



DO MORE, DO IT IN...  
**ZBRUSH 4R5®**

# GETTING STARTED

An Official Pixologic Document





# The Standard

Imagery Courtesy of 20<sup>th</sup> 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!

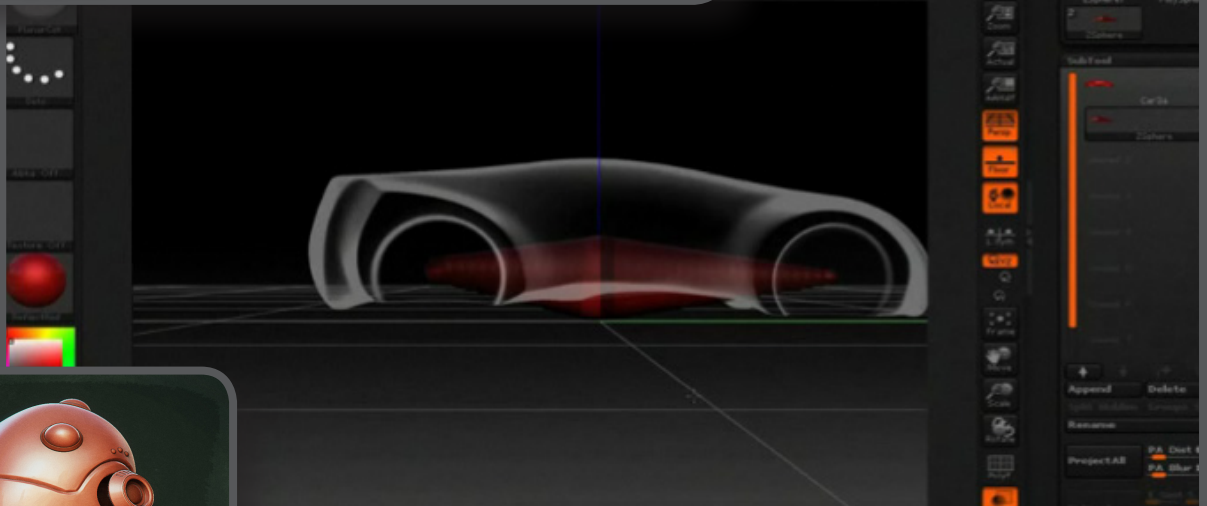
ZBrush is widely acknowledged and celebrated for its ground-breaking use in the conceptualization and realization of characters, environmental effects and visual effects in many blockbuster films and video games including **Avatar (20th Century Fox)**, **Lord of the Rings (Weta Digital)**, **Pirates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



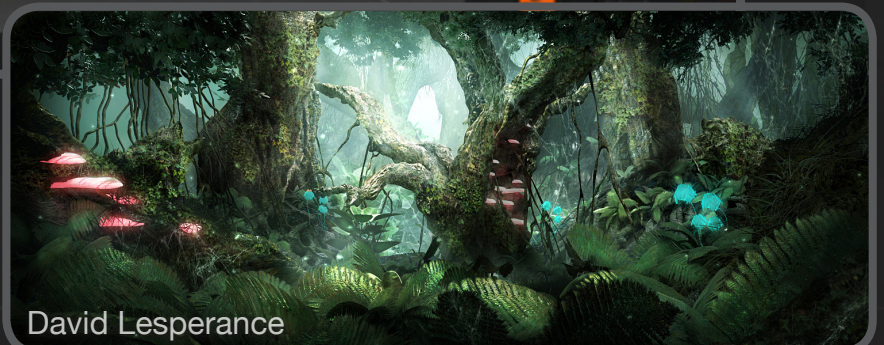
This document will take you through various videos, articles, tutorials, and images to inspire your journey. Most importantly, our goal is for you to understand how to best use ZBrush in your own artistic way. If you master the basic philosophies and techniques behind ZBrush, you will be able to apply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



Frederik Storm



Caio Cesar



David Lesperance



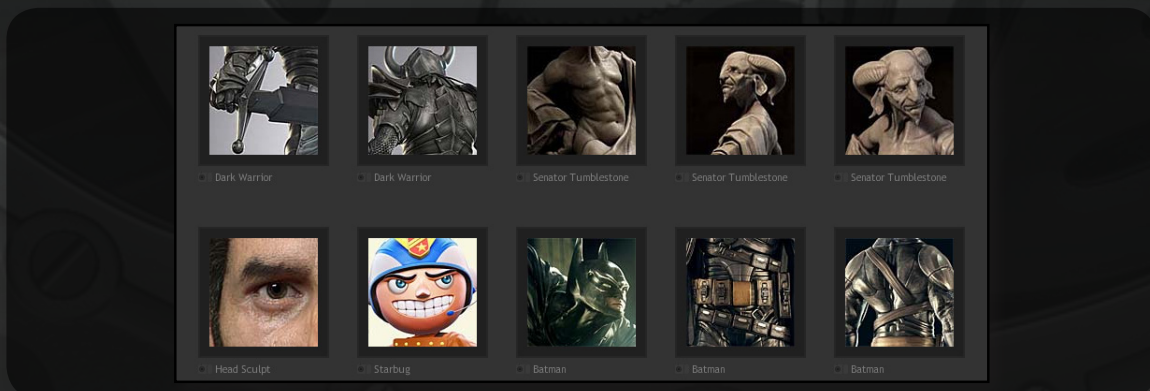
## See what our ZBrush Community is doing today....



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](http://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.

[Docs.Pixologic.com](http://Docs.Pixologic.com) - Online ZBrush documentation with all the functions listed, including the plugins, short-cuts and more!

[ZClassroom](http://ZClassroom) - Your video training center at Pixologic.com!  
Hours of free training video dedicated to ZBrush available 24/7.

[ZBrushCentral.com](http://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.....

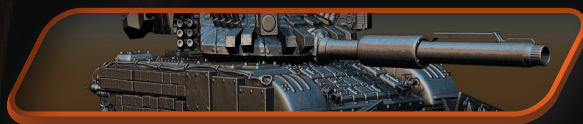


## Using this Course:

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.



# Chapter 1:

Start

Chapter 2

Chapter 3

Chapter 4

Chapter 5

# Getting Started

Imagery Courtesy of Alex Zozhanov

## 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>

( 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.

## 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

## 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

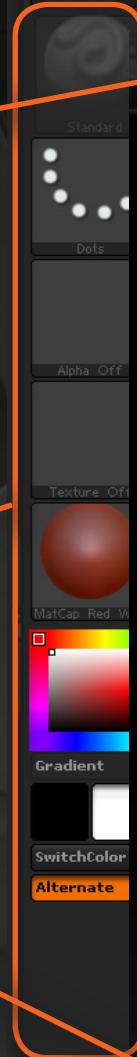
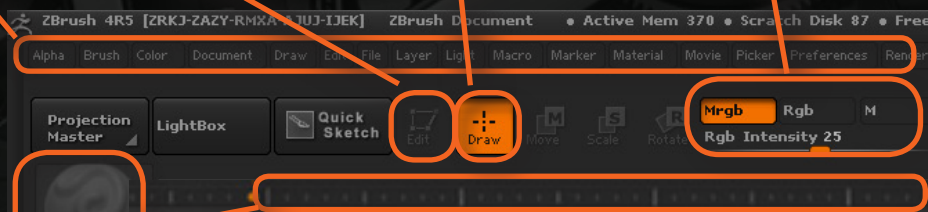
This is ZBrush's built in browser. Lightbox can be used like your computer's file explorer and help you navigate to different Brushes, Projects, Materials, etc. Store a short-cut for any system folder to be saved in one of the Lightbox folders for quick access to your very own folders. The Lightbox folders 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.

