WELCOME

UV Master is a new free plugin for ZBrush 4.0 Windows and Mac OS X, which will generate UV coordinates for your ZBrush models in a single click. When using a 2D map with a 3D model, the model must have UVs, which are 2D coordinates needed for your texture to display accurately on your model. It creates the necessary UV seams, followed by the unwrap and packing of the UVs.

This result is an optimized unwrap which is understandable to the human eye and so it is possible to work on the corresponding texture in a 2D painting software like Photoshop.

Using this plugin is easy, fast and efficient and will minimize your work of UV creation to a few seconds and a couple of clicks.

The process is by default fully automatic but you may want to drive the process to enhance the UV map generated by UV Master by using the polygroups option or the Control Painting feature.

This documentation will explain all the tips and tricks needed to help you create the UVs that best fit your needs.

As UV Master uses advanced Unwrap functions, if you wish you can create your seams in a different application (and optionally do a basic unwrap to create the UV shells), and then use the plugin to generate new and fully optimized UVs.

With UV Master, you will be more productive and your time previously lost in manual UV editing will be available for more painting or sculpting!

Don’t forget to subscribe for free to our ZBrushCentral community forum with over 180,000 members to discover tips, view artists’ creations, locate useful help for all things related to ZBrush or post your works-in-progress!

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The Pixologic Team
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UV Master is a plugin provided by default in ZBrush. If you need to reinstall the plugin, please, follow these steps:

**Installation process:**

1. Quit ZBrush.
2. Extract the zip file to a temporary folder.
3. Copy the UVMaster_1.0.zsc to your ZPlugs folder. With a default installation, it will be found on Windows at C:\Program Files\Pixologic\ZBrush 4.0\ZStartup\ZPlugs. (or similar) and Applications/ZBrush OSX 4.0/ZStartup/ZPlugs.
4. Also copy the UVMasterData_1.0 folder with its contents to the ZPlugs folder.
5. Launch ZBrush.
6. Open the Zplugin palette. There you will find an UV Master menu, containing the new plugin’s features.

This plugin only runs on Windows XP, Windows Vista and Windows 7. Windows 95, 98, Me and 2000 are not supported.

UV Master includes several checker maps, to help you visualize your UV unwrap on your model.

![The UV Master menu.](image)
II  LET’S UNWRAP IN A COUPLE OF CLICKS

To create the UVs in a simple way is very easy, especially when you don’t need to do specific post process.

For this short tutorial, we will use the nice model provided by EOF3d (Eugene Fokin), a member of ZBrushCentral, available at this URL: [http://www.zbrushcentral.com/showthread.php?p=591585#post591585](http://www.zbrushcentral.com/showthread.php?p=591585#post591585). After downloading the file, extract the archive and load the famme_shared3.ZTL file.

Note:
The model from EOF3d already has UVs. For this tutorial we will act as if it doesn’t have them.

Then, to do the unwrap of this model:

1. In the Zplugin palette, open the UV Master plugin.
2. Go to the lowest level of Subdivision for the body SubTool.

On the left, the original model. In the center, the Subdivision slider set to 1 and on the right, the model at this level of Subdivision.
(Optional but strongly advised) Click on the Work on Clone utility: you will be working on a clone of your object without subdivision levels or polypainting.

3. Leave the default options of the plugin.

4. Press the Unwrap button to launch the unwrap process. After few seconds, statistics in the progress bar area will notify you of the end of the process.

The message which informs you of the end of the UV unwrap... just 0.15 seconds!

Note:
The placement of the seams may change and can be placed on the front of the model. See the Control painting (Chapter V-2) for more information about improving the UV seams placement.
In orange, the UV seams created by UV Master, visible through the Check Seams mode.

5. (Optional) If you worked on a clone (see step 3), click on the Copy UVs button in the Utilities section of the plugin, select your original Tool or SubTool and press Past UVs in the Utilities section of the plugin.

6. In the Tool >> Texture menu, load a texture map with a checker pattern. (The ZTool provided by EOF3D includes a checker).
7. Select the hair and redo the previous steps to regenerate the UVs.
8. It’s done!

