

Pixologic™
makers of ZBRUSH®



GETTING STARTED

with **ZBRUSH**

An Official Pixologic Document

Conceptualize. Create. Complete.



The Standard

Imagery Courtesy of 20th Century Fox

Welcome

Welcome to the **Getting Started with ZBrush** guide and many thanks for your interest in ZBrush!

This step by step guide will walk you through the creative world of ZBrush from the basics to sculpting, painting and on to finishing off your art with ZBrush's powerful render engine. The **Getting Started with ZBrush** guide is a live interactive document to use from your computer, containing links to various videos, tutorials, and locations of the numerous Pixologic web pages. Be sure to keep your eyes open and minds focused to follow these links and enhance your ZBrush experience.

ZBrush is a software application that was **Created by Artists for Artists**. Since its inception in 1999 the award-winning ZBrush has established itself as the innovative **Standard** of the 2D/2.5D digital painting and 3D digital modeling worlds. ZBrush will enable you as an artist to **Create, Innovate, Inspire** and open up exciting new digital worlds for yourself that you might never have believed were possible. By applying its intuitive features and powerful sculpting and illustration capabilities, ZBrush has enabled digital hobbyists and professional artists **From Over 10 Industries** to shatter the barriers of creativity. Leave the usual technical restraints behind so that you can focus solely on your creation!

ZBrush is widely acknowledged and celebrated for its ground-breaking use in the conceptualization and realization of characters, environmental effects and visual effects in many blockbuster films and video games including **Avatar (20th Century Fox)**, **Lord of the Rings (Weta Digital)**, **Pirates of the Caribbean (I.L.M.)**, **Gears of War (Epic Games)**, **Assassins Creed (Digic Pictures)** and **Uncharted (Naughty Dog)**, just to name a few.

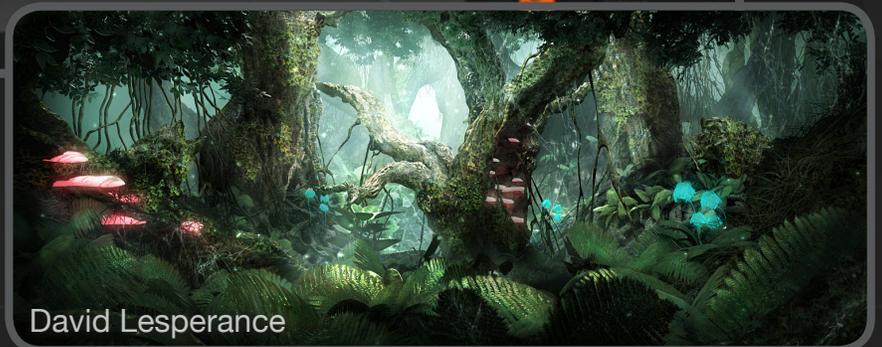
This document will take you through various videos, articles, tutorials, and images to inspire your journey. Most importantly, our goal is for you to understand how to best use ZBrush in your own artistic way. If you master the basic philosophies and techniques behind ZBrush, you will be able to apply those methods to create anything you can imagine.



Frederik Storm



Caio Cesar



David Lesperance

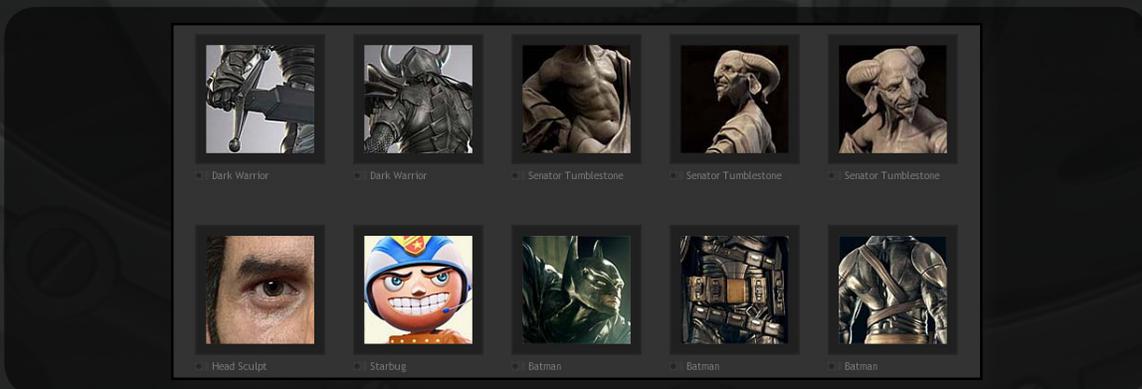
See what our ZBrush Community is doing today....



Be inspired at ZBrush Central



Turntable Gallery



Artist Gallery

Resources You Will Use Most

Official learning and training content:

The **ZBrush Documentation** - You will find in your ZBrush/Documentation folder a **Starting Guide**, a **What's New Guide** and a **Tutorial Guide**. Don't forget to check them for in-depth information about ZBrush 4 features and tips and tricks!

Our Resources:

Pixologic.com - The Pixologic home site is updated regularly with company and product news, ZBrush artist gallery images, 3D Turntables, company/artist interviews, and much more.

ZBrush.info - Online ZBrush documentation with all the functions listed, including the plugins, short-cuts and more!

ZClassroom - Your video training center at Pixologic.com! Hours of free training video dedicated to ZBrush available 24/7.

ZBrushCentral.com - Our community forum with more than 240,000 members and counting! Some of the best artists from around the world come here to post their ZBrush art and share their "secrets". Ask your questions, post your works-in-progress, and/or your finished creations. Interact with the community to improve your skills and help others when possible. As a ZBrush user you should definitely register at ZBrushCentral and view the daily postings! (It's free.)

Note: New plugins and updates for ZBrush are always announced first at ZBrushCentral.com!

[The ZBlog](http://TheZBlog) - This is our official blog, with all the latest news about ZBrush, Sculptris and Pixologic. Check it on a regular basis. Even better, subscribe to its RSS feed!



Follow us on Twitter! Daily news, great threads to visit at ZBrushCentral and other useful information – all sent directly to you.



Become a part of the ZBrush social network on our Facebook Fan Page.



Don't miss out on the ZBrush videos on YouTube.

LET'S BEGIN.....

Using this Course:

Each section of this course uses a combination of **text, images, and links** to ZBrush tutorial videos and resources on the Web. To get the most out of this curriculum, we recommend that you follow ALL of the links provided and thoroughly investigate the pages they lead to. The **Pixologic Website**, **ZClassroom**, and **ZBrushCentral** are the most powerful tools available to the ZBrush artist - containing tutorials, tips, and hints straight from leading professionals and from the experts at Pixologic. The links in this course will take you to the most essential pages in these growing resources. But don't stop there, keep exploring these sites to get the most out of your ZBrush experience!

Key Things to Remember :

Any time you see **Underlined, Orange Text** , this is a hyperlink to a resource in ZClassroom, ZBrushCentral or on Pixologic .com. These links are essential to the curriculum.



Use ShadowBox to create your next vehicle with Steve Warner

Orange buttons and text, like the example above, can be found at the end of some sections. These are links to insider tips and tricks written by Top ZBrush Artists.



Orange boxes with the icon pictured on the left can be found at the end of some sections. These boxes contain time-saving keyboard shortcuts for the tools discussed in the sections.

Table of Contents

This course will be broken up into 5 sections:

Chapter 1: Getting Started

Learn the basics of ZBrush: What Edit mode is and how to use the interface.

Chapter 2: Let's Get Sculpting

A walk through the various 2D, 2.5D, and 3D brushes. Also covered are the various innovative tools that enable artists of today to create their digital masterpieces.

Chapter 3: Paint it up

Focuses on the 2D and 2.5D side of ZBrush. With the painting system in ZBrush, you as an artist can Illustrate, Texture, and Conceptualize anything.

Chapter 4: Bring your Work to Life

With tools such as ZSphere Rigging, TransPose, and Timeline you can bring any character to life.

Chapter 5: Polishing your Work

With ZBrush's rendering and materials systems you will make any art pop off the screen.

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Getting Started

ZBrush User Interface

Before you can create, you must first be comfortable with the UI. ZBrush is a unique blend of 2D, 2.5D and 3D features. For this reason, the ZBrush interface has been designed to let you be “in control” with it’s customizable features.

The link below will walk you through basic videos regarding ZBrush’s navigation and concepts such as parametric objects, masking, polypaint and much more.

<http://www.pixologic.com/zclassroom/homeroom/tutorial.php?lesson=beginner>

(The movies are each devoted to a specific topic. To navigate between them, use the scroll bar directly beneath the main movie.)