## 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.

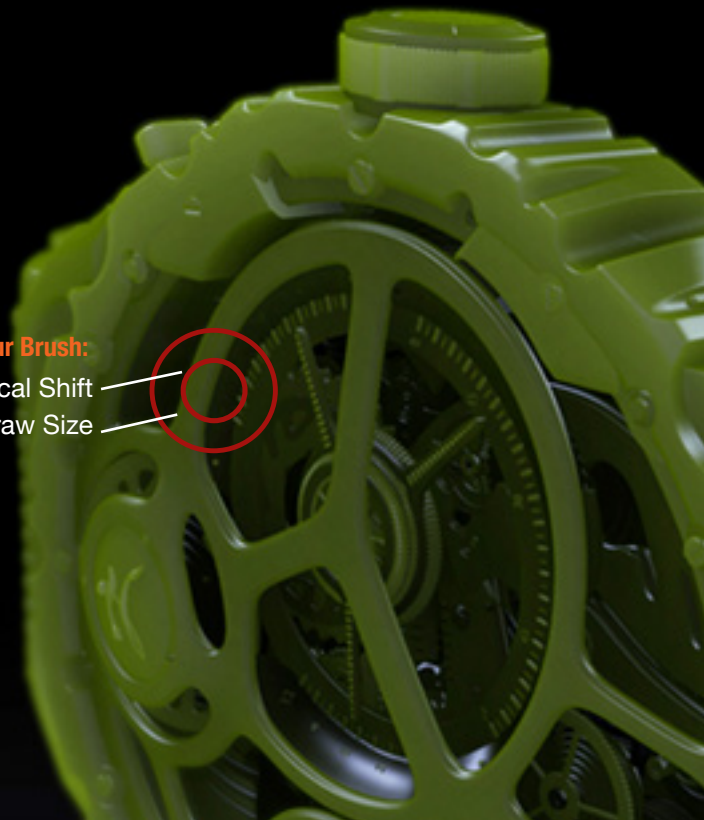
## Color Control

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.



## Your Brush:

Focal Shift  
Draw Size





See-through 0

### 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.

### See-Through Mode

Sometimes as you work you might find yourself searching for reference images on the internet or referencing an image already loaded into another program. See-Through will allow you to apply a transparency to the whole application of ZBrush for better viewing of your reference.

### Brush Controls

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

### Dynamic Brush Size

Makes it possible for the brush size to dynamically change as the model moves closer or further away from the camera.

### Quicksave with Autosave

Saving your work has been streamlined with the addition of Quick Save. If you have ever become so focused on creating that you've lost track of time and forgotten to save your work you will appreciate the new Auto Save feature.

### 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

Dynamic

QuickSave

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.

### 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.

### BPR Render brings work to life



Clipping brushes make any hard edge



Xpose all SubTools with one click of the



Mem 3725 • Time 2.551

Stencil Stroke Texture Tool Transform Zplugin Zscript

Zadd Zsub Zcut  
Z Intensity 25

Focal Shift 0

Draw Size 64

Dynamic

Active Points Count

Total Points Count

Tool

Load Tool Save As

Import Export

Clone Make PolyMesh3D

Clone All SubTools

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Lightbox Tools

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## What is Edit Mode?



The video titled **“Review of the UI”** 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

## Initialize ZBrush:

The video titled **“Initialize ZBrush”** will explain how to reset your settings to default. Think of the Initialize function as a return to default option.

### 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

## Curve Method

### Curve Tube Brushes: Curve Line Tube and Curve Multitube Brushes

The curve line tube function quickly generates tube geometry from the lines you draw. You can still

edit and manipulate the form, shape, number of editable points on your curve and the size of these tubes by changing the brush size while the brush size indicator is red. In conjunction with this, the Curve MultiTube brush generates multiple curves and still allows users to retain control over editing the various curves drawn on the canvas.



### Curve Lathe/ Curve Multilathe



The Curve Lathe brush produces geometric outputs with an imbedded revolve.

### Curve Tube



The Curve Tube Brush generates tubular geometry and allows for continuous editing of the active tubes in your scene. By changing the brush size you can dramatically control the size parameters of your active tubes.

### Curve Tube Snap

The Curve Tube Snap brush generates tubes in the same fashion as the Curve Tube brush but snaps the geometry to the existing mesh in your ZBrush canvas.



### Curve Surface

The Curve Surface Brush generates geometry based on curves and snaps to the surface of your model. Curves drawn with the Curve Surface Brush will remain in an editable state until you draw out the next curve. By changing your brush size, you can actively change the size of the most recently generated geometry.



### Curve TriFill

The Curve TriFill Brush will generate geometry based on the curves you draw on the ZBrush canvas. The geometry derived from using the Curve TriFill brush is triangulated. Curves retain interactivity by allowing you to make adjustments to size and the overall number of points on your active curve.size, you can actively change the size of the most recently generated geometry.







### Curve Quad

Similar to the Curve TriFill Brush and differing only in output, the Curve QuadFill Brush generates geometry

with mostly four sided faces in its composition. Generating geometry is as easy as drawing out a curve on the ZBrush canvas. Again, curves generated with this brush retain the ability to edit and manipulate overall size and number of curve points while still active.



### TIPS:

- Curve Method Brushes work best when used in conjunction with Dynamesh. Allowing you to generate complex, unique forms fluidly and with flexibility.
- Curve Mode can be added to your custom brush by simply activating it from the stroke palette



[Learn how to use the Curve Tri Fill Brush](#)

[Learn more about new brushes in ZBrush 4r4](#)

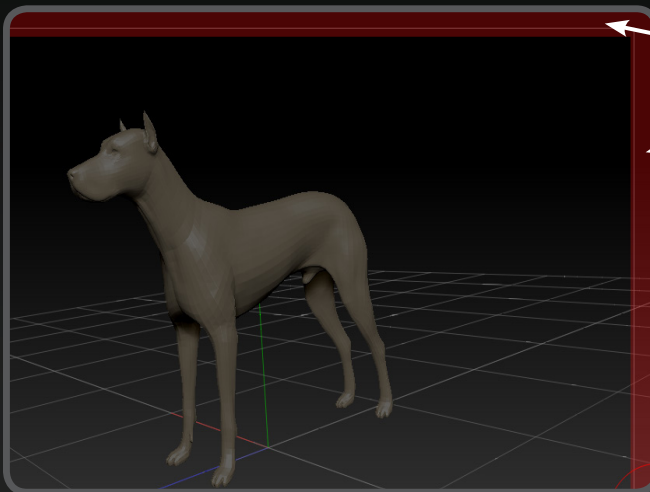
## Navigation in Edit Mode:

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.

**Quicksave with Autosave:** This feature supplements your regular saves by creating uniquely named backups which can be made with or without the Project History. Each time a QuickSave is called for, it creates a new project with incremental numbering with quick access through LightBox.

If you step away from your computer or switch to another application for a few minutes, ZBrush will add a new QuickSave to the existing series. This turns QuickSave into an Auto Save process!

This feature isn't limited to inactivity either. You can also set ZBrush to automatically perform a QuickSave after a specified amount of time has passed since your last save.



**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

# Chapter 2:

[Start](#)

[Chapter 1](#)

[Chapter 3](#)

[Chapter 4](#)

[Chapter 5](#)

# Let's Get Sculpting

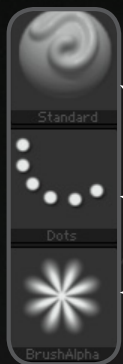
Imagery Courtesy of Rafael Grassetti



## 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

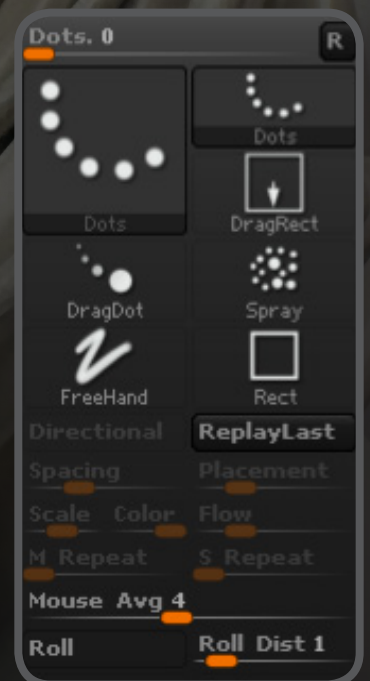




## Stroke Palette

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](#)

## Dynamesh

DynaMesh is The New Base Mesh that has no limitations to what it can become. Starting from a sphere to create a character head is an easy process but DynaMesh will allow you to create a whole character from that very same sphere with no uneven geometry!

Consider what it's like to work with clay. As you stretch clay out or add volume to it, the clay itself retains the same basic consistency and the same capacity for detail across its surface. DynaMesh brings that experience to the digital world.



