

ZBrush 3.1 Workshop Part 1

Workshop Part 1

Getting to know ZBrush 3.1

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Introduction

Note:

It's not essential to understand exactly how the program works but I found it less frustrating once I knew a bit of background information and the principle concepts involved rather than worrying about the magic behind the scenes.

As with a lot of creative fields there is not necessarily one right way to do things. As long as you are open to new ideas you can often take something from everything you learn and use the bits you find useful and best for the way you. Once you get over the first big hump with ZBrush you can start to explore some of the potential it has to aid you in the creation of characters, and other 3D Assets.

1-Pixols and 2.5D

There is a fundamental difference between using ZBrush and other 3D packages. This difference is in how the information is stored, it's not 2D, and most of the time it isn't 3D which is why it can handle such incredibly large numbers of polygons.

The information stored on screen is in fact 'Pixols' (not to be confused with pixels) they are effectively pixels storing colour information as well as depth information. If an object is completely deselected it is simply just stored as static Pixols, like a frozen inaccessible embossed/engraved image. This is fine if you are creating an illustration purely inside ZBrush, however not much use if you want to export your object back into your given software as 3D, so all you have to do is keep the object active to retain all of its 3D information.

Another major difference is that there is only one view of the object, meaning the program doesn't have to display all of the objects 3D information at the same time, only the viewable areas at anyone time have to be handled by your computers resources. An additional memory saving feature of the program reduces lag when rotating and moving your object, by temporarily displaying a lower subdivision of the object while the action is happening.

If your model gets to a level of detail where the PC you are using can't handle the information on screen and is starting to show lag and is interrupting your work flow then there are a number of features built in to reduce the demands on your system. **See Hiding and Revealing in the next workshop.**

The inability to add cameras to a scene is one of the main reasons why the program is not considered as fully 3D with more difficult navigation as a result like mudbox for example. Nevertheless when correctly integrated into the production pipeline this is still one of the most powerful modelling and texturing programs in commercial use due to its ability to deliver high resolution next gen models with greater ease than ever before without the need for expensive memory and processing resources, so its important to understand how to use the program to its full potential.

2 – Terminology

ZBrush seems to have been designed as more generally artist friendly program as oppose to being aimed at 3D Modellers. As a result of this to make it more intuitive for traditionally orientated artists, some of the terminology used is different to normal modelling packages, and requires a slightly different way of thinking.

A 3D object is no longer a 3D object, it's a tool. You are manipulating vertices, but you can't delete them or individually add them, only manipulate them. You can't change the topology (*ADVANCED unless reconstructing the entire topology of the .obj normally only used for making scanned 3D objects into viable models for animation*)

The view ports you are used to in other 3D packages are now just one view port called the canvas.

If you want to save the changes you make to a tool (3D object) you don't go to save document, you go to save it in the tool menu or Palette.

3D object = Tool

Menu = Palette

View Port = Canvas

Save = Tool > Save As

NOT DOCUMENT>SAVE it's just like taking a screen shot of the canvas, no 3D information is stored.

Hint- 3D becomes 2D VERY easily!

If you drop a tool and create a new one by accident, its game over. Once you drop it there's no going back and changing it. It becomes effectively 2D from that point on.

This can be really REALLY frustrating and annoying for anyone starting this package, get used to pressing T as soon as you've drawn out the tool this takes you into Edit mode and stops you accidentally doing this.

Draw out tool on canvas press T to enter edit



mode

3 - Navigation

Its scary opening ZBrush and realising that you don't know your way around it or where to look for the things you might need. It is quiet foreign to begin with but once you get your head around a few key concepts it will get easier to operate the software as a whole.

Navigation

Rotate = click drag on an empty area of your canvas

Move = press and hold Alt + click-drag on your empty canvas

Scale = press the Alt, click-drag on your empty canvas, then, release Alt

Centre/Frame = Alt+Click blank canvas

Hint

The navigation buttons are down the immediate right of the canvas.

Forget the top half of these. So don't worry about scroll, and zoom, Actual, or AAhalf.



The other buttons for navigation are **Move**, **Scale**, and **Rotate** buttons. If you are focused on an area to the point where there is no blank canvas then these buttons can be really useful to navigate around the model. **Hold click** on the buttons to use them.