See Daniel Williams completely customize ZBrush’s UI [HERE](#)
Check out how to create your own Palette [HERE](#)

Startup UI Layout

The following two pages show the Standard ZBrush UI configuration. Remember that other UI configurations can be selected using the buttons on the top right side of the title bar. ZBrush’s UI is completely customizable for a dynamic and powerful workflow. The **Shelf** is a great resource for storing your most used elements in ZBrush. Remember to visit **Preferences>Config>Store Config** to make sure ZBrush will always open with the same UI every time it is launched on the same computer system.

Learn what every button can do for you in ZBrush by holding **CTRL** and **scrolling over** any part of the interface. A pop window will appear giving a short description of the button or slider.

Customize Your ZBrush...

The Edit Button

This is a key feature of ZBrush that will allow you to move in and out of 2D/2.5D and 3D mode. When the Edit button is pressed then you will be in 3D mode to freely sculpt, paint, and render your next creation. When the Edit button is unpressed you will be in 2D/2.5D mode which will allow you to create an Illustration that you never thought was possible.



Draw Mode

When the Draw button is pressed you will be able to use the various 3D brushes to sculpt and paint your character or use the 2.5D brushes to change any image into a masterpiece. The Move, Scale, and Rotate will alter the shape of any 3D mesh or any Tool being used as a brush when in 2.5D mode. These three buttons will also move a model in 3D space when the Edit button is pressed.



Color Control

These three buttons and slider will control if Material, Color, or both will be applied to any mesh. The slider will control the intensity of Color being applied.



Palettes

All Palettes are listed in this bar in alphabetical order and can be displayed by name or by icon. To open a Palette, simply hover your mouse/tablet pen over it. All Palettes can also be docked into either of the Trays on the right or left of the interface. Simply click the icon or click and drag to either Tray.

Timeline

Timeline will allow you to put your work in motion. This is also a great feature to use as an inventory system for storing SubTool visibility, tool position to the camera, document change, and so much more. Make sure to turn your Timeline on by visiting the Movie Palette>Timeline>Show. All Timeline short-cuts are also found by holding CTRL and scrolling over the **Show** button.

The Shelf

The space surrounding the canvas provides a handy place to dock interface elements that you often use. This is completely customizable. Just activate Custom UI under the Preferences>Custom UI>Enable Customize. Hold the CTRL+ALT key, click on the element and drag it to where you want to place it. Note that only elements which exist at all times may be added in this manner. The standard UI will have quick icons to the Brush, Stroke, Alpha, Texture, and Material Palettes, along with the color swatch.

Lightbox

This is ZBrush's built in browser. Lightbox can be used like your computer's file explorer and help you navigate to different Brushes, Projects, Materials, etc. Store a short-cut for any system folder to be saved in one of the Lightbox folders for quick access to your very own folders. The Lightbox folders will be found in the ZBrush 4 root folder, e.g. The ZTools, ZMaterials, ZBrushes ZAlphas, etc., are folders that store all information for Lightbox.



Your Brush:

Focal Shift
Draw Size

Sculpting

The Zadd and Zsub controls whether a 3D brush will sculpt up or sculpt into any surface. The Intensity will control how quickly the surface will be built up or pushed in. The higher the Z Intensity slider is the stronger the effect. Hold the ALT key to switch between Zadd and Zsub.

Brush Controls

These two sliders control the size the brush will be and the roll off the brush will have to the surface.

Vert Point Count

This will display the current vertex point number of the visible selected SubTool and the total vertex count of all SubTools. ZBrush will only accept triangles or quad meshes. This number will be related to the millions of polygons each mesh has been divided into.

Zadd Zsub Zcut
Z Intensity 25

Focal Shift 0
Draw Size 64

ActivePoints: 2,048
TotalPoints: 2,048

Tray

Clicking on the thin vertical bar on the left or right side of the screen will expand or collapse a Tray, which is used to keep often-used Palettes. Once a Palettes is docked in a Tray you will be able to move up & down the Palette to its Sub-Palettes.

Zadd Zsub Zcut
Z Intensity 25

Focal Shift 0
Draw Size 64

ActivePoints: 2,048
TotalPoints: 2,048



BPR Render brings work to life



Clipping brushes make any hard edge possible



Xpose all SubTools with one click of the button



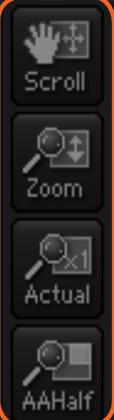
Load Tool Save As
Import Export
GoZ All Visible R
Clone Make PolyMesh3D
Ring3D. 48 R
Ring3D Sphere3D
SimpleBrush
ZSphere Ring3D
Ring3D_1

SubTool
Geometry
Divide Smt
Optimize
Check Mesh
Preview
Surface
Deformation
Masking
Visibility
Contact
Morph Target
Polypaint
UV Map
Texture Map
Display Properties
Unified Skin
Initialize
Export

Navigation

ZBrush has a 2D/2.5D and 3D atmosphere. Keeping this in mind there are two sets of buttons for navigation. The buttons located on the top right that are labeled Scroll, Zoom, Actual, and AAHalf will control the document for use with ZBrush's powerful 2D/2.5D technology. These are the navigation buttons used when the Edit button is not pressed.

The buttons located near the bottom that are labeled Move, Scale, and Rotate will control the 3D atmosphere of ZBrush. These are the navigation buttons used when the Edit button is pressed.



Sub-Palettes

There are several Sub-Palettes within Palettes. To expand a Sub-Palette simply click on any of the titles in a Palette. Once a title is clicked (e.g. Geometry in the Tool Palette) the Sub-Palette will expand within the Palette itself. To close the Sub-Palette click on the title again.

What is Edit Mode?



The video titled ***“Move Rotate Scale”*** will give you an understanding of ZBrush’s innovative interface. This concept is key to creating characters and scenes in ZBrush.



SHORTCUTS:

T = Edit
W = Move
R = Rotate
E = Scale

Understand What a Mesh is in ZBrush:

The video titled ***“Polymesh – 3D Mesh”*** will explain what a 3D Mesh is (as opposed to a primitive object). ZBrush has native 3D Primitives which are derived from mathematical parameters. The second kind of mesh is called a Polymesh. Follow this video along to understand the difference between the 3D Primitive and a Polymesh.

3D Primitives





What Subdivision Levels Are:

A key video to watch is the one titled ***“Subdividing”***. This will demonstrate the power of being able to adjust a model at multiple resolution levels and in a non-linear fashion. This is what we call ***Multi-Resolution Mesh Editing***. When a mesh is divided (quadrupling the mesh resolution), ZBrush will retain the previous level or levels. This will allow you to switch between levels at any time.

However, the power of ZBrush’s innovative Multi-Resolution Mesh Editing is in being able to adjust to a lower subdivision level, make a broad scale change to your mesh, then return to a higher subdivision level where fine detail can be added with no loss of quality to the mesh and with all changes made on the lower subdivision level retained in the higher subdivision.



SHORTCUTS:

- CTRL+D = Add a subdivision level
- D = Step up your subdivision levels
- Shift+D = Step down your subdivision levels

3D Brush Basics:

Learn the many ways in which you can adjust your sculpting brushes to meet your changing sculpting needs:

The video titled **“Brush Adjustments”** will walk you through the basics of brush usage and adjusting its size.

The video titled **“Strokes and Alphas”** shows you how easy it is to create detail with ZBrush. A simple grayscale image can dramatically change the effect of your brush strokes!

The **“Masking”** video presents how easy it is to create wrinkles, isolate details to only one part of the mesh, or use masking for polygon selection.

There are 5 Masking Brushes to choose from. Hold **Ctrl** (or **Command** on MAC) to view the default Masking Brush. While it is selected, click the Brush thumbnail (on the left side of the canvas) to choose a different Masking Brush:

- **MaskCircle**
- **MaskCurve**
- **MaskLasso**
- **MaskPen**
- **MaskRectangle**



SHORTCUTS:

CTRL = Select your Masking Brush

Ctrl+Alt = Toggle the Masking Brush to unmask instead

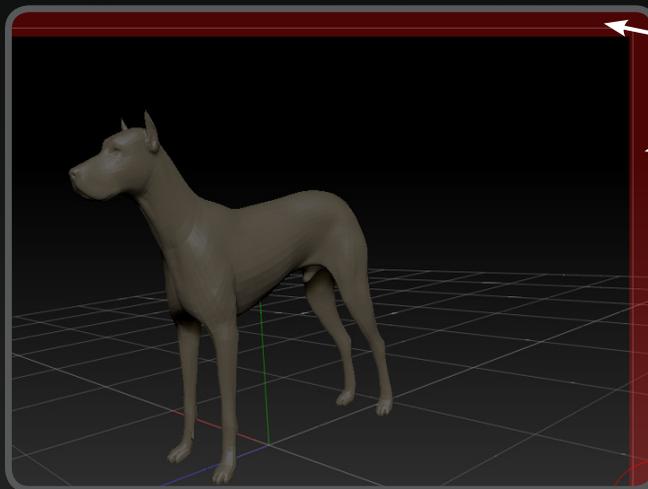
Navigation in Edit Mode:

Buttons to the right of the canvas allow you to **move, scale and rotate** your model on the canvas. Even faster are the keyboard shortcuts for these features - with just a little practice, they will make it very easy to adjust your model in front of the camera.