[An Introduction to Dynamesh](#)



[Learn more about Dynamesh](#)



ZBrush Artist: James Van Den Bogart

The magic behind the DynaMesh is its ability to regenerate geometry in a blink of the eye, removing all stretched polygons by creating a surface optimized for sculpting and with equal distribution of polygons across the surface. Don't be afraid to stretch your model to create legs, arms, columns, or whatever else comes to mind in your creative process. There are now no limits to what your starting point can evolve into.

## Dynamesh Additions

Since its introduction, DynaMesh has served as an excellent conceptual tool for developing the mesh that you will then sculpt. ZBrush 4R4 introduces refinements to give you even more freedom, such as being able to combine SubTools using DynaMesh and Boolean-type operators. brings that experience to the digital world.

**Learn about the new additions to Polygroups**

[Polygroup Additions](#)

**Learn more about the new additions to Dynamesh**

[Dynamesh Additions](#)



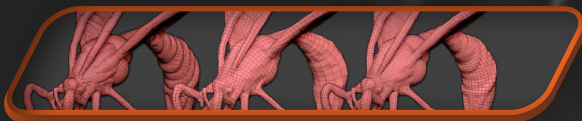
## QRemesher

Fully integrated into ZBrush, QRemesher is an easy to use automatic remeshing/retopologizing plugin. QRemesher does for your topology what UV Master did for UV mapping. It removes yet another creative barrier that often stands in the way of true artistic freedom. With QRemesher you can focus even more on the creative process of model creation and leave the technical hurdles behind!

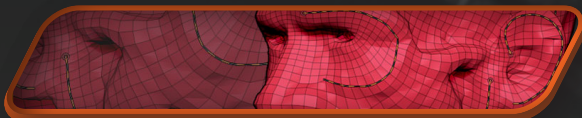
Unlike with traditional manual retopology, with QRemesher you can define a target polycount. This is very useful when you have restrictions on the number of polygons you can use, such as when you plan to take your work into a specific real-time engine.

The minimum polygon count is limited to 1,000 polys. This is because fewer polygons would prevent automatic retopology from producing a usable result. If your budget requires fewer than 1,000 polygons you will need to use a manual retopology solution.

In addition to the Target Polygon Count slider, there are three presets. With these you can automatically set the target to be half, equal to or double the number of polygons in your current model (or selection area).



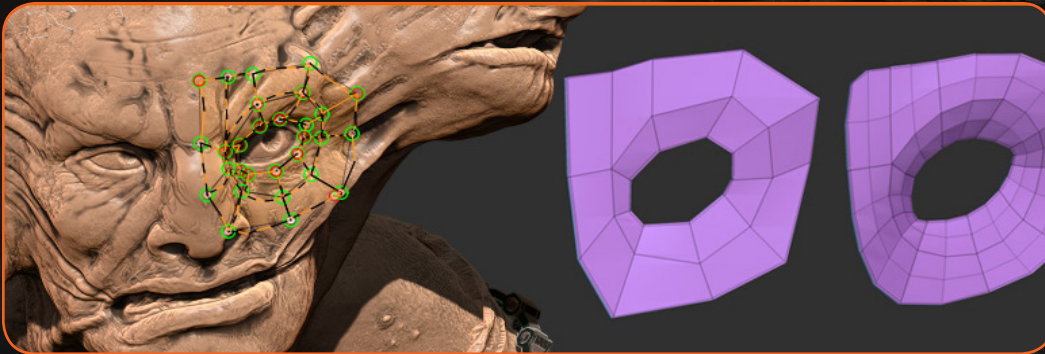
[Learn more about QRemesher](#)



[Learn more about Topology](#)

## Topology Brush

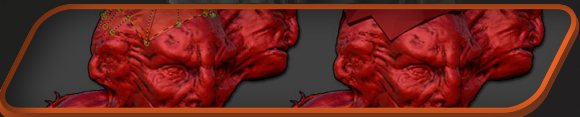
The Topology brush gives the ability to create new geometry with ease by drawing curves on the model. Where the curves connect new geometry is created. Unlike with the other Curve brushes, using the Topology brush, the curves can't be edited on the surface of the model. They can only be deleted, extended by starting at the end of an existing point, or closed by connecting both extremities with a new curve. They can also be deleted by holding Alt while drawing a new curve to intersect the one you wish to remove. The Topology brush puts additional power in your hands to dictate the form of your creations.



*Even though the curves may not be edited while having the topology brush active, it is possible to edit a curve created by the Topology brush (or QRemesher Guide brush) by picking any other Curve brush, making sure that Bend is on and completing your edits. Switch back to the Topology brush when done.*



[Learn more about Topology Brush](#)



[Topology Brush Accessories](#)



## Mesh Fusion

ZBrush is able to fuse topology with new topology on an existing mesh. The mesh fusion function can be performed using QRemesher, the Insert and Insert MultiMesh brushes, and the Topology brush.

### ***QRemesher Partial Mesh Retopology***

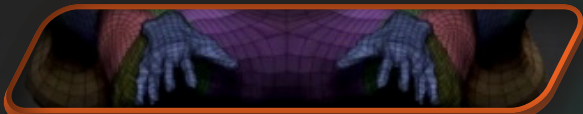
QRemesher has the ability to retopologize only a portion of your model. In this case it will automatically create the necessary connections to maintain mesh integrity with the original portions of the model. This is the fastest method of performing partial retopology.

### ***Insert Mesh Fusion***

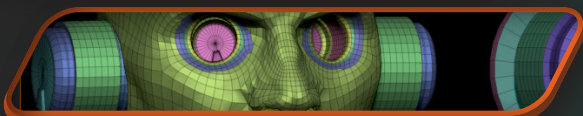
Fuse different models together utilizing Insert Mesh brushes, creating clean topology to connect them. This operation will only affect the polygons located at the connecting borders while the rest of the model will remain unchanged. This process makes use of a polygon bridge between your inserted mesh and the connection points of the model you are connecting the new geometry too. This function will retain the original topology best.

### ***Mesh Fusion and the Topology Brush***

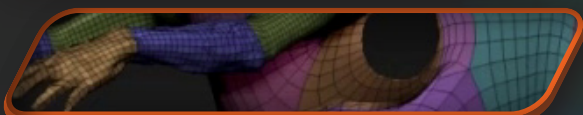
The replacement feature can also be combined with the Topology brush. The Topology brush is perfect for areas requiring an edit in topology. Using the power of curve mode, mesh fusion using the Topology brush



[ZBrush4R4 - Are You Ready?](#)



[Insert Mesh Replacement part 3 of 4](#)



[Insert Mesh Replacement part 4 of 4](#)

## Insert Mesh

The Insert brush has become a major player in your ZBrush arsenal of features. Now that it also allows you to actually replace portions of a model, several new enhancements have been made.

### ***InsertMultiMesh***

To extend your creativity when using mesh insertion with both DynaMesh and/or the mesh fusion feature, you can now use brushes which contain not only one, but a large panel of meshes, ready to be inserted. This makes it possible to create individual brushes with specific themes such as science fiction, mechanical, organic, flowers and more.

### ***Curve Mode Single Mesh***

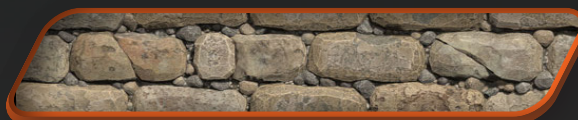
ZBrush 4R4 introduces new controls to create more accurate curves, as well as for editing them after creating them.

*When editing an existing curve, surface detection will allow you to conform the curve to the surface you are drawing on. This feature remains active when editing a curve, allowing you to change the path while still holding to the underlying surface. At the beginning and end of each curve you will see a green line indicator. These lines represent the normal direction (path) of the curve at those points.*

### ***Curve Mode TriPart***

The Insert-type brushes have been enhanced with a new ability to insert copies of one mesh between two “end cap” meshes. For example, you can with a single stroke create a chain where its links are duplicated between two locks or stoppers

*In addition to inserting a mesh as a negative, holding ALT while inserting a model can also stretch it.*



[Environment with  
Tate Mosesian](#)



[Insert Mesh Lesson](#)



## Panel Loops

With Panel Loops you can convert your model's PolyGroups into panels of polygons with or without thickness, or even as extruded surfaces. The edges of these panels are created with a custom bevel around them defined by an editable profile graph curve. Borders will have clean polygons loops even on low resolution models. They can have inner or outer panels (or both) and can be created as an extrusion from the original surface or as entirely separate pieces.