4 - Import low resolution obj. or .dxf

Importing a model from another package is easy just use 'import' in the Tool menu as an obj. file then it's just a case of click and drag on the working area in the view port to draw out the 3D object.

You don't need to import anything complicated, in fact the simpler the better. Get in the major details and you can refine them in ZBrush, getting the topology right first time is really important.

Hint – Avoid Triangles

Make a real effort to have as little number of triangles in topology as possible, because creases and other nasty mesh deformities can happen in higher subdivisions. They aren't always that noticeable, but if you want do the best detail you can then its something to think about. A few are ok sometimes but its one less thing to worry about if you have none.

Tool > import > obj.

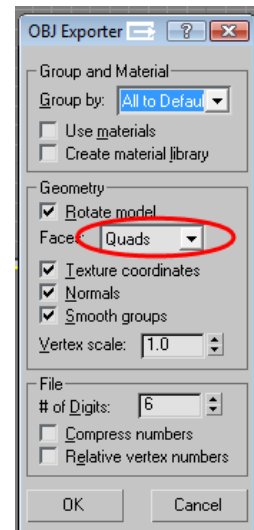


Preferences> Importexport> Turn everything off or the vertex id's will be changed resulting in problems exporting back to 3D Package.

Preferences> Store config so it's already setup when you start up.

One of the easiest ways to ensure that your topology is imported correctly into ZBrush from your 3D package is to make sure you export the mesh in quads. However if this isn't possible or are having other export/import problems with topology then you may find it useful to look at the following test imports.

It's always good to check your import by firstly checking if it subdivides correctly, or has any errors before you start investing any time in your model. To do this **See Subdivisions Later or look at the import test examples in Troubleshooting.**



As well as checking for problems with geometry, it's important to check your UVW's are also working as expected. To quickly check the UVW's you can import your model and make a quick texture in ZBrush that can show you if there are any problems occurring.



Tool > Texture > Col>Txx

It's normal that ZBrush turns the UVW layout upside down automatically, however the layout and proportions other than this will not be changed. It's just the way the program reads the information. It also exports the textures like this, so they will need to be flipped when you put them back in Max (covered in a later workshop)

If you hover the mouse over the texture menu down the left hand side of the interface, or hover over **Texture > Texture** this will show you the default colour in the shape of your UVW Layout hopefully looking normal

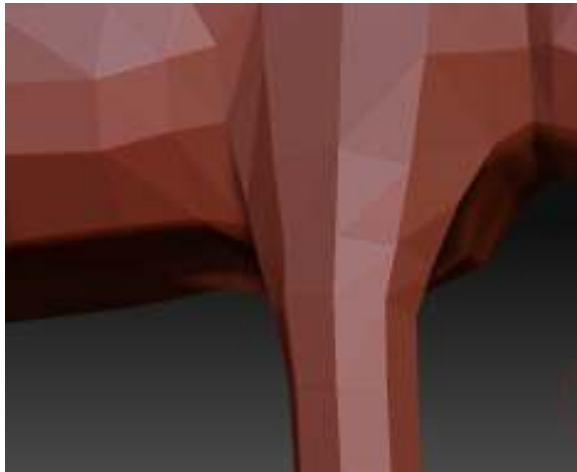
There is an example of UVW's that have been incorrectly imported in the **Troubleshooting** section

Troubleshooting Imports

Problems with geometry

Import geometry Test 1

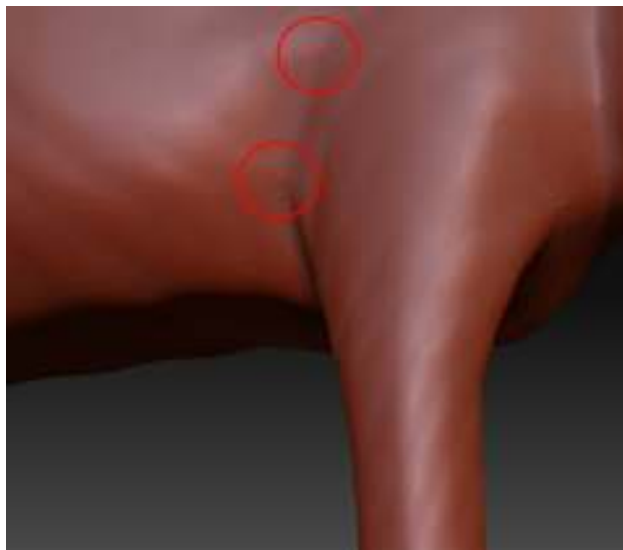
Initially the geometry appears to have been imported fine as the obj. however if the object is subdivided to allow for more detail to be added then problems can be noticed in the resulting geometry.