To Move your model:

Hold **Alt** while you click and drag anywhere on the canvas (**Option** key for MAC users).

Be sure to click on empty space so that ZBrush knows you wish to move the model rather than sculpt. If your model is scaled so large that it fills the viewport, click outside the canvas or outside the white line that frames the viewport on a very large canvas.



Click outside the white line (red highlight) to move your model when it fills the whole canvas

To Rotate your model:

Click and drag anywhere on the empty canvas.

To Scale your model:

Hold **Alt**, press and hold the mouse button while the cursor is over an empty part of the canvas, release **Alt**, then drag up or down. This maneuver takes a little practice to get down, but is very efficient once mastered.

Right-Click Navigation:

As an alternative to navigation with keyboard shortcuts, ZBrush also offers a feature called **Right-Click Navigation**. Turn this on in the *Preferences>Interface* menu if you would like to use it.

A key difference is that with this navigation method you can click while the cursor is over the model.

Move: Hold **Alt** while you right-click & drag

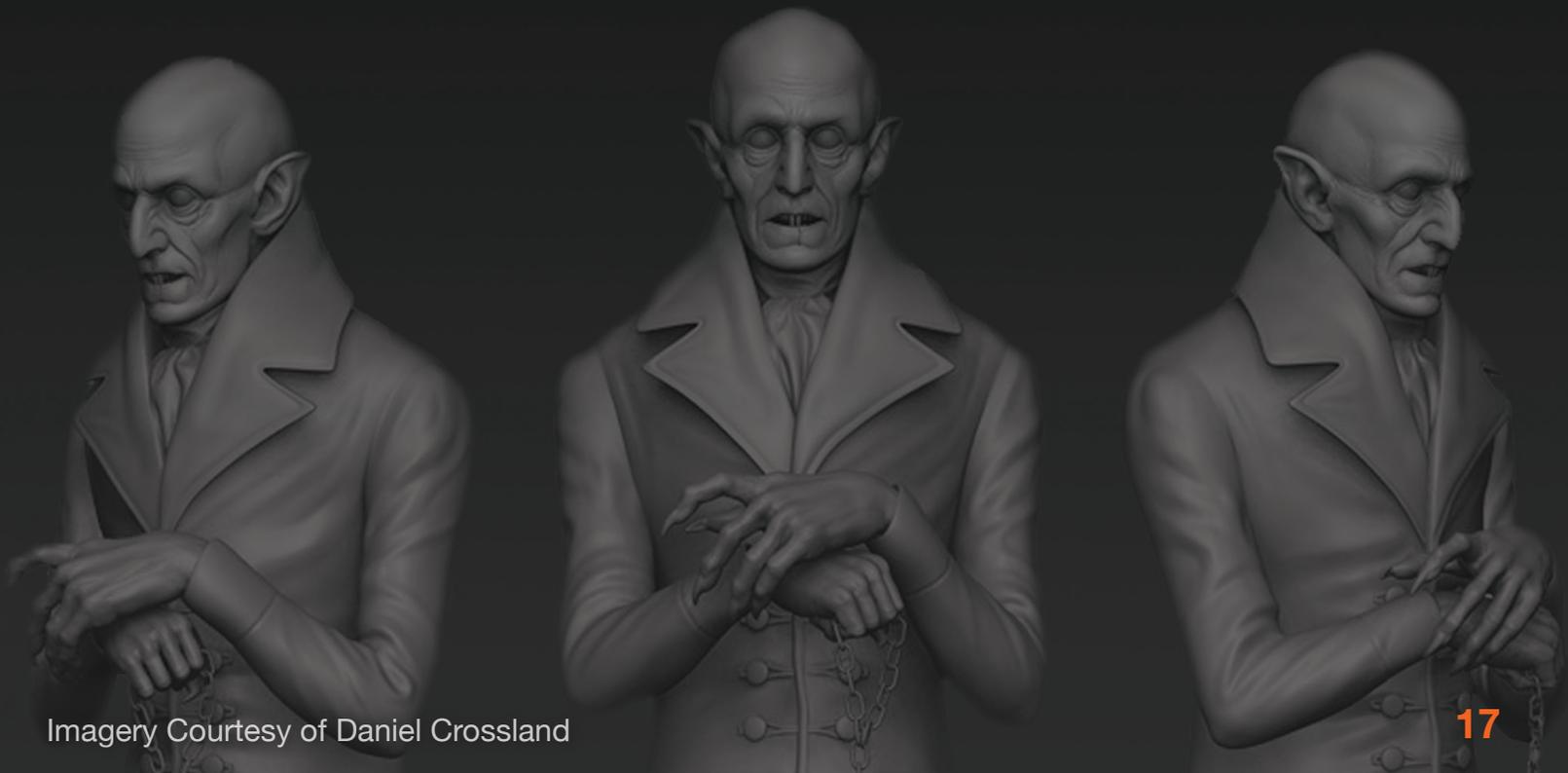
Scale: Hold **Ctrl** while you right-click & drag

Rotate: Simply right-click & drag without pressing any keys

If you wish to make this your default navigation method, be sure that it is turned on and then save your preference setting by pressing **Ctrl+Shift+I**.

ZBrush Shortcuts List:

A complete list of all ZBrush shortcuts is found [HERE](#)



Tools, Projects and Documents: What You Save is What You Get

ZBrush uses different file formats for saving and loading different types of data. It is important to understand these formats so that you always get what you expect when you save your work.

The video titled [“Saving”](#) describes the different formats and where the save/load buttons are found.

Document (ZBR file format): Saves pixols, only! This format is meant for creating illustrations. Any 3D data (if your model is in edit mode) is converted to 2.5D data when saving as a document. (*Document > Save or Document > Open*)

Tool (ZTL file format): Saves polygons. Use this format to save a model as 3D data that you can continue to work with in edit mode later. This format will also save any maps that are applied to your SubTools via the Tool palette. (*Tool > Save As or Tool > Load Tool*)

ZBrush calls anything that can be used to add pixols to the canvas or modify pixols already on the canvas a “Tool”. Since 3D models can serve this purpose, they fall under this classification as well. Even though some tools are called “brushes”, they serve a very different purpose from sculpting brushes (which are found in the Brush palette). Click the link at the bottom of this page to find out more about Tools in ZBrush.

ZProject (ZPR file format): New to ZBrush 4 is a format that saves considerably more data than the ZTL format does. This format will save the document settings including size and lighting, all materials that are used, the model itself and even the size/position/rotation of the model on the canvas, render settings, Timeline and more. In short, using this format allows you to return to ZBrush exactly where you left off. Keep in mind that this also results in a much larger file size than the ZTL or ZBR formats. (*File > Save As or File > Open*)

ZBrush calls a mesh a Tool, click the link below to find more out about Tools in ZBrush.

Learn more about Projects [HERE](#)

Learn more about Tools [HERE](#)

Learn more about Documents [HERE](#)



SHORTCUTS:

CTRL+S = Save project

CTRL+O = Load project

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Let's Get Sculpting

Imagery Courtesy of Rafael Grassetti

Sculpting Basics

Being able to work with millions of polygons (up to 1 billion if using HD sculpting) is meaningless without an intuitive yet powerful way to sculpt those polygons. The award winning 3D Brush palette in ZBrush represents the most natural digital brushes system found in the digital sculpting world today. As a ZBrush artist you will be using the various sculpting brushes to bring your creations to life.

Read an overview of sculpting brushes [HERE](#)



There are three main palettes that a ZBrush artist will use when sculpting:

Brush Palette

Stroke Palette

Alpha Palette

You will find these three palettes at the top of your interface in alphabetical order. For quick access to these palettes you can also look to the left side of the ZBrush canvas where you'll see a column of large thumbnails with the top three representing these palettes. (To a lesser degree you will also use Texture, Material and Color, which is why they have thumbnails on the left shelf as well.)

ZBrush includes dozens of brushes, designed for different needs. The most commonly useful ones are loaded into the Brush Palette at launch. Many more specialized brushes can be found by clicking the LightBox button and navigating to the Brush heading. Double-click any brush thumbnail in LightBox to immediately add it to your Brush Palette.

LightBox

LightBox is the ZBrush browser that will pop up at the bottom of your ZBrush Interface when first launching ZBrush. Click on the Brush tab in LightBox to see more 3D Brushes.

Learn More about Basic Brushes [HERE](#)

Brush Palette

This [Brush Palette link](#) will walk you through the most popular **Brushes** in ZBrush. However with over 200 brushes that ship with ZBrush we encourage you to explore and discover. As previously noted, additional 3D Brushes can be found in LightBox.



