic camera position.

Note:

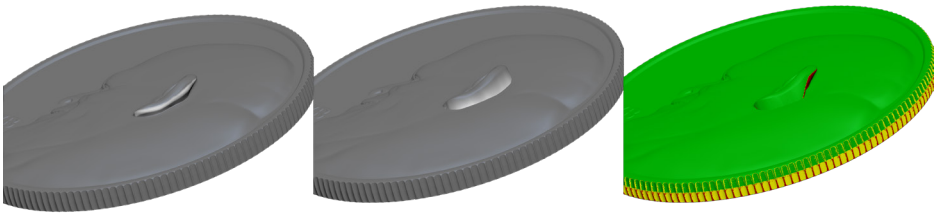
ZBrush will disable Perspective Mode if previously enabled.

From this pull direction, the coin mold separation line will exist at the center of the top and bottom halves



Step 1 & 2 examples

3. Viewing in Draw Draft Analysis mode, make corrections to any red areas on the surfaces before final output.



Step 3 example

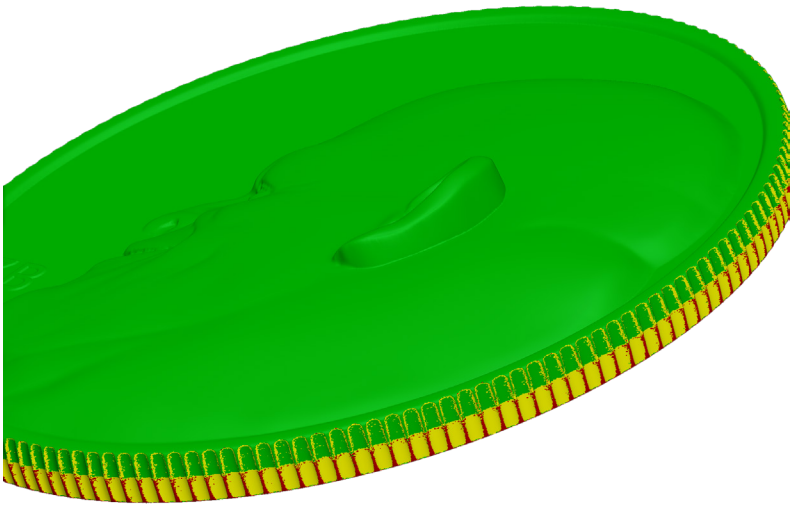
Notes:

Use sculpting brushes such as the Move brush to pull these surfaces down to an angle more suitable for removing from a mold.

Disable Draw Draft Analysis to view the mesh surface to apply a mask to areas for modification. Invert the mask, and re-enable Draw Draft Analysis to view draft angle changes

Invert the mask, and re-enable Draw Draft Analysis to view angle changes being made in real-time

4. Clear the mask and DynaMesh to weld all surfaces together.

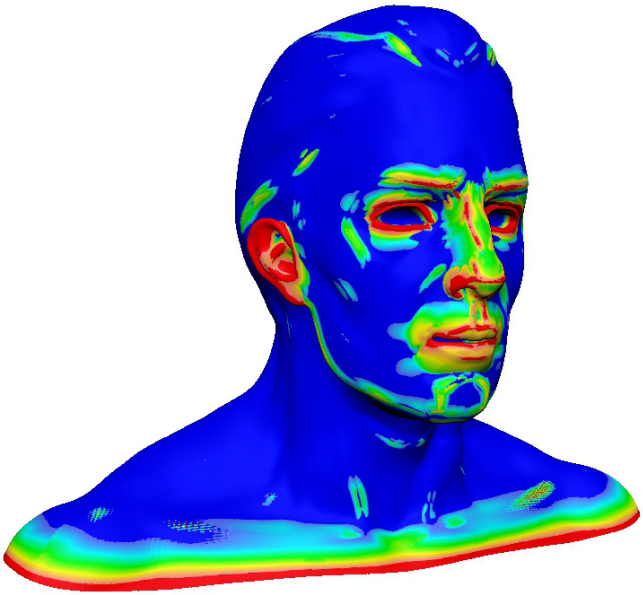


Step 4 example

POLYPAINT FROM THICKNESS

Evaluate distance between the outer and inner walls of a surface intended for 3D Printing and manufacturing

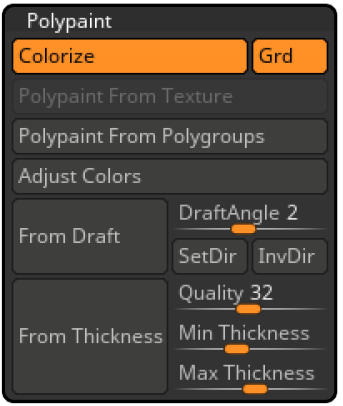
The From Thickness feature gives you the ability to evaluate the distance between the outer and inner walls of a surface intended for 3D Printing and manufacturing. This information is essential for identifying where corrections might be necessary in the surface areas on the model before final output for manufacturing.



Example of a model with PolyPaint from Thickness applied

I How PolyPaint From Thickness Works

When evaluating safe distances for meshes with wall thickness, ZBrush uses sliders and parameters to process the inner and outer shell surface distances. It then applies PolyPaint across a spectrum of 7 colors, displaying a distance range from the desired minimum to maximum distance values.



II From Thickness Functions

Note:

By default, the Min & Max Range slider values is an internal number that does not indicate any specific system of measurement. To assign a system of measurement to these units the scene will need to be pre-scaled and imported into ZBrush using the Scale Master plugin. Alternatively, you can use the Scale Master plugin to Set Scene Scale directly in ZBrush. (See the PolyPaint from Thickness in Action section, below.)

Quality Slider

Controls the number of rays cast from each polygon when evaluating the faces around it.

Setting this to higher values directly controls how accurately the PolyPaint analysis colors will be displayed on the surface.

The higher the number of rays cast, the more accurately the PolyPaint colors will represent the wall thicknesses based on the Minimum Range and Maximum Range factor settings. Of course, this increased accuracy will come at the cost of longer computation times.

Max Range Slider

Sets the desired maximum distance factor for wall thickness between the inner and outer shells.

This slider directly controls the gradients of color analysis PolyPaint (7 total) displayed on the model. Having a higher range between Max Range and Min Range will display more analysis colors for more accurate representation of surface distances between the minimum and maximum range factors.

Min Range Slider

Sets the desired minimum distance factor for wall thickness between the inner and outer shells.

Preferences > > Analysis (PolyPaint Color Spectrum)

These color patches allow you to set the 7 colors that will be used when displaying the spectrum on the mesh, based on the Minimum and Maximum Range settings.

III How Color Analysis S - C5 Slots are Calculated

1. Minimum Range x Maximum Range = Range Threshold.
2. Range Threshold / 6 = Incremental Slot Amounts (Slots S – C5).

**Slot E is reserved for any surfaces that exceed the maximum range factor.*

The colors listed below for each slot are the defaults.

S (Red) – Below the Minimum Range distance factor and therefore considered to be an unsafe thickness.

C1 (Pink) – The Minimum Range value.

C2 (Yellow) - 1 increment of distance beyond Minimum Range.

C3 (Green) - 2 increments of distance beyond Minimum Range.

C4 (Light Blue) - 3 increments of distance beyond Minimum Range.

C5 (Purple) - 4 increments of distance beyond Minimum Range.

E (Blue) - Exceeds the Maximum Range factor and therefore considered to be a safe wall distance (but only when Minimum Range is the primary factor).

Note:

When Minimum Range for wall thickness is considered the primary factor for adjustments; Red areas will need additive sculpting or adjustments in order to exceed the Minimum Range distance from the inner wall.

When Minimum and Maximum Range for wall thickness are both considered as primary factors for adjustments, Red and Blue areas will need additive or subtractive sculpting/adjustments to meet the safe distances for Minimum and Maximum Range.

IV Polypaint From Thickness in Action

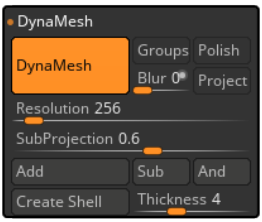
Begin by creating a mesh that has wall thickness and pre scale a scene with Scale Master Plugin to complete the full procedure for using PolyPaint from Thickness.

1. Open Lightbox\Projects\DemoAnimeHead.ZPR.
2. Select IMM Primitives Brush to begin creating a shell for the DemoAnimeHead.

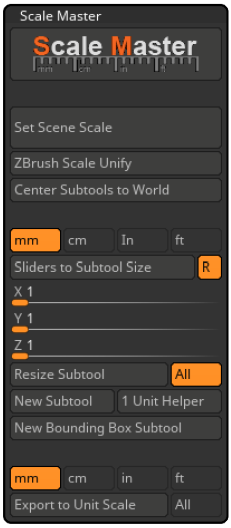
3. Select Insert Sphere from the IMM brush menu, and disable symmetry.
4. Alt+Drag onto the mesh head to apply a subtractive action.

5. Turn on Gizmo 3D, then completely move the inserted sphere outside of the head mesh.

6. Ctrl + drag outside the mesh once to clear the mask.
7. Set the Geometry >> DynaMesh >> Thickness value, then click Create Shell.



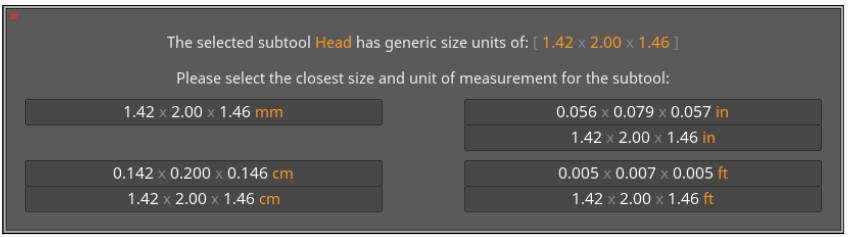
8. Set Scene Scale with Scale Master Plugin by clicking ZPlugin >> Scale Master >> Set Scene Scale.



Note:

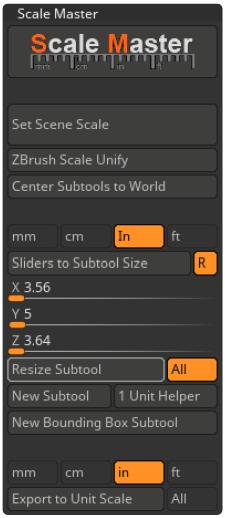
For this example, we will configure the head to be 127mm tall (5 in).

9. Choose 1.42 x 2.00 x 1.46 in.



10. Scale Master >> Set Y axis value to 5. Click enter.

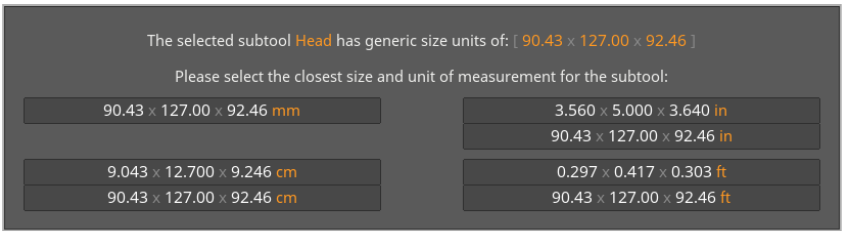
11. Click the Resize Subtool button. This will now update the scale of the model.



