





# STEP BY STEP AND TUTORIALS CREATED BY ZBRUSH 4 BETA TESTERS

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Pixologic would like to thank all Z4 beta testers, we hope you'll enjoy and learn from their experience, quick tips and tricks.

The Pixologic Team



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# MAKING OF "T80 TANK"

By Steve\_Warner - <a href="www.stevewarner.com">www.stevewarner.com</a> - <a href="steve@stevewarner.com">steve@stevewarner.com</a> 3D Modeling Instructor, Digital Animation and Visual Effects School

Steve Warner got his start in computer graphics in 1982. Using smart programming routines, he created his first animation on a Timex Sinclair 1000. Less than a year later, he created the award-winning educational game, "Excursion I" on the Texas Instruments 994A computer. In the late 1980s, Steve moved to the Commodore Amiga platform and began using Aegis Videoscape and Aegis Modeler to create 3D graphics and animations. Several years later, these programs were acquired by NewTek and released as LightWave 3D.

Over the past 23 years, Steve has developed a name for himself as an artist, educator, and expert in the field of computer graphics. In addition to magazine articles in HDRI and 3D World, he has co-authored three popular books, including "1001 LightWave 3D Tips and Tricks" and the #1 bestselling, "Essential LightWave 3D 9."

Steve began using ZBrush in 2003 after seeing it at the annual SIGGRAPH convention. He developed one of the first pipelines between ZBrush and LightWave and went on to write the official ZBrush to LightWave Pipeline Guide for Pixologic.

Today, Steve works as the 3D modeling instructor for the Digital Animation and Visual Effects School at Universal Studios in Orlando. He also continues to work as a professional 3D artist, providing freelance modeling and animation work to clients across the United States.

ZBrush 4.0 has a variety of new modeling tools. I wanted to test these out by creating a traditional "hard surface" object entirely in ZBrush.

I began by selecting a great piece of concept art from the game, "Tom Clancy's EndWar."

To supplement the concept art, I used reference photos from an actual Russian T-80 tank.



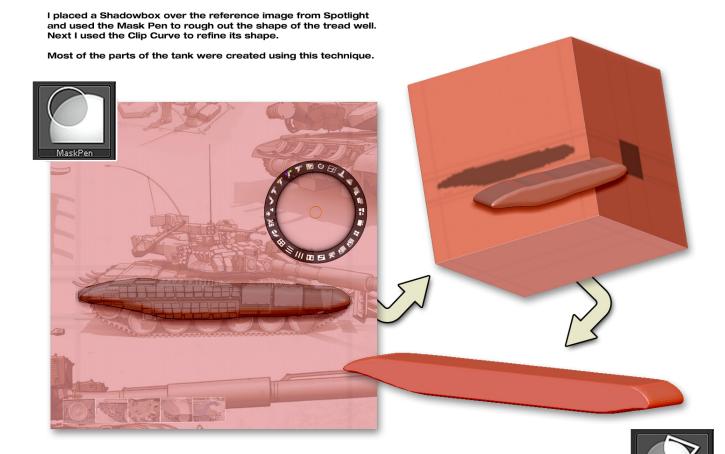


My workflow involves three basic steps:

- 1. Get geometry onto the canvas
- 2. Refine the shape and form of the geometry
  3. Add details to the geometry

To ensure that I was matching my reference material, I used the Spotlight tool to position, size and rotate my reference images on the canvas.



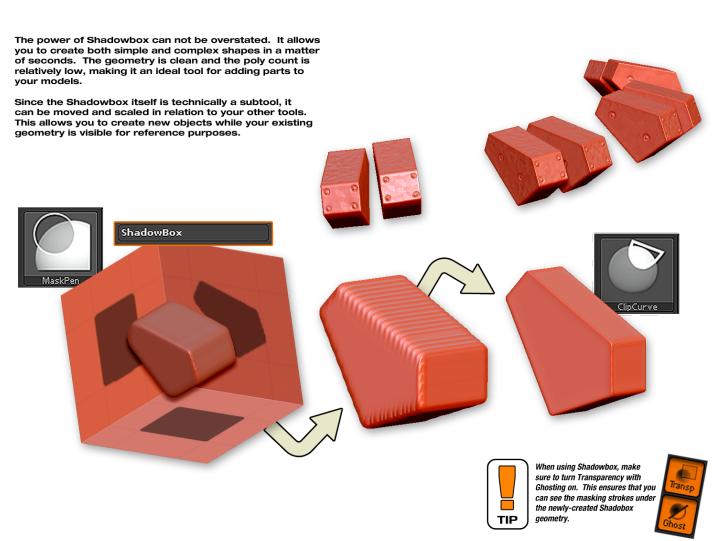




ZBrush 4.0 now allows you to duplicate subtools. You can use this to quickly create multiple copies of objects.

I created a couple of simple boxes using Shadowbox and then used the Duplicate tool to make multiple copies. These were positioned over the reference image (from Spotlight) to match up to the concept art.







To make the cannon, I started with a cylinder primitive and converted it to a PolyMesh 3D object. Using Radial Symmetry and the Layer brush, I sculpted the basic form.

Shadowbox was used to create the remaining piece.

The two objects were combined using the new "Merge Down" option in the Subtool menu and detailed.

ShadowBox

ShadowBox

Merge Down

Merge Down

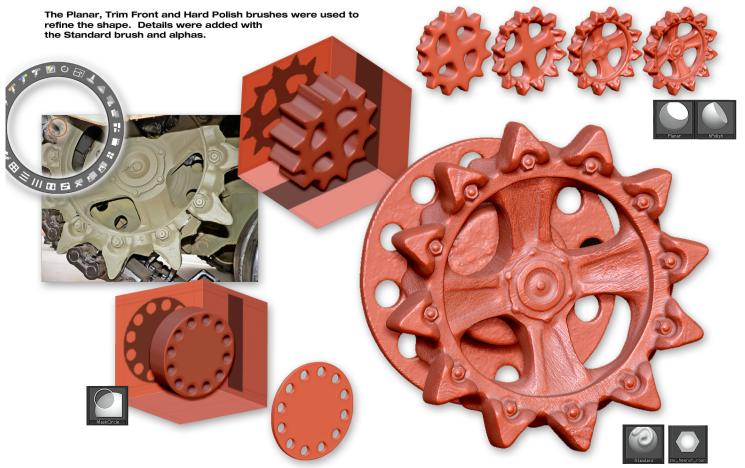




The gear at the front of the tread was built from a Shadowbox using Spotlight for the background reference.



The two gears at the back of the tank were created from Shadowbox with Spotlight used for reference. These are good examples of complex shapes that can be created in a few minutes with Shadowbox and Radial Symmetry.



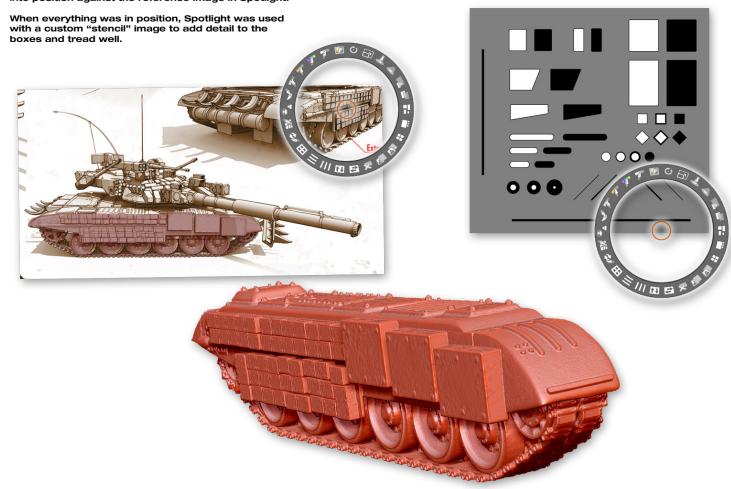


A single tread piece was made by arranging primitive shapes and using the Remesh All tool from the Subtool menu.

The Planar, Trim Front and Hard Polish brushes were used to refine the shape. Details were added with the Standard brush and alphas.



The individual tread pieces were duplicated, moved and rotated into position against the reference image in Spotlight.





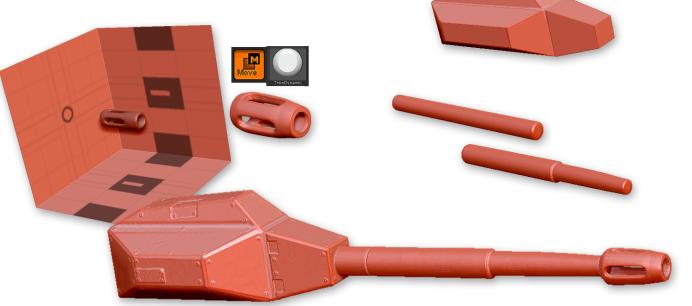
I created the side cannon base from a box, which I then shaped with the Clip Curve tool. This was then reshaped with the Transpose Move tool.

Clipping tends to bunch up your geometry. To evenly distribute it (which is critical for detailing), I used the ReMesh tool in the Subtool menu. Then, with the original shape still visible, I used Project All to get the Remeshed model to match the original shape.

The tip of the cannon was made with Shadowbox. It was reshaped with Transpose Move and the Trim Dynamic brush.

The cannon shaft was made from a primitive cylinder that was reshaped with Radial Symmetry and the Layer brush.

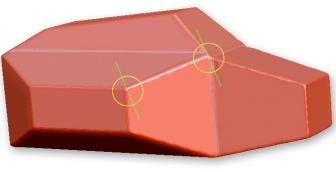
Detailing was done with the Layer brush and alphas along with Shadobox and a custom "stencil" image.





To create hard-edged bevels, I used the Trim Dynamic Trails brush in conjunction with the Backtrack setting in the Stroke menu. Backtrack is available when the Lazy Mouse function is turned on.

With the Backtrack option set to Line and the Snap to Track option turned on, click and drag over the edge you want to bevel. The first stroke will define the edge placement and length. Then drag back over the edge to create your bevel.