While the Brush types are accessible through the pop-up window, you need to open the Brush palette to access the many available modifiers. For example, a new setting in ZBrush 4, **Brush>Auto Masking>Topological**, will control the brushes' range of sculpting or painting ability based on the geometry flow of the mesh.

*If you know the name of the brush you want, click on the Brush thumbnail to bring up the pop-up window. Next, type the first letter of the brush name. ZBrush will display only brushes starting with that letter, assigning logical letters or numbers to each brush's icon. You can now press the key for the letter of the specific brush you want. For example, **S T** will always give the Standard brush. **S W** will give the StoneWall brush.*



SHORTCUTS:

B = Open the Brush Palette pop-up window under cursor
, (comma key) = Open/close LightBox



Stroke Palette

This [Stroke Palette link](#) describes each **Stroke** type in detail. The Stroke controls how the 3D Brush is being applied to the surface of your Tool. For example, the **Dots Stroke** draws a series of very closely spaced dots to create a continuous line. The **DragDot Stroke** draws a single instance of your brush that can be dragged across the surface of the model before being precisely placed by releasing the mouse button.

Each Stroke type has a number of modifiers that can be applied to refine its performance.



Alpha Palette

This [Alpha Palette link](#) breaks down the whole palette. The **Alpha** is a grayscale image that is used as a mask by the brush to change its shape. This will allow you to sculpt details faster than you can say “alpha”.



For best results, alphas should be in **16-bit Grayscale PSD format**. ZBrush can use lower bit-depth or RGB images such as JPG but the quality may not be as good. If you wish to put any alphas into the ZBrush 4\ZStartup\Alphas folder (so that they are loaded into ZBrush at launch), the alpha **MUST** be 16-bit Grayscale PSD in order for ZBrush to recognize them.)



[Learn to create shoe treads with Gregory Callahan](#)



[Use the Gear3D primitive to create alphas with Joseph Drust](#)



[Create fuzzy hair with Ty Shelton](#)

Create a Starting Base

Every sculpt must start somewhere. ZBrush has some amazing tools that will inspire you to create any base model from which you'll build up your sculpture. With **ShadowBox** and **ZSpheres**, there is no limit to what you can create.

ShadowBox

This [ShadowBox link](#) will teach you to rough out the shape of your mesh using any of the masking brushes previously discussed in the Getting Started section. ShadowBox takes the silhouettes that you paint on the box walls and uses that information to create a floating mesh in the center of the box.



See Shadowbox in action [HERE](#)

Shadowbox Resources:



[Create your next ShadowBox gear and gun with Geert Melis](#)



[Make the perfect rose with Magdalena Dadela](#)

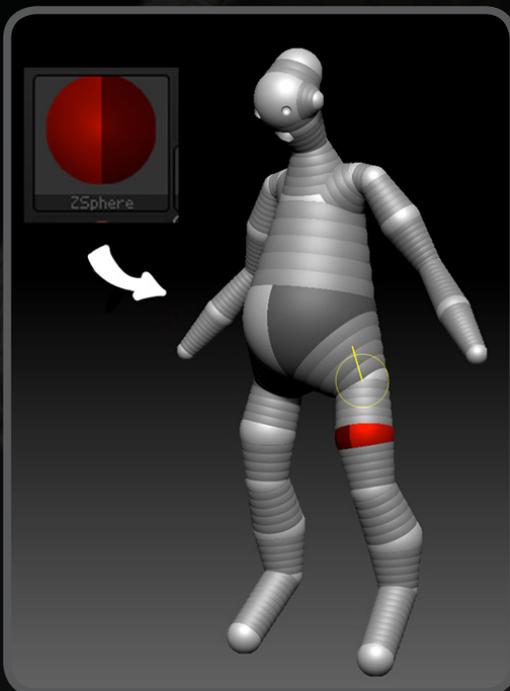


[Use ShadowBox to create your next vehicle with Steve Warner](#)

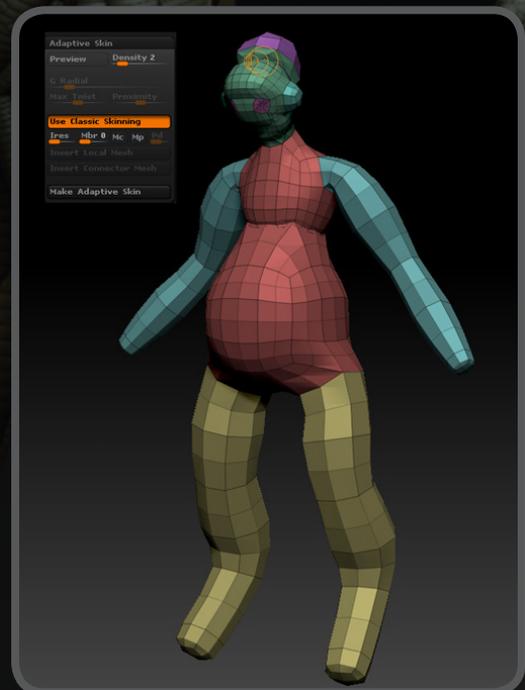


[Start your next bust with Mariano Steiner](#)

ZSpheres



ZSpheres are an advanced ZBrush tool that is similar to working with a real-world maquette. With ZSpheres you can 'sketch out' a 3D model quickly and easily. Once the model has been formed using ZSpheres, it can be 'skinned' (the term for creating a mesh from it) for further sculpting.



There's nothing like ZSpheres in other 3D programs. We'll briefly touch on a few topics, and then leave you with some tutorials to study.

ZSpheres can operate in several distinct modes:

Armature: This mode is like building the wire framework for a maquette. ZBrush then automatically creates the “clay” around that armature.

ZSketch: This mode is a step beyond the armature mode in that you put the clay on the armature yourself. You can use any model as the underlying armature by appending a Zsphere as a Subtool or just start with only one ZSphere. Learn the basics of ZSketch Brushes [HERE](#).

Retopology: In this mode ZSpheres are used to change a base model’s topology on a point-by-point level. Alternatively, this mode can be used with another model as reference to create entirely new topology such as the remesh of a model or even form-fitting clothing.



[Create your next sea creature with Simon Blanc](#)



[Let your mind escape using simple ZSpheres with Cesar Dacol Jr \(Part 2\)](#)



[Imagine your next car with ZSketch](#)



[See ZSketch brushes in action](#)



[Create your next ZSphere knot with Ty Shelton](#)



SHORTCUTS:

Shift+A = Enter/exit ZSketch mode

B = Brings up ZSketch brushes when in ZSketch mode

Adding Complexity to a Character

Now that we have an understanding of what a Tool is in ZBrush we must speak about SubTools. **SubTools** are a way to add multiple meshes together to create a complete character, scene, vehicle or illustration. Not only do SubTools provide a way to better organize your model, they also serve to break your work into bite-sized chunks. While your computer won't be able to handle a single model of 40 million polygons, it certainly can handle a model comprised of eight SubTools with 5 million polygons each.

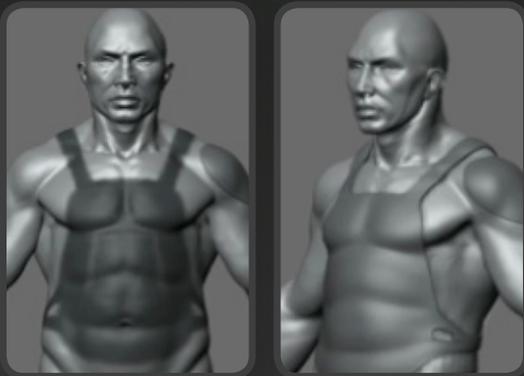
With SubTools it's very easy to create accessories for a character or add the little things and fine details that bring a scene to life.

In essence, SubTools are another Tool being linked to the selected Tool by clicking on **Append** or **Insert** in **Tool > SubTool Sub-Palette**.

Mesh Extract

Mesh Extract is a good way to create clothing, tools, a helmet, machine parts, (you name it), quickly by using masking. When the mesh is extracted a new SubTool is automatically added to the selected Tool. This new SubTool shares the same topology as the model from which it was derived, with only the edges being different.

Note: An extracted mesh can also have various degrees of thickness.



*Quick tip: In ZBrush 4 an extracted mesh retains the mask that was used to create it. Press **Tool > Masking > Clear** to remove the mask so that you can begin sculpting the extracted mesh.*

Learn the basics of using Mesh Extract [HERE](#)

Learn to sculpt a basic head [HERE](#)



[Check out the ZBrush bike in this video](#)



[Learn to create a motorcycle with Mesh Extract PART 1 \(30 min\)](#)



[Learn to create a motorcycle with Mesh Extract PART 2 \(30 min\)](#)

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Paint It Up

Imagery Courtesy of Olivier Thill

Painting With No Boundaries

Now that you have a sculpted model, let's look at how we can add color to your creation. There are four major tools explained below that you can use for painting in ZBrush.