To discover all the Unwrap Master option, please read the chapter dedicated to the advanced Unwrap.
III WHAT YOU NEED TO KNOW BEFORE UNWRAPPING

The unwrapping of UVs has always been a technical operation during the 3D creation process, far from artistic creation. With UV Master, we tried to reduce the technical aspect of the process to its minimum. With most models, a single click on the Unwrap button will do the operation and will produce UV maps ready to be used.

This section summarizes the important points when unwrapping with UV Master. It will help you better understand the UVs resulting from the process.

1. PROCESSING TIME

Depending on the geometry and topology, the automatic unwrap can have a processing time which varies from a couple of seconds for a low polygon mesh of 3000 polygons to up to 5 minutes on 150,000 polygons complex models. The number of tunnels and handles increases the processing time. (see chapter 6.2).

A progress bar is displayed during the unwrap process and will display several statistics upon completion.

This simple-looking model, generated by a Remesh is the perfect example of a model which will be long to process: it has approximately 70,000 polygons and includes a lot of holes (see chapter 6.2). The processing time has been of 40 seconds on an Intel Core2Duo at 3Ghz. Creating several polygroups would drastically reduce the computing time.

Note:

On Windows 7, the display can freeze because of the operating system’s verifications. Please wait until the end of the process.
2. **UV Master is Different from Other Unwrap Tools**

Most of the software dedicated to UVs or tools available in 3D packages offer an “automatic” UV unwrap. This “automatic” means that after manually defining the UV seams to help the software’s “cutting” of your UVs it will automatically unwrap the UVs in an efficient way. In fact, the process is only half automatic: manual UV seams placement and then automatic unwrap.

Other solutions exist which can create automatic seams, like the A/G/PUVtiles of ZBrush. While these methods result in distortion-free maps, they create a lot of different UV islands which make editing of the resulting UVs or the corresponding texture in a 2D editor hard or even impossible to achieve.

By using the plugin’s Ambient Occlusion feature to attract the UV seams, UV Master will try to place the seams in the least visible parts of the model, in most cases making ready-to-use UVs for 2D work.

UV Master has been designed to be a 100% automatic solution (with a few optional settings) though the result may be different from what a UV specialist would produce. But for most of an artist’s needs, the plugin will produce UVs ready to be used in production or as a very good starting point for advanced UV editing.

UV Master includes simple manual UV editing after the unwrap has been done by allowing the model to be flattened and then tweaking the UVs. It doesn’t include manual UV seam placement; UV Master has been designed to be primarily a UV creator, not a UV editor.

3. **The Computer Doesn’t Have Eyes**

This chapter title may be obvious for most of you, but when expecting a result, it shouldn’t be a surprise if the face of your character has a UV seam in the middle of a face. The plugin can’t know if it’s a face or something different.

On some models, the UV seam can be placed perfectly in the back of the head while others will have seams between the ears and mouth on both sides.

To “help” the plugin, a Control Painting system is included to locally protect portions of your model from UV seams or drive them where you would like them to be.

4. **Automatic Seams Placement**

The placement of the UV seams can drastically change the result of an unwrap. To help you understand how the plugin places them, you need to know that it tries to place them on the cavities of the model. It will also try to join the extremities (like a horn, or the fingers) to reduce UV distortions.
This means that if the internal part of the mouth and the throat of a model have been sculpted, the plugin may create an UV seam from the top horn in the middle of the forehead directly to the extremity of the throat.

5. SEAMS CAN BE ATTRACTIONED, RESTRICTED, BUT NOT EXACTLY PLACED

To help the plugin, the protection painting system can mask an area from UV seams placement and then no UV seams will be created on this area. For example, this would be useful for protecting the face of a character.

In addition the plugin can be helped in the placement of the UV seams by an attracting system: by painting areas, the plugin will try to “Attract” the UVs through these defined areas. In this context, “Attract”, means that if UV seams are close to this defined part, UV Master will make them go through this new potential path, but it won’t prevent the creation of seams on other parts of the model which are not protected. The plugin always tries to find the best ratio between seams creation, placement and UV distortions.

The Attract system is not a seam positioning system like classic UV Unwrap software. Protecting all the model and painting an Attract area may be close to a result made with another UV unwrap solution, but it won’t mean that the seams will fill only the painted drive area.