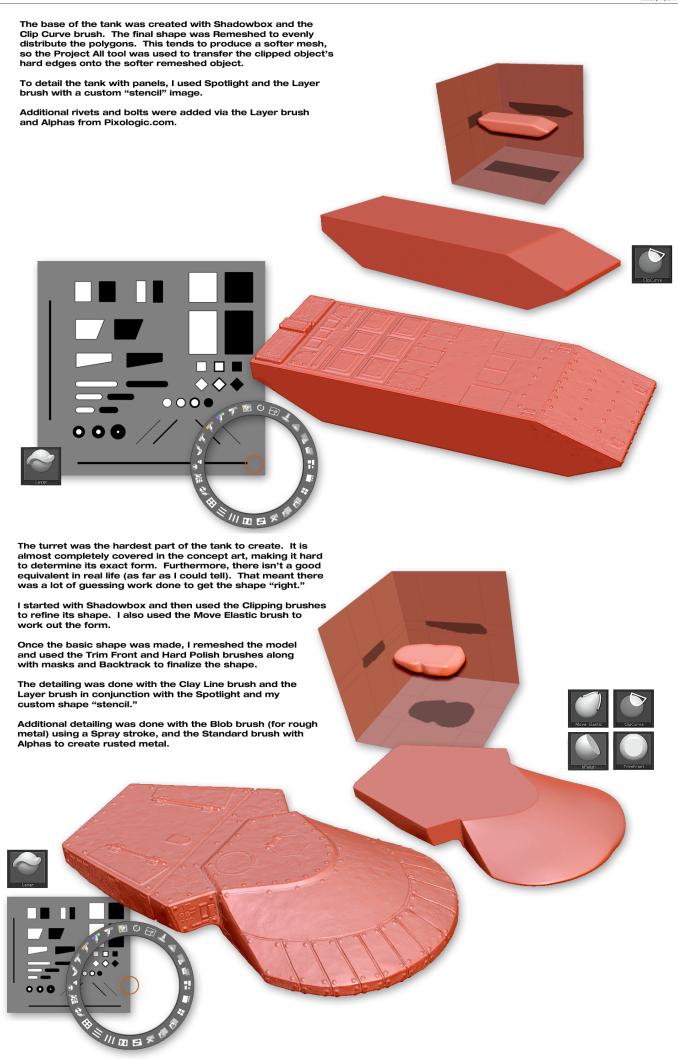




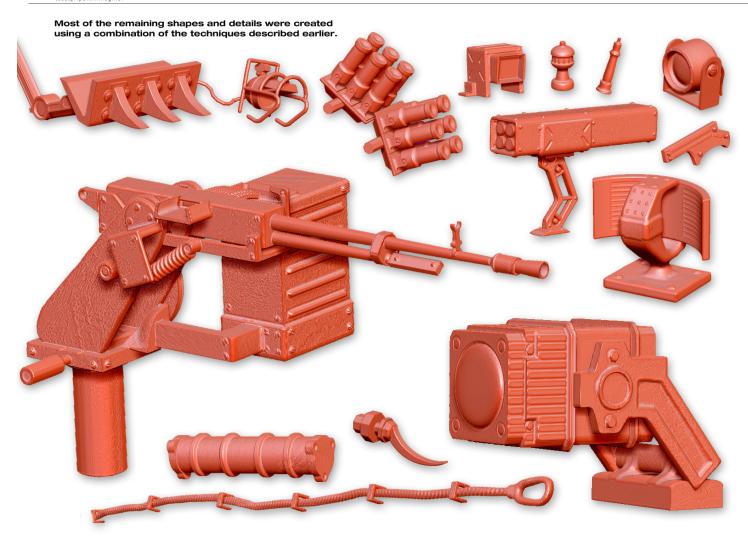




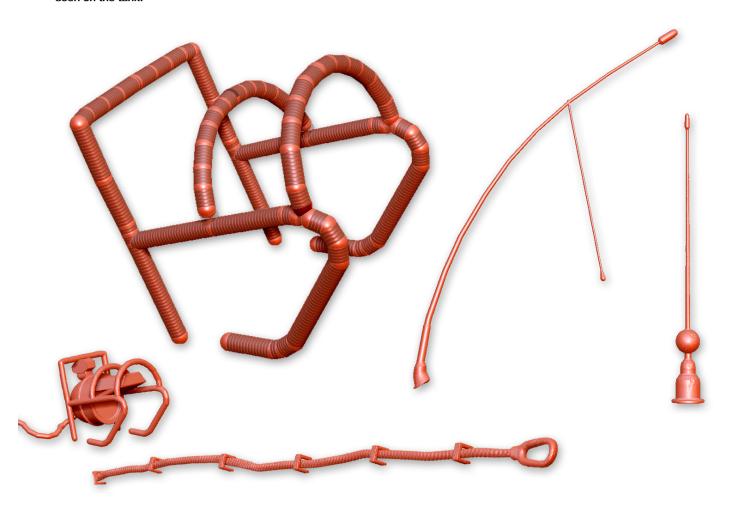








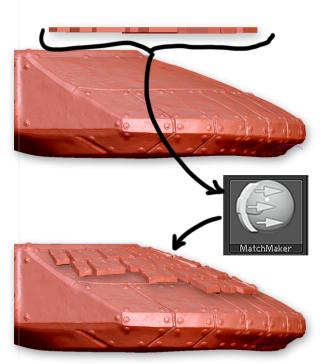
ZSpheres were used to create the cables and wires seen on the tank.





For the turret boxes, a single box was created in Shadowbox. This was then duplicated and moved as described in Step 04.

The resulting boxes were flat and did not match the slope of the turret, so the new Matchmaker tool was used to get them to follow the angle of the turret geometry.





To add character, I created a vanity license plate for the tank.

I started used an actual license plate for reference and built a black and white image over it.

The image was brought into ZBrush and Shadowbox was used to create the plate geometry. Projection Master was then used to position the image and "stamp" it into the geometry.









To keep the tank from floating in space, I created a small pedestal. Shadowbox was used with the Mask Circle option to create the basic geometry.

Radial Symmetry with the Hard Polish brush was used to bevel the edges. Then the new Deco3 brush was used to add ornate trim.

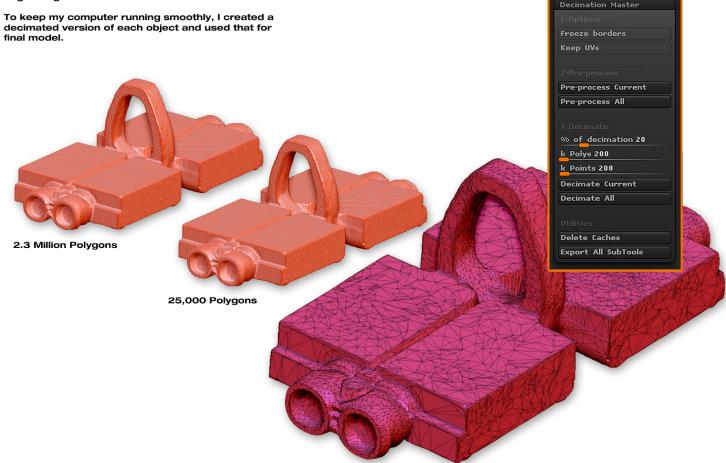
To get the rocky surface, I used Surface Noise and a custom noise curve.  $% \left( 1\right) =\left( 1\right) \left( 1\right) +\left( 1\right) \left( 1\right) \left( 1\right) +\left( 1\right) \left( 1\right)$ 

The grass was added using the Snake Hook brush.

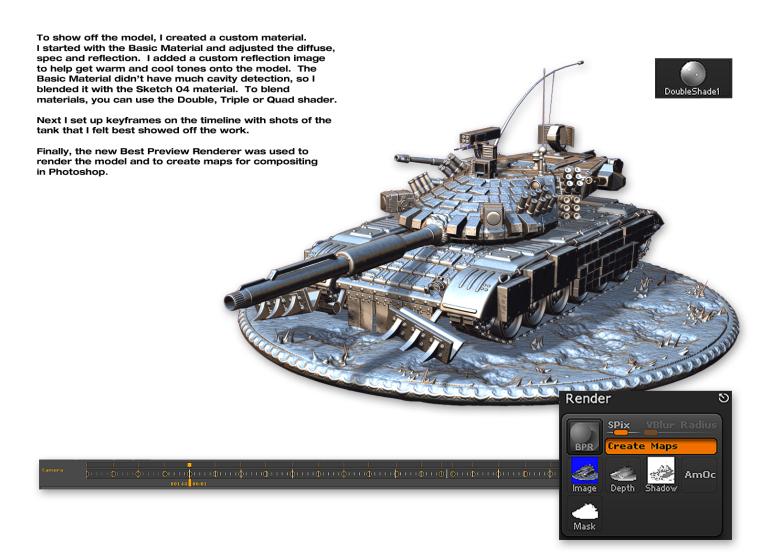




I'm working on a 64-bit computer running Windows 7. I have 4-GB of RAM, When my object's total poly count passed the 30-million poly mark, my whole system began to grind to a halt.









## SHADOW BOX QUICK START

By Geert Melis - geertmelis@hotmail.com

Geert melis lives and works in Belgium / Europe. He studied at the Royal Academy of Fine Arts in Antwerp and is currently employed as an art teacher at De Kunsthumaniora – Antwerp.

YouTube Channel: <u>Etchertube</u> MySpace: <u>Etcherspace</u>

My online sketchbook: Etcher Sketcher

# - SHADOWBOX QUICKSTART GUIDE -

Compiled by Geert Melis

- 1. Setting up ShadowBox.
- 2. Initial testing.
- 3. Taking things a step further / the new Masking Brushes.
- 4. Probably the most important tip on working with the Masking Brushes.
- 5. Hide the ShadowBox sides you don't need.
- 6. Symmetry and Radial Symmetry.
- 7. Using reference images in ShadowBox.
- 8. Using images for shape creation.
- 9. Combine multiple ShadowBoxes.
- 10. Create low polygon basemeshes.

#### 1. Setting up ShadowBox:

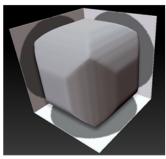
ShadowBox can be activated for every tool and / or subtool.

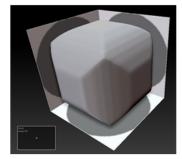
1. Start ZBrush and load any primitive from the tool palette.(1)

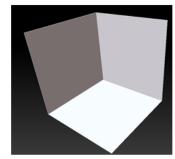


- 2. Hit the "Make Polymesh 3d" Button. (2)
- 3. Open the Subtool Palette (Tool Menu -> Subtool)

4. In the Subtool Palette, press the ShadowBox (4) button to activate ShadowBox. If you choose the Sphere, you'll get something that looks like the first image below. Ctrl-Drag in an emty area on the Document to clear the circular masks (middle image below) and you get an empty ShadowBox.

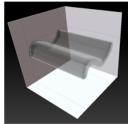




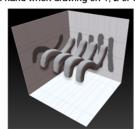


## 2. Initial testing:

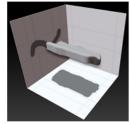
Now, you can hold Ctrl and draw shapes on the ShadowBox sides. It's essential to take some time out to experiment with the different possibilities that are on hand when drawing on 1, 2 or three sides:



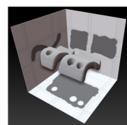
Draw a shape on one of the backplanes and it extrudes along the ShadowBox



You can control the lenght and/or the fragmentation of the extruded shape by drawing on the opposite plane



Using the bottom plane to control the length and visibility of the shape.

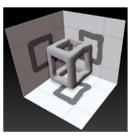


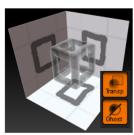
Using side and bottom planes to alter the extruded shape.











#### Hold Ctrl to draw. Hold Ctrl + Alt to erase / remove

When you draw shapes, ShadowBox adds bounding / construction lines on each plane: they are a great aid for correct shape drawing / placement.

Making simple doodles like this is great to understand how Shadowbox works.

Turn on transparency to draw on planes hidden by the Shadowbox shape.

#### 3. Taking things a step further / the new Masking Brushes:

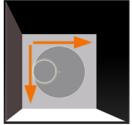
After some initial experimenting, you can tighten things up by using other masking brushes.

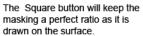


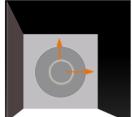
Try out the Square and Center options for the masking brushes:

To acces: Press and hold Ctrl to activate Masking Mode -> Lmb on the Stroke Icon and you'll be presented with the menu below:

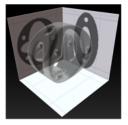








The Center will draw out the masking to Allowing you to make the tighstart at the center of the brush stroke.



test and craziest shapes on the

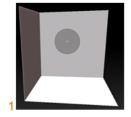
#### 4. Probably the most important tip on working with the Masking Brushes:

You can move / reposition your selection before applying it to ShadowBox's planes (note that this also works outside of ShadowBox and when working with the Clipping Brushes). This works for the Circle, Rectangular, Curve and Lasso Masking.

At first, It is a bit tricky to perform, but you'll get accustomed to it after a few tries:

-Hold Ctrl and draw your selection. (1)

-Keep your Lmb pressed, let go of Ctrl and pess and hold the Spacebar -> you will now be able to move / reposition your selection. (2)



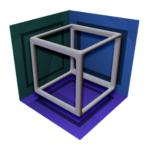


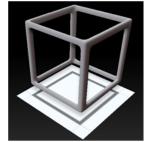
As long as you keep your Lmb pressed, you can keep repositioning and resizing your selection.





#### 5. Hide the ShadowBox sides you don't need:





You can use Shadowbox with only 1 or 2 planes visible.

Hit Shift-F to activate Polyframe Mode and you'll see that the sides of the Shadowbox are Polygroups.

Ctrl+shift and click on the planes you want to hide

I only used 2 planes to block out the HK\_MP7A1.



Use Symmetry and Masks to get the coolest shapes -> Transform Menu -> Activate Symmetry



This is only a quick ShadowBox test, but, using radial symmetry in ShadowBox, the Clip Brushes to refine, and Matchmaker to change the overall shape, you can cranck out various wheel rims in no time...

#### 7. Using reference images in ShadowBox:





1. Open Potoshop and create a square document (this one is 3000 x 3000 pix) divide it into four quadrants and place your reference images as shown in the Screenshot. Save the image.