## Delete Loops

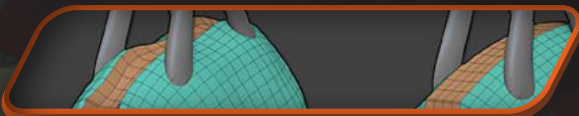
The new Delete Loops command analyzes your model's topology based on a user-defined angle setting. With a single click it removes all unnecessary edge loops – polygons that don't contribute to the shape of the model.



[Learn More About Panel Loops](#)



[Learn More about Delete Loops and Align Loops](#)

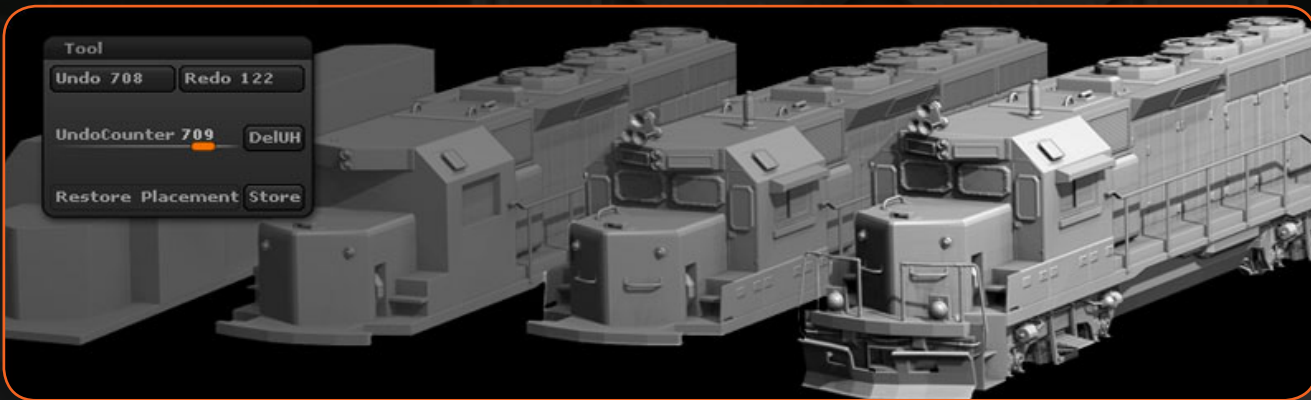


[Introduction to Polish by Features](#)

## Undo History

ZBrush now has a larger undo history for various operations, allowing you to go further back into your sculpting history to fix any mistakes -- even after reloading your model in a new ZBrush session! While there is still a maximum number of undo's which may be performed, this limit is now set at 10,000 which in most cases will be far in excess of what you might need. For clarity, you might think of this simply as a process history.

In addition to the expanded undo/redo ability provided by this feature, the Undo History can be used to replay your creation process and save it as a movie.

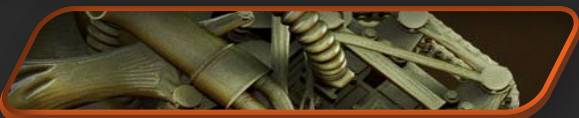


## Undo History Movie

While sculpting with ZBrush, you are always turning around your model, zooming in and out or changing the model's position to focus on a portion of your model. Simply playing back a recording of your sculpting session can be awkward to watch due to all these movements. The Undo History feature has controls to overcome this and make your recordings more enjoyable for viewers. In addition to the expanded undo/redo ability provided by this feature, the Undo History can be used to replay your creation process and save it as a movie.



[Undo History Overview](#)



[Undo History Feature](#)

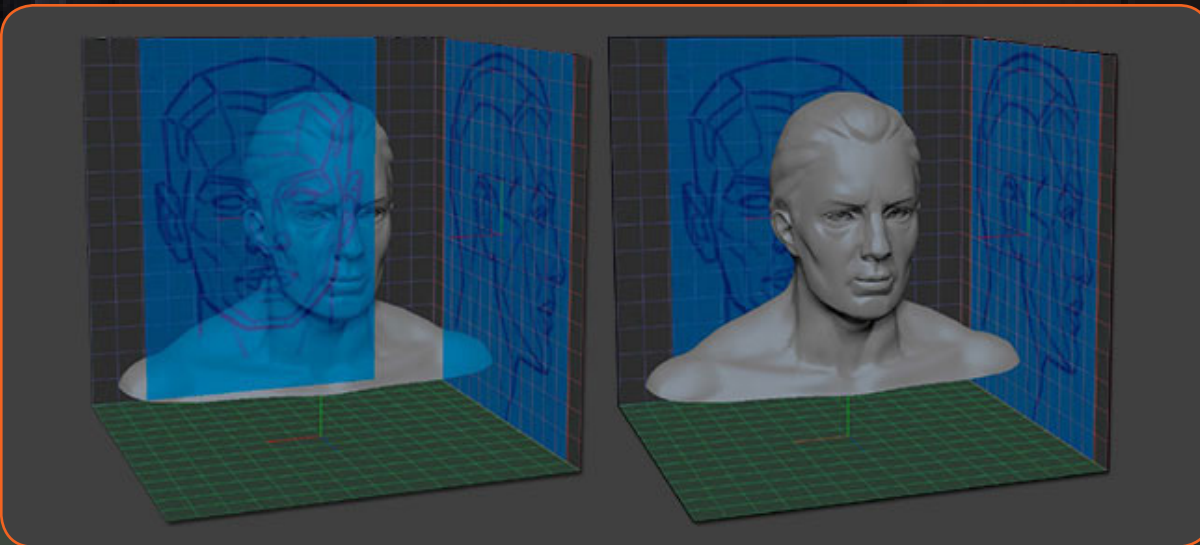


## Grid

In ZBrush 4R4, the Grid feature is given new functionality, mainly to provide support for reference images. You can easily load your images for the front, side and top views to more easily create artwork based on references.

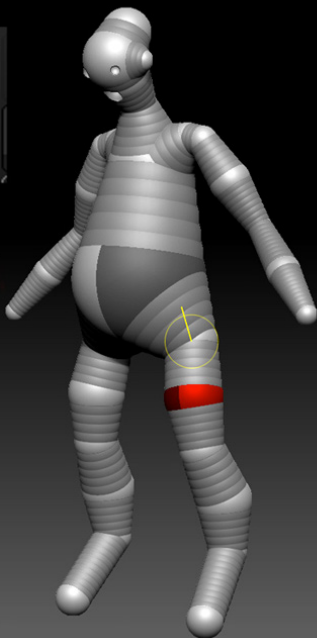
A Floor Fill section has been added to the Grid options, located in the Draw palette. These settings allow you to load your reference images for the working planes you want to use. There are also settings to control visibility of these grids, the reference images, and the model itself.

ZBrush can display a different image on each side of a grid plane. This is useful in situations such as when you need different front and back reference images.



[Grids and Reference Images](#)

## 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:

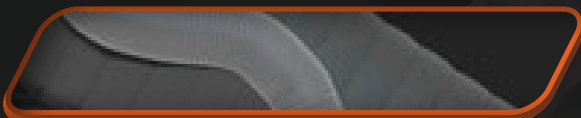
**Armature:** This mode is like building the wire framework for a maquette. ZBrush then automatically creates the “clay” around that armature.

**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](#).

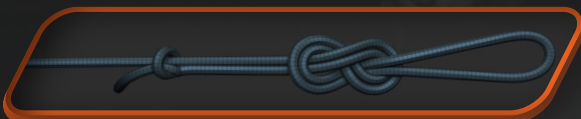
**Retopology:** In this mode ZSpheres are used to change a base model’s topology on a point-by-point level. Alternatively, this mode can be used with another model as reference to create entirely new topology such as the remesh of a model or even form-fitting clothing.



[Imagine your next car with ZSketch](#)



[See ZSketch Smooth Showcased](#)



[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.

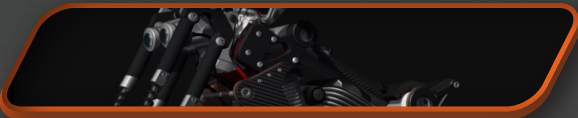
Note: An extracted mesh can also have various degrees of thickness.