6. UNUSUAL TOPOLOGY, TUNNELS AND HOLES

UV Master is designed to work on all kinds of topology, but some of them can generate extra UV islands or extra seams placement:

6.1 NON-MANIFOLD OBJECTS

When an edge shares more than two polygons, the object becomes “non-manifold”. This kind of topology may appear when using the ZSpheres 1 Adaptive skin on complex ZSphere structures.

When UV Master finds such edges, it will add extra UV seams to split the model on this area. It’s recommended to avoid such topology, even for sculpting purposes.

6.2 TUNNELS HOLES AND HANDLES

Some objects can have tunnels, holes or handles and such topology is problematic to unwrap. Imagine a Mug: the handle and the body of the mug are in one part, and if you want to unwrap this object you will have to cut the handle (or another part) to do the unwrap.
Another example is provided in the ZBrush sample files: the DemoSoldier props: the backpack has two handles and so it must have an extra cut to be unwrapped. The glove is also a typical problematic model: it has a thickness, holes and tunnels. Unwrapping such model will create extra UV seams in those areas to make the unwrap work.

Even with such special areas, for most models the automatic unwrap will be able to do its task in a short amount of time while manually doing this operation would require considerable UV knowledge and some serious brainstorming!

To reduce the need for extra cuts, creating polygroups can improve the result.

The tunnels (1) and holes (2) on the DemoSoldier gloves.

The DemoSoldier backpack. On the left, the computed seams with cutting seams on the bottom of the handles. On the middle, the result of the unwrap and on the right, the model with an UV checker map to visualize the result.
The computing of such topology can take a longer time than a usual unwrap. The more handles and tunnels the model has, the longer it will take the plugin to do the unwrap.

The Control Painting is only partially taken into consideration on tunnels and handles: Protect will work depending on the geometry and how the area is painted; Attract will not have any effect. Density is fully functional.

7. **High Polygon Count Restriction**

UV Master has been designed to work on low polygon models with a recommended limit of 100 ~ 150,000 polygons. On a higher polygon mesh the computing can take time and may request a large amount of memory.

Using polygroups will increase the speed of plugin operation and reduce memory usage.

Models generated from a ZSketch, based on the Unified Skin can have a high poly count and a very large number of polygroups. If possible, reduce the Unified Skin resolution.

*Note:*

_A high polygon mesh combined with holes and tunnels (see previous chapter) can result in a longer process. Such models can be the result of an Unified Skin over a ZSketch model. To reduce this processing time, try creating polygroups and reduce the polygon count if possible._

8. **UV Packing**

UV Master packs the created UV islands to optimize the UV space. It will scale, rotate and move them to use the maximum space, but will always maintain the ratio between the UVs and the polygons.

The plugin also uses the UV Border value located in the Tool >> UVMap submenu to set the space between the UV islands.
9. CREATION OF EXTRA UV ISLANDS

To preserve the symmetry of the unwrapped models as much as possible, UV Master may need to split a UV island into several parts to avoid extra distortions of the model. Disabling the Symmetry option will avoid this extra UV split, but it will result in non-symmetrical UV Islands.

When a model has different objects merged together resulting in one unique Tool, like the Rhino model available as a ZBrush sample file with its nails, horns, etc, each object will be unwrapped separately and packed in the UV space. Then the minimum number of UV islands created will be the number of objects unwrapped.
IV WORKING ON CLONE, COPY & PASTE UVS

1. WORKING ON CLONE

![3-Utilities](image)

Work on Clone, located in the utility section of the plugin.

To make the UV work easier to understand and avoid any data loss in the UV operation, the plugin lets you work on a prepared copy of your model. Clicking on the Work on Clone utility of the plugin will clone your current Tool or SubTool and prepare it for UV creation by going to the lowest level of subdivision, deleting the higher levels and changing the current Matcap to the Skin4 Material.

This step is strongly advised, though not an obligation, because when using advanced options like Control Painting any existing polypainting will be lost. It also avoids unnecessary reprojection of details when the plugin manipulates internal files, such as when using the Flatten or Unflatten utilities.

But if you just want to create UVs on your model in a single click, without editing or checking the result, working on a clone is not necessary. That's why the Work on Clone is an option and not a default mode.