Note:

Skip steps 12 & 13 if you do not wish to update the scene factors to Millimeters.

12. Click Set Scene Scale again.
13. Choose 90.43 x 127 x 92.46 mm



Note:

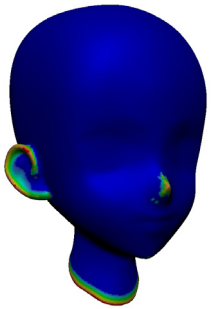
Applying steps 12 & 13 will allow you to associate the PolyPaint from Thickness slider values to desired units of measurement.

14. In the Tool >> PolyPaint sub-palette, set Min Range to 1 and Max Range to 5.

Note:

These values will be calculated in inches or millimeters if you've applied steps 12 & 13.

15. Click From Thickness.



From Thickness results

16. When examining the mesh at this point, all red surfaces will need to be modified as they are below the minimum wall distance and therefore too thin for safe printing.

PolyPaint Analysis Colors at current scale factors:

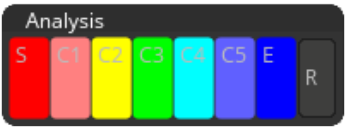
S (Red) – below 1 mm wall distance

C1 (Pink) – 1 mm wall distance

C2 (Yellow) – 2 mm wall distance

C3 (Green) – 3 mm wall distance

C4 (Light Blue) – 4 mm wall distance

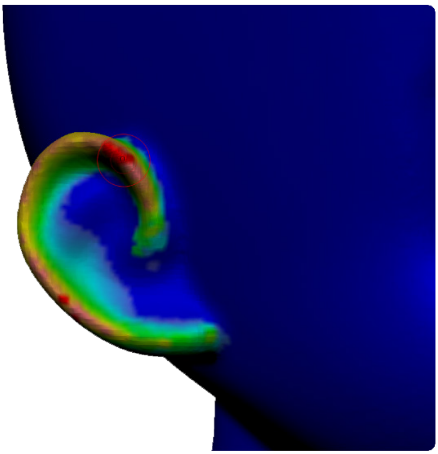


C5 (Purple) – 5 mm wall distance

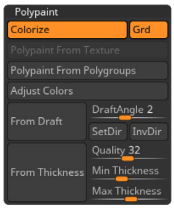
E (Blue) - Exceeds 5 mm wall distance

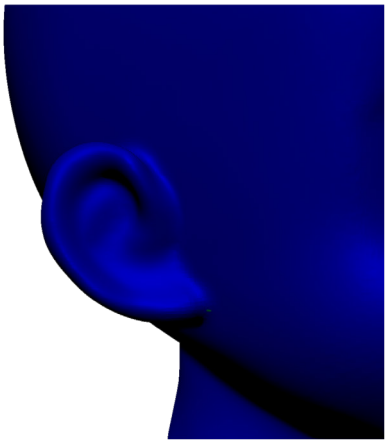
Note:

Try using the Inflate or ClayBuildup Brushes to adjust the thickness. Be sure to turn on the Backface Masking option to protect the inner wall surfaces.



17. Click ‘From Thickness’ again to re-calculate the changes made to outer wall thickness.



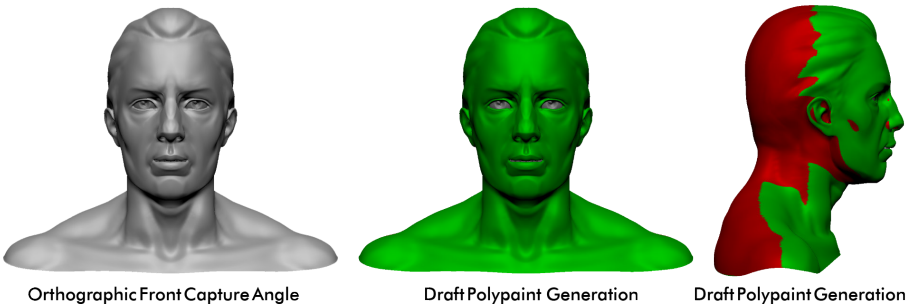


POLYPAINT FROM DRAFT

PolyPaint from Draft generates color based on the draft angle captured by the camera

PolyPaint from Draft generates color based on the draft angle captured by the camera. This feature utilizes the Draw Draft Analysis system together with the ZBrush camera. It generates the draft angles displayed from this Draw Draft Analysis as red and green PolyPaint.

For more information on Draw Draft Analysis, search for it at docs.pixologic.com and in the ZBrush Documentation Guide PDF found within the ZBrush installation folder.



Example of a model with PolyPaint From Draft applied

I How PolyPaint From Draft Works

This button captures the draft angle of a mesh based on its position as viewed by the camera. Once the model has been positioned so that the desired pull direction faces the camera, click Tool >> Masking >> MaskByDraft to generate the PolyPaint.

PolyPaint from Draft colors the model with pure red (R 255 G 0 B 0) and pure green (R 0 G 255 B 0).

Once the draft angle is captured and PolyPaint is applied, this will store and lock the pull direction of the draft. The SetDirection can be changed by clicking Tool >> Masking >> SetDir. Once a new pull direction is established, this requires clicking the PolyPaint from Draft button to update.

The Draft angle can be adjusted in the Tool >> Masking sub-palette settings. After PolyPaint From Draft has been clicked, making adjustments to the draft angle slider requires clicking PolyPaint From Draft again to update.

II PolyPaint From Draft Functions

Draft Angle

This slider adjusts the draft angle relative to the camera view before capturing mask.

SetDir

This button updates the pull direction of the draft angle relative to the camera. After using this function, the PolyPaint from Draft button must be clicked again to update the PolyPaint.

InvDir

Reverses the current pull direction of the draft angle. After using this function, the PolyPaint from Draft button must be clicked again to update the PolyPaint.

MASK BY DRAFT

Generate a mask based on draft angles

MaskByDraft uses the Draw Draft Analysis features to generate a mask based on the draft angle captured by the camera.

Generating masks from draft angles offers the ability to extract negative molds for prototyping, as well as providing other modeling and sculpting benefits.

For more information on Draw Draft Analysis, search for it at docs.pixologic.com or in the ZBrush Documentation Guide PDF found within the ZBrush installation folder.

Orthographic Front Capture Angle

Draft Mask Generation

Draft Mask Generation

I How Draw Draft Masking Works

MaskByDraft captures the draft angle of a mesh based on its position as viewed by the camera. Once the model is oriented so that the desired pull direction is facing the camera, click Tool >> Masking >> MaskByDraft to capture a mask. The Draft angle can be adjusted in the Masking palette settings.

Once MaskByDraft has been applied it will store the SetDirection of the draft. The SetDirection can be reset by clicking Tool >> Masking >> SetDir

II Mask By Draft Functions

Draft Angle

This slider adjusts the draft angle relative to the camera view before capturing the mask.

SetDir

This button updates the pull direction of the draft angle relative to the camera. After using this function the MaskByDraft button must be pressed again to update the mask.

InvDir

This button reverses the current pull direction/draft angle. After using this function the MaskByDraft button must be pressed again to update the mask.

ADJUST COLORS

Adjust colors for PolyPaint and texture maps with sliders

Adjust Colors allows you to make color adjustments based on hue, intensity, contrast, gamma, and tint of a model's PolyPaint assigned to the vertex points themselves, as well as any existing texture Map from UVs.

Adjust Colors gives you the ability to isolate areas for color correction by use of eight Mask by Color channels, giving you the flexibility to make color corrections to specific selections while protecting others.

Whether working with a texture map or PolyPaint, Adjust Color makes color correction easy without the need to resort to an outside application.

Example of a model colors adjusted with Adjust Color sliders

I How Adjust Colors With PolyPaint Works

For models with PolyPaint, clicking Adjust Colors opens a preview window that provides the tools to apply a total of eight mask selection channels. These allow you to isolate areas on the model for color adjustments. Alternatively, you can make global PolyPaint adjustments by use of the color adjustment sliders.

Inside the window, clicking and dragging on the adjustment sliders will make instant changes to any unmasked sections of PolyPaint.

When there is a need to apply PolyPaint adjustments to specific areas on a model, the eight mask selection channels allow you to select specific colors within the model's PolyPaint for isolation before making adjustments with the sliders.

Mask by color selection channels work with a click and drag system. Dragging from a mask channel's color patch to a PolyPaint color within the preview of the model will isolate the paint with a mask, allowing for color adjustments to these specific selections. Mask channels can also be combined to protect or show multiple colors for adjustments.

Adjust Colors mask channels use a Tolerance slider that controls the how closely a point's color must match the selected value in order to be included in the masking effect.

Note:

Tool >> PolyPaint >> Adjust Colors
Texture >> Adjust Colors

Deleting the last SubTool within a folder will automatically delete the (now empty) folder.

If no PolyPaint exists or no PolyPaint is visible by use of PolyPaint >> Colorize, the Adjust Colors button is grayed out and unavailable for use.

II How Adjust Colors With UV Texture Works

In order for Adjust Color to work on a texture, that texture must first be located in the Texture palette. This means that when working on a model that has a texture assigned in Tool >> Texture Map, it must first be copied to the Texture palette by cloning it using Tool >> Texture Map >> Clone. Once the texture map resides in the Texture palette it must then be selected prior to using the Adjust Colors feature.

Clicking Adjust Colors opens a preview window which gives you the ability to make global adjustments to the texture's colors via sliders. You can also isolate specific colors for adjustment via a total of eight mask selection channels.

Inside the Adjust Colors window, clicking and dragging on the adjustment sliders (ex-

plained below) will make changes to any unmasked sections of the texture map's colors.

When there is a need to apply color adjustments to specific areas within a texture, the eight mask selection channels allow you to select colors from the texture map. These selections will isolate the selected colors before making adjustments with the sliders.

Mask by color selection channels work with a click and drag system. Dragging from a mask channel's color patch to a color in the texture map will isolate that color with a mask, restricting color adjustments to these specific selections. Mask channels can be combined to protect or show multiple colors for adjustments.

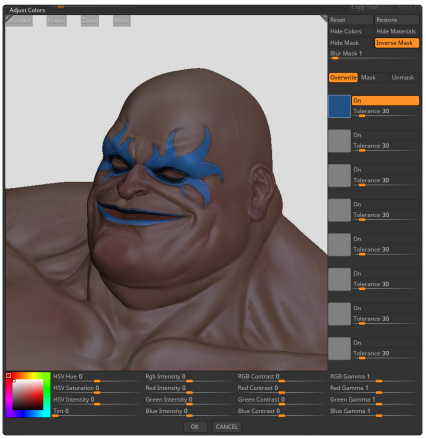
Note:

If no texture map is selected, the Adjust Colors button is unavailable for selection.

If you wish to undo changes adjustments that you have just made, click OK to accept the changes, then Undo (Ctrl+Z) to revert them. Now click Adjust Colors again to start over.

III Adjust Colors in Action

1. Click Lightbox >> Projects >> Demo Projects >> Load Kotelnikoff_Earthquake.ZPR.
2. Select the Earthquake_82_optim body SubTool.
3. Click Tool >> PolyPaint >> Adjust Colors.
4. Click and drag from the first mask color selection box to the blue PolyPaint on the arm to apply a mask.



5. Adjust the HSV Hue slider to change the color, or any other slider adjustments as desired.
6. Click OK to finalize the change.