Let's also not forget that ZBrush has full 2D & 2.5D capabilities that will allow illustrators to create images with depth, color, material and light information. Here is a great [Illustration link](#) to learn more about how ZBrush is used for this purpose.

There are many great artists that use ZBrush for Illustration. Some work entirely with ZBrush's 2.5D "paint" while others also incorporate 3D models into their scenes as pixols. Once a 3D model has been "snapshot" to the canvas it becomes exactly the same as if it had been painted with brushes; the pixols integrated perfectly with anything else that is already in the scene. We have provided several links here so that you can see what artists are doing with ZBrush to bring life to a 2D static image.



Daniel Crossland



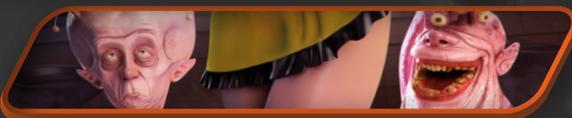
[Create your next comic book in ZBrush with Olivier Thill](#)



[Follow Yiannis Tyropolis in making your next cartoon character](#)



[Your next masterpiece is easy to conceive with ZBrush just as Alexey Kashpersky did with his piece called "Dream"](#)



[Imagine your next pin up like Michal Suchanek has here](#)

Now that you have seen how powerful ZBrush's sculpting tools are, let's walk through the basics of bringing color to your sculpts. There are four major ways to texture/paint in ZBrush:

- **PolyPaint**
- **Projection Master**
- **ZAppLink your work to (and back from) Photoshop**
- **SpotLight**



Before we break into each of these sections let's make sure you understand the parts of the User Interface that apply to painting. First, look immediately above the canvas at what is called the Top Shelf. Here you will find the following switches and sliders:

- **Mrgb** - With Mrgb turned on your brush strokes will apply the selected color and material to the canvas or your model.
- **Rgb** - With the Rgb button selected you will only apply color when your brush is over the surface.
- **M** - With this button selected you will only apply the selected Material to the sculpt when the brush is applied.
- **Rgb Intensity** - Controls the amount of color being applied to the surface with 100 representing 100% intensity and 0 representing that no color is applied. You can also build up your color information, for example, painting a stroke at 50 intensity and then painting over that spot with another stroke at 50 intensity will result in 100% color intensity.

Note: These modes are independent of the Zadd/Zsub and Z Intensity options. This means that any brush stroke can both paint and sculpt at the same time, if you would like.

There are four palettes that, when combined, control the colors being applied to your surface:

- **The Color Palette** - This is where you select the base color you wish to apply to your surface when **Rgb** or **Mrgb** is on.
- **The Draw Palette** - This palette has your **Mrgb**, **Rgb**, **M** switches and the **Rgb Intensity Slider**. (These are the same elements that are also located on the Top Shelf.)
- **The Material Palette** - This palette is used to select which material you would like to apply to the surface. A material tells the rendering engine what to do when light reaches a surface. This means that your material will modify whatever color has been painted on the model or canvas.
- **The Texture Palette** - This palette will allow you to import/export textures that you wish to apply to your character or brushes. When applied to a model (using the **Tool > Texture Map** menu), texture hides any color that has been painted onto the model previously.





Su Yeong Kim



Lighting also plays a role in determining the colors you'll see on your surface. As you rotate your model, the shadows interact across its surface to dynamically lighten and darken the colors. Lighting is controlled through the **Light palette** unless you're using a MatCap material. (In which case the lighting is baked into the material itself.)

A simple equation to understand how ZBrush's rendering engine creates the colors that you see on the canvas is:

$$\text{Color or Texture} + \text{Material} + \text{Lighting} = \text{Rendered Color}$$

Easy access to the Texture, Material and Color palettes is found on the **Left Shelf** of your interface. This will provide a quick way to build your paint brushes!

When you first start with your character the color and material are in what is called a “live” state. As you switch to a different color or material you will see your character’s color and material change right before your eyes.



To begin painting multiple colors and/or materials onto your surface, let’s assign them to your character. This is done by “filling” the object.

Once you have a material that you would like to permanently apply to your character just make sure that **M** is on at the top of your interface and then click to **Color > Fill Object**.

This PolyPaints the entire model with a base coat of the selected material. If you select a new material your character will keep the Filled material assigned and nothing will change on the model. You can now use the brushes to paint other materials to different parts of your model.

*Note: To remove PolyPainted materials from your model select the **FlatColor** material, turn on **M** and press **Color > Fill Object** again.*

Now that we have a material assigned, let’s fill your character with White color. Make sure **White** is selected in your Color Swatch, activate **Rgb** on the Top Shelf (or in the Draw palette) and then click **Color > Fill Object**.

Of course, if you wish to fill the Color and Material at the same time just make sure to have **Mrgb** active when doing a **Color > Fill Object**.

What this allows you to do is paint with just color, with material only, or with both at the same time. Just like with materials, once you have a character filled with a color any other color you select can only be applied to the surface with a brush stroke. This is much like how a painter applies paint to a canvas – the Fill Object operation prepares the object so that you can then paint it with your brushes.

Go ahead and give it a try!

PolyPaint



Now that we have a basic understanding of color and material let's talk about what this PolyPaint term means. **PolyPaint** is a revolutionary new way to paint a model in ZBrush. PolyPaint will allow you to directly paint on the surface of your model with no UVs needed.

What PolyPaint technically boils down to is a way to assign color and/or material to a model's points. Since ZBrush is capable of working with millions of polygons in real time, you can achieve a resolution that meets (or even exceeds!) that of textures – and do it without UV mapping your model.

This is ideal for coloring models that will be rendered in ZBrush because it completely removes the technical aspect of assigning UV's and painting textures from the equation. It's also quite useful in a production environment since PolyPaint can easily be converted to a texture. You can sculpt and paint a "hero" model – all before even thinking about topology or UV mapping. You can also change topology or UV's -at any time- without losing any detail previously PolyPainted. ZBrush gives you incredible artistic freedom!

PolyPaint is like holding a paint brush with which you freely apply paint to your character. What's more, because PolyPaint is done on the 3D surface rather than a 2D flat map, you don't need to worry about compensating for seams or UV distortion. Paint what you want to see and let the computer worry about the technical stuff!

Learn your basics of PolyPainting [HERE](#)

Learn more PolyPainting [HERE](#)

Learn to PolyPaint a head [HERE](#)



SHORTCUTS:

Hold C = As you move your cursor around the screen, the color beneath the cursor will be selected

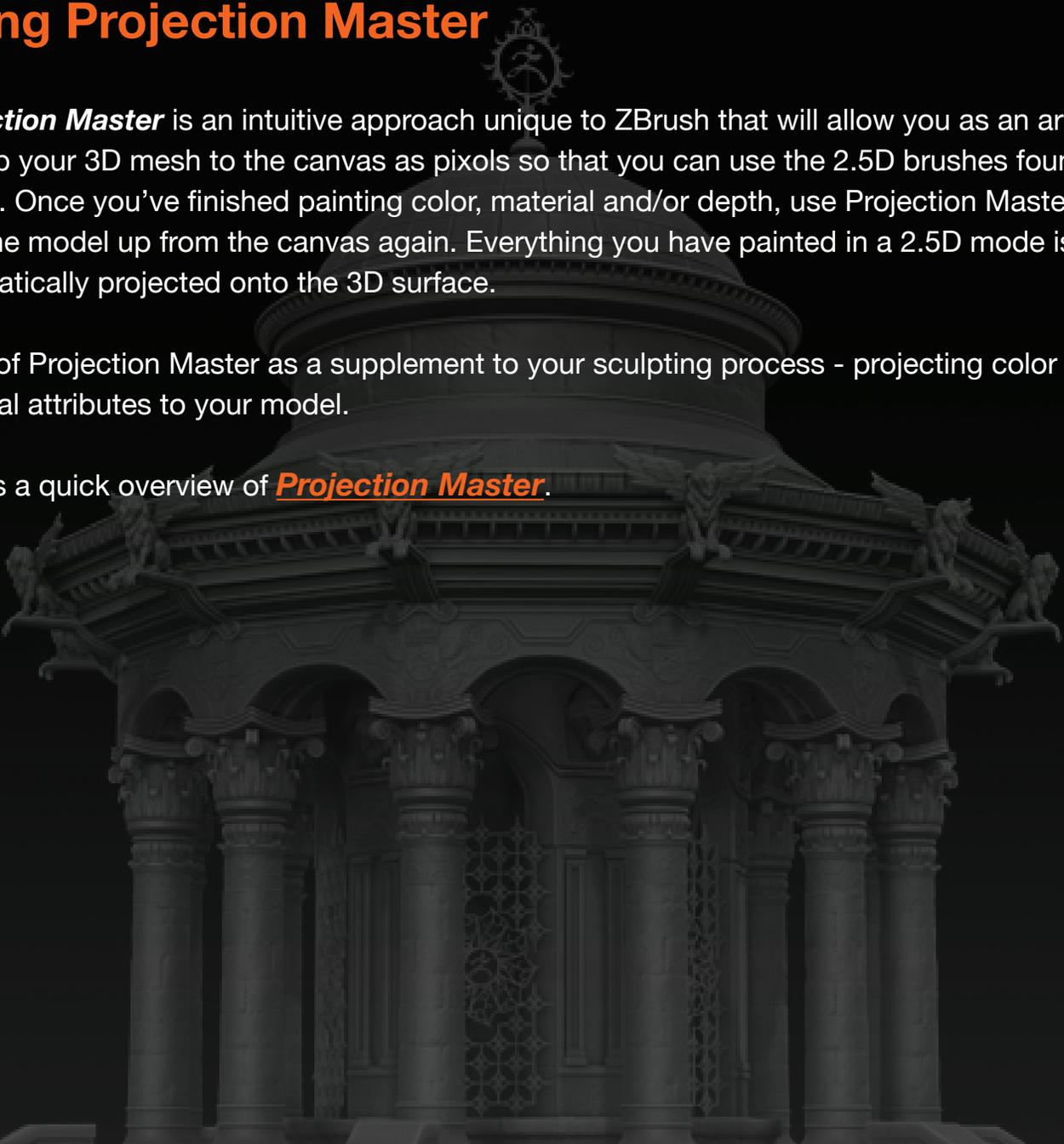
V = Switch between Main color and Secondary color