The cloned model name will have the prefix “CL_” like “CL_DemoHead”

2. COPY AND PASTE UVS

When the unwrap process is done on a cloned model, simply use the Copy UVs utility to copy the model’s UVs into memory, then select the original Tool or SubTool and press the Paste UVs utility to transfer the new UVs to this model.

This is also another way to copy the UVs to various models which have the same topology and vertex order.
The Copy and Paste UVs, located in the utility section of the plugin.
V OPTIONS AND PREPARING THE MODEL

To create a more predictable result in your UV unwrap, some options can be enabled or disabled, or a simple preprocess can be applied by providing some directions to the plugin. Nothing is better than the human eye to know where a model has to be split, or which areas to be protected.

1. OPTIONS

1.1 Unwrap All

Unwrap all is doing the same operation as Unwrap, but on all visible SubTools, by using the full automatic unwrap.

This action is perfect when you want to unwrap a large amount of SubTool at once without the need to protect or attract the seams.

1.2 Symmetry

By activating this option, the UV unwrap will try to produce symmetrical results on the UV island.

On some specific models, to preserve the symmetry, the plugin may cut the UV island(s).

Note

The plugin tries to preserve the symmetry as much as possible, but it may not be kept on some models. If the UV seams positions are not symmetrical, then it won’t be possible to have a symmetrical unwrap.

1.3 Use Existing UV Seams

This option is only for those models which are to be unwrapped by the plugin without computing the seams: for example, loading a model which has topology seams created
by cutting the topology in another software or loading a model which already has existing UVs.

The plugin will use these topology seams or UV islands to compute new UVs, using the powerful algorithm of UV Master, which produces UVs with minimal stretching.

By using this mode, you can use Density Control painting, but the Attract and Protect modes won't be taken into consideration by the process because they are useful only for UV seams creation.

The new optimized UVs will have the same UVs islands, but the shape of the border of these islands will be different from the original one. In other words, the actual cuts of your model will be the same but the UV unwrap can be completely different.

This famous Vulcan head model has UVs made in another 3D package (2). It shows a lot of distort-
tion on the nose and the ears (1). By using the UV Master algorithm and preserving the seams, the new UV Unwrap (4) generate less distorted UVs, visible on the nose and ears (arrows, 3).

Note:

If the model has a specific topology like handles or is just a closed volume with no topology cut or existing UV islands, UV Master won’t be able to create an UV unwrap without overlaps.

When this option is activated, the Symmetry and Polygroups options are disabled.

1.4 POLYGROUPs:

Using this option will create UV islands defined by the existing polygroups of the model in order to improve packing in the UV space. It is also another solution to better organize your UV unwrap and minimize some distortions.

Notes:

Using the polygroups will improve the speed of the process.

Please, before using this option, check your existing polygroups. By default, ZSpheres models or ZSketch models have automatically generated polygroups and having too many polygroups may create too many UV islands which makes the generated UVs hard to understand for future editing or texture creation.

Don’t forget to use the new ZBrush 3.5 polygroup options to create them in a quick and efficient way through masking or Polypainting. It is also advised to use the Tool >> Visibility options to ensure that no extra isolated polygroups exist.
2. **CONTROL PAINTING MODES**

To improve the quality of the UV unwrap, UV Master uses a Control Painting system which will allow you to provide extra information to the plugin, resulting in a more controlled result.

To use this system, press the Enable Control Painting option. It will activate the painting modes.

For better visibility of the Control Painting, it is advised to use a white MatCap or use the Work on Clone utility.

Control Painting is based on three operations: Protect, Attract and Erase for the UV Seams placement and an extra Density mode which can change the density of the UVs to modify the pixel ratio between the textures and the UVs.

All these modes can be combined and used by the unwrap at the same time.

2.1 **PROTECT**

This mode will let you paint areas where you don’t want to have seams at all. An example would be to paint the face of a character.
By default, UV Master will add a seam to this penguin in the middle of the eye area (1). Protecting this area with Protect Control Painting (2) will avoid creation of the seam in this part with a new Unwrap (3). The generated UVs (4) with an UV checker map provide a good preview of the UVs.