IV Adjust Colors Functions

Hide Colors

Hides all PolyPaint on the model and displays only material properties.

Hide Materials

Hides material properties on the model and displays only unshaded PolyPaint.

Tolerance Slider

Controls the tolerance factor of the color selected in the mask channel. Increasing or decreasing tolerance will specify how closely a color must match that shown in the color patch in order to be included in the selection.

Hide Mask

Hides the mask selections chosen from the color selection channels.

Inverse Mask

Reverses the mask selections chosen from the color selection channels.

Blur Mask

Blurs the mask selections chosen from the color selection channels. The maximum blur setting is 25.

Overwrite

When this option is enabled, choosing a new color selection will overwrite any previously existing masks.

Mask

When this option is enabled, new masks generated by your color selection will be combined with (added to) any existing masks.

Unmask

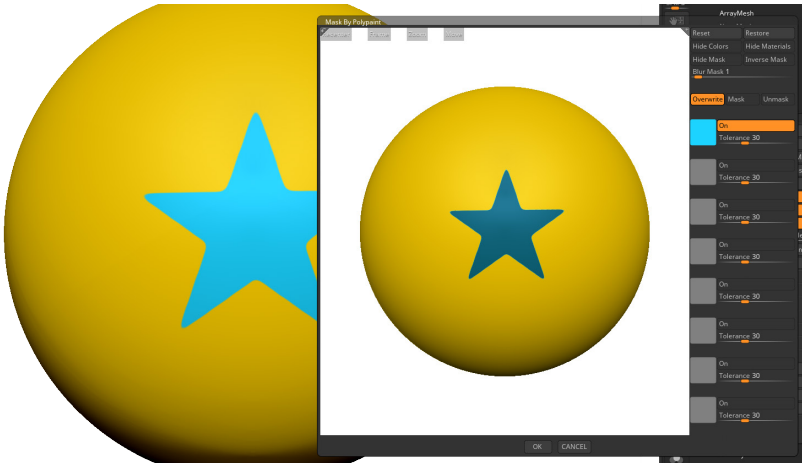
When this option is enabled while a previously existing mask is visible, any areas chosen by color selection channels will be subtracted from the mask.

MASK BY POLYPAINT

Apply mask selections to PolyPaint colors

Mask by PolyPaint offers the ability to isolate areas for color correction by use of eight Mask by Color channels.

Having the ability to mask select PolyPaint give you flexibility to protect areas based on PolyPaint colors, make 3D extractions from masks, as well as many other sculpting and modeling techniques.



I How Mask By PolyPaint Works

Clicking the button opens a window giving you the ability to select colors using eight mask selection channels.

Inside the preview window, navigation around the 3D model uses default ZBrush canvas navigation. It also offers navigation buttons for re-center, frame, zoom and move.

The mask channels work with a click and drag system. Dragging from a mask channel color patch to a PolyPaint color within the preview will isolate the paint with a mask, allowing for color adjustment to these specific selections. Mask channels can be combined to protect or show multiple colors for adjustments.

Each mask channel also uses a tolerance slider that controls the bleed amount of the mask relative to the selected color.

Note:

If the current SubTool does not have visible PolyPaint, the Mask By PolyPaint button will be vunavailable for selection.

II Mask By PolyPaint Functions

The first three functions below have to do with creating folders or the information displayed on a folder. The remaining functions are specific to the SubTool Folder Actions menu. They refer to the specific actions found when clicking on any folder's Gear icon.

Hide Colors

Hides all PolyPaint on the model and displays only material properties.

Hide Materials

Hides material properties on the model and displays only unshaded PolyPaint color.

Hide Mask

Hides the mask selections generated by the color selection channels.

Inverse Mask

Inverts the mask selections generated by the color selection channels.

Blur Mask

Blurs the mask selections generated from the color selection channels. The maximum value is 25.

Overwrite

When this option is enabled, choosing color selections will overwrite any previously existing masks.

Mask

When this option is enabled, any previously existing masks will be retained and any new masking generated by choosing color selections will be added to the existing mask.

Unmask

When this option is enabled and a previously existing mask is visible, any areas chosen by color selection channels will be unmasked.

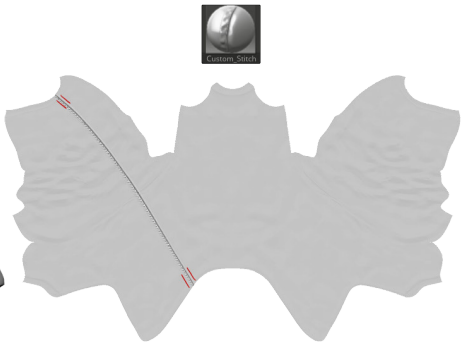
SCULPT & PAINT MORPH UV

Sculpt & PolyPaint to Morphed UVs

Morph UV is a feature that morphs a 3D mesh into its flattened (2D) UV shell. While morphed you have the option to sculpt and paint with ZAdd, ZSub, and MRGB information. Once finished, turning Morph UV off will morph the model back into its 3D state with all details applied.

Morphing a 3D mesh into a 2D object offers many benefits in situations that are difficult or impossible in the 3D state. For example, you have the ability to apply longer brush strokes across tight corners or overlapping geometry.

3D Mesh



Morph UV Sculpt & Paint

I How Sculpting & Painting to Morph UV Works

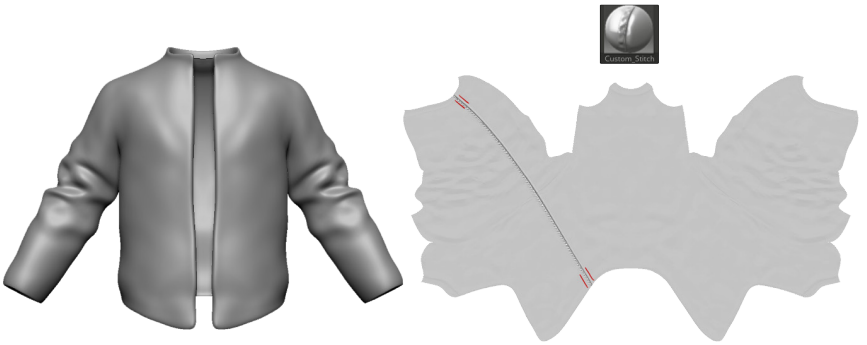
Once a 3D mesh has UVs, clicking the Morph UV button will flatten the mesh down to a 2D state based on the mapping. In this state the flattened surface can be sculpted or painted just like you would the 3D mesh. The mode supports ZAdd, ZSub, and MRGB information. You can use sculpting brushes, Surface Noise, SpotLight, and more.

Nearly all brush types will function on a mesh in Morph UV state. However, if a mesh has subdivisions when Morph UV is turned on any brush type that cannot function on a subdivided surface is excluded from use.

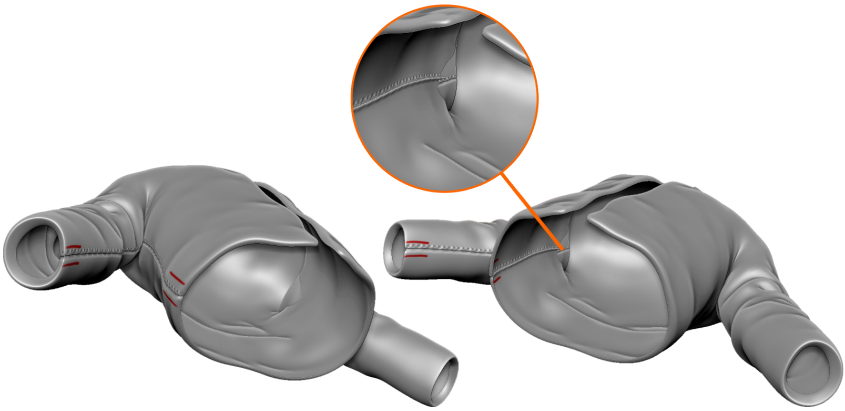
Note:

In the Morph UV flatten state, the topology of the surface must remain consistent with the 3D mesh. This means that all ZBrush functionality that affects the vertex order or mesh topology cannot be used.

Smoothing Brushes do not work in the Morph UV flattened state.



This example shows a 3D jacket on the left, with a single UV shell. Once Morph UV was activated to flatten the mesh as shown on the right, a Stitch brush was used across the underarm of the jacket. Since that region has overlapping geometry, it would have been difficult to make the same stroke in the model's 3D state.



When Morph UV is turned off to revert the model to its 3D state, the brush stroke is applied. As you can see, one continuous stroke was therefore able to travel from the waist to the cuff, successfully allowing the stroke to travel through the overlapping geometry

II Morph UV Functions

Morph UV

Flattens the 3D mesh into its 2D UV shell state. If the mesh doesn't have UVs, this option is disabled.

Bump Slider

Controls the visual bump of the sculpted surface of the 3D mesh, as displayed on the 2D flattened UV shells when clicking Morph UV.

Note:

Increasing this slider value increases the time taken to Morph UV from a 3D mesh into the flattened 2D shell.

DECO CURVE BRUSHES

3D DecoCurve Brushes with Alpha

DecoCurve brushes simulate the effects from the classic 2.5D Deco tool, but as a true 3D sculpting & painting brush. These brushes use Stroke >> Curve Mode functionality to simulate the natural application of an alpha projection onto the surface.

I DecoCurve Brushes & How They Work

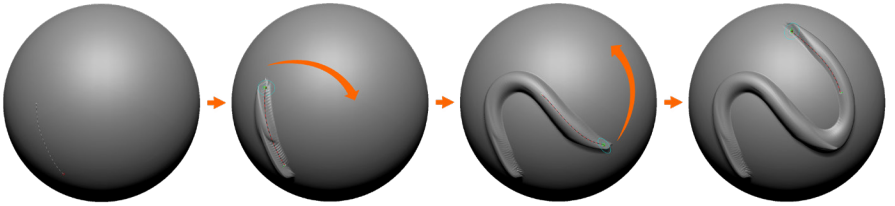
ZBrush offers two types of DecoCurve brushes: DecoCurveDots and DecoCurve-DragDots. Each of these brushes uses a different Stroke type to affect how the alpha is projected onto the surface.

1. DecoCurve Dots

This brush type uses the CurveStep, Bend, and Snap options found in Stroke >> Curve >> Curve Mode. It also utilizes the Dots stroke type. It functions by projecting the selected alpha along the curve path.

This brush has the arrow alpha selected by default. Since this brush uses the Dots stroke, the alpha will be repeatedly drawn along the curve path. The result will be a softer projection with less definition of the alpha's original shape. In effect, this brush uses the alpha to create a nearly seamless repeated alpha texture.

While dragging the curve start and end points, the alpha will leave a trail of sculpted details along its path. You can continue dragging the curve along a new path for further additions or subtractions.



As you continue to drag the curve line for sculpting, you have the option to change the selected alpha for different projection effects.

Note:

When using alphas for projection, DecoCurveDots will only project the alpha within the start and end points of the curve. Dragging the curve will continue to use the curve line distance for further refinement.

