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**Hair Compositing Tutorial
for DAZ Studio 3+
(3Delight render engine)**



Overview

This step-by-step tutorial describes a manual two-pass render method that might save rendering time when doing scenes with transmapped hair and raytraced shadows (especially on area lights). A ShaderMixer network is provided to create a shader that is useful for compositing the results of the passes into one.

Introduction

Transmapped hair models are still very popular among DAZ Studio users, but they add a lot of render time when using raytraced shadows (or any other raytraced effect like ambient occlusion).

Sometimes the problem can be rectified by simply using depth-mapped shadows (aka DSM - deep shadow maps), but sometimes it does not work, especially for area lights, which always compute raytraced shadows by their very nature.

Assuming you are not using AO on hair, you could try my method of manual two-pass rendering. It is not a perfect solution, neither is it a universal one, but may prove useful in many situations.

The method consists of rendering everything - but the hair - with your raytraced shadows, and then rendering only the hair and the objects it should cast shadows on, with depth-mapped shadows.

The objects should use a simple ShaderMixer shader that would add in subsequent compositing, using the "green screen" principle. It is not a basic "shadow catcher" because shadow catchers are transparent, while we want our objects to hide those parts of the hair model they would have hidden if it were a single pass render (like the head hiding the back of the hair model). We also want the objects to be as-flatly-shaded-as-possible, for ease of compositing. The shader is created with that in mind. However, sometimes slight shading

artefacts will occur anyway.

We also need to disable shadows cast by those objects, otherwise they will self-shadow (like a nose casting a shadow on the cheek), and this will be a nightmare to work with.

The shader has three colour parameters. The first one, in the "Invert for proper shadowing" subtraction operator, is white. It should not be changed - we need to invert the output of the shadow catcher block to get dark shadows (not white). The second one, in the "Control the shadow strength" addition operator, should stay grayscale and can be adjusted to make the shadow lighter. Generally you would not want to go above midrange grey (127,127,127). The third one, in the "Chroma Key" multiplier, is your "green screen" colour that you will destroy in your image editor to get the alpha mask for compositing (actual procedure depends on your image editor).

Tip:

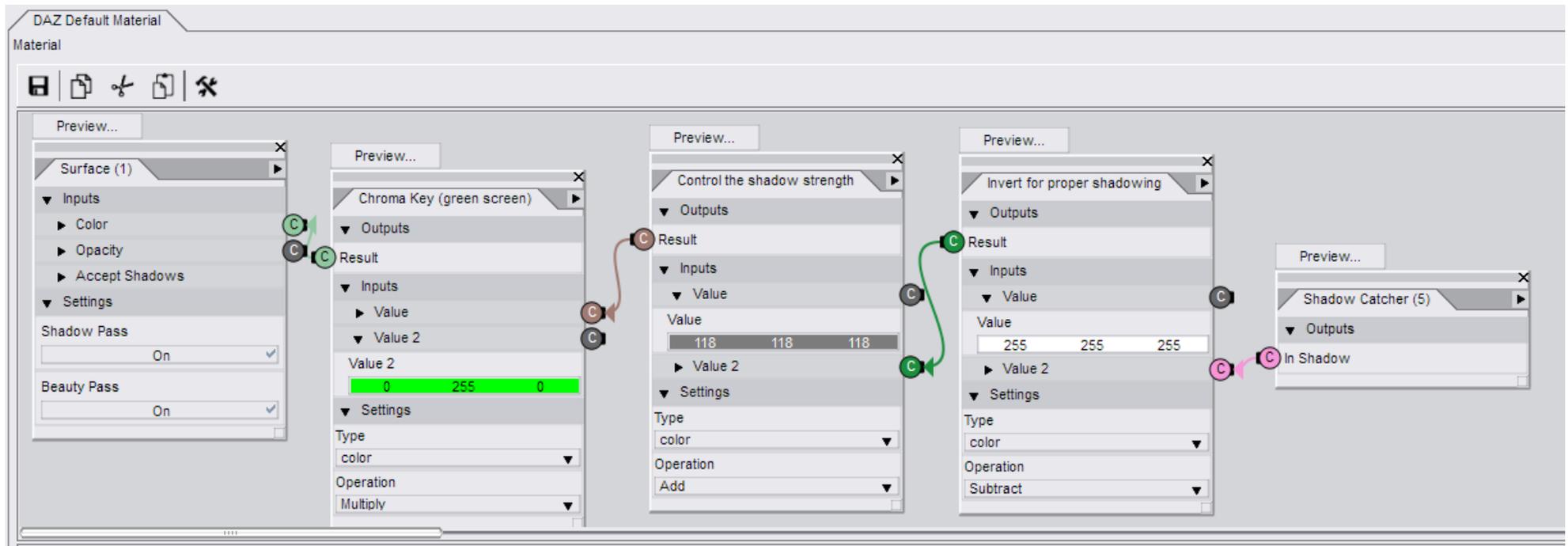
- It is easy to change directional lights from using raytraced shadows to using DSM. But you cannot do this with area lights, so you will need to replace them with spotlights. If you were using the camera trick from Szark's tutorial (here: <http://www.daz3d.com/forums/viewthread/14536/>), you would only need to place the spotlight into the exact same place where the camera used to be (you can simply copy and paste settings in the scene tab) and then adjust the spotlight parameters like cone spread angle (or two of them, depending on your spotlight) and shadow settings (samples are very important), to get a shadow approximating the hypothetical one from your area light.

Limitations:

- This method is not for you if you use AO on the hair because if you leave AO on, DSM will not give you much speed gain.
- Watch out for reflective surfaces in your scene; if the hair is to be reflected, you should set up a "green screen" plane to be reflected along with it, otherwise it would be difficult to composite the reflection of the hair with the rest of the scene. I cannot guarantee you will be successful all the time (especially when using coloured reflections etc).

How-to

1. Make the hair invisible and render the scene with your raytraced shadows.
2. Hide/delete everything but the hair and the objects it should cast shadows on.
3. Set your lights to use depth-mapped shadows (if you are using area lights, replace them with spotlights).
4. If you are using ambient occlusion from UberEnvironment2, either turn occlusion off for hair materials (if they are based on shaders that allow this, like the UberSurface family) or switch UE2 to "Ambient" mode.
5. Select the objects that need to receive hair shadows (if they are boned objects, select each and every bone visible - this is important!) and disable "Cast shadows" in the parameter tab.
6. Do test renders to determine the DSM parameters you like best.
7. Open ShaderMixer, create the following network:



8. Select the surfaces of your objects and apply the ShaderMixer shader to them.
9. Render. You should get something like the image in the beginning of this tutorial.
Tweak and re-render until you get what works for you.
10. Composite the hair with the rest of the image in your preferred image editor.

Technical Specifications

This document was created using LibreOffice and Paint.NET.