1. Import obj. from MAX



2. Subdivide (ctrl+D)



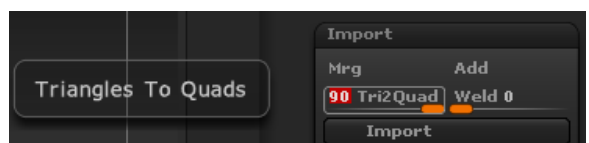
<3. Higher subdivision reveals how the distorted geometry has created grooves and particularly bad pinch points (circled in red) in the flow of the geometry.

The reason the import has not been successful is because the geometry has been imported as triangles instead of the quad polygons that were exported from MAX. This cannot be corrected easily so it is best to prevent this from happening in the start.

Import Test 2

Importing the geometry as quads is relatively simple once you know to not use the import at the top of Tools.

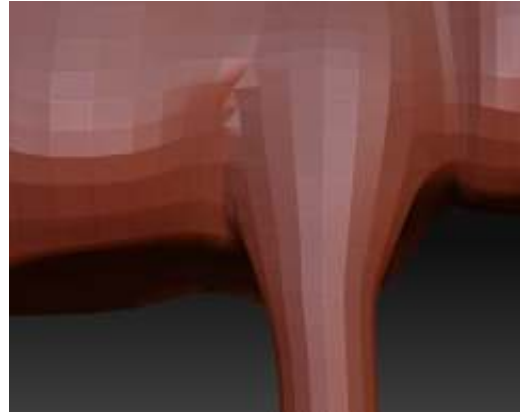
Tools>Import> Tri2Quad 90 > Import



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1.Import obj. after changing tri2Quad to 90



2.Subdivision occurs without errors into new quad polygons



<3. Higher levels of sub division show how geometry it smooth and shows further how there are no problem areas in geometry.

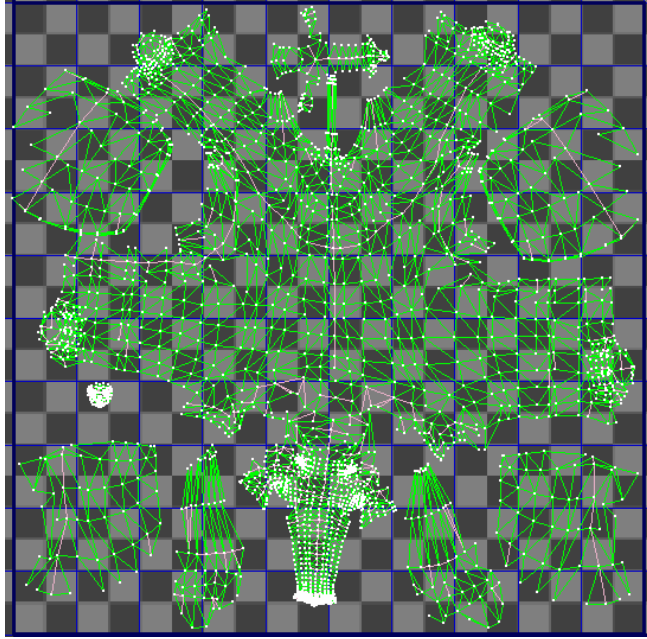


Problems with UV's

If you export your .obj to ZBrush and your UVW's look like this after you have checked them, then you need to re-export your original model again after following a few procedures.

If you import the same .obj that you have just tried importing into ZBrush back into Max then you would expect the UVW map to stay the same as it hasn't been changed by any external program. This however probably won't be the case. The image following shows how the map

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seams have been destroyed and will not allow the model to be correctly mapped.