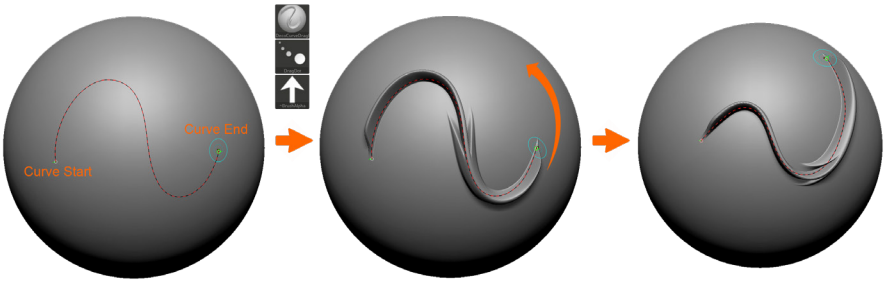
Adjustments made to Stroke >> Lazy Mouse settings effect how this brush type operates.

2. DecoCurveDragDots

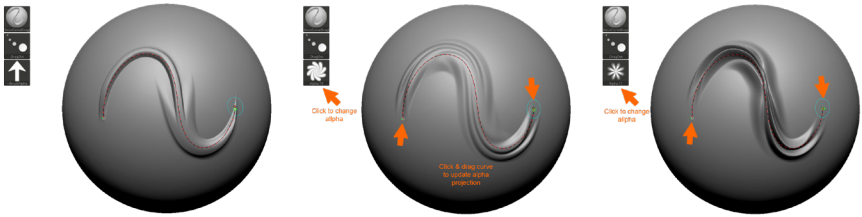
This brush type uses the CurveStep, Bend, and Snap options found in the Stroke >> Curve >> Curve Mode sub-palette. It also utilizes the DragDots stroke type. It functions by projecting the alpha along a curve line path.

By default, this brush has the arrow alpha selected. After drawing a curve line on the surface of the model, clicking and dragging the ends of the curve line will begin the projection of a single instance of the alpha along the curve line while also moving it along the mesh surface. This brush curve can be modified further with adjustments to the Stroke >> Curve Mode options.

As this this brush utilizes the DragDots stroke type, the single instance of the alpha shape is drawn as the alpha image sits from bottom to top, along the curve line path from start to finish



While a single curve line is drawn with an alpha projected along the curve, you have the option to change the selected alpha. Dragging the curve will update the projection of the alpha on the surface for a different effect.



Note:

Once the alpha has been changed, you must click and drag the curve start and end points to see a visible change in the alpha projection.

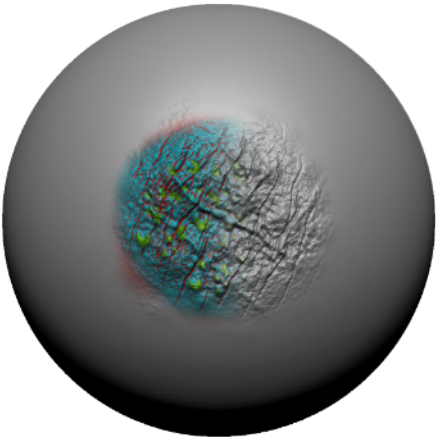
Adjustments made to the Stroke >> Lazy Mouse settings effect how this brush operates

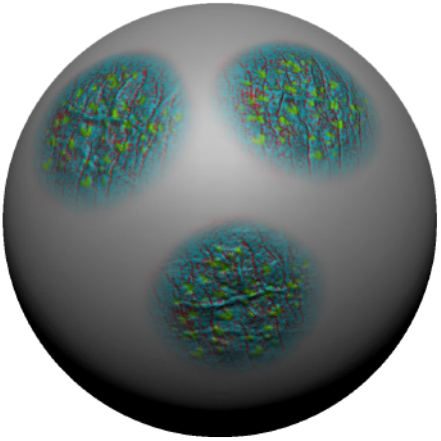
FROM BRUSH

Captures alphas and textures from sculpted and painted details

From Brush evaluates sculpted and painted surface details, and captures those details as an alpha and texture.

This system offers a highly customizable way to sculpt your own details to repeat on other areas of the model, build alpha brush libraries and more.





I How From Brush Works

From Brush looks at the ZAdd and ZSub sculpture details on a surface and provides a capture tool to draw over the details, converting them into an alpha.

The From Brush button is found in the Alpha palette. The Hotkey for From Brush is the G key. Activating From Brush mode will display a blue circle instead of your usual red cursor, indicating that ZBrush is ready to capture an alpha from a sculpted surface.

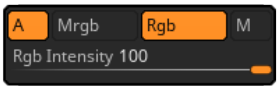
The From Brush blue circle capture tool utilizes the selected Stroke type for capture.

When using From Brush, the generated alpha will be assigned to whichever sculpting brush is selected at the time. It can also be assigned to any sculpting brush, and customizations can be made to the brush for refinements to how the alpha will be used for sculpting on the surface.

If PolyPaint exists on the model, turning on RGB channel allows From Brush to generate an alpha and a texture from the captured surface.

Note:

To use a captured alpha and texture for application with a brush, you must turn off the A button, found next to the MRGB button.



The From Brush feature is utilized by default in the XTractor brushes found in the Brush palette. For more information on utilizing From Brush in action, search for XTractor Brushes in docs.pixologic.com or the Documentation Guide PDF found in the ZBrush installation folder.

II Strokes functions with From Brush

Note:

For all stroke types, the draw size as indicated by the blue circle must fully encompass the sculpted detail before you begin your stroke in order to ensure successful alpha capture

Freehand Stroke

This stroke captures the sculpted details by dragging your cursor across the sculpted surface.

DragRect Stroke

This stroke captures the sculpted details by dragging your cursor from the center of the sculpted details outward to fully encompass the desired area for alpha conversion.

Dots Stroke

This stroke captures the sculpted details by dragging your cursor across the sculpted surface for alpha conversion.

DragDot Stroke

This stroke captures the sculpted details by clicking and slightly dragging your cursor to the desired center of the sculpted surface for alpha conversion.

DragDot Stroke

This stroke captures the sculpted details by clicking and slightly dragging your cursor to the desired center of the sculpted surface for alpha conversion.

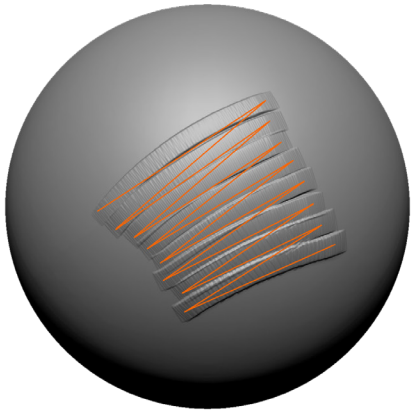
Spray Strokes

These strokes capture the sculpted details by dragging your cursor across the sculpted surface for alpha conversion.

HATCH BRUSHES

Sculpt back and forth in a single stroke for precision

Hatch brushes offer the ability to apply sculpting strokes in a back and forth motion without picking up your cursor, but only add or subtracting in the forward direction of the stroke. This functionality makes it easy to apply sculpting strokes in a sketch-like fashion. It also reduces adding or subtracting too quickly from a surface, helping give brush stroke precision.



I Hatch Brushes & How They Work

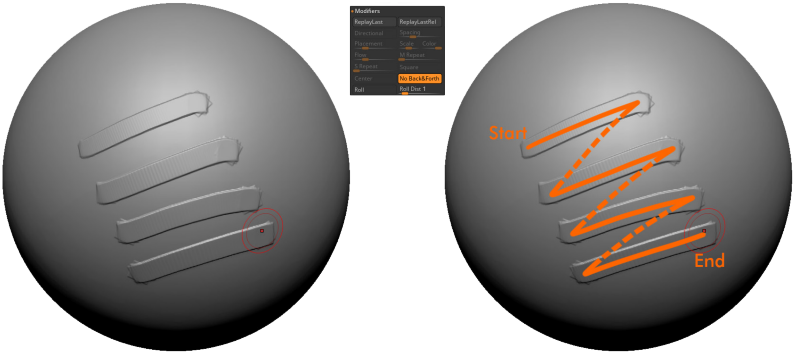
All Hatch brushes use the Stroke >> Modifiers >> No Back&Forth mode. To learn more about No Back&Forth mode, search for it at docs.pixologic.com or in the ZBrush Documentation Guide PDF found in the root ZBrush folder.

There two of these brush types > Hatch Brush, and HatchBackTrack Brush.

1. Hatch Brush

The start of your brush stroke establishes its direction. The initial direction of movement is the forward progression.

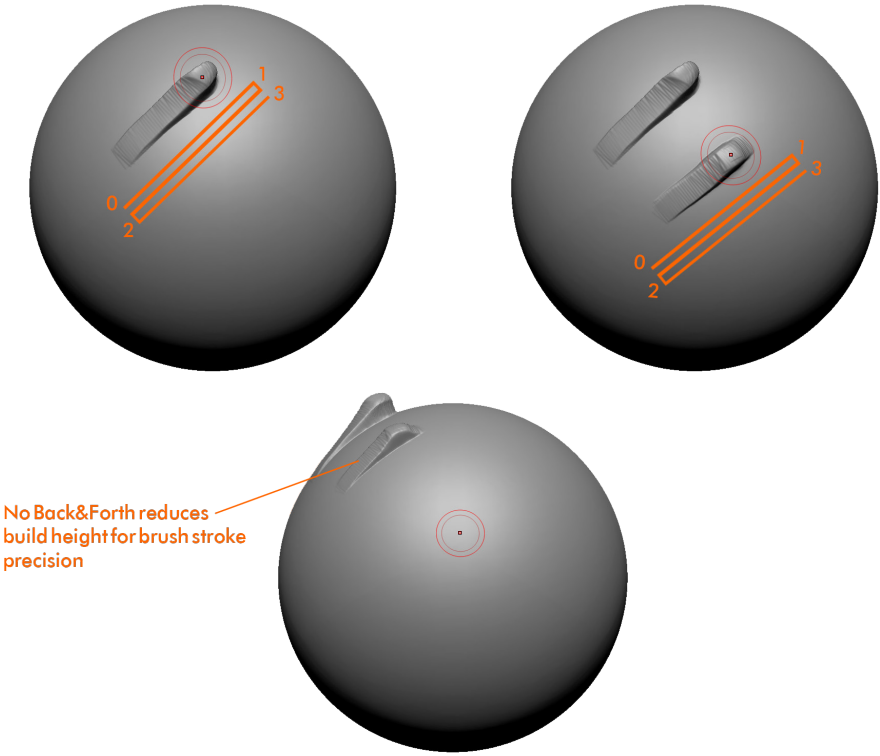
While applying strokes in a back and forth motion without picking up your cursor, the stroke can only add or subtract in the forward direction established by the first part of the stroke.



2. HatchBackTrack Brush

This brush utilizes No Back&Forth mode along with Stroke >> Lazy Mouse >> Backtrack. This creates a ramp effect in the sculpted details.