2. Back In ZBrush, open the Texture Menu and import the .psd file

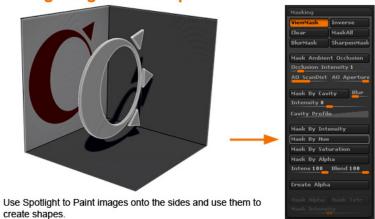


3. In the Tool Menu, go to the Texture Map pulldown and click on the empty image window (1) -> the available textures window will open and you can load the imported .psd file (2).

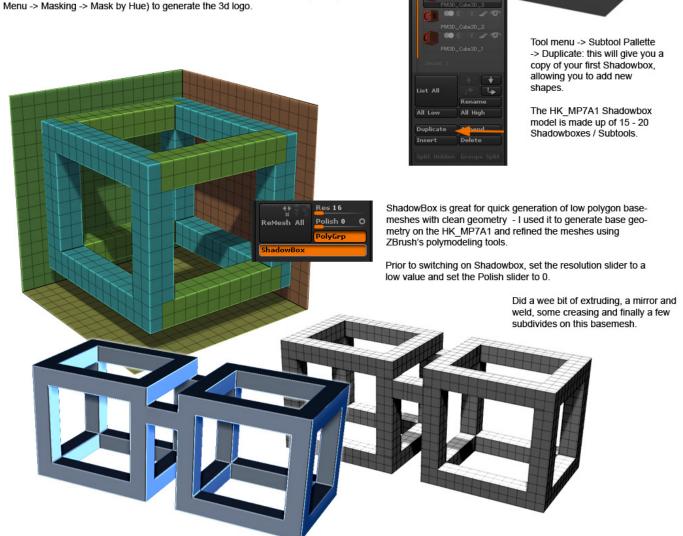
The ShadowBox planes should now update to display the reference image!



#### 8. Using images for shape creation:



In this example, I painted an image on one side and performed a Mask by Hue (Tool





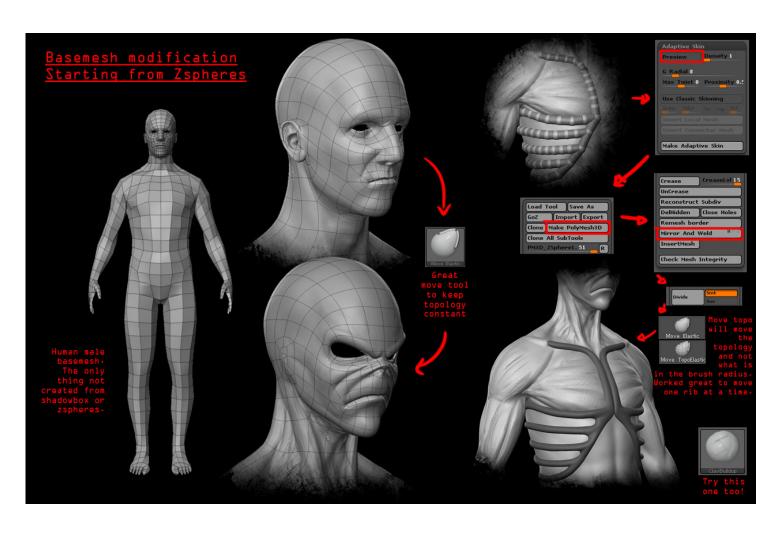
# MAKING OF "IRON MAIDEN: EDDY"

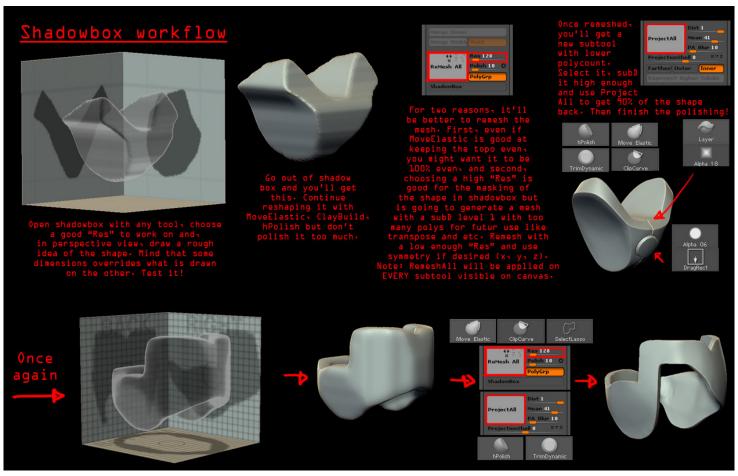
By Marc Olivier Plouffe - www.marcoplouffe.com

Hey my name's Marc-Olivier Plouffe or Splash if you feel artsy. I'm a simple guy from Hull QC north of Ottawa ON in Canada. I started drawing when I was almost an infant and it remained my center of interest along with music until I started in 3d June 2009 when I moved to Montréal and joined the Campus Ubisoft - Cégep de Matane. During this brief year at school, I learned everything you need to know about modeling lowres and highres characters, levels and props, and also texturing, lighting, riggind and more. Since my first classes, I dedicated my whole time to 3d and most of it in character design and modeling. It's at the end of school, June 2010, that I was given the opportunity to join the beta testing and expand my knowledge in Zbrush and especially Z4!;)

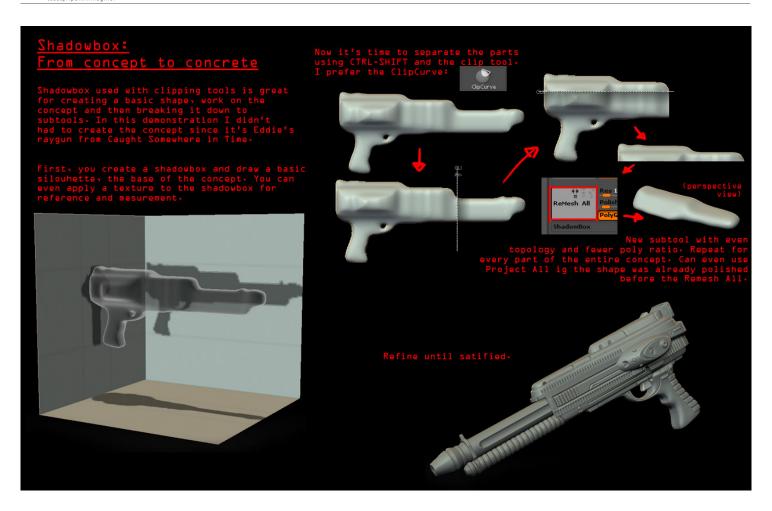


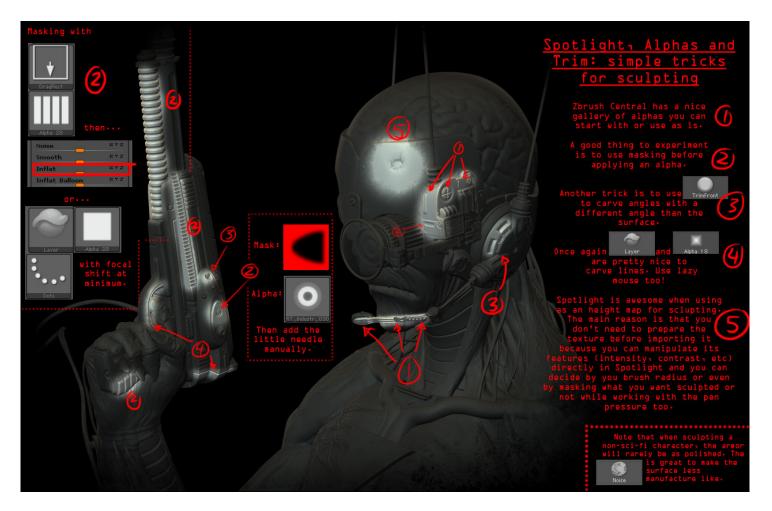




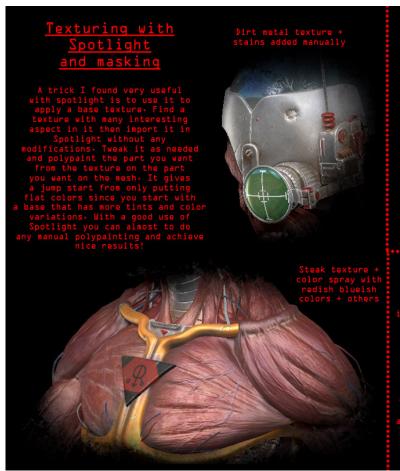












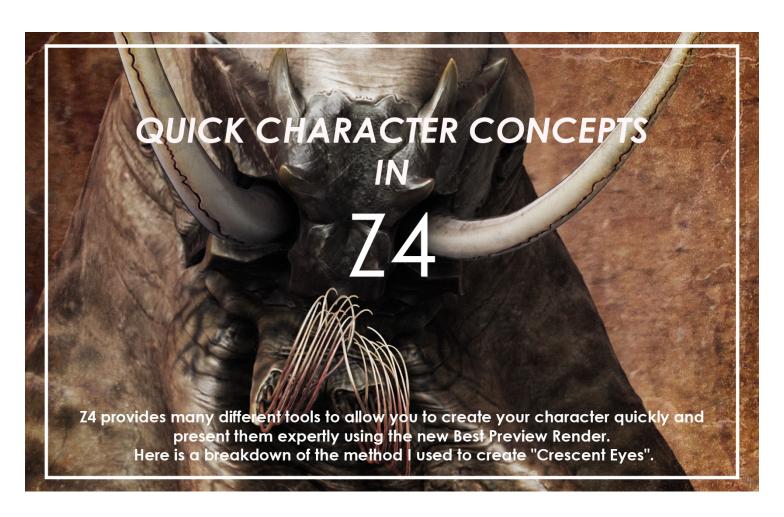




# MAKING OF "CRESCENT EYES"

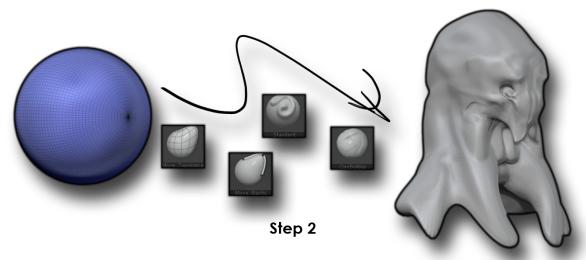
By Cameron Farn - www.theartofcjf.com - theartofcjf@telus.net

Cameron J. Farn was born and raised in Calgary, Alberta, where he currently works and resides. He is the lead creative designer for F&D Scene Changes, and has worked on many diverse projects spanning from cinema to commercial design. His feature film credits include 3D Modeler for 2008's Death Race; and head of props and fabrication for F&D for Kathryn Bigelow's K-19: The Widowmaker. He served in the same capacity for F&D for the Broadway production of the multi-Tony Award winning musical Wicked and its touring productions. Mr. Farn produced numerous 3D models and digital images for Cirque du Soleil's Las Vegas presentations of "Believe" and "Viva ELVIS". In addition, he has worked on over a dozen F&D created theatrical attractions, floats and rides for Disney theme parks around the world, including the U.S., Japan and Hong Kong. Mr. Farn's first public art sculpture, "Tempus Fugit", a 40-foot tall art installation, is set to be unveiled near Calgary in October of 2010. Currently, Cameron is working on a multi-character sculpture project titled "World of the Red Sands." Cameron is always on the lookout for new projects that can utilize his unique talents.





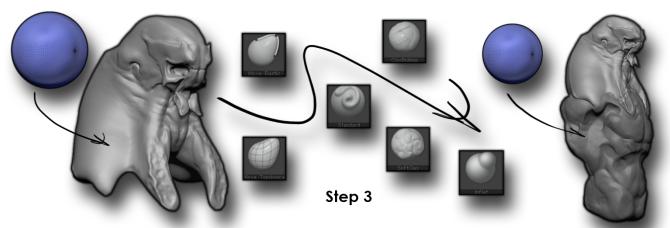




I started with a Sphere 3D and made it a polymesh, and activated X Symmetry. I began sculpting the head using the new Move Elastic brush, pulling the surface around searching for an interesting form that helped to support the words "ring eyes". While sculpting I immediately decided to have the rings protrude all the way through the cranium, which brought up other questions. Did they move, were they static, how were they supported, how did they move? Armed with these new questions I began establishing forms in the sculpture to answer them.