To correct this go back to the original file before export,:

Select the mesh> Utilities > Reset XForm> Reset Selected

This will add the **XForm** to the mesh modifier stack. **Collapse** this and the mesh will **flip** all of the polygons. Select all of the polygons and flip them, then **re-export** with the new working UVW's.



5 – Subdividing Geometry

Once the geometry has been successfully imported it is very tempting to subdivide to the highest level your computer will handle and then start putting the highest level of detail in from the start.

The best way to make the most of your model is to start on the lowest level, work on that first level for as long as possible doing everything you can to improve the base form, before moving onto the next level doing as much detail as the topology will allow, and so on until it is suitable to do the high end frequency detail.

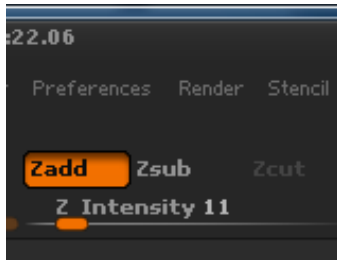
Subdivide Geometry = **Ctrl + D**
Lower Resolution Geometry = **Shift + D**
Higher Resolution = **D**

Once a new level of detail has been created it is possible to move up and down the levels of resolution either using the menu or the shortcuts

Hint – Get used to shifting up and down the Levels

If the lower levels are altered this has a knock on effect in the higher. This is particularly useful for altering large masses without disrupting higher level detail. Get used to shifting up and down the levels.

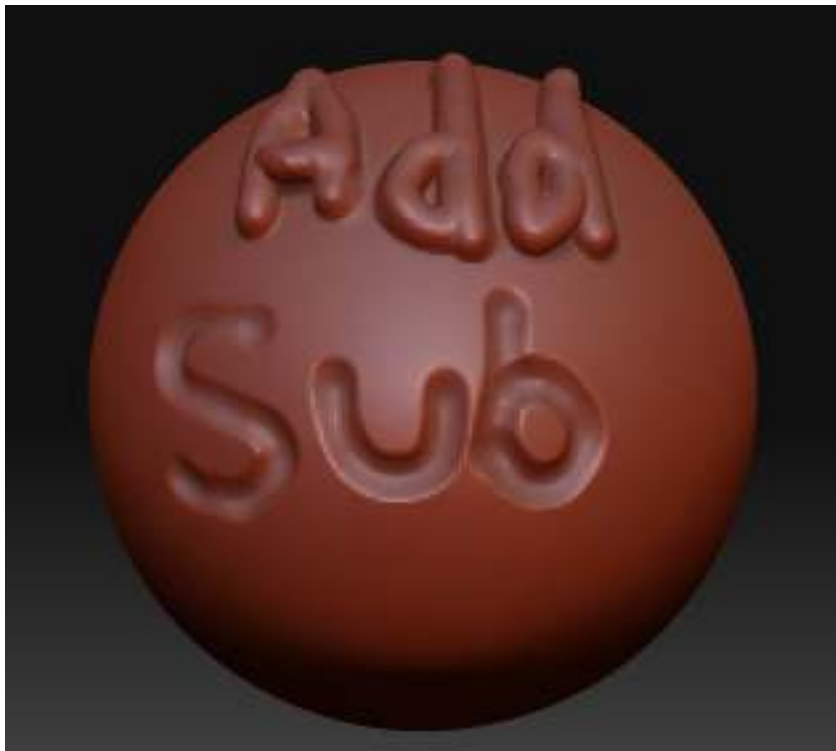
5 ZAdd and ZSub



Another really important feature is that anything you can add to on your model you can also subtract the same thing.

Whether the each button is activated determines which one is in use, or if neither of them is in use then the brushes will have no affect on the model.

A quick way of switching between the two is holding Alt while performing the normal function and ZBrush will invert whatever you are doing.



6 – Brush, Stroke and Alphas

Simple brushes are good for manipulating low resolution models to get the overall forms and shapes correct, but sometimes as the models poly count gets higher and the resolution of the model is increased, then other brushes will need to be used.

There are 6 main factors that can affect the way in which a brush will influence the surface of the model.