UV Master will use a value between 70% to 100% of the color value to protect the area while a lower value won’t be taken in consideration, meaning no protection for the UV seams creation.

When painting a protection area, take care of the unpainted part in the middle of the protection area, like the internal part of the mouth or nostrils. UV Master will be able to fill small holes, but painting a loop around a neck won’t be taken in consideration as it would mean splitting the UVs into two islands. In this case, the plugin will force the creation of a seam, even if an area is protected.
The neck is fully protected and then, in this case, UV Master will add an extra seam to make the
unwrap possible. This user error can be easily corrected by erasing a part of the Protect control
painting or by painting an Attract area (see below).

Note:

By protecting areas, you can make some UV seams non-symmetrical. Please use the Attract
option below to improve the UV seam positions.

2.2 Attract

This mode will let you paint areas which will attract UV seams. It’s - not - a UV seams
creation method and it won’t force them to pass through it.

This mode is a good addition to the protection one. That’s why both modes are visible
in the same painting control map.

Change the intensity of the Attract color by changing the RGB intensity slider: a low
value mean less seam attraction while a high value mean more seam attraction. For this
mode, a value of 100% is advised.

Non-painted areas do not mean that no UV seams will be created in them: UV Master
will drive UV seams to an Attract area, but won’t prohibit them in non-painted areas.
The Attract mode used in the wrong way: painting accurate seams with the Attract mode like you would do in a traditional UV unwrap solution isn’t advised.

2.3 PROTECT AND ATTRACT AT THE SAME TIME

These two Control Painting modes can work together and most important, are designed to work on areas.

One of the best ways to use them is to paint a large area with Attract mode to indicate to the plugin that seams are allowed in that area and paint with Protect mode an important area to forbid seam creation.

The demo head with a Protected area on its front part, and an Attract area on its back part.
On the left, the unwrap of the Demo head with no Attract and no Protect: the unwrap produced very good results, but the UV map is difficult to read. On the right, with the Protect and Attract painted from the illustration above, the result is easy to read and then paint over. With just a couple of fast strokes, the unwrap understandability has been drastically improved.

### 2.4 Attract from Ambient Occlusion

This tool will compute a dedicated Ambient Occlusion and will convert it to an Attract Control Paint. As the seams are naturally placed in the less visible parts, it will improve the position of the UV seams where they are less visible.

*Attract from Ambient Occlusion: the UV seams will be attracted under the arms on this model.*
Note:

UV Master uses a specialized ambient occlusion computing method which is different from the ZBrush one.

2.5 ERASE:

This mode will let you erase the Control Painting done with the Attract and Protect modes.

2.6 DENSITY

This mode lets you paint areas to affect the pixel density by locally changing the scale of the UVs. By using a high value, your UVs will use more space and so will use more pixels for a more accurate texture. A low value means less UV space and so a lower resolution for that part of the texture. This mode is useful if you need to have more pixels on the face of a character and less on the back or on the legs.

This Painting mode is combined with a Coefficient slider which will affect the color of the painted areas: there are settings from 1 to 4, combined with an operator: multiply or divide.

Set the operator first, then choose the value. 1 means 1 times the UV size (no modification), 4 means 4 times the UV size, modulated by the multiply or divide operator.

To make the operation faster, preset buttons have been added below the slider. Just press them to set the desired value.

The density settings with Density mode enabled on the top and the multiply or divide operator combined with the value slider on the right. Under these settings are the different presets.

The painted colors go from Cyan for the negative values to green through white for positive values.

Use the ZBrush Smooth brushes to soften the Density color to make smoother transition between values. Don’t forget to turn off Zadd or Zsub if necessary to avoid affecting
On the left, the original UVs. In the center, a Density painting has been applied, from 50% to 100%. On the right, the result which shows that the UVs of the head are approximately 4 times bigger, providing more pixel space.

Note:
To erase the parts of the density map, please set the density slider at 1 and paint over painted parts.

2.7 **SAVE, LOAD AND CLEAR**

These three options allow you to save or load the Control Painting information for future editing of the model if needed. Or simply erase the Drive, Protect and Density information stored by the Control Paint.
VI UTILITIES

UV Master includes several utilities to improve your result or to make your UV work more easier.