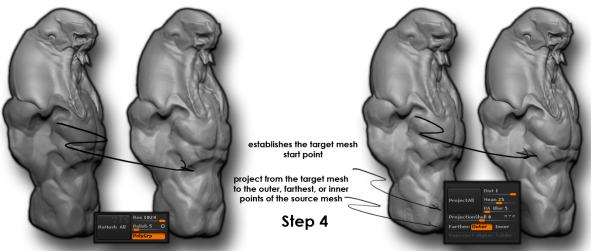
Tip: Making firm decisions and sticking to them helps to move your concept forward quickly. You can always go back and produce any number of versions later.





My first head did not produce the silhouette I was looking for, so I appended a second sphere and continued searching for the answers. Finally I hit on a silhouette that I liked, working only the larger forms and profiles rather than details. With all the basic forms established in the head I appended a third sphere and began the torso, using the shapes within the head to inform the sculpt as I proceeded, e.g. the mask-like shape and its angularity suggested a harder surface, and the way it blended with the softer inflated form of the neck, helped to establish the chest area and inform the blending of hard edges and soft forms of the abdomen. (Brushes used were the Move Elastic, Move Topological, Clay Build Up, Standard and Inflate.)

Tip: You could also duplicate the first head and continue working using the new Duplicate button located in the Subtool palette.



In the case of the head and the torso, I sculpted at a low subdivision level only dividing when the mesh could no longer support the forms I was asking it to. No details were added to the sculpt at this stage, only large and medium sized forms that made it possible to read the silhouette, suggest eye placement, mouths and in this case insertion points for limbs. Once happy with the head and torso forms, I made them the only visible tools and remeshed and reprojected to combine them into one sculpt.

Tip: You could remesh and reproject the forms onto a new mesh at anytime for each of the parts if you wish to take them further, this is a great way to retain the forms while eliminating the poly-shredding and maintaining a manageable polycount.

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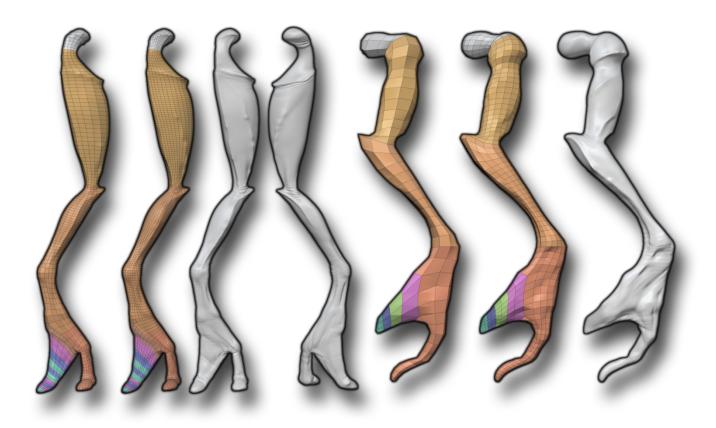
#### Step 5

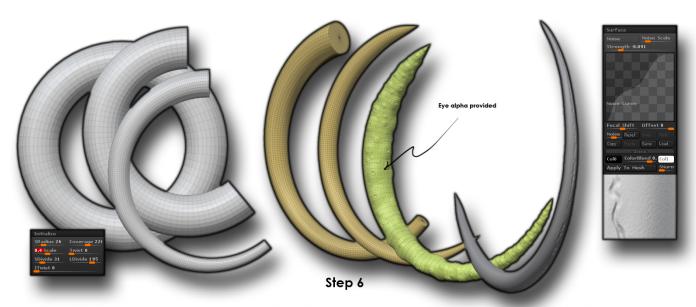
I used ZSpheres to create the left arm and left leg and generating a mesh. I sculpted the arms and legs and major forms without getting caught up in the details. I made the head and torso visible and established the proportions of the limbs, moving and scaling them into position. With the torso arm and leg visible I reviewed the groups of words I created and evaluated the sculpt against the images that came to mind. The first set of limbs I created did not fit. This first set seemed too large and had too many digits. I recreated the arm and leg using ZSpheres, making them slimmer and with fewer digits. I quickly sculpted them with the Clay Buildup brush, Standard and Form brushes, bringing the blend of hard and soft surfaces from the face and chest into their respective anatomy. I moved, scaled and placed them into position, and took a few minutes to evaluate them with the body visible. When I was happy with them, I divided each of the tools and sculpted them up to the same level, moving from one to another until all the major anatomical forms are established across each tool. I referred back to my words often, pulling inspiration from them. They brought to mind images of soft shell crabs molluscs, turtles and sea shells. I added these words to my list and kept developing the design vocabulary for the character.

Tip: See the transpose action line units step by step for help establishing the overall proportions of your character.





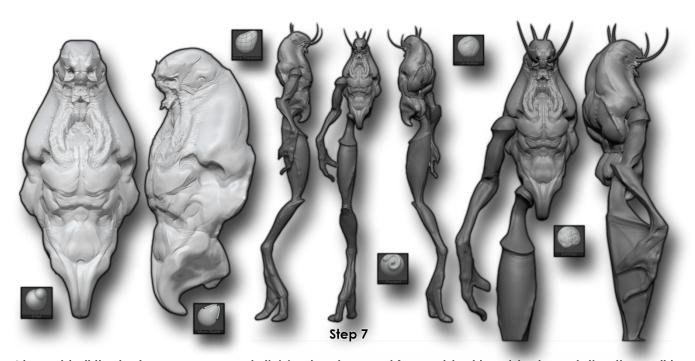




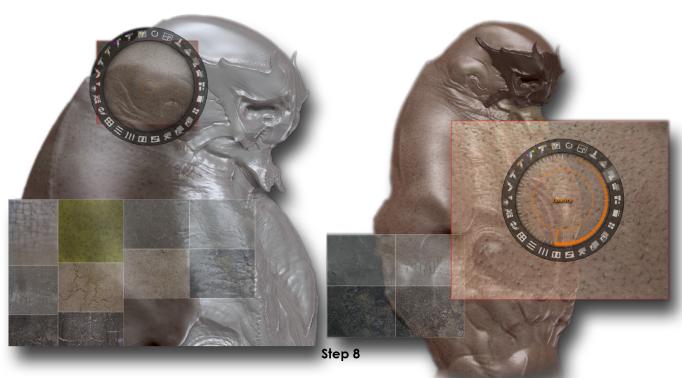
The eyes for this character were a focus from the outset. I saw them slipping back and forth through the cranium. I appended a single ring primitive and initialized it to change the shape, size and to open up the ring into a crescent shape. After making it a polymesh i began sculpting. My first attempt was to add multiple eyes over the surface of the shape, but when viewed with the head it felt bulky and out of place. I then created a second crescent-shaped eye and this time pulled inspiration from the group of words created earlier. Something struck a chord when reading mollusc and sea shell and I created an oscillating indentation down the length of the entire eye, mimicking the opening of some shells. The slender simplified feel suited the character better. I moved, scaled and placed the eye into position.

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I brought all the tools up one more subdivision level, moved from subtool to subtools, sculpting them all to the same level, integrating one into the other, and answering questions with the sculpture as they came up. e.g. the eyes needed to move, they should be shiny, and somewhat smooth. They needed a undulating muscle to move them back and forth. The orbit in the mask needed more of the shell forms to help tie the eye into the head.



With the new Spotlight active I started by laying down base textures, often with Add on, and I intensity between 4-6, and used the standard brush to take advantage of all the depth information available in the image.



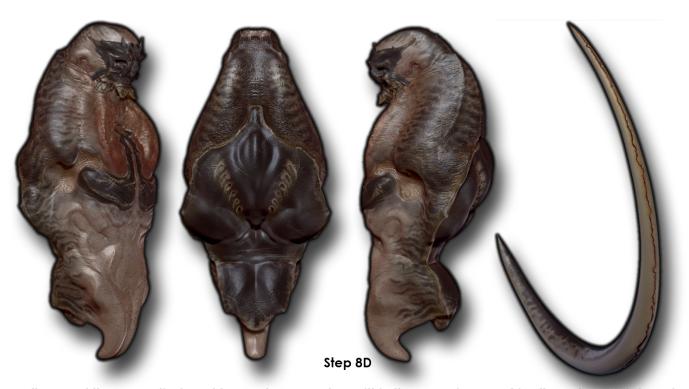


I continued to add textures and details using the Spotlight process, and occasionally added polypaint as base colors, and then reduced the RGB intensity while in Spotlight to build depth and variation.



Throughout the process, I masked whole areas like the soft shell back, or used cavity masking to control where the textures and deformations would be applied.





I often used the Hue adjustment to create new colors within the same image. This allowed me to take advantage of the same depth information and details while applying new colors like the horizontal skin marking and mottling.



The main color and texture and details in the hands and feet were from a pear texture. The Spotlight has been provided with this overview for you to try out.



#### Step 9

I mirrored the arm and leg and eye over to the other side, using the subtools master plug-in. I did another spotlight pass on these parts to make them slightly different from the other side.

#### Step 10

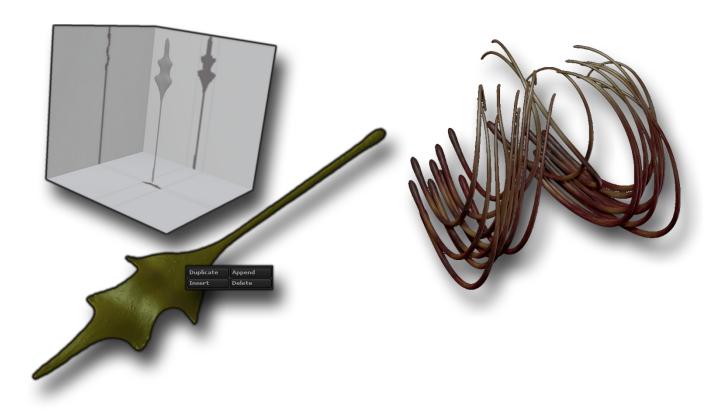
I used transpose master to repose the character and break the symmetry.

#### Step 11

After seeing the character with a little bit of life I re-evaluated its form and flow. In my case I felt like it needed a structure on its back to offset the weight of the eyes and bring some balance back to the piece.

I used Shadow Box to create the feather-like forms and a mix of spotlight and poly paint to detail it. To create many of them I duplicated then altered, scaled and applied gravity in the deformations palette to each one. After I placed each one in their respective spots I grouped them together by merging down a set for the left and a set for the right side.

I also felt the head needed whiskers to accentuate the mouth-like organ that protruded from its face. I created a ZSphere hair, made it a unified skin, duplicated, altered and merged them into two groups.



### MAKING OF "CRESCENT EYES"



# **TRANSPOSE UNITS**

#### By Cameron Farn



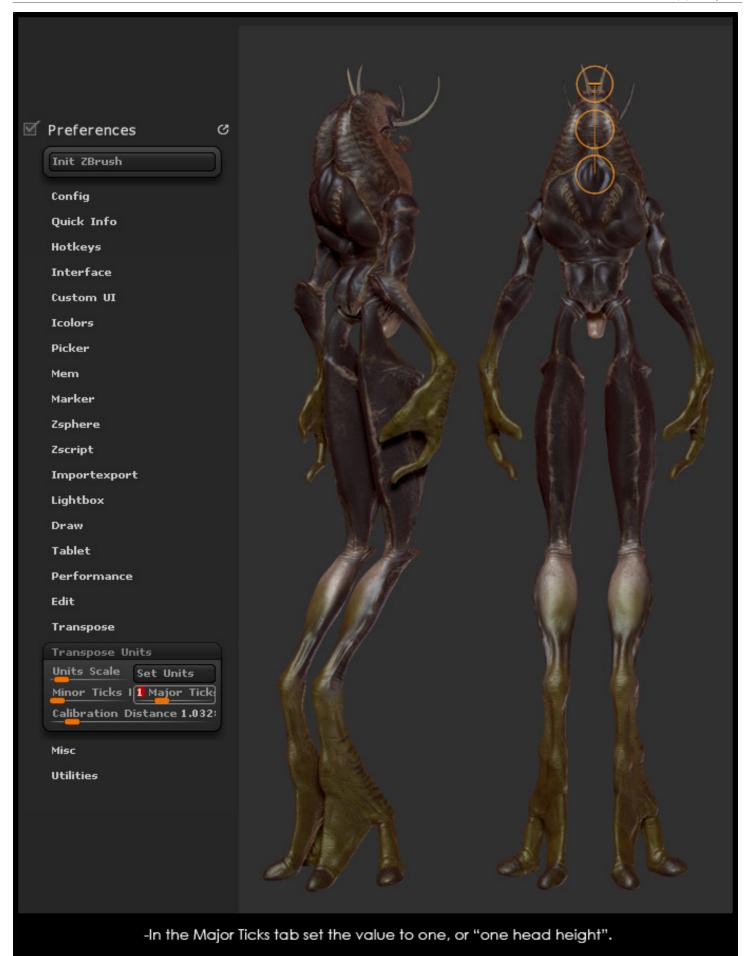
The addition of units to the Transpose Action Line has made it easier to sculpt your projects by providing a way to set any major unit, minor unit, and to calibrate it using a portion of your model. In this example the head size is used to set the major unit and the minor units are set to 4 or quarter heads. This allows you to draw out the Actioin Line against any part of your model and check its proportions, and length.



