Basics: UV Mapping Guidelines (WIP)

This page is a WIP. There are likely to be incomplete and or missing steps while the page is being built.

Summary

In this article, rather than provide a step by step tutorial for a specific model, we discuss some basic guidelines and suggestions for creating “good” UV maps.

This article requires functionality that is not provided directly within in DAZ Studio 4.x. It requires additional tools, such as Carrara or Hexagon, that allow you to create and assign UV coordinates to your 3D model. There are also several 3rd party tools that can perform this task. We assume, for this article, that you at least have a basic understanding of UV coordinate space and creating discontinuous edges (aka “UV seams”) on the model.

Process Overview

- Create UV coordinates for every vertex of every polygon
- Create seams where they would logically fall or have the least negative impact
- Watch for and avoid UV stretching where possible
- Be mindful of overlapping UVs
- Arrange UVs in UV space to optimize as best you can
- Test and make adjustments for best results

Foundation

UV mapping describes how the surface of a three dimensional model is unwrapped into a two dimensional space. We use this unwrapping to flatten an object out so that we can paint texture maps in 2D applications, which are then wrapped back around the 3D model.

You can create the UV map at any time, but it is easiest if you do it before you bring your model into DAZ Studio.

Guidelines and Suggestions

Listed below is a mix of rules and suggestions to follow when creating UV's.
Map Each Surface

- Every surface must be UV mapped or flattened into UV space. This allows the textures to be created and applied accurately to each surface area.

Seam Placement

- It is usually best to place seams where real clothing has seams. For instance, a shirt is made up of panels of cloth sewn together, so place your UV seams where those panels of cloth meet. This method is more “realistic”, and it alleviates the need to try to hide seams. Instead, you can purposely make the textures match up differently and make it look like panels of cloth are sewn together.
- If the seams are not placed in a realistic location, you will need to make sure you can paint textures in a way that the seams will not be visible. For this reason, you will want to keep seams to a minimum and carefully choose where to place them so they are the least visible.

Control UV Stretching

- While you want to have as few seams as possible, you need to pay attention to UV stretching. Your product will fail the QA process if the UVs have too much stretching and distortion. Seams are used to minimize stretching, so you will have to play around with this to get the best UVs you can. One note, the quality and success of a product often depends on how well the UVs are placed.

Overlap of UV’s

- UVs can overlap. Look at Genesis and you will see that all the surface groups with a “1” in front of the name are all part of one UV set that takes up the whole UV space. In total, Genesis has 7 UV sets. For clothing, this may not be necessary, but it is an option.
- Again, whenever possible (when not trying to match where seams would be on clothing), place seams in locations that are less visible.

Optimize the UV Space
Arrange UVs in the UV space so they are optimized as much as possible. You do not want to leave large spaces between objects if it can be avoided. Maximizing the space and layout helps keep the resolution of the texture map high and clean.

This image shows where we chose to place UV seams on the shirt and how it unwraps in UV space. We could also choose to split off the modeled details around the arms, neck and waist.

**Test**

Once you have created the UVs, it is time to test and see whether or not they work well. To test, we suggest you apply a tiling texture to the surfaces and see what happens. You can use this texture for testing.

- Testing with a tiling texture is very important. It will immediately let you see any areas of stretching or distortion in the UV.
- When arranging the UVs to maximize space, you may be tempted to re-size some of the parts. If two different pieces are going to use the same texture, you should try to keep the size of the UVs consistent with each other. Use the tiling texture to check for large differences in scale.

Here is the result of applying the texture to the shirt. Overall, it looks pretty good. Not much distortion, the tiles are generally the same size over the entire surface.

At this point it is important to take a closer look and see if there are any issues and make appropriate adjustments by hand. After you are happy with the UVs, it is on to the next step!

**Wrap-Up**

The creation of UVs for your model's surface is very important. Products with accurate and carefully
placed seams, as well as attention to UV space and resolution, will make for a much higher quality product. Take your time in creating the UVs for optimum results.

**Next Steps**

- In preparation for the next step, export your clothing item out to OBJ, making sure the UVs are included with it.

The next sequential step to follow is to create the initial rigging for the figure, using the Transfer Utility. Continue on to the [Basics: Initial Rigging with the Transfer Utility (WIP)](http://docs.daz3d.com/doku.php/public/software/dazstudio/4/userguide/creating_content/surfacing/tutorials/basics_uv_mapping_guidelines/start) article to get started.