The start of your brush stroke establishes its direction. The initial direction of movement is the forward progression. While moving the cursor in a back and forth motion without picking it up, the stroke can only add or subtract in the forward progress direction established at the beginning of the stroke, while still applying the Backtrack ramp effect

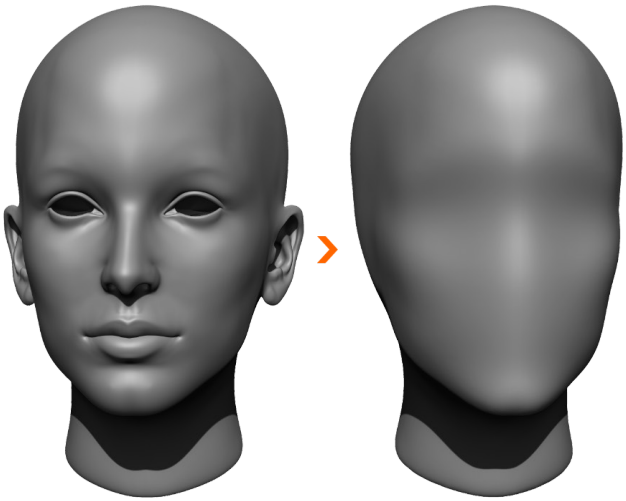


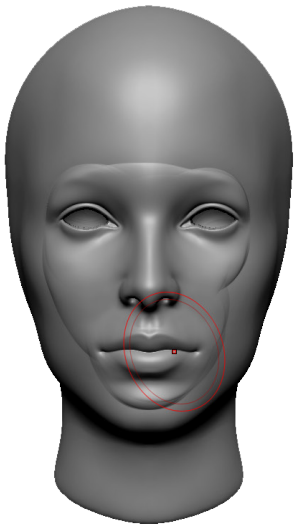
HISTORY RECALL BRUSH

Project sculpted and painted details from one model to another by hand

The HistoryRecall brush gives you the ability to capture the depth position of a model's sculpted details by use of the Undo History timeline, and then project those details onto a completely different model by use of brush strokes.

HistoryRecall does not require the models to have the same topology or vertex count. It serves as a way to re-project sculpture details between models, as well as to sculpturally project details by hand rather than via the SubTool >> Project options





I How HistoryRecall Works

HistoryRecall allows you to take one model's position in 3D space and store it in the Undo History slider. Once the position is stored, you can take the HistoryRecall brush and apply that stored state to another mesh, projecting the details onto the other model.

If both models do not exist in the same 3D space, the projection will be flawed. This feature requires both model surfaces to exist close together in 3D space for a successful projection.

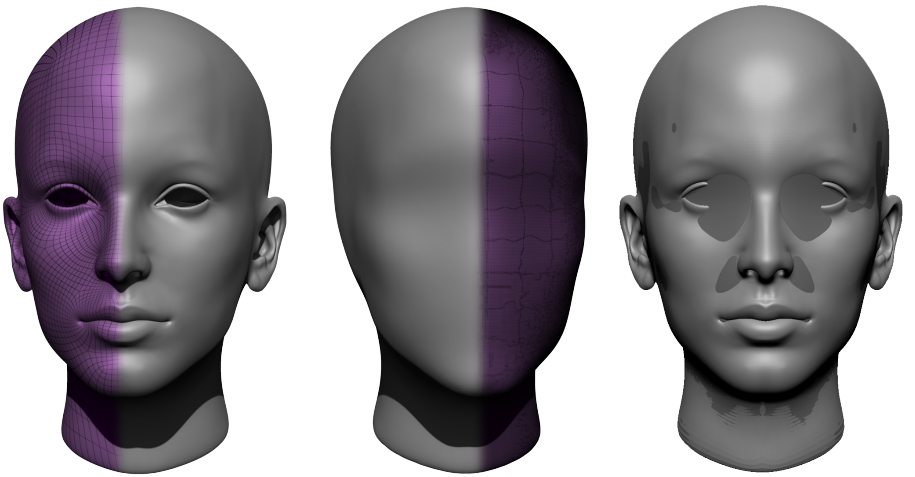
II History Recall Brush in Action

1. In this example we started with a sculpted model face and the same model duplicated, dynameshed, and all facial form details smoothed out.

Note:

The two models have different topology.

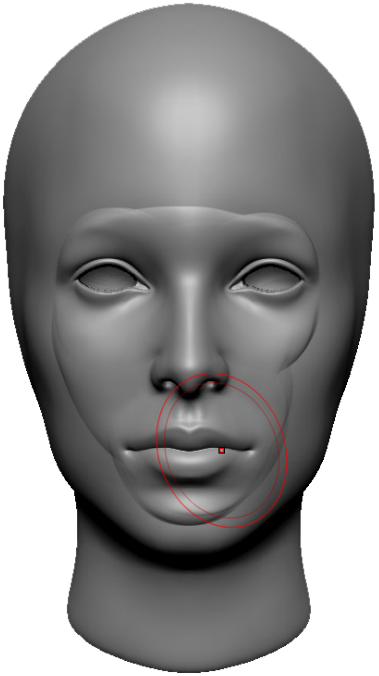
As they are both similar forms and exist in the same space, the HistoryRecall projection will be able to capture and apply details from the original model onto the new mode.

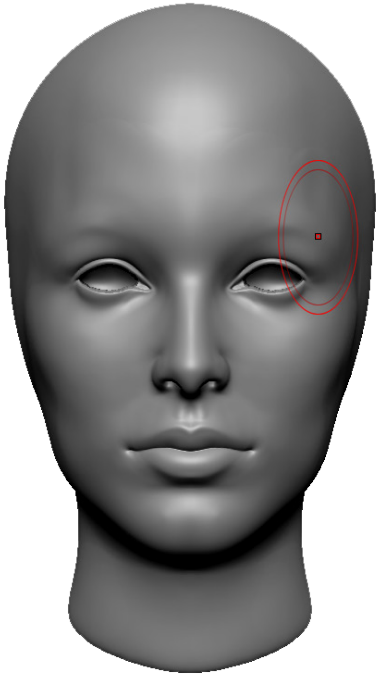


2. With the sculpted face model, select the HistoryRecall brush

3. In the Undo History timeline >> ctrl + click on the most recent orange hash mark for the model

4. Select the new model and begin to sculpt on the surface.



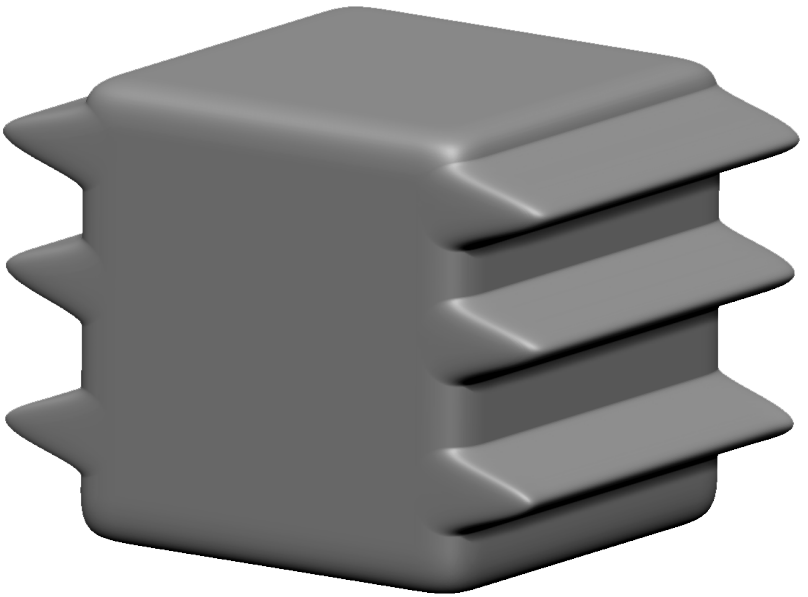


MOVE INFINITE DEPTH BRUSH

Move surfaces of the model based on its depth orientation relative to the camera

The MoveInfiniteDepth brush allows you to move the surface of the model based on its orientation relative to the camera. Regardless of the model's local coordinates, this brush evaluates the camera's view to establish the depth direction for your brush stroke without the need for other tools such as Masking, or Gizmo3D.

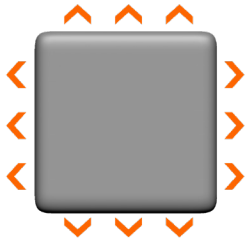
With other brushes, the cursor is represented by a circle but in fact has a spherical area of effect. With MoveInfiniteDepth the cursor is instead effectively a cylinder that starts at the cursor circle and extends away from the camera to infinity.*



1 MoveInfiniteDepth Brush in Action

The MoveInfiniteDepth brush utilizes a brush modifier called Infinite Depth. Infinite Depth can be found in Brush >> Depth. For more information on Infinite Depth and how it works, search in docs.pixologic.com.

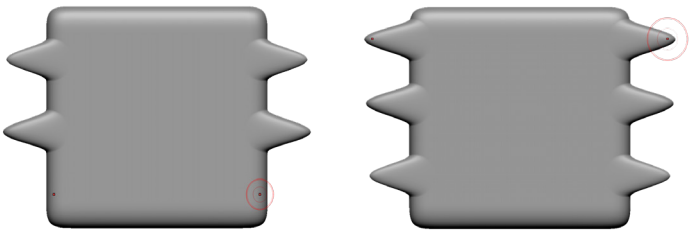
1. Adjust the camera position of the model in the desired direction to allow adjustments along the depth axis of the camera.



**This example shows a cube aligned in orthographic front camera view for adjustments.*

2. Select Brush >> MoveInfiniteDepth.

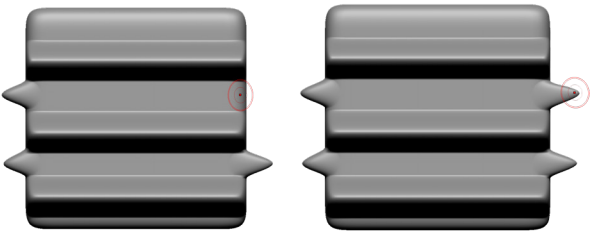
3. With a mid-range Draw Size, click and drag from the edge of the cube sides and pull away from the cube center. All points behind the cursor's circle will be moved, no matter how far away they are.



4. Rotate the camera around the model to view the MoveInfiniteDepth changes on the surface.

5. Continue rotating the model to other angles for brush applications. In this example, making a rotation adjustment to view the side orthographic view.

6. Continue rotating the model to other angles for brush applications. In this example, making a rotation adjustment to view the side orthographic view.

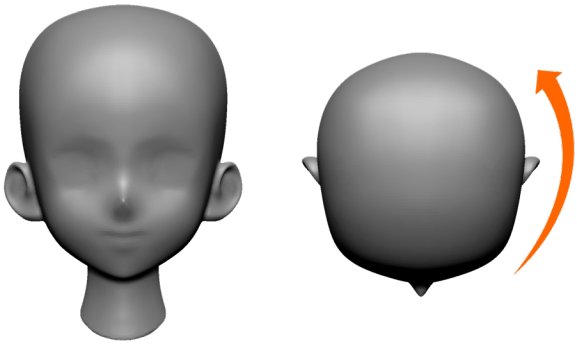


Note:

This brush reacts based on the consistency of the surface curvature along the depth direction. When applying this brush to surfaces that have curvature, the brush will react differently depending on how many vertex points are caught within its area of influence. In other words, the curvature of the surface affects the results.