1. WORKING ON CLONE, COPY AND PASTE UVs

Please see Section IV of this documentation (above) for these utilities.

2. FLATTEN AND UNFLATTEN MESH

Flatten will flatten the 3D object into a 2D plane which will represent the UV island(s). This is a good way to visualize the result of the Unwrap in a single click.

*The Flatten and UnFlatten buttons. UnFlatten is greyed out as it is enabled only when the model has been flattened.*

Because the flattened mesh is a 3D object, you can use the ZBrush brushes or tools to slightly modify the UVs representation. The most common usage will be to use the Move or Smooth brushes to locally tweak or relax the UVs.

A common mistake is to use the Smooth brush to relax the UVs. By doing this you will distort the UVs compared to the corresponding geometry, resulting in texture stretching. UV Master preserves as much as possible the relation between the geometry shape and the generated UVs.

When the operation is done, click on UnFlatten to restore your flattened mesh to its 3D representation.
The DemoSoldier in 3D on the left and flattened, based on its UVs, on the right.

Please keep in mind that the Flatten mode is a temporary state of your 3D model. Don’t forget to click on UnFlatten to bring your model back before selecting another Tool or SubTool.

Note:

*If the UVs are moved outside of the 0 to 1 UV space while in Flatten mesh mode, the UVs will be repacked or rescaled to fit the 0 to 1 UV space.*

*It’s not possible to use several UV spaces or create a multi UV map.*

3. **Check Seams**

By clicking on this mode, polypainting will be created on the model which will represent the UV seams.

Each time an operation is done which affects the UV seams, like unwrapping another time after changing the Control Painting, the seams representation will be updated.

The orange color is used to display the UV seams and the brown color to display the openings.

This utility will work with the seams created by the plugin, or with any kind of 3D model which has UV seams. It is different from the UV Check feature that is found in ZBrush’s Tool >> Texture Map menu.
4. **Clear Control Maps**

UV Master stores Control Painting information in specific files called “Control Maps”. They are stored in the data folder of the plugin during the ZBrush session and are bound to the Tool name.

This means that if you load a Tool which has the same name as a previous one on which you applied Control Painting, activating Control Painting on the new one will make the painting appear on it with the likelihood of various color artifacts as the geometry may not be the same at all.

Clearing the Control Maps will erase all temporary files, as will a restart of ZBrush.

**Note:**

*Clearing the maps is also an easy way to erase Control Painting applied on the current model and begin again.*

*If your model already has polypainting, clicking on this utility will erase it. Please work on a clone by using the Work on Clone utility to avoid this!*
5. **SAVE AND EXPORT CONTROL MAPS**

If you need to rework the UV unwrap of your model at a later stage, you can save or load the Control Painting of your model by using the Save or Load tools located in the utility section of the plugin.

It is advised to save them with your ZTL files and not in the UV Master data folder because its content is erased at each ZBrushStartup.
VII TIPS AND TRICKS:

These are some useful tips or tricks to know about creating UVs with UV Master:

- Density mode can be used without the Use Existing UV Seams option, just by loading existing UVs or a model pre-cut in another 3D software.
- If you are pleased with the seams generated by the automatic unwrap but not by the pixel density, enable the Use Existing UV Seams option before refining the Density.
- To soften the Density map, use the ZBrush Smooth brushes: the Density color is polypaint, so smoothing it will make a better transition between different densities.
- When working on a ZSketch Unified Skin, increase the Sdns slider value located in the Unified Skin menu to its maximum if your model has small and thin tubes such as those the ZSketchSeacrit demo file (available in Lightbox) has on its back. This will create cleaner geometry and will avoid having a lot of separate UV islands.

On the left, the original Unified Skin. On the right, the same model with the Sdns value set to 100. As the arrows show, the quality of the Unified skin is far better, resulting of a better UV Unwrap.