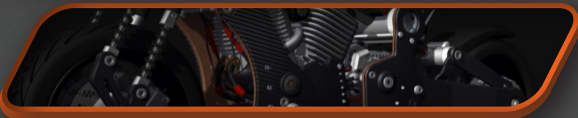
*Quick tip: In ZBrush 4r4 an extracted mesh retains the mask that was used to create it. Press **Tool > Masking > Clear** to remove the mask so that you can begin sculpting the extracted mesh.*

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

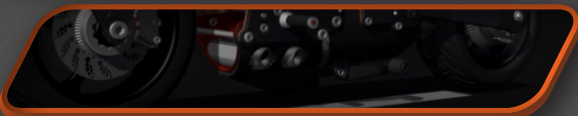
Learn to sculpt a basic head [HERE](#)



[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 \(30 min\)](#)



## FiberMesh™

ZBrush 4r4 brings a new specialized mesh generation tool: FiberMesh™. You may already be familiar with the Fiber material from previous versions of ZBrush. FiberMesh is different because it is not a render process. Instead, FiberMesh creates real geometry on the fly which is added to the existing model as a new SubTool.

You will find FiberMesh in the Tool >> Fibers sub-palette.

Depending on your settings within the Fibers sub-palette, you can generate totally different shapes for fibers, hair, fur and even vegetation.

Thanks to these fibers being a real geometry, you then have the ability to sculpt your hairs with ZBrush's powerful feature set. This includes the default sculpting brushes, Masks, TransPose, etc. as well as being able to

paint them through the PolyPaint system. ZBrush 4r4 also introduces a number of "Groom" brushes designed specifically for use with the FiberMesh feature.



Of course, because these fibers are real geometry, they are also able to be exported to your application of your choice. Export the fiber geometry with or without UVs where each fiber will allow a texture to be applied to the individual fibers.



## FiberMesh cont.

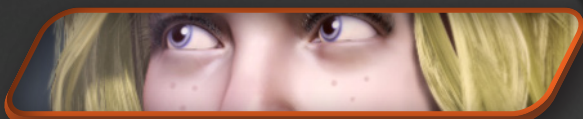
FiberMesh geometry is optimized for performance which and includes specific attributes which let the that allows the ZBrush groom sculpting brushes know that they are being used on a FiberMesh. Any 3D brush can be adjusted to edit fibers with new settings available in the Brush Palette. However, if you do something that changes the topology -- like slicing the fibers or adding subdivision levels – ZBrush converts the FiberMesh into a classic PolyMesh3D. From that point forward, the sculpting brushes will behave exactly like they would for any normal mesh object.



Imagery Courtesy of Daniel Williams

Learn the basics of using FiberMesh [HERE](#)

FiberMesh in ZClassroom [HERE](#)



Imagery Courtesy of Tsvetomir Georgiev

## Micro Mesh

Micromesh, joins the already feature rich list inside ZBrush 4r4. It will allow for ZBrush's rendering system to replace a generated FiberMesh, or a models individual polygons with any other 3d mesh. That being said, you can already start to imagine the creative potential at hand. This new feature will no doubt open doors to previously undoable operations and design elements. Now you can "grow" complex plants with the help



of FiberMesh or place real scales on your creatures.

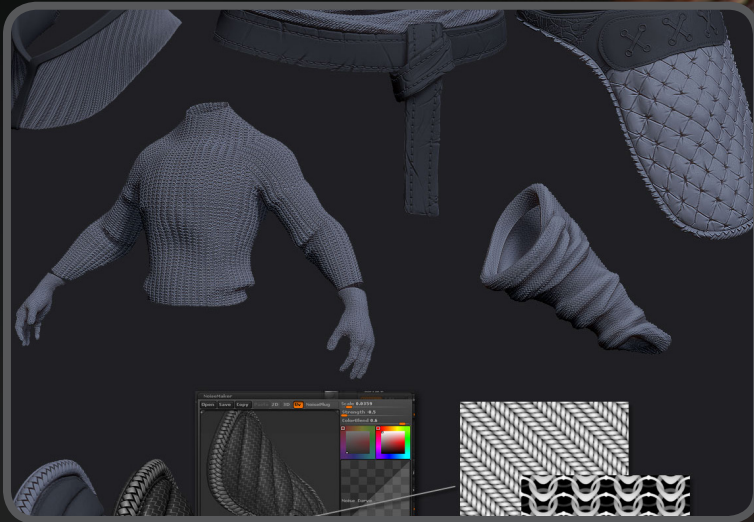
Amazingly, MicroMesh will only be displayed at render time.

[See Joseph Drust's Experimentation with FiberMesh](#)



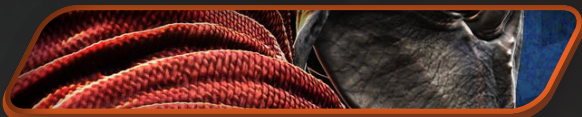
## Noisemaker

Surface Noise was first introduced in ZBrush 3.5 and provided a way to display procedural effects on the surface of your model. Enhancements in subsequent releases provided many new ways to generate the surface noise as well as the ability to convert this noise into actual geometry. Because this noise is procedural, you can apply advanced modifications to both topology and PolyPaint without altering your current model. However, at any time you can convert the rendered effect into actual geometry and/or PolyPaint – either on the entire model or to specific portions using Masks to protect the rest of the surface.



[Click here to see the Noisemaker workflow of Maxence Fleuret](#)

ZBrush v introduces the NoiseMaker Plugin. This adds a full set of powerful noise generators to the existing NoiseMaker functions from ZBrush 4R2. The key difference to the noise created by NoiseMaker is that it is being generated in 3D instead of 2D. Most of these generators have common and specific settings, which produce almost instantaneous visual results. The workflow for using Surface Noise is the same as from ZBrush 4R2 except that you can now replace the default noise with one that is generated by the NoisePlug settings.



[Click to see Geert Melis working with Noisemaker](#)



[ZClassroom Noisemaker tutorials](#)