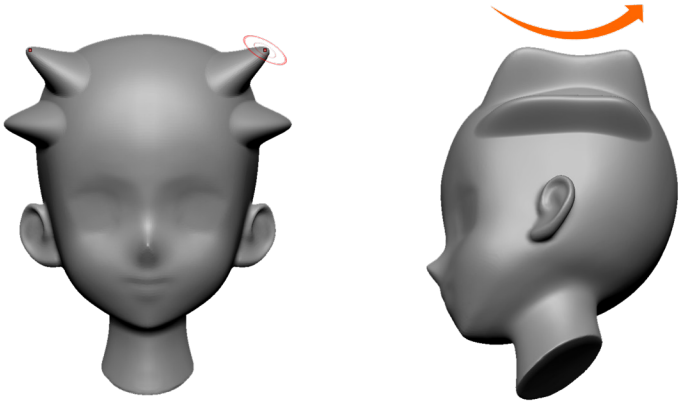
II MoveInfiniteDepth Brush with Surface Curvature

This brush reacts based on the consistency of the surface curvature along the depth direction. When applying this brush to surfaces that have curvature, the brush will react differently depending on how many vertex points are caught within its area of influence. In other words, the curvature of the surface affects the results.



Top of the head has curvature when viewing from top orthographic view.

Top of the head has curvature when viewing from top orthographic view.

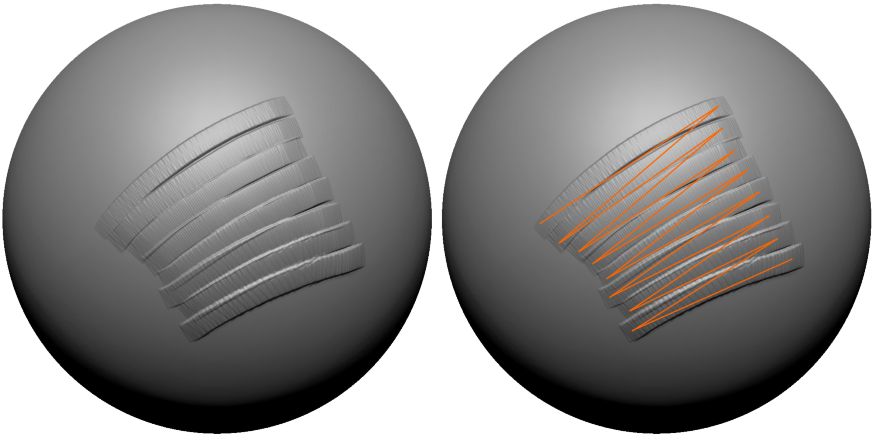


The brush stroke reacts to the surface curvature when applied to the depth of the front orthographic view and so is different when compared to the cube example.

NO BACK & FORTH MODE

Will only add or subtract while moving in the stroke's forward direction.

This mode allows you to apply sculpting strokes in a back and forth motion without picking up your cursor. No matter how you move the cursor, the brush will only add or subtract while moving in the stroke's forward direction. This offers the ability to reduce the amount of detail buildup or overlap that can occur while sculpting in a sketch-like fashion and improves stroke precision.



I How No Back & Forth Mode Works

This sculpting mode is automatically enabled for the HatchBrush and HatchBacktrack Brush. However, it can be applied to any 3D sculpting brush.

The initial movement of your brush stroke establishes the forward direction for No Back&Forth mode. Once this forward direction has been established, reversing your cursor direction will not influence the mesh at all. ZBrush will not allow the sculpting brush to apply any additive or subtractive details.

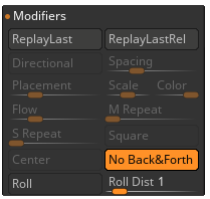
II No Back & Forth in Action

1. In LightBox select DynaMesh_Sphere_128.ZPR from the Projects tab.
2. Select the ClayTubes brush.

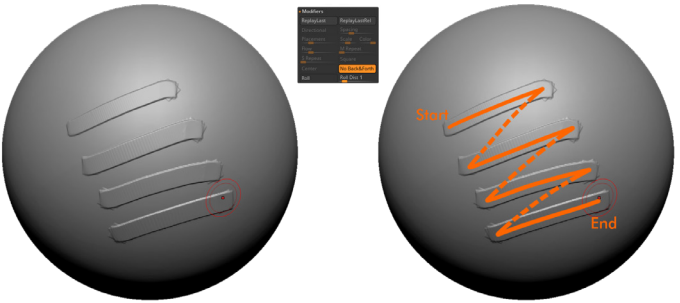
3. Select the ClayTubes brush.

The back and forth motion of the sculpting stroke creates a connected overlapping surface while applying as a single stroke path.

4. Press Ctrl+Z to undo the brush stroke.
5. Click Stroke >> Modifiers >> No Back&Forth.

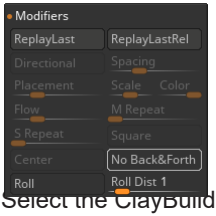


6. Click Stroke >> Modifiers >> No Back&Forth.



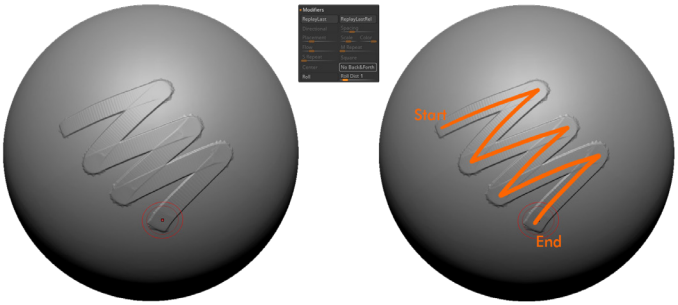
With No Back&Forth enabled the back and forth motion of the sculpting stroke can only add or subtract in the forward progress direction established by the stroke's initial movement. In the image on the right, the hash mark lines depict the stroke traveling in the reverse direction of where the stroke began. As a result, those portions of the stroke cannot apply sculpture details.

7. Press Ctrl + Z to undo the previous stroke.
8. Click Stroke >> Modifiers >> No Back&Forth to turn it off again.



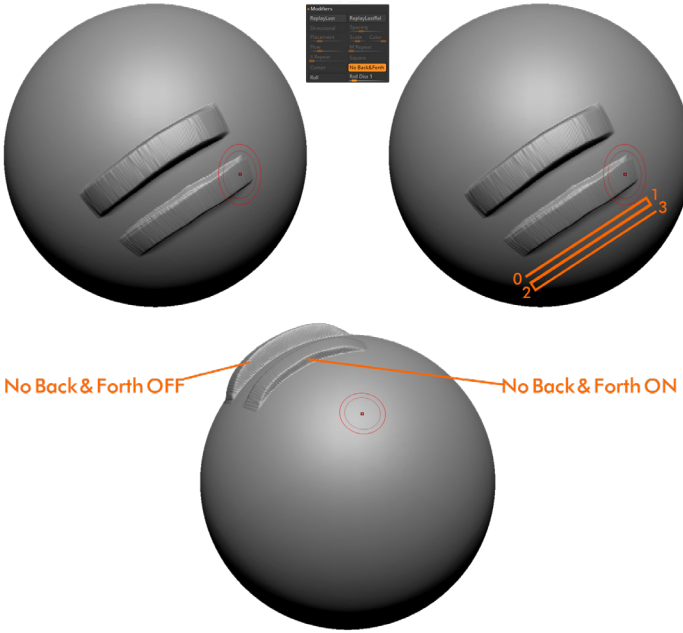
9. Select the ClayBuildup brush.

10. Apply a 3 step brush stroke in back and forth motion across the same start to finish path without picking up the cursor.



The ClayBuildup brush uses Brush >> Samples >> Buildup mode, which adds or subtracts sculpture detail as you repeatedly drag a cursor line over the same path, creating a natural buildup effect as you move back and forth.

11. Turn on Stroke >> Modifiers >> No Back&Forth.
12. Next to the existing stroke, apply the same 3 step brush stroke in a back and forth motion across the same start-to-finish path, without picking up the cursor.



The stroke applied with No Back&Forth will have less buildup above the sphere surface because the No Back&Forth only allows sculpting additions in the stroke's forward direction. (Between 0-1, and 2-3.)

PROJECT UNDO HISTORY

Go back in time to set a restore point and project this information back into the model

ZBrush remembers the sculpted and painted details within the Undo History timeline. Project Undo History gives you the ability to go back in time to set a restore point and project this information back into the model. With this feature you can choose any point in the timeline to project back onto the model.

While making design changes for a project, this feature makes it incredibly easy to restore previous iterations of your design without the need to resculpt or repaint.

I How Project Undo History Works

After building up the Undo History timeline for a model, to project former details back into the present point in time you must first set a time projection point. This is done by moving the timeline slider to a point that contains the details that you wish to restore. You then set the point by ctrl+clicking on that timeline point.

Once a source projection timeline point has been stored, the timeline must be set to the desired destination point. Do this by clicking anywhere along the timeline or clicking and dragging the orange cursor hash mark to its destination.

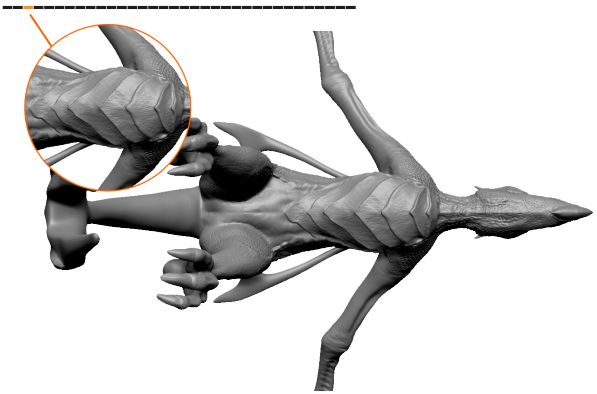
When the projection destination has been set, click SubTool >> Project >> Project Undo History to process and apply the projection history point.

Note:

Projection uses distance parameters to allow for a projection to complete successfully. If the selected history point has vertices which are situated too far in space from the destination this may result in projection failures. Using the Project Distance settings has a direct effect on the final outcome depending on the severity of the changes made to the model in the timeline.

II Project Undo History in Action

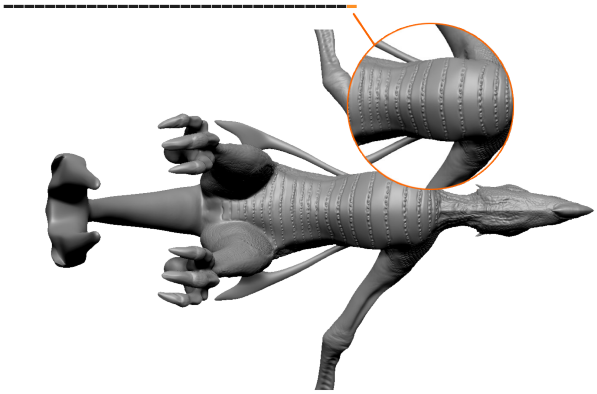
1. This example shows a DynaMesh model with undo history, and design changes made across the history timeline.



Note:

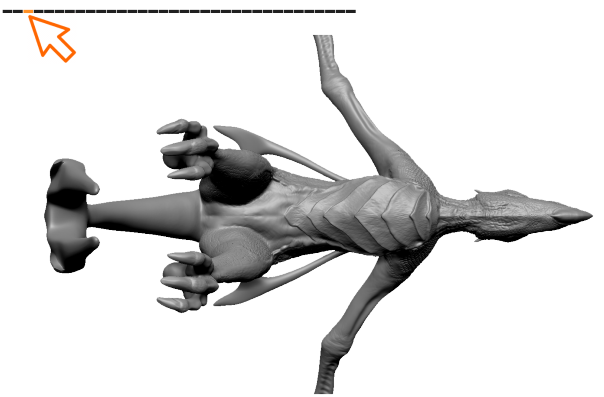
The timeline point highlighted in the image demonstrates details applied to a specific area on the model in previous history actions.

