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THE SHARP DIFFUSE METHOD

This second method is one I like to call **Sharp Diffuse**. I won't say it yields *better* results, because "better" is subjective and directly related to the result you're hoping to achieve for your comic.

I **WILL** say it's quite a bit quicker than the Ambient Method.

Also, we're going to use **Surface Selection Sets** to create the appearance of a bodysuit on the Genesis figure.

While there are very good bodysuit products available for Genesis on Daz3d.com and other sites, they are commercial items that not everyone will have, and I want to keep this instruction as basic and as inclusive as possible.

PART ONE - Apply UberSurface Shader

To start, load up a completely new Daz Studio scene by choosing `File > New` from the top menu bar.

Next, we'll load the `Basic Male` Genesis figure. Begin by going to your Content Library tab, then navigate to `DAZ Studio Formats > My Library > People > Genesis > Characters >` and double-click the `Basic Male` icon in the bottom window. If you don't find your Genesis here, you can search for "Basic Male" in the search field at the top of the Content Library tab and his icon should show up in the bottom pane.

The `Basic Male` figure should now be loaded in your viewport.

Usually the figure will be selected when you load it, but if it isn't, just click the figure in your viewport, or you can open the Scene tab on the left and make sure "Genesis" is selected.

With Genesis selected, make sure the `Surfaces` tab is visible on the right hand side. [FIGURE 01] Just like in the Ambient Method, we're going to change all of the surfaces over to the Uber Surface Shader
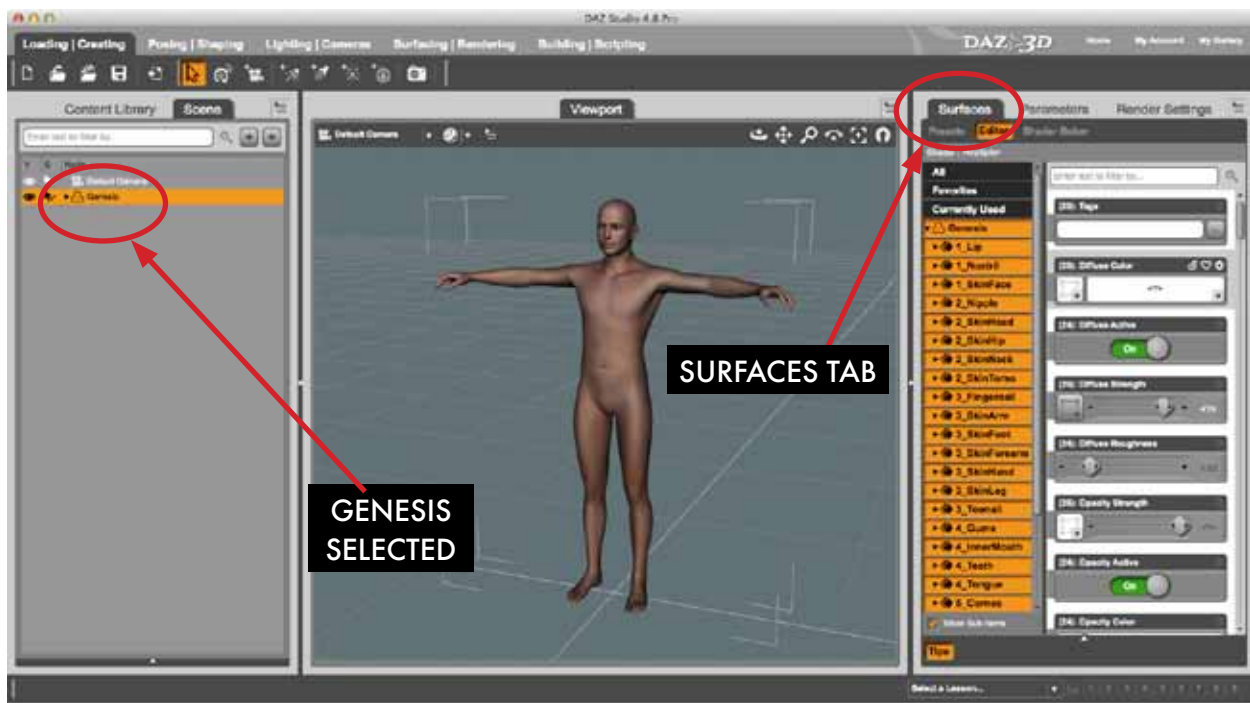

Figure 01: Genesis selected in Scene tab and all surfaces selected in Surfaces tab.