- UV Master tries to preserve symmetry, but when working on a unified Skin ZSketch model the resulting topology may not be symmetrical. To fix this problem, use the Mirror and Weld function with the appropriate axis, located in the Tool >> Geometry menu.
- If the model has a lot of stretching in some areas, creating polygroups and then new UV islands on the unwrap will reduce or remove this extra stretching. On some complex models, having a single UV island doesn’t produce the best result.
- Create polygroups! The more polygroups you have, the better your results will usually be, with less distortion, better UV space optimization and more. This is also a good way to reduce the processing time on models with holes and tunnels.
- When flattening your model, you can use ZAppLink to work on the model using the 2D editor of your choice. This operation will only work if your Tool has an existing texture in the Tool >> Texture Map menu. It won’t work with polypaint.
- Check your model carefully for topological issues. UV Master will deal with most of them, but for some topological problems the result may be unpredictable. Use the Check Mesh Integrity utility, located in Tool >> Geometry (ZBrush 3.5 R3 and above).
1. **Unwrap with Control Painting.**

This tutorial will explain how to use the control painting option to improve the result of your UV unwrap.

When you decide to use UV Master, the plugin will produce the least stretched UVs with the best ratio of pixels per polygons, but sometimes the seams won’t be where you expect them to be as it is an automatic process. Perhaps for the quality of your final model, you may need to have more pixels for a polygon area (lips, eyes, nose) and less for another (the back of a character).

The first step is to load the model to unwrap. For this tutorial, this retopologized character will be used. Feel free to use any kind of model.

1.1 **Unwrap and Things to Fix**

First, let’s do a simple Unwrap of the model and check the seams and the UVs. The steps to do these operations will be explained later in this tutorial. The purpose is to see any potential problems:

- The default result is pretty good with the UV seams which go on the back of the model, but the UV unwrap can be improved.
- In orange, we can see the UV seams on the model. The forehead has a seam which goes between the eyes (1), which is visible in the UV unwrap on the right.
- The seams on the arm go from the top to bottom and not in a straight line (2) and
Let’s fix these problems and do some improvements.

1.2 Density

For this model, we will need larger UVs on the head, to use more pixels on the texture and reduce the UV density on the back as this part will be less visible on the model.

To do this we will change the UV pixel ratio for some areas by using Control Painting.

Please note that this option, like all other Control Painting options, will remove any existing Polypainting. You are strongly advised to use the Work on Clone command, which will create a clone of the current Tool or SubTool and will remove the highest subdivision levels.

• Click on the Enable Control Painting button to enable the Control painting Tools.
• Click on the Density option to enable the painting. Adjust the Density to define the desired density, using the slider or the preset buttons. We want larger UVs on the head, so with the ‘x’ (multiply) button set, push the slider to 4 and paint on the head. You should paint a green color. (1 on the illustration below).
• For the purpose of this tutorial, we will also adjust the density on the hands. Change the density value to 2 and paint on them. You should see a lighter green on them while painting. (2 on the below illustration).
• Now, let’s work on the back of the character to define a lower UV density. Set the ‘/’ (divide) option button and then change the slider value to 4. Your painting should be a Cyan blue. (3 on the below illustration).

The three steps for the Density Control Painting.

As the Control Painting is based on Polypainting, we can use the Smooth Brush
(press Shift and turn off ZAdd or ZSub while pressing) to soften the Density painting: it will make the transition smoother between density parts of your UVs.

Note:
Be aware of your active sculpting brush, alpha and stroke when painting areas.

The smoothed density, shown by the arrows.

Now the density work is done. But at a later stage, if you need to refine the density values (even after the unwrap) switch Density Control Painting on and edit it again. Then press unwrap again and refine as needed until you are satisfied with the result.

1.3 Protect and Attract UV seams

On the first unwrap shown in the first chapter of this tutorial, the UV seams go too far on the forehead (close to the eyes) and are going from the back to the front of the legs and arms. To improve the seams placement, we will use Control Painting - similar to Density but dedicated to the protection of an area, or to attract the seams.

First, we will protect the front of the character. This part is most of the time the one which mustn’t have seams:
• First, we will protect the front of the character. This part is usually the one which mustn’t have seams:
• Click on the Protect button, below the Use Control Painting button. (Which should be on, based on the previous Density step.)
• Paint the front of the character, from the head to the legs. Paint also the front or top part of the arms. Depending of your own model, choose which part to protect.
• Take care when painting a closed surface and avoid small unpainted areas (such as inside the mouth, nostrils, bellybutton, etc.) even though the plugin can work with small unpainted parts.
• Now that all the desired parts are protected, we will provide the plugin with which parts we need to drive the UV seams. Click on the Attract button and paint on the back of the model where you would like to have the seams. Keep in mind that it's not an accurate solution to create UV seams. Painting large areas provides better results.