2. This example shows the present point in the undo history timeline where details have been changed to same highlighted area of the model.



3. To Project History from the details highlighted in image 1, do the following:

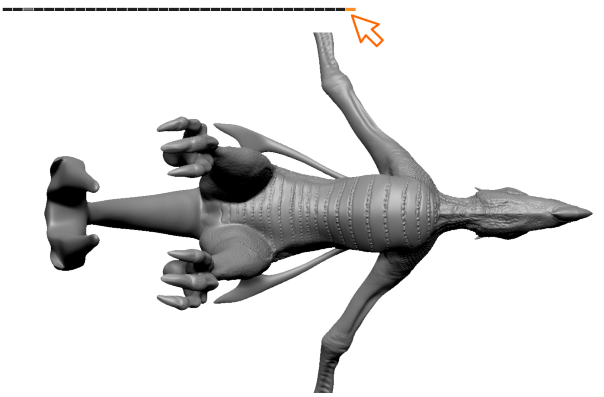
Click the orange timeline mark, click the desired undo history timeline point, then Ctrl+click on that timeline point to store it for projection.



Note:

Dragging the timeline mark allows for more precise undo history point selection in time.

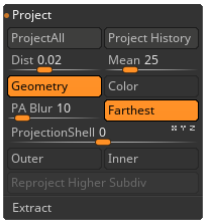
4. Drag the orange timeline mark back to the most recent undo history point where changes exist. This will be the version of the model that receives the projected details.



Note:

ZBrush will leave a gray hash mark in the stored history position with Ctrl + click.

5. Click SubTool >> Project >> Project History.

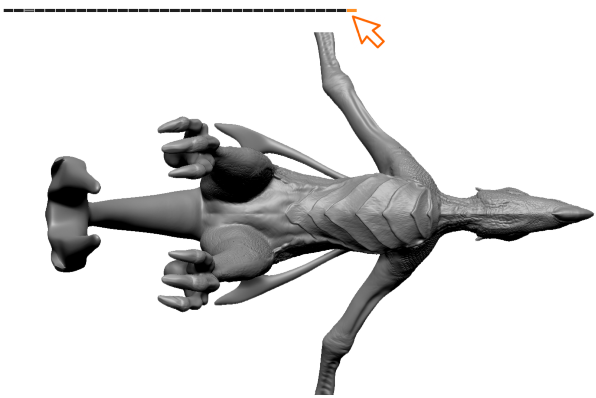


Note:

Geometry and Color channels can be enabled separately for this projection process.

Enable Subtool >> Project >> Farthest mode to ensure all possible details can be projected if there are large distance changes made between history projection points.

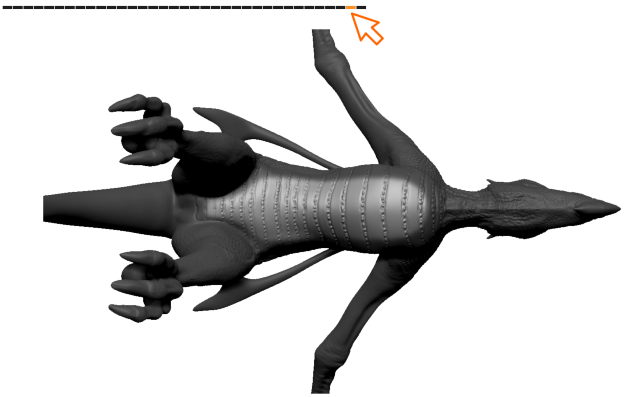
6. At the most recent timeline point, the projection is now applied.



Note:

Project Undo History also has the ability to protect areas from history projection by use of masks. Move to step 7 to follow along.

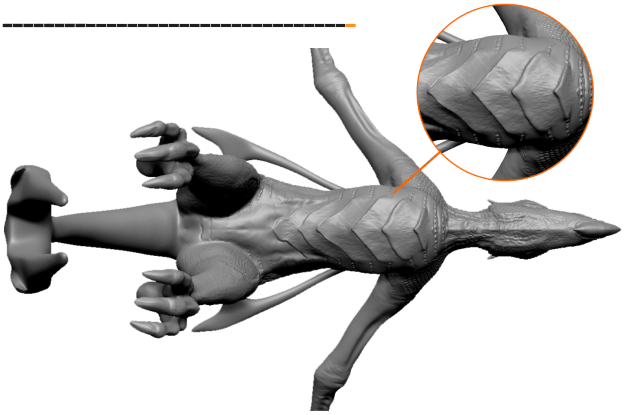
7. Click Undo (ctrl+z) to remove the projection that you just completed. Now draw a mask over the surface for projection and then invert the mask.



Note:

Clicking Undo will move the timeline point 1 step back, no longer making this the most recent point in the undo timeline. This point will be overwritten in step 8.

8. Click Undo (ctrl+z) to remove the projection that you just completed. Now draw a mask over the surface for projection and then invert the mask.



Note:

The image highlights the surface where the mask protects part of the mesh from projection, leaving sculpted detail patterns from two different points in undo history.

History projections can be applied using this same workflow for both sculpted and PolyPaint details.

III Project History/Project All Functions

Geometry

This switch tells Project History to process geometry projections from different points in the undo history timeline.

Color

This switch tells Project History to process vertex color (PolyPaint) projections from different points in the undo history timeline.

Farthest

This switch enables projections from the source mesh to the farthest point of the target.

XTRACTOR BRUSHES

Capture surface details to create custom sculpting brushes

XTractor brushes give you the ability to capture surface details into an alpha to be re-used for further sculpting with XTractor or other brushes. Each XTractor brush type uses a different method to capture the sculpture details, as well as using the same method to reapply the captured surface details for quick and easy use.

XTractor Brushes give you the ability to leverage time sculpting details you intend to reapply in other areas of the model. They make it easy to create your own custom Alphas from sculpting for more efficient sculpting.

I XTractor Brush Types & How They Work

The creation of SubTools folder can be done in multiple ways, depending on your workflow. You only need to keep in mind that a folder cannot be empty; it always needs to have a minimum of one SubTool.

Folders can't be nested within other folders. This means that all new folders will be created at the highest level within the SubTools list.

Note:

Deleting the last SubTool within a folder will automatically delete the (now empty) folder.

1. From Brush

From Brush is an option found in the Alpha Palette. All XTractor brushes utilize the From Brush function to capture sculpted details by use of the G key on your keyboard.

Note:

For more information on the From Brush feature, search for it in docs.pixologic.com, and the Documentation Guide PDF found in the ZBrush installation folders.

2. XTractor Brush

This brush type captures sculpted details by pressing the G key and drawing a path along the detailed surface you intend to capture into an alpha. Once those details are captured into an alpha you can reapply the details in other areas along a stroke path in the same fashion they were captured in.

Note:

This Brush mode uses the Stroke>> Modifiers >> Roll function to reapply sculpture details along a stroke path. Changing the stroke type for capture or reapplication will change how the brush functions.

3. XTractor DragDot Brush

This brush type captures sculpted details by pressing the G key and clicking once on any sculpted surface to capture that area as an alpha. Once the alpha has been captured, the brush will reapply the alpha with by clicking on the surface and dragging the detail into position.

Note:

This brush mode uses the DragDot Stroke type to capture the alpha and reapply its sculptural detail. Changing the stroke type for capture or reapplication will change how the brush functions.

4. XTractor DragRect Brush

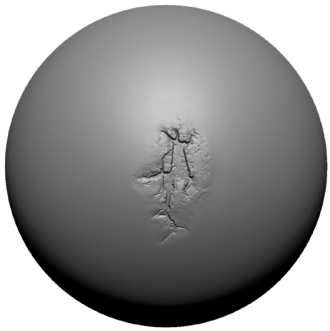
This brush type captures sculpted details by pressing the G key and clicking+dragging over a sculpted surface to capture a region as an alpha. Once the alpha has been captured, the brush will reapply the details in the same way, by clicking+dragging.

Note:

This brush mode uses the DragRect Stroke type to capture the alpha and reapply its sculptural detail. Changing the stroke type for capture or reapplication will change how the brush functions.

II XTractor Brush in Action

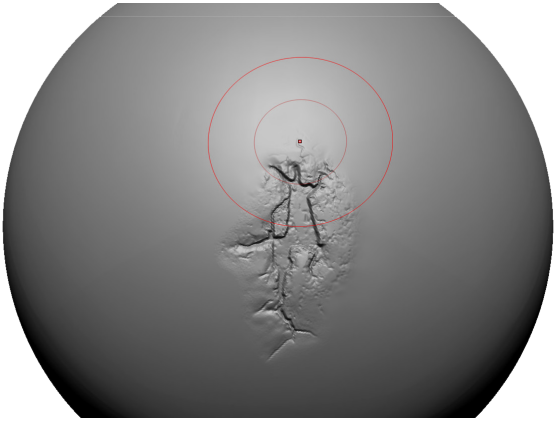
1. Load Lightbox > Projects > Polysphere.ZPR.
2. Subdivide Polysphere to 1.5 mil active points or higher for detail sculpting.
3. Sculpt a surface with details.



Note:

Deleting the last SubTool within a folder will automatically delete the (now empty) folder.

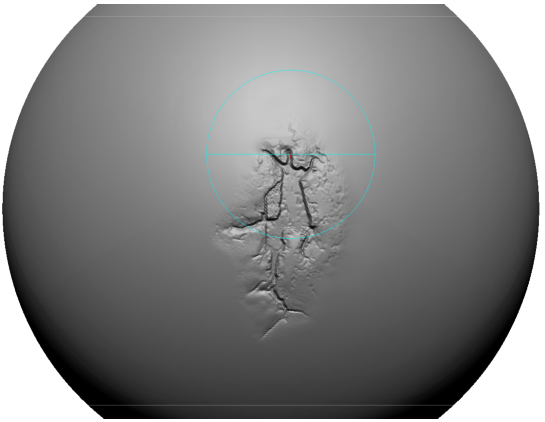
4. Select the XTractor Brush from the Brush palette.
5. Make your cursor size large enough to cover the circumference width of the sculpture details.



Note:

If the size of the draw stroke does not fully encompass the sculpture details before beginning the capture process, the alpha will not capture correctly.

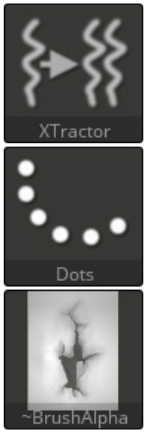
6. Press the G key to activate the From Brush action. The cursor circle will turn blue. Click+drag from the starting point of the details across to end of the details.

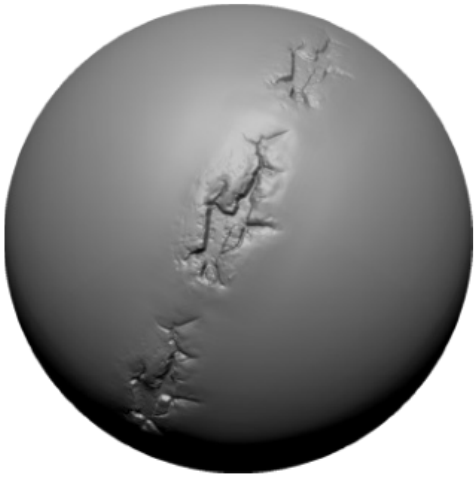


Note:

The center line of the blue circle should start beyond the beginning of the capture stroke, and complete beyond the end of the capture stroke.