Using Projection Master

Projection Master is an intuitive approach unique to ZBrush that will allow you as an artist to drop your 3D mesh to the canvas as pixels so that you can use the 2.5D brushes found [HERE](#). Once you've finished painting color, material and/or depth, use Projection Master to pick the model up from the canvas again. Everything you have painted in a 2.5D mode is now automatically projected onto the 3D surface.

Think of Projection Master as a supplement to your sculpting process - projecting color and material attributes to your model.

Here is a quick overview of [Projection Master](#).



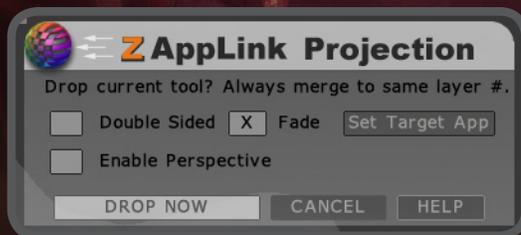
[Use Projection Master to make a building with Sebastien Legrain](#)



SHORTCUTS:

G= Will drop the tool to the canvas and will pick tool back up when completed

“ZAppLink” Your Work to Photoshop



ZAppLink is a plugin developed by Pixologic to allow you the artist to send your model over to Photoshop (or any PSD-capable image editor) so you can use all its brushes, filters and other features on your model. In a way, ZAppLink turns Photoshop into a ZBrush plugin!

An excellent example of how ZAppLink can benefit you is how it can be used to add text to your surface using Photoshop text editor.

ZAppLink is similar to Projection Master in that it takes snapshots of your model. Like Projection Master drops these snapshots of your model onto the ZBrush canvas for modifying, ZAppLink will send the model's snapshots to Photoshop. Once you paint on the model's layer in Photoshop and save the file (by pressing **CTRL+S**) you are able to switch back over to ZBrush (**Alt+Tab** in Windows, **Command+Tab** in Macintosh). You'll see a confirmation dialogue box, your paint will then be projected onto the model.

Get started with ZAppLink Basics [HERE](#)

ZAppLink is a plugin that you must install into your **ZBrush 4\ZStartup\ZPlugs** folder. You'll find the Download and Installation instructions [HERE](#). You will also find a link there to the ZAppLink documentation.



[Learn PolyPainting and ZAppLink with Cesar Dacol Jr. \(Parts 4 & 5\)](#)

SpotLight

SpotLight was introduced in ZBrush 4 to give you the artist a whole new world for texturing your characters. SpotLight allows you to float one or more textures in front of the ZBrush canvas to edit or manipulate them in a variety of ways. You are then able to use any of the Brushes to project from the floating texture onto the model behind it. SpotLight makes texturing fun and easy!

SpotLight is also not limited to the textures that you have on your machine. Using LightBox's **WWW** tab, you can search for image references directly from the internet, preview them in LightBox, then add the ones you like to SpotLight with a simple double-click!

Learn what every button can do for you in these [SpotLight Videos](#).

SpotLight is more than a texture/painting tool. SpotLight will also apply sculptural changes to your mesh if **Zadd** is active, therefore allowing you to texture, paint and sculpt at the same time. Many artists also use SpotLight for “reference sculpting” and much more.



[See how Steve Warner uses tank images to create his tank](#)



[See how Daniel Crossland uses SpotLight to texture his little bunny](#)



SHORTCUTS:

Shift+Z = Turn on/off SpotLight
Z = In/out of SpotLight edit mode

Chapter 4:

Start

Chapter 1

Chapter 2

Chapter 3

Chapter 5



Bring Your Work to Life

Posing Your Characters

Alright, now that we have learned to sculpt and paint a character, we need to put some feeling into our creation. ZBrush allows you to pose a character into multiple positions so that your finished image has a dynamic feel.

There are four major tools that will bring life your character. These tools are:

- Mannequins
- TransPose (with or without TransPose Master)
- ZSphere Rigging
- Timeline

Once again ZBrush breaks the technical boundaries. Using our simple and nontechnical posing system, artists can now experience and explore multiple ways to bring their digital creations to life without leaving ZBrush. The following sections will take you through the powerful posing tools available in ZBrush.

Mannequins

ZBrush 4 introduces a new tool for an artist to quickly hash out any singular or multiple pose(s) within a scene. With the new Mannequin system you can begin to pose by first establishing the form. What a great tool for your concepts!

At any time, you can search for a dynamic pose and then sculpt directly onto that posed Mannequin. This tool is not just for a simple character but can also be used for a quadruped or any other creature within a scene.

Learn the basic navigation of Mannequins from the videos under the Concept Creation section [HERE](#)



Norman Schaar

TransPose

TransPose is the first tool ever to allow a digital artist to pose a character with just a few clicks rather than standard rigging tools. TransPose works by masking portions of your character and then using the TransPose Line (or Action Line) to move, scale and rotate the unmasked portions.



You can use TransPose to easily move one SubTool relative to another and/or manipulate a SubTool, along with changing its shape, gesture or form. Learn the basic controls of ***Move, Scale, And Rotate using TransPose***. The **Move**, **Scale**, and **Rotate** icons found at the top of your interface will activate **TransPose Mode** and display the **Action Line**. Understand the Action Line [HERE](#).



Learn how to pose your character by viewing the 6 posing tutorials found [HERE](#).

The TransPose Line (or Action Line) also makes it possible to have a digital caliper within the ZBrush document. Once you have defined the scale, the Action Line can quickly and easily show you the distance between any two points.

Learn how to manipulate your scale settings [HERE](#).



[Watch Cesar Dacol Jr pose his alien](#)



SHORTCUTS:

W = Move mode

E = Scale mode

R = Rotate mode

TransPose Master

Now we know that most characters will have several SubTools filled with weapons, clothing, gear and anything else you might imagine. Since TransPose works with a single SubTool, Pixologic has developed a plugin called TransPose Master which allows you to pose all your SubTools at once.

TransPose Master creates a proxy mesh that serves as a stand-in for your multi-part model. You then TransPose the proxy mesh, after which TransPose Master will analyze your changes and apply those back onto the original model.

This is another plugin that must be downloaded from our [Download Center](#). All instructions and documentation can be found in the zip file.

ZSphere Rigging

We have already discussed how to use ZSpheres to create a base mesh, however, there is so much more to this powerful tool. Found only in ZBrush, ZSpheres can also be used as a rigging tool.