Note:

*Be aware of your active sculpting brush, alpha and stroke when painting areas.*

The Protect painted area on the left and the Attract painted area on the right.

### 1.4 Unwrap!

It is now time to do the UV Unwrap of the model, using the previously made Control Painting. Press the Unwrap button.

To do so, simply press the Unwrap button of the plugin.

After a few seconds, the process will be completed with some statistics in the note bar.
1.5 COLORING SEAMS AND VALIDATION

The unwrapping doesn't change the appearance of your model, so it's impossible to visualize the result of the UV unwrapping.

The solution is to use two utilities of UV Master:

- Click on the Check Seams button located in the Utilities: it will paint the seams in orange and the openings in brown. If you are not satisfied with the existing seams you can redo the previous couple of steps by painting different Protect or Attract areas and doing a new Unwrap.

The new UV seams, all visible in the back of the character and restricted on the forehead.

- Click on the Flatten button to transform your 3D model in a 2D model corresponding to the UV island(s). All your ZBrush brushes and Transpose can be used to alter the UVs. When done, press Unflatten to bring your model back to its 3D shape.

Note:
We strongly advise to use only Move, Smooth and Transpose to edit your UVs.
The flattened model. The increased density on the head and hand is really visible on this unwrap.

1.6 CONCLUSION

Now, your model has UVs which better suit your needs. You have seen that in a couple of minutes you can create more accurate UVs and change the UV density of local parts.

Keep in mind that painting areas is better than painting thin lines as the plugin is not designed to create seams based on accurately painted lines.

A checker texture applied on the model, to visualize the UV map density and the UVs distortions.
2. Unwrapping a Model with Existing UVs or Seams.

This short tutorial will explain how to optimize or create the UVs of an imported model with split edges or existing UVs made in another 3D package to use the power of the UV Master algorithm.

Only a few steps are needed and can dramatically improve your UVs but it is important to remember that your UV Island position, orientation, scale and seams position will change.

For this short tutorial, we will use the famous Demo Head.

2.1 Unwrap from Existing UVs

1. In the software of your choice, create UVs. You don’t need to create clean UVs because UV Master will completely recreate them. You only need to worry about where on the model the seams will be located.

The two UV island created from the model. Note: The face is bigger than the other part of the head, because the two parts have been unwrapped separately then manually packed and resized.
Press the Check Seam button in the Utility section of the plugin:

You should see the UV seams painted like below (of course your own results will vary based on where you put the cuts in your UVs):

In orange, the UVs seams and in brown, the border seams. We can clearly see the seam around the face, splitting it from the rest of the head.

Now, it’s time to work on the UVs themselves. The first step is to press the Use Existing UV Seams option to disable the creation of the seams as we want to use the existing ones.

Now press the Unwrap button to start the operation.
When the process is finished, press the Flatten button to visualize your UVs:

![UV Editor Menu]

You should see your mesh flattened like below. Compare with your original unwrap to see the improvement.

![Mesh Flattened Example]

When your are done, don’t forget to Unflatten your model!
2.2 **UNWRAP FROM EXISTING SEAMS**

In your 3D package of choice, split your geometry where you need to have your UV seams.

Save your 3D model as an OBJ file and import it into ZBrush.

Open the UV Master plugin menu and before unwrapping, click on the Check Seams to visualize your existing seams:
You should see a set of brown seams, which will show you the split areas of the model, as opposed to orange seams which show UV seams as in the previous chapter.

The topological seams visible in brown, in opposition orange one which represent UV seams.

Now, enable the Use Existing UV Seams option. This ways no new seams will be created in the unwrap process. Press the Unwrap button.

When the note which indicates the end of the process appears, click on it to close it and then press the Flatten button to visualize your UVs:
You should see your mesh flattened like below:

*The flattened mesh, which used your existing seams.*

When your are done, don’t forget to Unflatten your model!