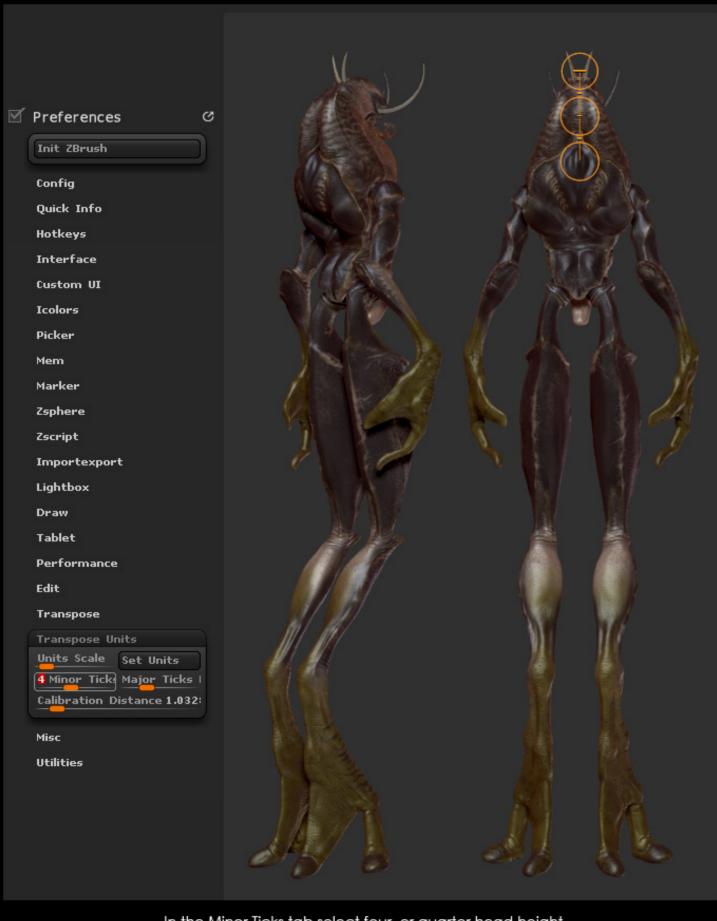


-Select the preferences palette and open the Transpose Units tab.









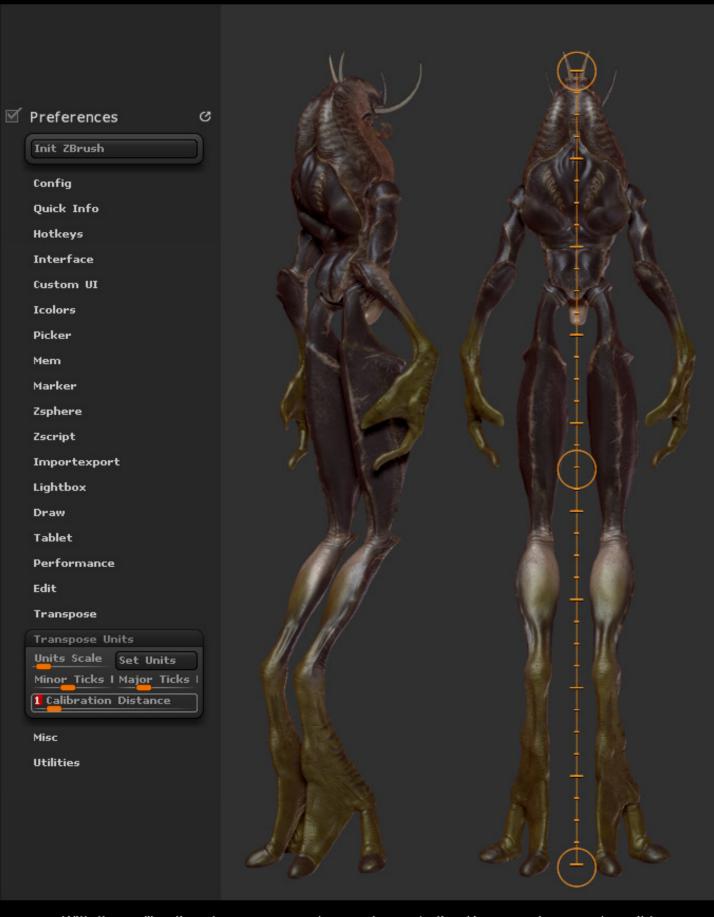
-In the Minor Ticks tab select four, or quarter head height.





-Set the Calibration Distance slider to 1. This will set the distance to one unit based on the current action line length.





-With the calibration done you can draw out your Action Line anywhere and use it to check your works proportions and adjust the over build of your model.



## MAKING OF "THE GUITARIST"

By Martin Andersson

I am a 28 year old Norwegian 3d artist who mainly work as a sculptor and modeler. I have two years of education in 3D Design and 3D Animation and I have been working in the industry for six years now. I am currently hired as a lead modeler at Storm Studios in Norway with main responsibility for all the assets we create. I have been working on features like "Trollhunter", "Max Manus", "Manhunt", "The Radio Pirates" and "Elias and The Royal Yacht". I have also been working on several commercials doing both technical and organic modeling.

I'm a pretty young ZBrush artist considering I have only used it for six months, but those six months has been a great experience. I have learned tons and tons and I want to thank Pixologic for letting me be a part of the Beta team for ZBrush 4. Working with all these great artists was very valuable and we also had a lot of fun. Ofer calling from his helicopter, making Han Solo by accident and a bunch of other stuff...

If you want to contact me, I can be reached here: <u>martin@animation-hut.no</u>. Visit my site <u>www.animation-hut.no</u> to view the latest available reel. I usually update the reel around once a year so remember to check back now and then.

For years and years the hard surface modeling tools have been living in packages outside ZBrush. With the release of ZBrush 4 (later referred to as Z4), Pixologic lets us stay in Z4 and thereby we don't have to worry about the things we have always had to worry about. I feel the new tools lets us be more creative and we now spend less time fiddling about with snapping vertices around and measuring stuff. We can retopologize our sculpts in ZBrush finalizing the mesh for the next step in the pipeline and there is not really a need for other software modeling wise.

## THE GUITARIST

One of the things that was really holding me back as an artist was the obsession for accuracy. I went on for years and years thinking that it actually mattered. It's way more important that you are able to communicate with your audience. If the project doesn't specifically require a high level of accuracy, don't bother spending too much time on it. Concentrate on the shapes. That's what's going to read on screen.





In this article I'll go through how I made the piece "The Guitarist" starting with the capo for the guitar. The reason I start with the capo and not the character is because the capo uses more of Z4's features.





I will be using Shadow Box, new masking techniques and the new Clip brushes together with some of the other tools we're used to from earlier releases.

## 1. THE SHADOW BOX

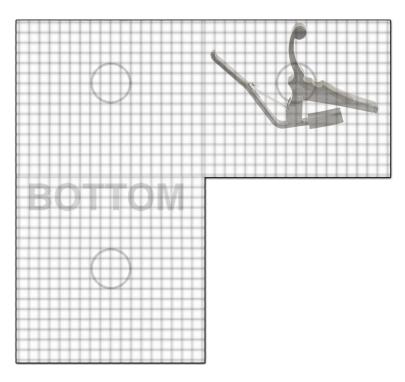
A couple of years ago I did a lot of hard surface modeling where I used to lay out curves in the viewport so I had a way to visualize the volume of the mesh I was making. Much like the way you would build something with NURBS before patching it up. I wanted to write a script that could read a black and white image and draw the curves automatically based on



three views. I never got time to write it and to be honest, I don't think I'd be able to pull it off. In Z4 we are introduced to the Shadow Box and it works in similar ways. It doesn't draw your model for you, but it's creating a mesh based on a mask you paint on the surface of a side-, back- and bottom plane. The Shadow Box is one of the strongest tools Z4 has to offer and you'll be using it a lot! This tutorial will assume you have some basic knowledge about how the Shadow Box works.

#### 2. SETTING UP THE SHADOW BOX

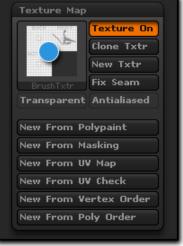
First things first... Paul Gaboury from Pixologic made a reference template that I have been using to set up my reference before I start making my masks. This template should ship with Z4. I just want this as a rough setup. I'm not going to live by it, but it's very nice to have something there. You can use this template to line up your drawings or pictures if you have more reference available.



I don't even have a reference in the other views because I have the capo in my hand and know how thick it is etc. The image is not orthographic either. If accuracy was a demand for this model I'd have to photograph my own or use blueprints, but for this model the shape is more important than measures.

Add your reference images and save out your file. I am using PSD files because Z4 can read these and at the same time I keep the file for later editing. No need to render out a jpg or tif. When you have saved out your texture file, in Z4 go to Texture > Import to import your PSD file. Under your shadow box texture section (Tool > texture) you click the large square holding the texture image and you choose your newly imported image. If you check out your Shadow Box now you can see that it has the reference all set up. I used a resolution of 1024 and a polish of 5 for this piece. It's probably a bit overkill. Try out the different settings and become comfortable and familiar with them. Then you will know what settings you need for the particular type of object you are making in the future.





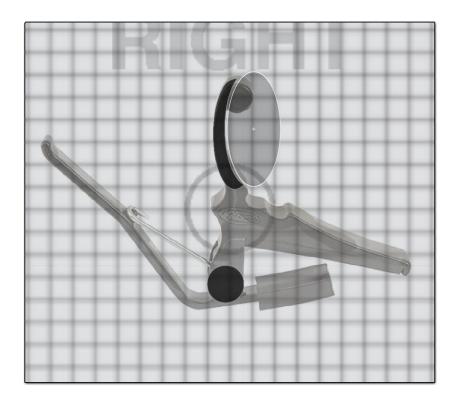


#### 3. PAINTING MASKS ON THE SHADOW BOX WALLS

Now we can start creating some mesh. Z4 is packed with new masking features. The most important upgrade is that you can drag out squares and circles inside your mesh. Before you had to be outside your mesh and then drag- draw the mask on to your mesh. Now you can create a mask wherever you want. It also works with symmetry.

When I look at an object I am going to model, the first thing I do is to forget what I am looking at. For this project I know I'm making a capo, but I early translate this into shapes and arcs. I don't see a capo inside Z4. I see a whole lot of circles and some squares. If you learn to think like this you will automatically use the quickest tools to create your model because it's much easier to say that you need a circle with an additional cut from another circle than it is to analyze what part of the capo you're creating. The first thing I do is to map out the easiest areas, the circles and squares or whatever can be made out of these primitive shapes. Use the new mask brushes to start creating your capo.

The Shadow Box will instantly create a preview of your model. If this mesh gets in the way, turn transparency on and you can see your masks behind the mesh. Press CTRL to activate the mask brush and while holding CTRL you can click the big brush icon at the top left, right below the "Projection Master" button, and there you will find all the different masking brushes. Notice the buttons square and center. Square makes sure your square or circle has even sides/diameter and center makes sure you draw the shape from the center of your cursor. It's very handy.