7. The captured alpha will now be placed in the Alpha palette. You can now apply the details elsewhere on the model by dragging your cursor across the surface wherever you wish the XTractor brush to lay the details down.



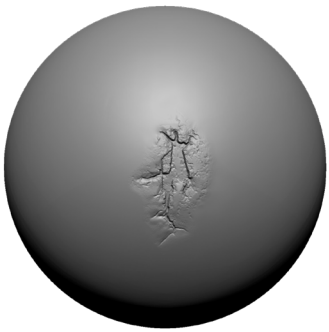


Note:

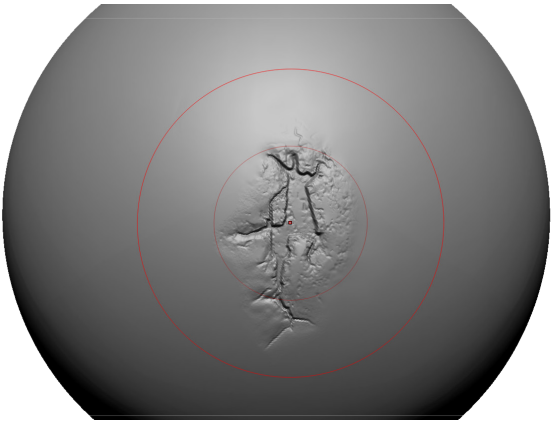
This brush mode uses the Stroke >> Modifiers >> Roll function to reapply sculpture details along a stroke path. Changing the stroke type for capture or reapplication will change how the brush functions.

III XTractorDot Brush in Action

1. Load Lightbox > Projects > Polysphere.ZPR.
2. Subdivide Polysphere to 1.5 mil active points or higher for detail sculpting.
3. Sculpt a surface with details.



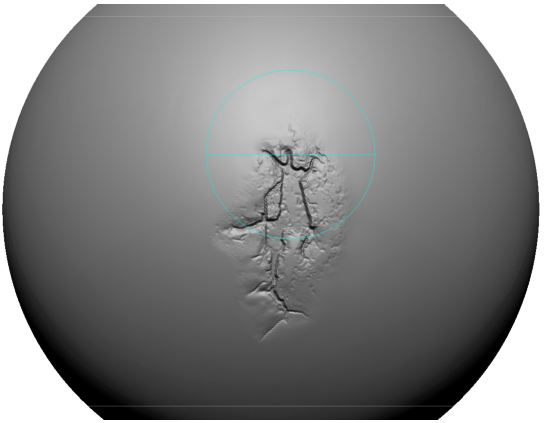
4. Select the XTractorDot Brush from the Brush palette.
5. Make your cursor size large enough to cover the circumference of the sculpture details.



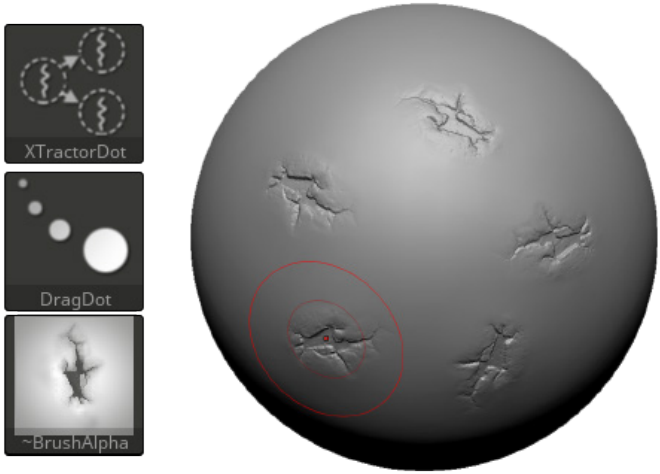
Note:

If the size of the draw stroke does not fully encompass the sculpture details before beginning the capture process, the alpha will not capture correctly.

6. Press the G key to activate the From Brush mode. Your cursor will change to a blue circle. Click and slightly drag to a point near the center of the details, keeping the blue cursor circumference around the sculpture details.



7. The captured alpha will now be placed in the Alpha palette. Apply these details elsewhere on the model by clicking anywhere on the surface and dragging to the exact place and orientation that you desire with XTractorDot Brush.

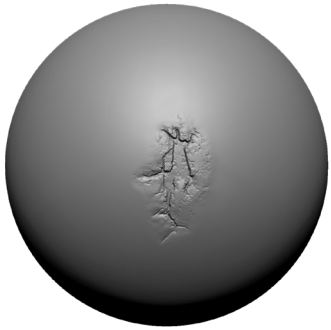


Note:

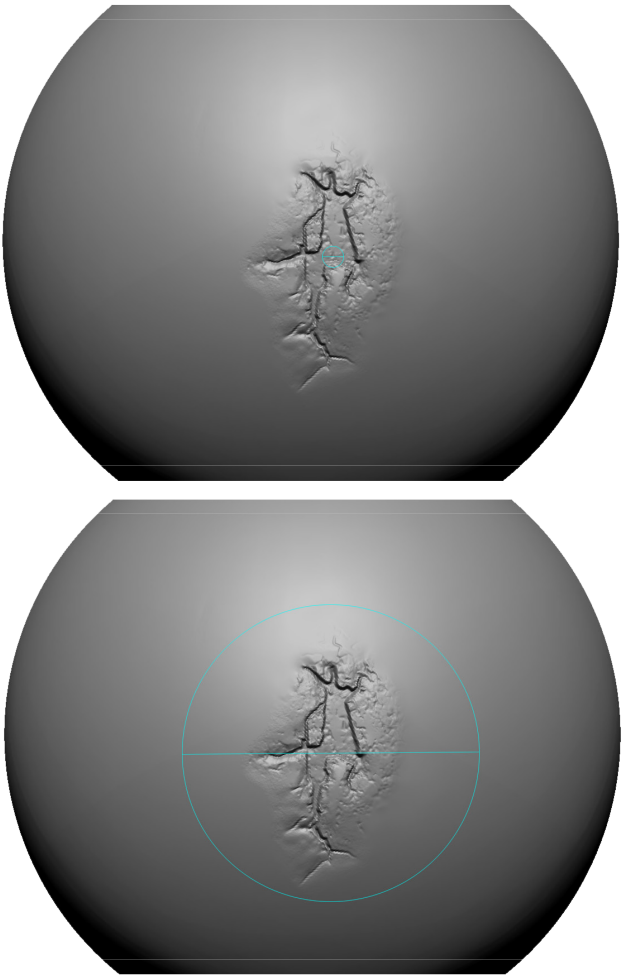
This brush mode uses the DragDots Stroke type to capture the alpha and to reapply its sculptural detail. Changing the stroke type for capture or reapplication will change how the brush functions.

IV XTractorDragRect Brush in Action

1. Load Lightbox > Projects > Polysphere.ZPR.
2. Subdivide Polysphere to 1.5 mil active points or higher for detail sculpting.
3. Sculpt a surface with details.



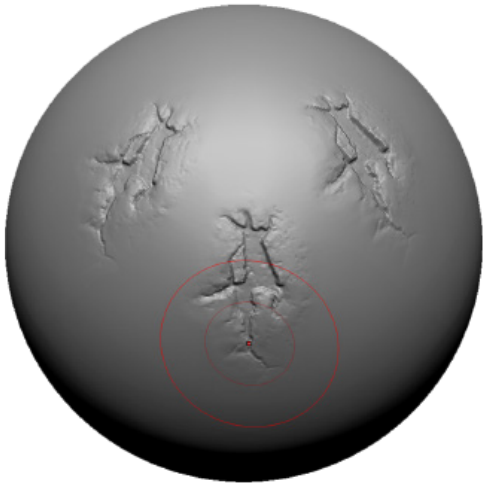
4. Select the XTractorDragRect brush from the Brush palette.
5. Press the G key to activate the From Brush mode. Your cursor will become a blue circle. Click and drag from the center point of the details until the blue cursor completely encompasses the sculpture details.



Note:

If the blue circle DragRect stroke does not fully encompass the sculpture details, the alpha will not capture correctly.

6. The captured alpha will now be placed in the Alpha palette. Reapply the details elsewhere on the model by clicking and dragging with DragRect.



FADE OPACITY

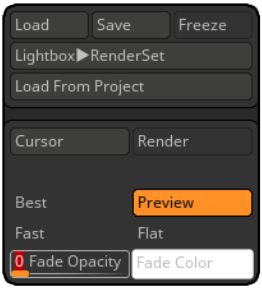
Adjust the strength of color displayed on the model by use of the Fade Opacity slider.

Whether you have PolyPaint applied to a surface or UVs with a texture map, you can change the visibility of those colors by use of the Fade Opacity slider.

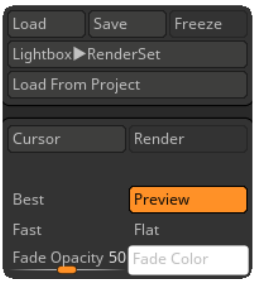
This slider offers the ability to adjust color opacity to focus on the sculptural aspects of the model.

I FADE OPACITY IN ACTION

1. This example shows a model with polypaint, where Render >> Fade Opacity is set to 0.



2. Click Render >> Fade Opacity >> Set to 50% fade



II Fade opacity Functions

Fade Opacity Slider

Adjust color visibility on the model from 0 - 100%

Fade Color

Sets the color that you wish the colors model colors to fade into.

Note:

The Fade Color selector operates independently from the Primary and Secondary colors in the Color Palette.

OTHER ADDITIONS

Find in this section all the various other additions and changes made in ZBrush 2020.

Edit >> DeleteOlderUH

Delete Older Undo History offers the ability to choose a point in the UndoHistory timeline, and remove all history actions existing before the selected point.

When the selected point in the history is not the last step, this feature will delete everything prior to the selected point while retaining all actions that follow.

Export Options & Additional Formats

ZBrush offers the ability to export all format types through Tool >> Export. Using this export path allows for exporting files from one location.

Click Tool >> Export >> Type for all available export format types.

For all formats that require additional formatting, a secondary dialog window will open upon export which offers all possible format settings for final output.

Formats Added to Tool >> Export

- STL *.stl
- VRML *.wrl
- FBX *.fbx

Additional Formats Added to Tool >> Export
- OBJ Extended *.obj
- PLY *.ply

Note:

Tool >> Export does not offer the ability to write script export functionality

Infinite Depth

Infinite Depth allows you to sculpt across the entire axis of a s surface of the model based on its depth orientation relative to the camera, or infinite X,Y, and Z axis.

InfiniteDepth button can be found in Brush >> Depth.
This mode can be assigned to any sculpting brush, and is a setting unique to each brush.

By selecting any of the X,Y, or Z axis options, these settings will affect the sculptural details to infinity, on those axis.

If XYZ axis options are disabled, this mode will default to using the depth orientation relative to the camera as it views the model.

Note:

Infinite Depth mode is utilized in the MoveInfiniteDepth brush. For more information on this mode and to see it being utilized in action, search for MoveInfiniteDepth Brush in docs.pixologic.com.