The first 3 are:

Focal shift = brush intensity fall off

ZDepth = intensity of the 3D brush effect e.g. 100 (strong) > 0 (weak)

Draw Size = Brush size

Either found at the top or **Right Click**

The second 3 are:

Brush= Brush effect preset selected

Stroke= way in which the stroke is delivered

Brush Alpha= alpha mask applied to the brush effect

Experiment until you find what you need, there are a lot of good preset brushes that can already be found in the standard ZBrush library.

Brush Presets



There are different strokes that can be used each with different settings. Most of them are self explanatory once you've had a play with them.

There are settings along the bottom that can be changed mouse average takes the average from movements you make to produce a smoother brush stroke. A smooth stroke isn't always desirable so this can be lowered as appropriate.

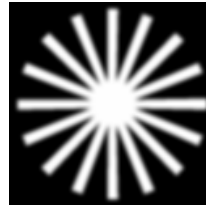
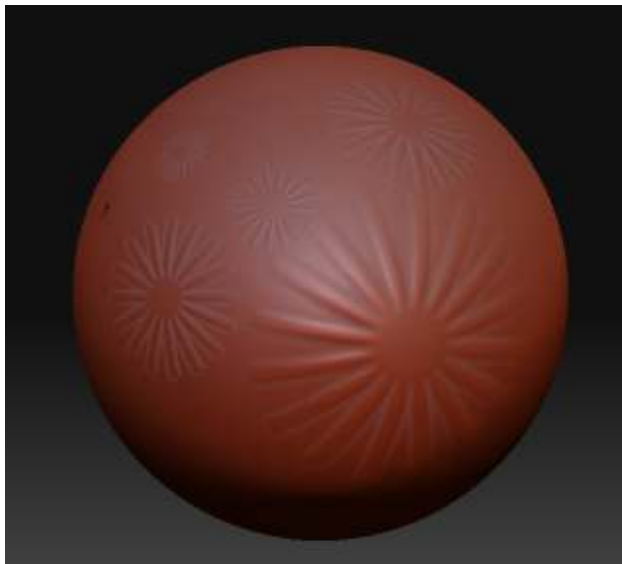
Stroke



The stroke is important in dictating how the brush is applied to the surface of the mesh. As well as the default settings there are other variations that can be made on each stroke, most of them are self explanatory once you've had a play with them.

One useful setting that can be changed is the **Mouse Average**, this average takes the average from movements you make on the surface to produce a smoother brush stroke. A smooth stroke isn't always desirable so this can be lowered as appropriate.

Note: Drag Rect doesn't always work the first time you select it in the stroke menu, go back and re-select it until it does as demonstrated bellow



DragRect draws out the alpha selected when you click and hold and drag to size on the model

Alphas



Alphas are THE most important feature that ZBrush has to offer. They allow for the unique creation of detail that would take hours otherwise and would be almost impossible to do by hand. You can easily import alphas you create from Photoshop **.psd's**

There are a number of ways alphas can be applied, these include **stencil** creation and **masking** as well as using the **DragRect** features

Hint

Almost any high resolution detailing problem you think you might have can be solved by using an alpha. If you are struggling to make your own there are tons of alpha libraries out there on the net you can find and use.

7 – Saving and Exporting 3D mesh

If you are spending a considerable amount of time in ZBrush and relying on using your layers of subdivision to create a normal or displacement map you need to save your work as the native ZBrush format **.ztl** this avoids losing the subdivisions of detail in your mesh.

Save Tool = **Ctrl+ Shift+T**

If you are exporting your mesh back into your 3D package simply choose the subdivision resolution at which you would like to export and go to:

Tools > Export> .obj

Shortcuts

Navigation

Rotate = click drag on an empty area of your canvas

Move = press and hold Alt + click-drag on your empty canvas

Scale = press the Alt, click-drag on your empty canvas, then, release Alt

Centre/Frame = Alt+ Click blank canvas

Editing Model

Enter Edit Mode = T

Sub-divide = Ctrl + D

Down sub-division = Shift + D

Up sub-division = D

To see number of polygons hover mouse over tool icon

ZAdd and ZSub **hold Alt to inverse brush** effect on model of whichever is in use

Save Tool = **Ctrl+ Shift+T**