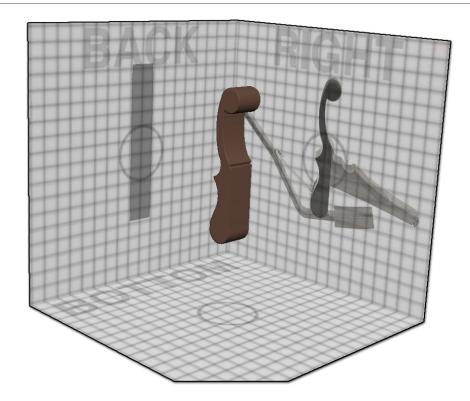


Some parts are impossible to create with just primitive shapes so you can use the MaskPen brush or MaskLasso for these parts. We are going to use the clipping brushes to clean up the mesh anyway.

For this mesh I started painting my masks on the right wall and by default Z4 will have the mesh expanding all the way across the bottom and back because no other masks are defined. That doesn't really matter, but for visual feedback it's good to draw a thin square on the back side so you can see more clearly what you're making. I don't care about the width just yet, nor should you... It's way too early;)

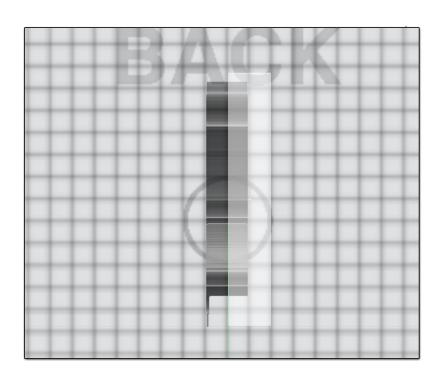
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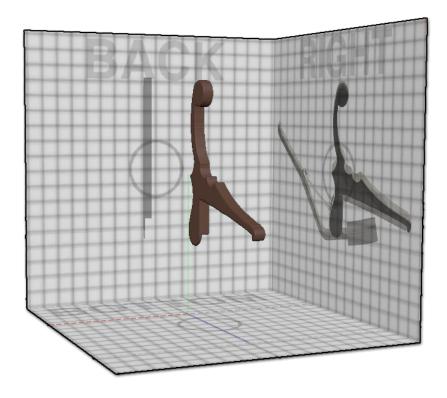


The capo contains two main parts along with some other smaller parts. The long handle is attached at the bottom round end of the main part that is holding the strings on the guitar down. I have to cut a hole in the mesh to make sure I can fit in the parts later. After you create a mask with the CTRL key you can hit alt to create an inverse mask. Another excellent addition to Z4 is that you can hold SPACE to move the mask around and therefore pin point it after you have a rough size. Release the SPACE key to make additional adjustments.

At this point I decide that it's easier to cut out the one side and mirror it later so I get rid of roughly half the model. At this point I also make a mistake by not cutting enough mesh out and therefore I take a few shortcuts further down the road. If this was a main prop I'd go back and fix it, but because I discovered it a bit late I decided to ignore it since the prop is just a small small asset that is not a part of the main setup. Also, the angle will make sure the viewer don't see the error so I let it slide.



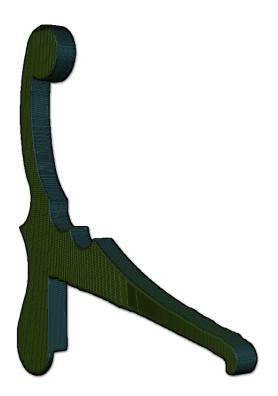




Finish up the rest of the mesh using the MaskPen brush to paint out the areas you can't make with primitive shapes and use the mask circle to cut out the characteristic arcs in the capo. Don't worry that it's not awesome mechanical looking after your shaky hand with the MaskPen brush. We are going to make a few cuts to this mesh. In problematic areas it's smart to add some extra geometry on both sides so you have some mesh you can cut away.

#### 4. JUMP OUT OF THE BOX...

When you're happy with the masks you click Make Polymesh3D (Tool > Make PolyMesh3D) and the Shadow Box will politely say "good bye" and "It's been a pleasure working with you, now you must continue your journey alone...". Notice that a new tool has been made. This is the mesh created from your masking. Neet, ey? If you turn on wireframe you can also see how the Shadow Box has set up the poly groups (if you have the Auto PolyGroup option checked before creating the Shadow Box). It could be handy for later...



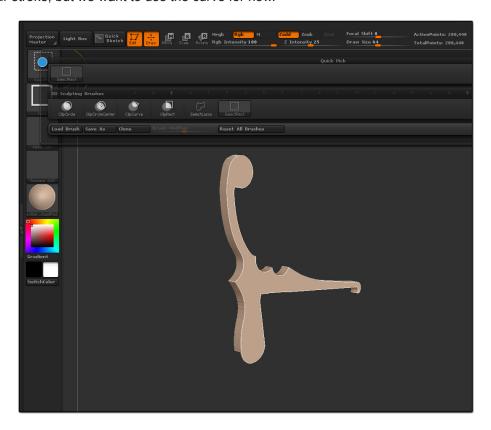


If we want to we can mirror this mesh now or we can finish off all the modification and then mirror it later. I decided to do it now since most of the edits will be made from the side slashing through the entire thing. Press SHIFT + P or click the little icon called Floor located between the viewport and the right hand side layout to activate the floor and thereby see the axes. Make sure the axes are actually activated in the Floor button. The very small letters can toggle each axis. Now move the part to the center and a bit more so you are sure the edge of the mesh overlaps the x axis just a tiny bit. (Which axis you move the mesh along will vary depending on how you build your models) We need to do one little thing before we mirror the mesh and that is to trim off the bevel the Shadow Box created. This will introduce the clipping brushes.



## 5. THE CLIPPING BRUSHES

If you hold down CTRL + SHIFT you will activate the clipping brushes. By default Select Rect is active. This is used for hiding parts of your mesh. Select the ClipCurve brush. Note that under stroke you now have Curve active. If you want to you can change your stroke, but we want to use the curve for now.





The way this clip brush works it that you CTRL + SHIFT click and drag out a curve and one side of the curve will clip the mesh. The side that will get clipped is the side where the shadow falls. If you draw in a downward motion you can see that the right side will have the shadow cast. Draw upwards and you'll get the shadow on the left side. The brush is not really clipping any mesh away from your model. It's pushing all the mesh on the shadow side on to where you had your clipping line on the mesh so you might get some weird results. There are several ways to fix this. On the capo I used the Smooth Brush where the mesh jagged up and if all else fails you can always use Remesh All and Reproject All to project the details over on your new mesh. When you use the smooth brush and go over the side you can just use the clipping brushes to clip the errors you just created.

You don't have to draw straight lines with the ClipCurve brush. If you start drawing, click ALT (don't let go of CTRL + SHIFT) once and you will anchor a spline point. If you click ALT twice you will anchor a linear point. Very useful for those parts that aren't straight. Also, remember that ,just like with the masking brushes, you can hold SPACE to move your curve around. You'll rarely hit the curves spot on and being able to move the curve around helps A LOT!

It's a good idea to turn perspective off if you have it on. Press P or click the little icon called Persp located between the viewport and the right hand side layout. Cut away a small portion of the side of the capo to straighten it out and you should be ready for mirroring.

The Mirror And Weld button is located under Tool > Geometry. It can mirror over all the axes and you can choose which one(s) at the top right on the button itself. Click the Mirror And Weld Button to ... well, mirror and weld your mesh..

Now we can continue working with a model that is intact and we can focus on the profile only.



It's always easier to clip the mesh based on the brushes you can create a straight line with or with the square and circle shapes. Don't forget that you can easily rotate your model around by using the transpose tool or under Tool > deformation > rotate to line up your angles so you can use straight lines instead of trying to create perfect angles.

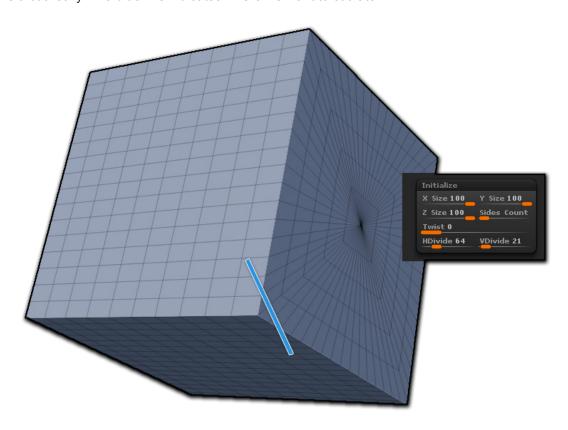




Continue using Clipping Brushes and Smooth Brushes till you're happy with your mesh.

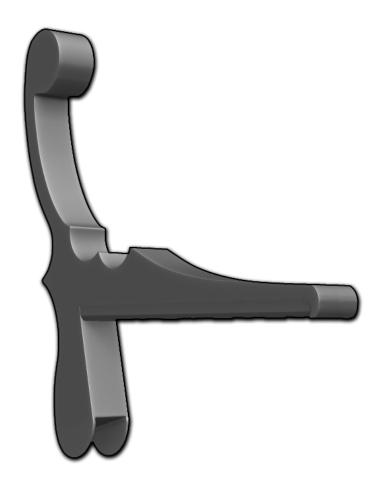
### 6. Don't hurt your guitar

If you look closer on a capo you can see that there is a soft part there to protect the strings. It's basically a cube. Load a cube and go to Tool > initialize. Set HDevide to somewhere around 60 and Vdevide to somewhere around 20. Just enough for us to make a cut really. The blue line indicates where we want to cut later.

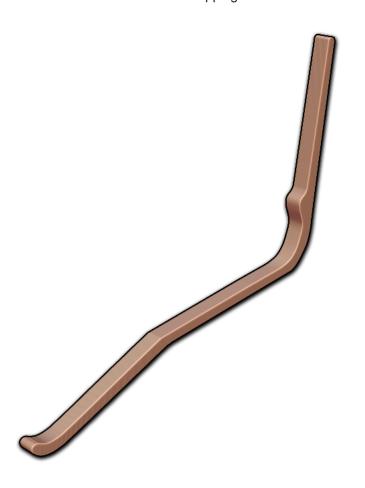


Click Make PolyMesh3D so we can start editing the cube. Append it to your previous tool and move it into place. Use transpose to place and scale etc. If your capo is still rotated so the housing of the soft part is straight, good. If not you can rotate the soft part, but then I'd clip it before translating it around if I were you.





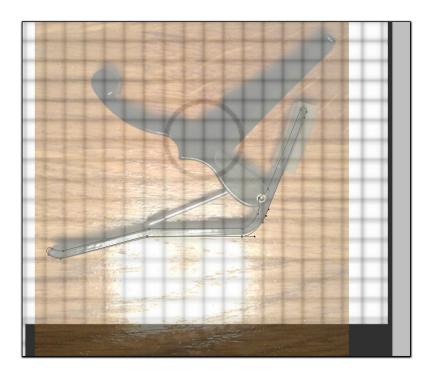
Using the same methods as described over I made the handle. Since this mesh has so many angles I just used the MaskPen brush and drew a mask free hand. Then I used the clipping brushes to finish it off.





#### 7. A LITTLE TIP

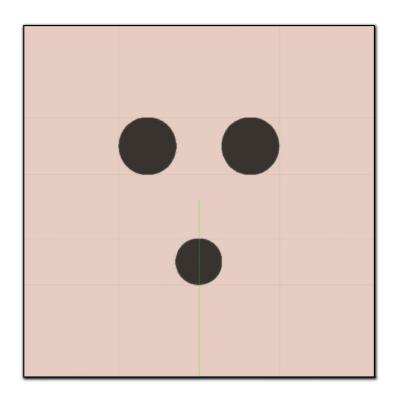
If you need a more accurate mask and don't manage to paint that mask in Z4 you can create a stencil and use the MaskPen brush with a DragRect stroke and draw that mask on to the Shadow Box. Use Illustrator or the Pen tool in Photoshop to create an Alpha you will load into the Alpha slot of the brush. As I said earlier, I didn't use this method on this piece, but this is an alternative.



For the spring and the bolt I used Z4 primitives, masking and transpose. Because of my early mistake with the cutting of the hole where the two parts connect I didn't make the entire spring. If I had to do that I'd probably use ZSpheres to have more control of the bent metal. You can also try tweaking a helix.