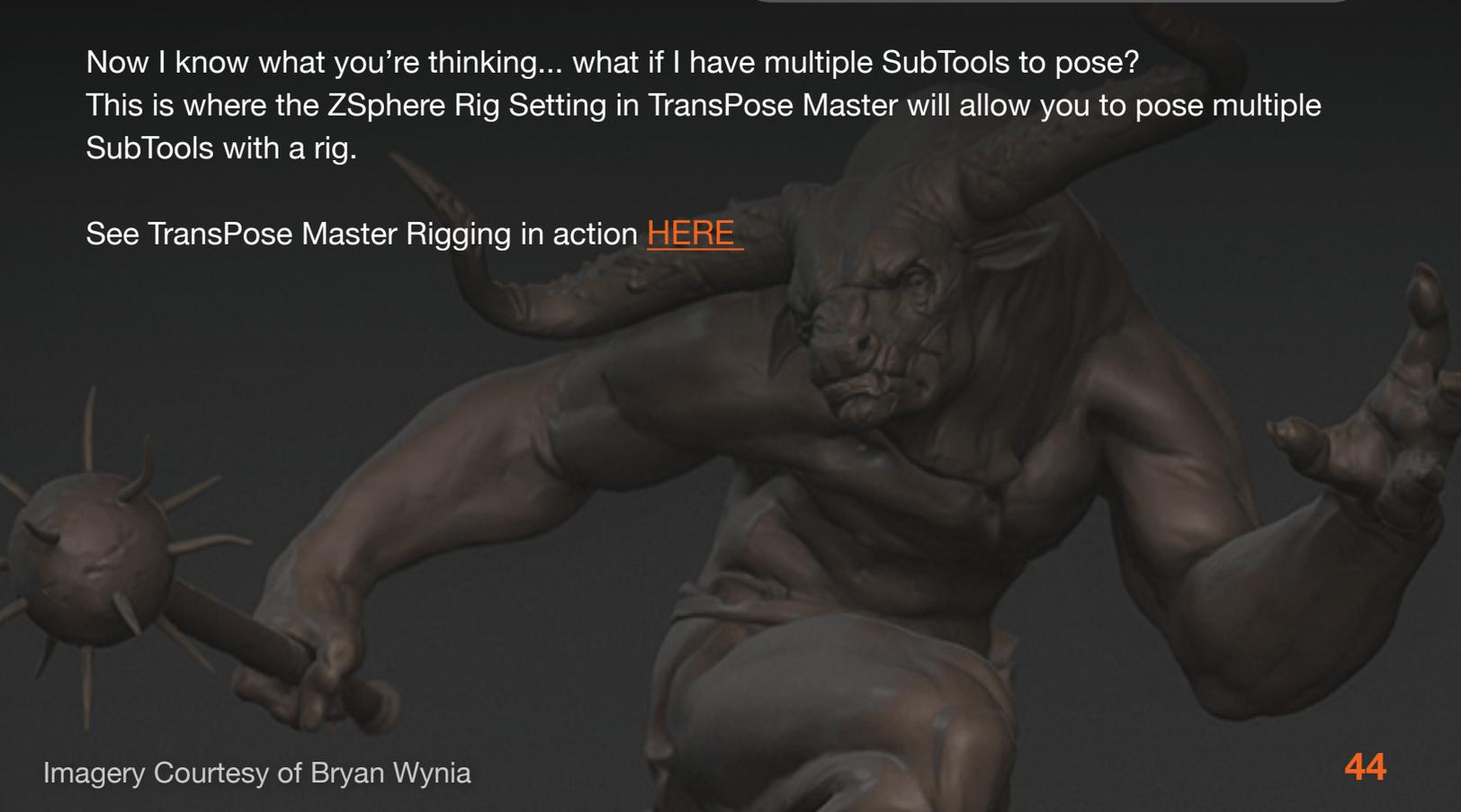
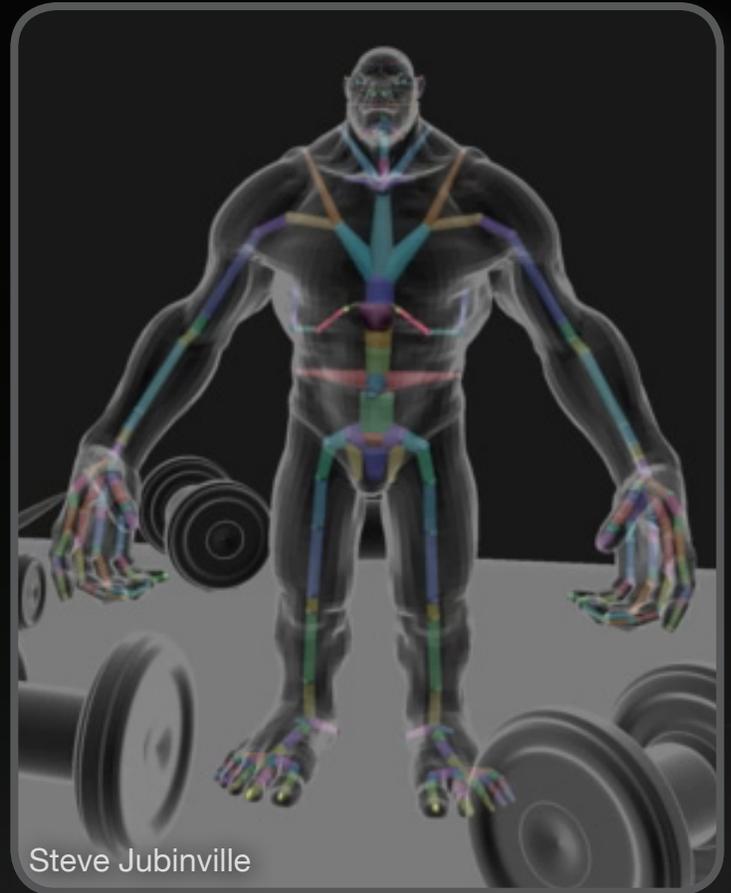
You can begin by creating an underlying rig (or skeleton) for your character. Then with a single click, ZBrush binds your character to this skeleton for posing. Posing the ZSphere skeleton will automatically pose the character that's bound to it.

Learn the basics of setting up a rig [HERE](#).

See how to pose and transfer a high resolution sculpt to your pose [HERE](#)

Now I know what you're thinking... what if I have multiple SubTools to pose? This is where the ZSphere Rig Setting in TransPose Master will allow you to pose multiple SubTools with a rig.

See TransPose Master Rigging in action [HERE](#)



Timeline

Have you ever created an amazing model but wanted to view it in motion in order to check your sculpted character, present it to your art director or simply create your next demo reel? How about giving a little bit of movement to a character by simply having him breathe and maybe fidget a bit? Or how about having a car race across the screen? At some point, we all want to put motion into our work quickly and with the simplest approach.

Timeline will allow you to do just this. See the many ways Timeline will work with TransPose and ZSphere Rigging to bring a scene to life [HERE](#).

Watch all 3 movies. You won't regret it.

Timeline can also be used as a basic inventory system allowing you to key just about anything in your ZBrush workflow. For example, you can hide parts of your model and create a key frame. Any time you return to that key frame on the Timeline, ZBrush will hide those parts of the model again.

Learn the basics of using Timeline [HERE](#).



[Jump deeper into Timeline with these 3 videos on Timeline Animation](#)



[See Dave Wolf bring a heart to life with Timeline](#)



[See how to bring subtle movement to a character with Marco Splash Plouffe](#)



SHORTCUTS:

All Timeline Short cuts can be found by holding down the CTRL key as you scroll over the Show button under the Render>Timeline Sub-Palette.

Chapter 5:

Start

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Polishing Your Work

Imagery Courtesy of Mariano Steiner

Render Settings

Now that you can sculpt, paint, and pose in ZBrush, let's create an image that is going to knock your socks off. ZBrush has three rendering systems that can be used to render an image.

The three render systems are:

Preview Render

This render system applies a real-time render to your character as you sculpt so that you may have much more realistic interaction with your character. Any time you are sculpting, painting or PolyPainting in ZBrush, you are using the real-time Preview render. If you have used a different renderer, ZBrush will automatically switch back to Preview as soon as you interact with a mesh or the canvas.

BPR (Best Preview Render)

This is a 3D render system that will create realism with multiple rendering passes. This render system will allow you to render models with real 3D Shadows, Ambient Occlusion, Multiple SubTool Transparency, 3D Fibers and a SSS pass. Learn about the various settings [HERE](#).