# Chapter 3:

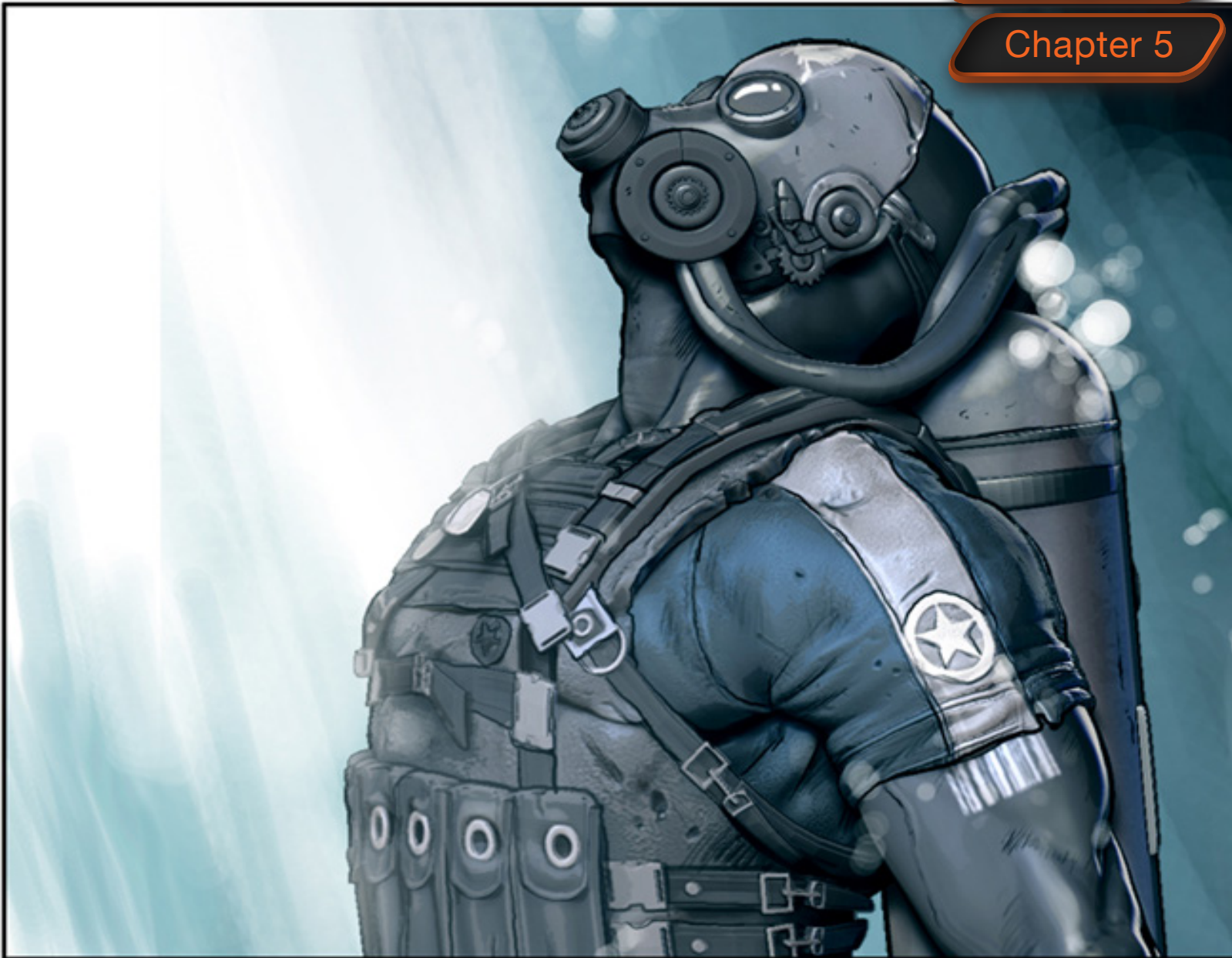
Start

Chapter 1

Chapter 2

Chapter 4

Chapter 5



# 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.

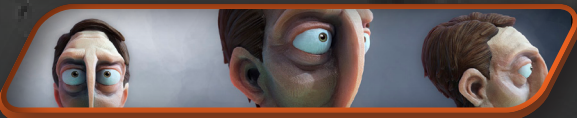
There are many great artists that use ZBrush for Illustration. Some work entirely with ZBrush's 2.5D "paint" while others also incorporate 3D models into their scenes as pixols. Once a 3D model has been "snapshot" to the canvas it becomes exactly the same as if it had been painted with brushes; the pixols 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



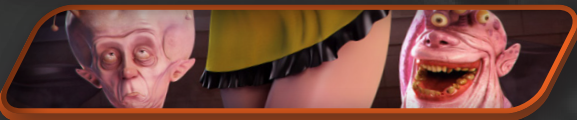
[Create your next comic book in ZBrush with Olivier Thill](#)



[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.
- **Rbg** - With the Rbg 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.
- **Rbg 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:

***Color or Texture + Material + Lighting = 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**.

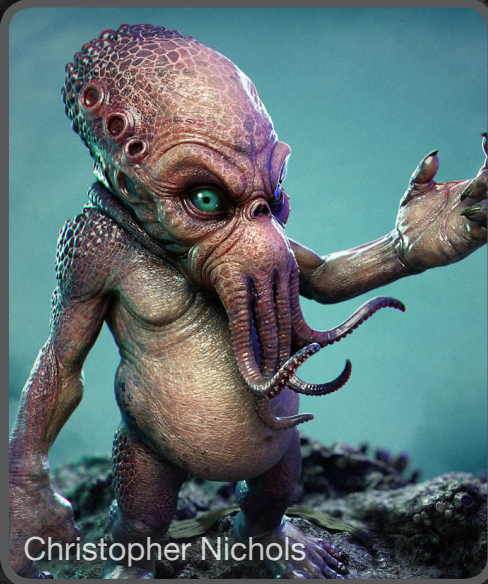
Of course, if you wish to fill the Color and Material at the same time just make sure to have **Mrgb** active when doing a **Color > Fill Object**.

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](#)

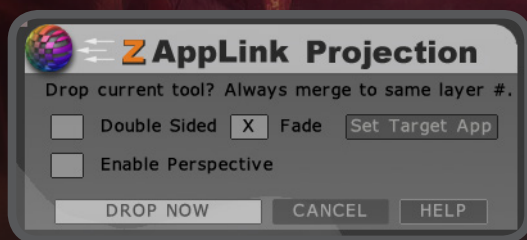


### SHORTCUTS:

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 more information about the ZAppLink plugin [HERE](#).

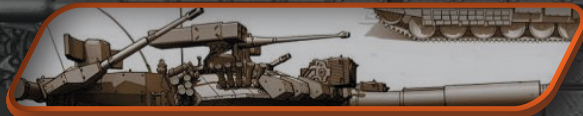
## SpotLight

**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

Imagery Courtesy of Gregory Callahan



## 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 Line

The transpose line has evolved to better meet the needs of the artist. Several new actions have been added to Transpose which will enhance your interactive mesh deformations as well as improving manipulation of your meshes. In addition to the expanded undo/redo ability provided by this feature, the Undo History can be used to replay your creation process and save it as a movie.



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](#).

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](#).



### SHORTCUTS:

W = Move mode  
E = Scale mode  
R = Rotate mode



### ***Axis Selectors***

In addition to the default TransPose action line, world axis indicators have been added. By clicking on the small circle at an axis extremity you can align the action line along the corresponding axis.

### ***Orientation***

In some circumstances it is useful to orient Transpose exactly to the surface normal. For example, having the action line perpendicular to the surface can be useful for doing a clean extrusion. It is also quite useful when using an Insert brush – both for inserting the shape as well as for manipulating it after insertion.

### ***Flatten a Surface***

The Transpose line in Move mode lets you flatten the model along its action line axis. This is done by dragging the inner circle located at the root of the universe three axis indicator.

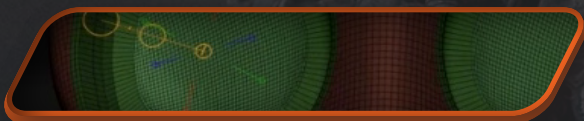
### ***Inflate a Surface***

The Transpose line in Move mode lets you inflate the model along its action line axis. This is done by right-click dragging the furthest circle away from the universe three axis indicator. Hold the cursor over the red ring then right+click and drag outwards.

### ***Insert and Edge Loop***

Edge loop insertion using TransPose can now be done in Move or Scale mode. In Move mode it works as before. In Scale mode it adds a new ability to quickly create topology inserts on a model without subdivision levels rather than a simple extrusion.

While Scale mode is active, holding the CTRL key and dragging the action line's inner middle circle will create an edge loop on the boundary of the non-masked part of the model.



[Learn about the new Transpose Line](#)



## 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.

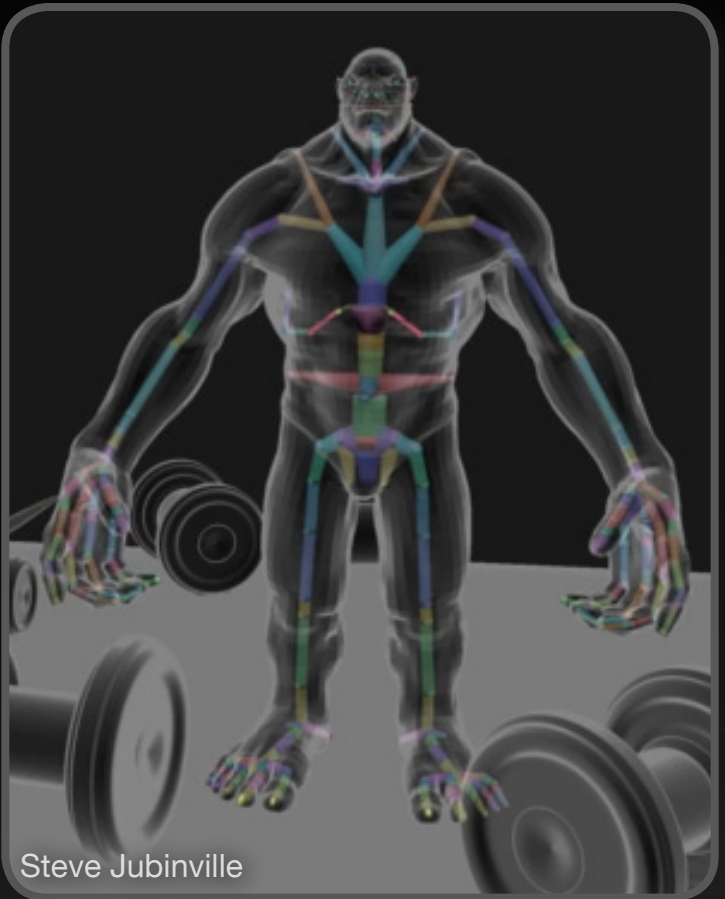
You can begin by creating an underlying rig (or skeleton) for your character. Then with a single click, ZBrush binds your character to this skeleton for posing. Posing the ZSphere skeleton will automatically pose the character that's bound to it.