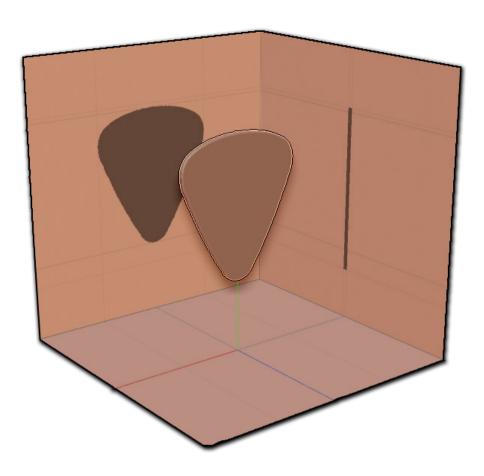
#### 8. LE PETIT BONUS

As a little bonus I quickly want to throw in the pick as well. It's basically created the same way as the capo, but here I used symmetry when painting the mask. Hit x to activate x axis symmetry and paint a circle where the outer top of the pick is. Basically the pick is three circles with connecting mesh in between so that's what I paint first.

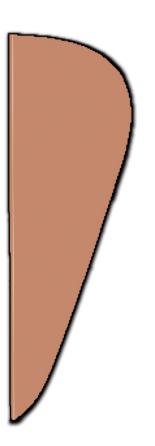




After connecting the dots, this is what I have. Notice the cut on the right wall defining the width of the pick.



Then it's just a matter of going moderate crazy with the clipping brushes. I also like to just cut away half of the model sometimes and continue working on the remaining half like I normally would do in another package. Then I use the lovely Mirror And Weld when I'm happy with the result.





#### 9. THE GUITAR



For those of you playing guitar, you'll quickly recognize this dreadnaught style guitar to be a gorgeous cedar Art & Lutherie guitar (http://www.artandlutherieguitars.com/). No? Well it is. It's basically built like any other steel/western guitar and you can use this method to create most other dreadnaughts. Hopefully you're thinking "yeah, and making one with a cutaway should be really easy with the new tools". I also hope you've been thinking of other stuff to create while you have been reading about the Shadow Box and that you see what endless possibilities this tool can be used for.

Since you've already made a capo you're pretty much suited to create this guitar without my help. However, there are a couple of tricks I want to show you. In this part of the tutorial I will use what I see as one of the coolest tricks ZBrush can pull off. Paul from Pixologic taught me this when I was banging my head against the wall and the deadline for Siggraph was coming...fast!

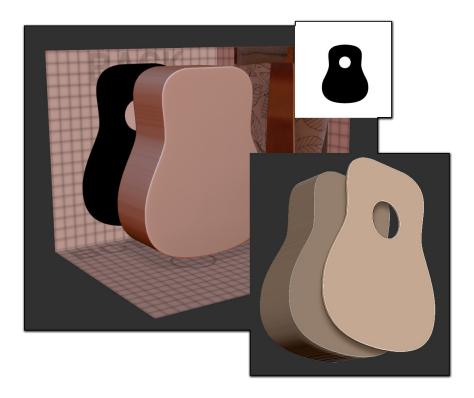


When I made the guitar I used a lot of the new tools together. Of course the Shadow Box was my best friend, but the Spotlight was also a great asset and it is far more powerful than what I used it for. I basically used it as a reference holder. I also used it for sculpting later when I made the floor. I'll get back to that later.



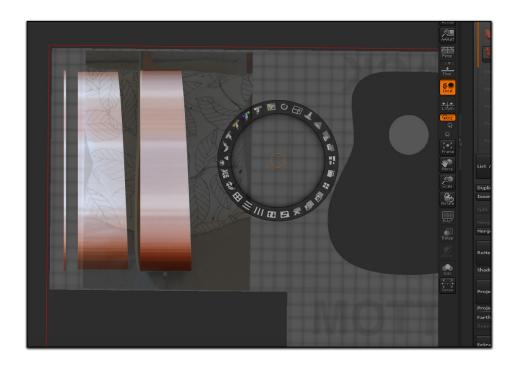
#### 10. THE BODY.

The guitar did demand a higher level of accuracy. I did attempt to use the MaskPen brush and the clipping brushes, but my hand is not steady enough so I felt I needed a stronger base. In Photoshop I used the pen tool to draw the outline of the guitar top and used this to draw my mask. As for the depth of the guitar I just made sure I had enough mesh so I could cut away some of it to get that nice arch guitar bodies have on the back. First I made the top with the alpha with the hole in it. Then, after I converted that into a PolyMesh3D I went back to the Shadow Box and filled the mask hole and voila I had the shape of the body.



I made a lot of reference images for my guitar and I loaded most of them into Spotlight. I also used several different ones to texture the Shadow Box walls for reference. I suggest you check out the Spotlight videos from Pixologic. Most of the usage is covered there. The main setup is that you load your desired texture and add it to spotlight. Then you can toggle images, stack them and move them around. I used it as a reference holder so I could easily check out the form of the guitar. I used the ClipCurve brush to carve out the volume of the body I didn't want to have there.

## 11. THE COOLEST TRICK IN THE BOOK.



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This is the coolest trick I did making this guitar. I didn't even know you could do it... I knew the canvas was powerful, but come on...

The body of the guitar is solid and on a real guitar we know this part is carved out. (it's not actually carved considering how you make a guitar) This hollow part is where the guitar echos the sound and we need to carve out almost all of the volume of the body. First I tried doing this with boolean operations, but that does not give the desired result.

Make sure the guitar body is the only visible tool. Feel free to delete all the other sub-tools you might have as long as you have saved out the ZTL file. When this operation is done, we'll have a new tool anyways. We are going to work with poly groups on this one. Turn on wireframe so you can see where the poly groups are defined. Remember that you can use this method on other objects where the poly groups aren't laid out like this. You can mask out an area of a model and click From Masking under Tool > Polygroups to create your own poly groups.

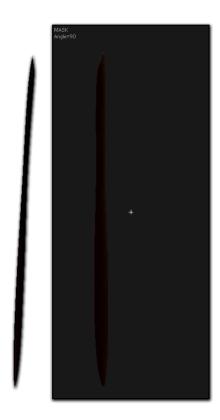


First we want to work with the two planes making the top and bottom of this part. CTRL + SHIFT click on either the top or the bottom and we tell Z4 that we want to work with those parts. The other poly group is now hidden.

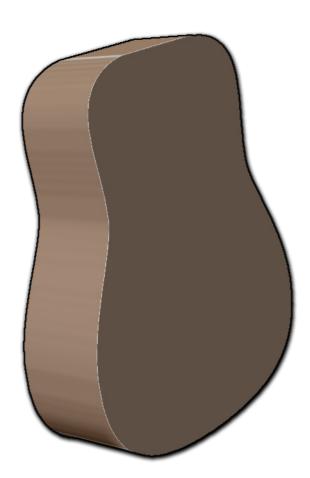




Create a mask over the straight top. We want to keep the arch part.



To call the other parts back we just do a CTRL + SHIFT click outside the model anywhere on the canvas and the middle part pops back. Invert your mask (CTRL + I or Tool > mask > inverse) and then hide the unmasked part by clicking Tool > Visibility > HidePt. Now we are left with a shell and that's our base for the body part.



At this point you want to do two very important things before moving on. First I want you to delete what is not visible. Go to Tool > Geometry and click DelHidden. Bye bye top... Then you have to store a morph target. Go to Tool > Morph Target and click Store MT.





Now, this is where the fun starts. Rotate the model in an angle where you feel you get a good presentation of the volume. Press SHIFT + s to make a snapshot that will drop to your canvas. If you move your model around you can see that a print of it will be laying on your canvas. This is useful for other stuff as well. You can be tweaking a model and drop a snapshot to compare your changes. The snapshot will stay on your canvas till you clear it (CTRL + n). Make sure you don't move after you made the snapshot and go to Tool > Deformation > Size. Start dragging the slider just a bit in negative space with all the axes checked. You can see that the model is scaled against the snapshot. The y axis will require some extra attention for the thickness to stay even.



DON'T MOVE! If you have already moved the mesh around after this operation you have to start over. Z4 can create a difference mesh based on the difference between your snapshot and model. What you are left with is your new guitar body

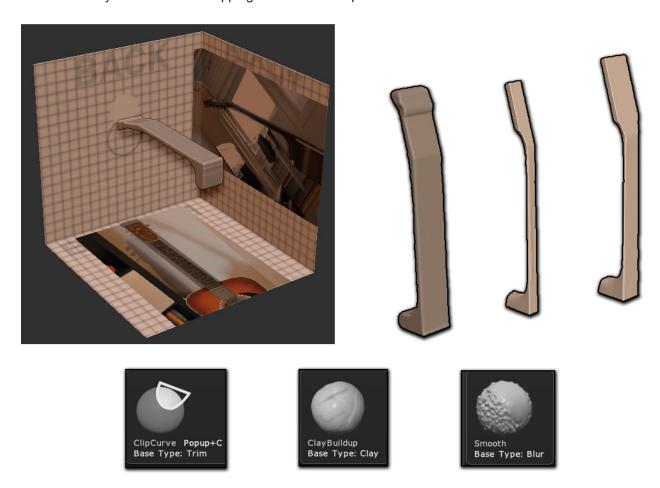


part. Go to Tool > Morph Target and click CreateDiff M. Check your tool palette on top of your Tool menu. You should see a part called MorphDiff\_ followed by the original name of your SubTool. If you move it around and see that the normals look flipped, make sure you click Flip under Tool > Display Properties. You can also click Double to have Z4 display double sided faces.

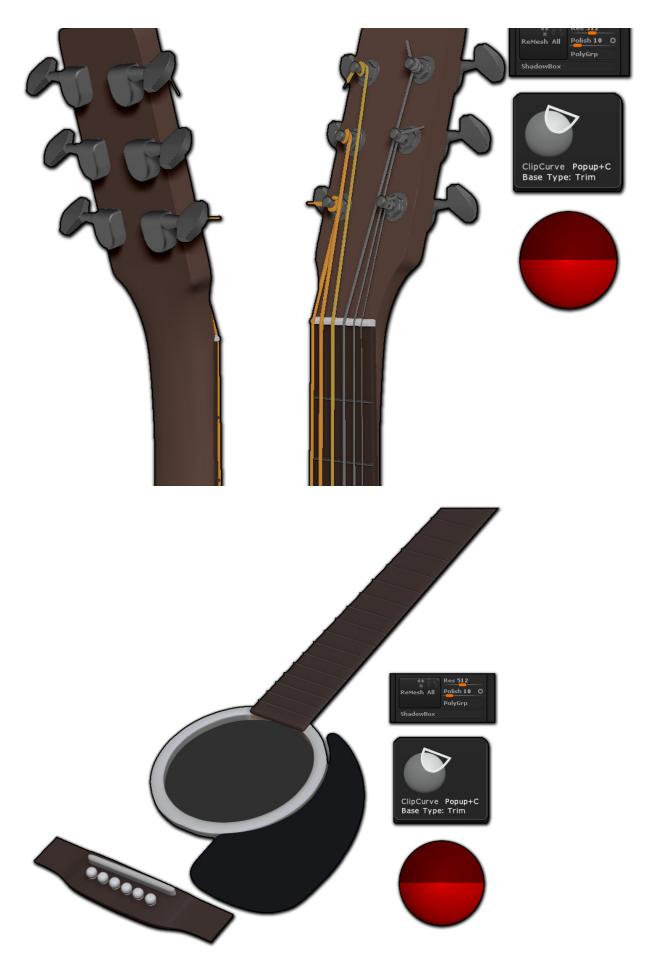


Now you can smooth out the sides of the guitar gently and also use the ClipCurve brush to get a clean sharp top. If you cut away too much you can mask out half of the body and use the transpose to drag a portion of it back out.

That is the most interesting part of the guitar. Below a series of images will show you how I made most of the other parts. It's a mix of mostly Shadow Box + Clipping brushes and ZSpheres.