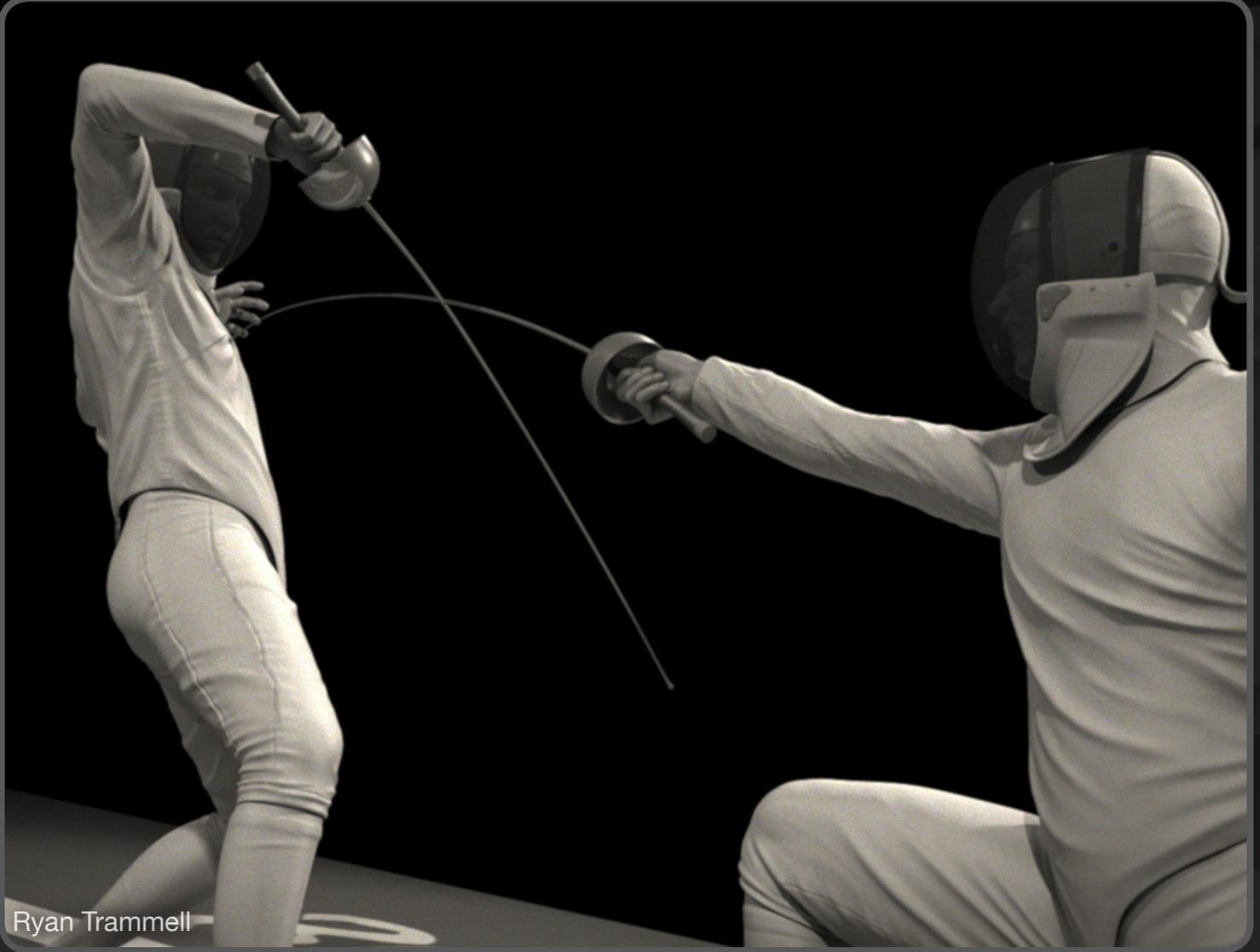
Note: BPR requires that a model be in Edit mode on the canvas. It is specifically designed for rendering polygons rather than pixels.

Best Render

This render system is essential to any illustrator to bring a 2D/2.5D image alive. Learn more about render modes [HERE](#). For best results, create your illustration at twice the desired export size and turn on AA Half mode (on the Right Shelf) before or after rendering.



[See how Yiannis Tyropolis uses Lights and BPR to render out his character](#)



Ryan Trammell

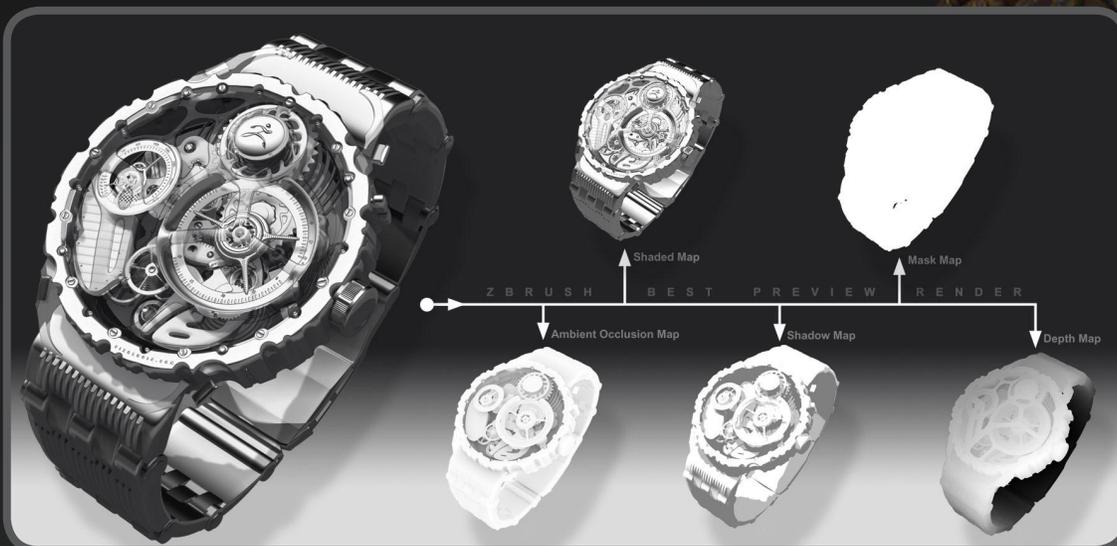
There are several other controls that will really make a difference in any render. Make sure to play with these various settings when using Best Render and BPR to create a more realistic render.

- **Depth Cue** – Gives your render a depth-of-field look. Learn more [HERE](#).
- **Fog** – Create moods like darkness, underwater or flying through the atmosphere. Learn more [HERE](#).
- **Environment** – Brings reflective materials to life. Learn more [HERE](#).
- **Render Adjustments**- After rendering you can make some subtle adjustments to your image. Learn more [HERE](#).

Lights

Of course you cannot render without Lights. The ZBrush Light system is a completely user-friendly system. Learn more about the Light Palette [HERE](#).

Small note: Light Colors will only render out with Best Render. You can also complete a Best Render first and then run a BPR to take advantage of both rendering systems on the same model.



[Learn how easy it is to render damaged metal with Edward Fleissig](#)



[Follow Igor Catto through the simple features of rendering](#)



[Take advantage of ZBrush materials with Olivier Thill Comic](#)



[Use Fibers to create fur/grass/hair and so much more with Magdalena Dadela](#)

We at Pixologic would like to thank our ZBrush community for their continuing efforts to **Share, Inspire, and Motivate.**

Thank you to the following ZBrush artists for allowing us to use their amazing work throughout this documentation:



Frederik Storm ([p.4](#))



Caio Cesar ([p.4](#))



David Lesperance ([p.4](#)) ([p.35](#))



Maarten Verhoeven ([p.5](#)) ([p.33](#))



Samuel Burton ([p.7](#)) ([p.28](#))



David Giraud ([p.8](#))



Alex Zozhanov ([p.9](#))



Ryan Kingslien ([p.10](#))



Fabio Paiva ([p.13](#))



Kris Costa ([p.14](#))



Tomasz Strzalkowski ([p.15](#))



Scott Patton ([p.16](#))



Daniel Crossland ([p.17](#)) ([p.31](#))



Furio Tedeschi ([p.18](#))



Yiannis Tyropolis ([p.19](#))



Rafael Grassetti ([p.20](#))



Depp Shang ([p.21](#))



Scott Eaton ([p.22](#))



Cedric Seaut ([p.23](#))



James Van Den Bogart ([p.24](#))



Geert Melis ([p.25](#))



Tae-Bong Lim (p.26)



Damien Canderle (p.27)



Christian Fischer (p.29)



Olivier Thill (p.30)



Alexey Kashpersky (p.31)



Daniel Williams (p.32)



Su Yeong Kim (p.34)



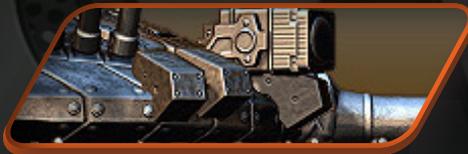
Christopher Nichols (p.36)



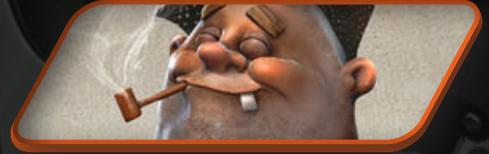
Christopher Brandstrom (p.37)



Alvaro Buendia (p.38)



Steve Warner (p.39)



Gregory Callahan (p.40)



Marco Splash Plouffe (p.41)



Norman Schaar (p.41)



Maximilian G. Vogt (p.42)



Michal Suchanek (p.43)



Bryan Wynia (p.44)



Steve Jubinville (p.44)



Jelmer Boskma (p.45)



Mariano Steiner (p.46)



Ian Joyner (p.47)



Ryan Trammell (p.48)



Edward Fleissig (p.49)

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