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](#)

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[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.

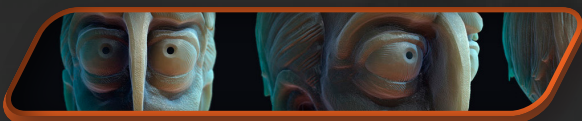
### **BPR (Best Preview Render)**

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 pixols.*

### **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](#)

## Posterize

ZBrush puts celshading at your fingertips with new Posterize render features. Give your models a new look with full control over gradients and steps in real time!

Posterization in ZBrush is computed in different ways depending on your needs. You can use it in 3D and build your desired effect directly onto your model, or it can be applied as a 2D effect to your renders in conjunction with BPR (Best Preview Render) filters.

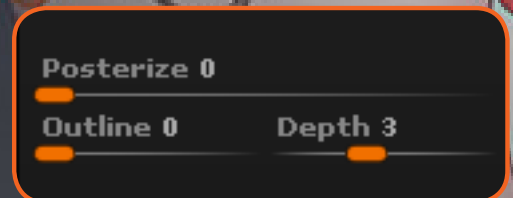
Taking this concept further, BPR Posterization can dynamically unify your model with a background image.

## Step Curves

In ZBrush Posterization can also be applied to Materials and Curves via the curve modifiers settings. The Posterization functionality extends to Shader Channels, Sculpting Brushes, Alpha curves and Auto Masking.

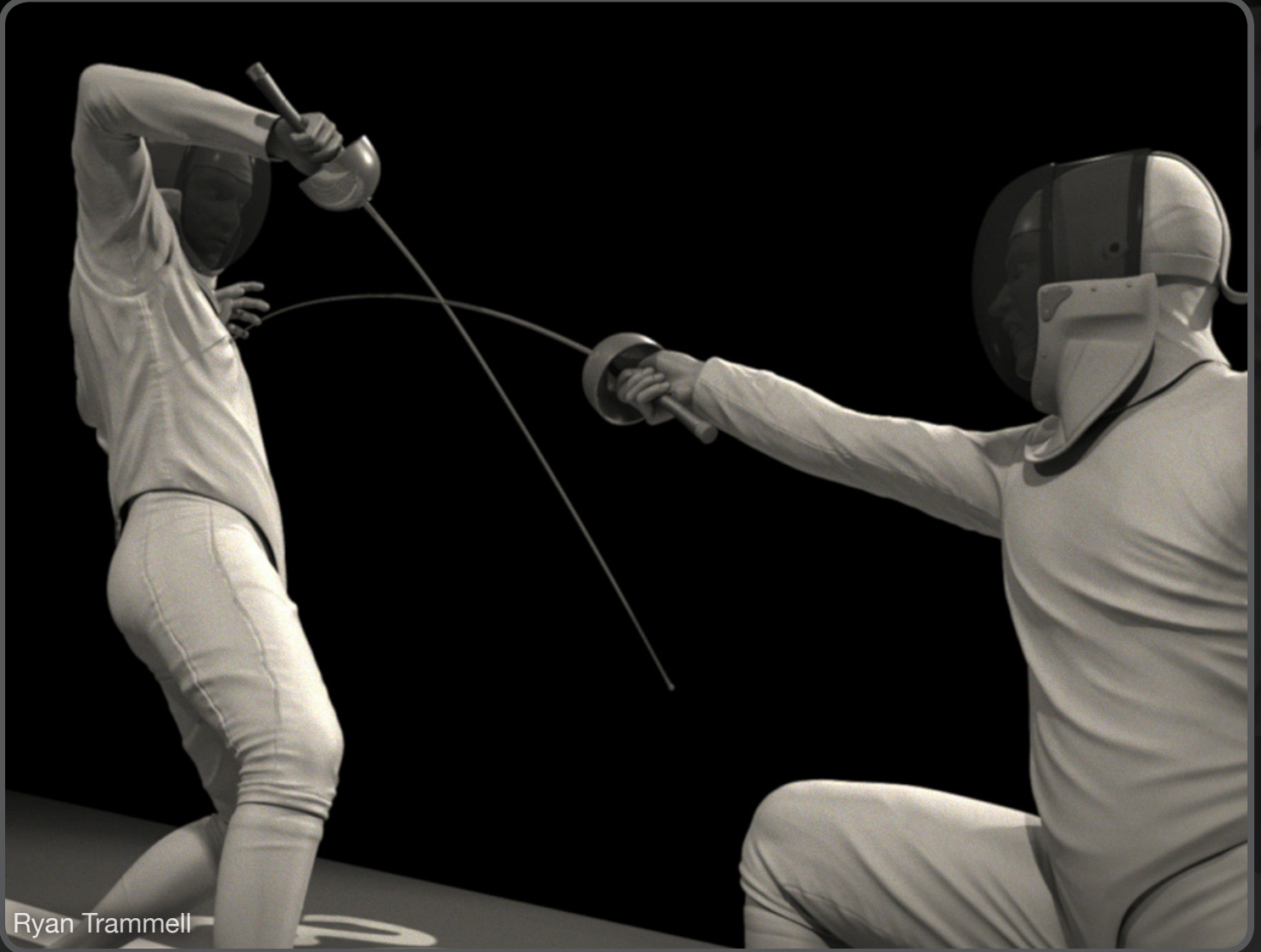
## Outline

The Outline function applies an illustrative touch to your final image. Outline also works with the Material Mixer and as a post render effect in conjunction with BPR filters.



[Learn more about Posterization and Step Curves](#)





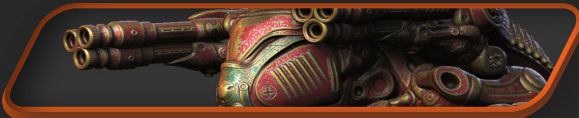
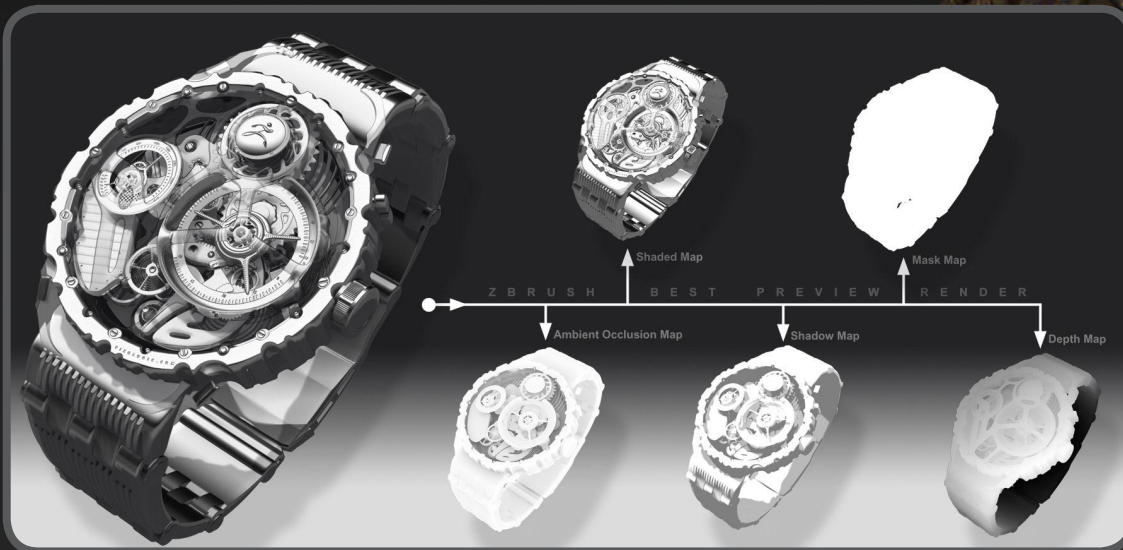
There are several other controls that will really make a difference in any render. Make sure to play with these various settings when using Best Render and BPR to create a more realistic render.