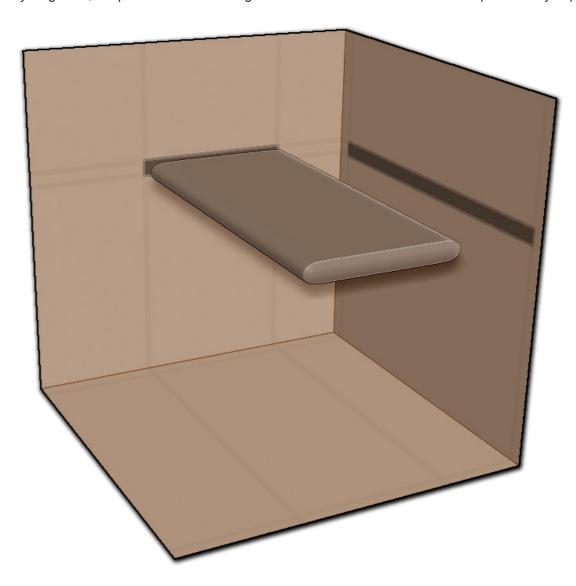


As you can see the same methods are used to create tons of different models. Don't forget the good ol' stuff, like ZSpheres, just because you got some new toys.

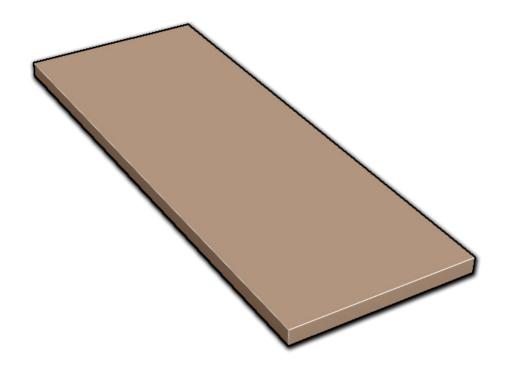
The last thing I'm going to show you, if you're still reading, is how I used the Spotlight to quickly sculpt the floor.



As with "everything" else, the planks are made using the Shadow Box. You can use a cube primitive if you prefer that.



Then I use the ClipCurve brush to straighten out the sides of the plank.

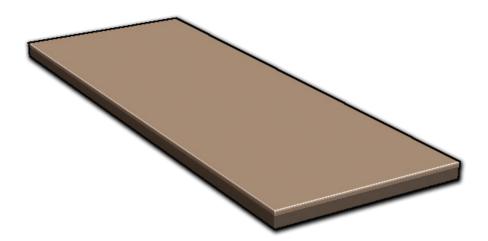




Import the photograph you want to sculpt from and load it into the Spotlight. Scale it, move it, rotate it till you're happy with the placement of it.



Mask out the bottom half the plank. If not, you'll sculpt right through it. You just need the top of the plank here. An alternative is to turn on Auto Backface Mask. You will find this button under Brush > Auto Masking. This way your selected brush will not sculpt through your model. I use masking because I find it quicker. There's no rule on how to do it right. In fact, there is no right or wrong way to do stuff in 3d as long as the result is good and the model will work further down the pipeline.



Find a good spot and line up your model to the image. Next you select a brush you like, I just use Standard in cases like this, and set the z intensity to a very low value. Then you just do a quick few brush strokes and there you go. It will inherit the data from the image and you will sculpt those details onto your mesh. The denser the mesh and the higher resolution the image the better the result will be. You'd be surprised how low poly the planks in my final image are.

You just have to analyze your mesh and set it up according to what you are trying to create.







The guitarist himself was made out of ZSpheres, his belt and belt buckle are made using Shadow Box and his hat is made using ZSpheres.

I also recommend that you take a look at Steve Warner's tutorials on how he created his Tank. There are several juicy Shadow Box steps there. The other beta testers have also made a lot of fantastic step by step images and I encourage you to check out all the beta work at zbrushcentral.com. That's it for me... I hope you learned something and I wish you a pleasant journey when you walk into the realm of Z4. Feel free to e-mail me stuff you make using the methods I describe or if you're stuck with anything. I'll give you a hand if I have some extra time available.

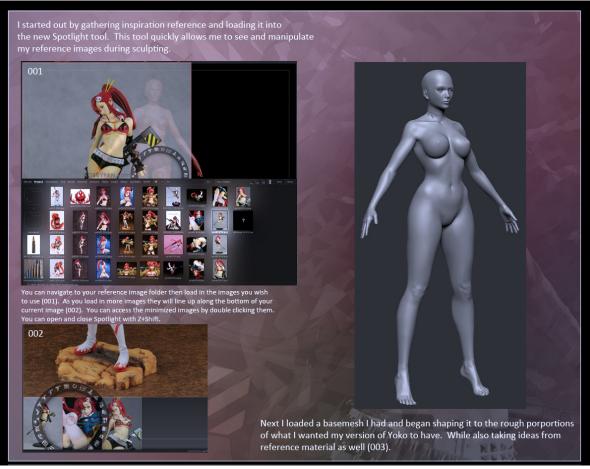
Martin



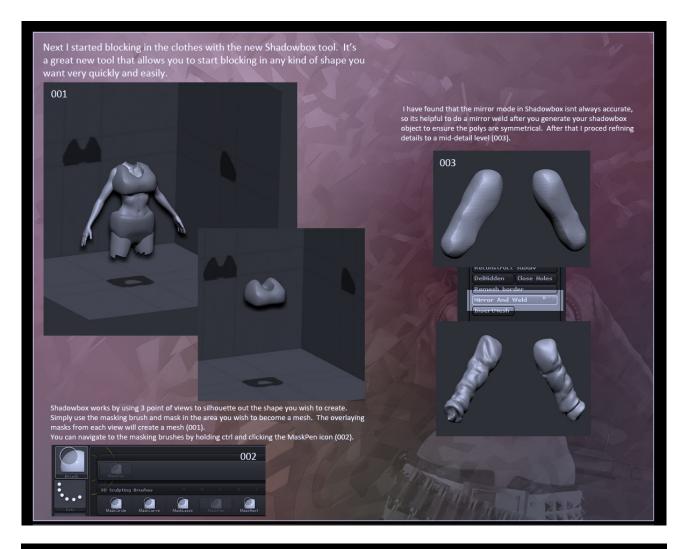
# MAKING OF "YOKO"

By Trevor Hennington - <a href="mailto:trevhenny@hotmail.com">trevhenny@hotmail.com</a> - <a href="http://lukavi.cgsociety.org/gallery/">http://lukavi.cgsociety.org/gallery/</a>





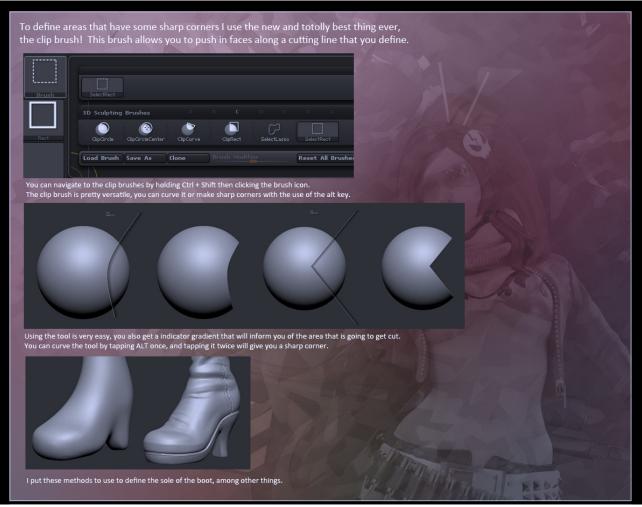






































## MAKING OF "GASMASK"

By Mariano Steiner - <u>marianosteiner@gmail.com</u> - <u>marianosteiner.blogspot.com</u> 3D artist/ character modeller



1 - I've started to rough my character out with a generic basemesh. In this first step I've used basic ZBrush modeling techniques.

ZSpheres, Hide polygons, group loops, extract mesh and append SubTool. Now it's so much faster with the duplicate and merge buttons.

The new Move Brushes and the new "relax" deformation also make things better, allowing you to deform your mesh without messing up the topology.





2 - Here again with extract mesh and ZSpheres. I've also used Deco and Hope Brushes to detail the shoes and the pants.



3 - Refined the mask, added new parts and detailing it with alphas, masking and the new "Inflate balloon" deformation.

By using the amazing Shadow Box feature, I did this shotgun in about 1 hour. Shadow Box, Clipping brushes and the possibility to edit your alpha tilling makes inorganic modeling so much faster and easier.





4 - The "Xplode" button is a amazing way to quickly show your model in details. You can see every single mesh on it.

Again using Shadow Box and Clipping brushes I've made this Knife, then I've transposed the left hand to hold it

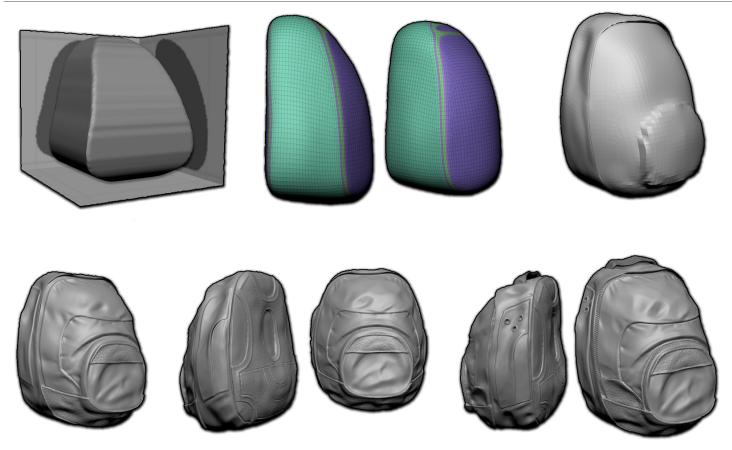




5 - Best Render Preview! Amazing upgrade on this! Now you can post your sculpts without worry with others softwares. Easy to use, easy to compose passes in post-production.

And I've used the new Fibers. You can get awesome results to preview the hair of a character, grass or a simple pedestal.





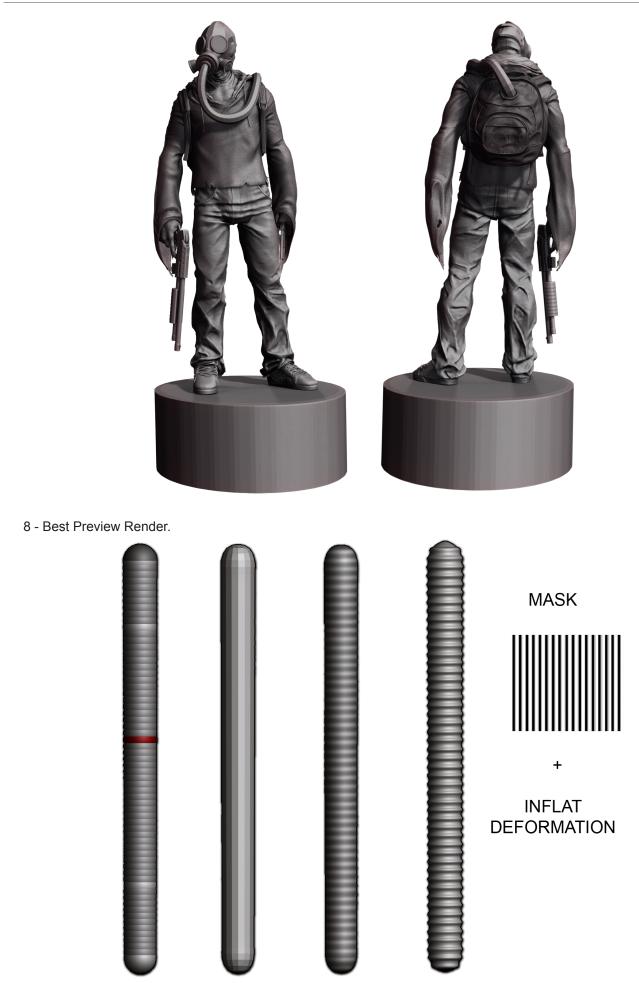
6 - This character was "finished", but I was still missing something. It had a "too simple " feeling. So I had the backpack idea.

I could do this with any geometry, but with SB I don't waste time blocking the main shape anymore. So I did it! Using the new move brushes, deco brushes, masking/inflating and etc.



7 - With ZSpheres, i did the straps and again detailing with deco brushes, masking/inflating.





9 - I wasn't satisfied with the oxygen tube, so I've re-modeled it, using ZSpheres, alpha tilling, inflate balloon deformation and then transposed to the same position as the other one.





That's it! The final BRP with the amazing new SSS Shader!



## THANKS!

Pixologic would like to thank all Z4 beta testers, we hope you'll enjoy and learn from their experience, quick tips and tricks.

The Pixologic Team