- **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](#).

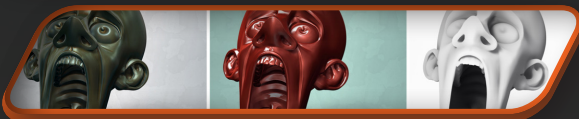
## Lights

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](#)

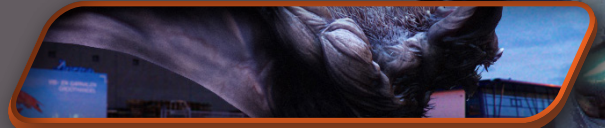


## LightCap™



ZBrush 4r4 introduces the LightCap Designer: a real-time material light modifier. In astonishingly little time you can create scene lighting from an environment, create lights with alpha shapes applied and even add texture to a light to fit the needs of your render.

You can even create lights and then use the LightCap Designer to convert these to an environment for your render, resulting in more accuracy and allowing more creativity in your process.



[Lightcap Bat Creature Rendering Technique by Mariano Steiner](#)



[Environment Map Support to generate Lightcaps](#)



[Rendering with Lightcap](#)



[Learn more about Lightcap:](#)

## ZBrush 4R4 Background Updates

The Light >> background function provides new controls which will be very useful when working with animations, including ZBrush 4R4's History Animation feature.

### Rotate With Object

Rotate With Object mode, located in the Light >> Background sub-palette (activate by default) synchronizes your mesh orientation with the background. The result is that whenever do a camera rotation, the background will follow. This function is enabled by default.

### Snapshot

With new Rotate With Object ability, you can apply your reference image as a Background and snapshot (Shift+S) a grid. You can even snapshot your mesh to the background panorama, storing all the views of your choice as one background.

[Check out 4R4 Background Updates](#)



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:



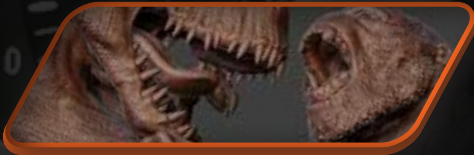
Frederik Storm ([p.4](#))



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



David Lesperance ([p.4](#)) ([p.16](#)) ([p.48](#))



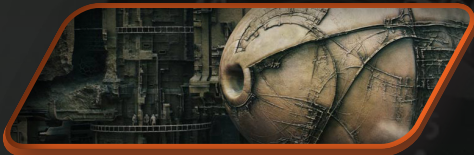
Maarten Verhoeven ([p.5](#)) ([p.16](#)) ([p.46](#))



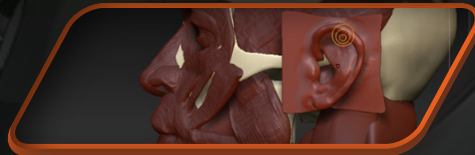
Samuel Burton ([p.7](#)) ([p.38](#))



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.18](#))



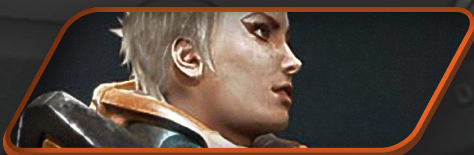
Daniel Crossland ([p.19](#)) ([p.40](#))



Furio Tedeschi ([p.20](#))



Yiannis Tyropolis ([p.21](#))



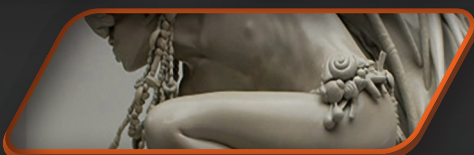
Rafael Grassetti ([p.22](#))



Depp Shang ([p.23](#))



Scott Eaton ([p.24](#))



Cedric Seaut ([p.25](#))



James Van Den Bogart ([p.26](#)) ([p.32](#))



Geert Melis ([p.27](#))

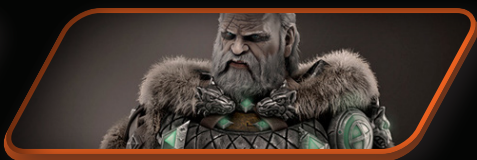




Cezar Brandao (p.28)



Stefano Dubay (p.29)



Carlos Vidal Torres (p.30)



Paul Gaboury (p. 32)(p.34)



Chris Carter (p.33)



Scott Spencer (p.35)



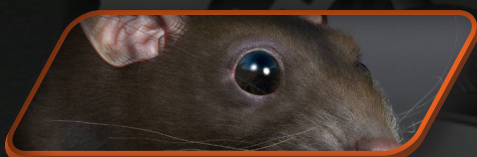
Tae-Bong Lim (p.36)



Damien Canderle (p.37)



Christian Fischer (p.39)



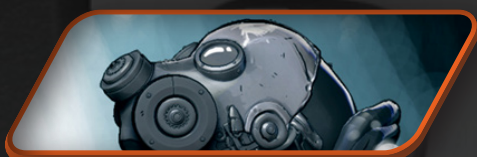
Rick Baker (p.40)



Tsvetomir Georgiev (p.41) (p.55)



Maxence Fleuret (p.42)



Olivier Thill (p.43)t



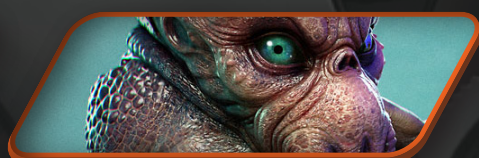
Alexey Kashpersky (p.44)



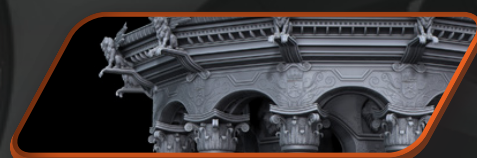
Daniel Williams (p.45) (p.44)



Su Yeong Kim (p.47)



Christopher Nichols (p.49)



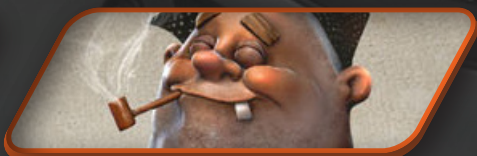
Christopher Brandstrom (p.50)



Alvaro Buendia (p.51)



Steve Warner (p.52)



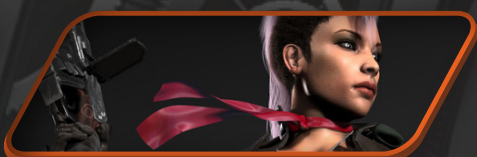
Gregory Callahan (p.53)



Marco Splash Plouffe (p.54)



Norman Schaar (p.55)



Maximilian G. Vogt (p.56)

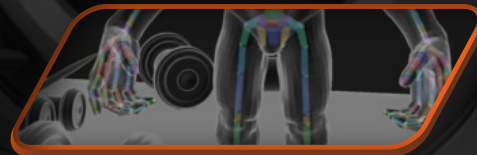




Michal Suchanek (p.57)



Bryan Wynia (p.58)



Steve Jubinville (p.58)



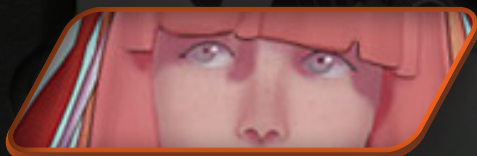
Jelmer Boskma (p.59)



Mariano Steiner (p.60)



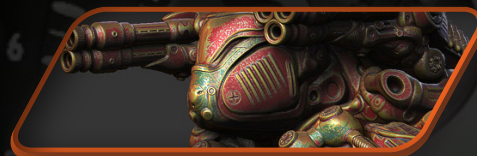
Ian Joyner (p.61)



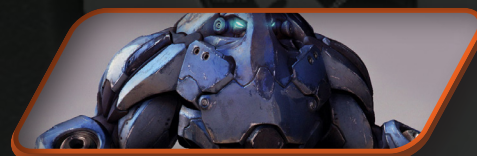
Oliver Milas (p.62)



Ryan Trammell (p.63)



Edward Fleissig (p.62)



Mike Jensen (p.64)



Daniel Bystedt (cover)



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**[www.ZBrushCentral.com](http://www.ZBrushCentral.com)**

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