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The steps are:

1. In the *Surfaces* tab, click on "Genesis" to select all surfaces.

2. Apply the UberSurface shader. Switch from your *Scene* tab back to your *Content Library* tab, then click *DAZ Studio Formats > My Library > Shader Presets > omnifreaker > UberSurface Base* (it may be listed as "!UberSurface Base"). If you can't find it, type "ubersurface" in the search panel at the top of the *Content Library*, and you should see the icon listed as one of the results below (it's a red teapot in my install). [FIGURE 02]
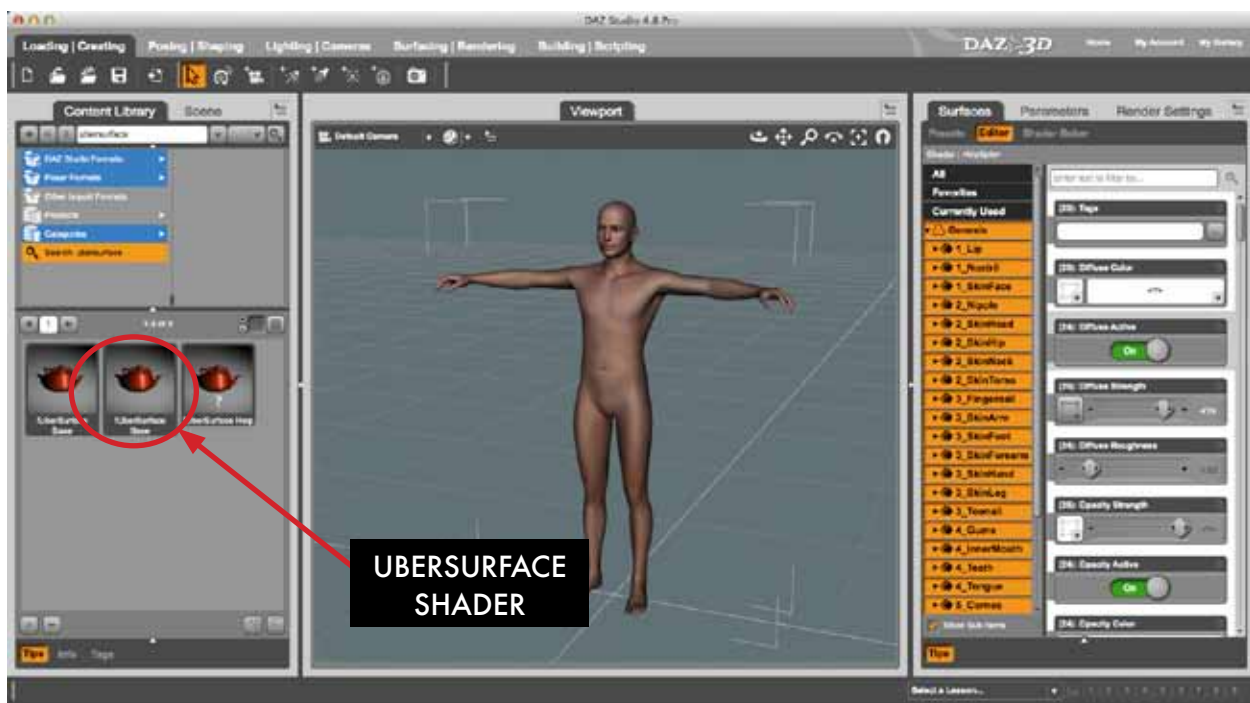

Figure 02: Ubersurface shader icon in the Content Library tab

3. COMMAND Double-Click on the Mac (CONTROL Double-Click on PC) on the UberSurface Base icon. This will cause a small dialogue box to pop up called Material Preset Load Options.

4. In the Material Preset Load Options, change the "Images" drop-down menu from "Replace" to "Ignore" and click the "Accept" button.

Now all the surfaces on Genesis should be using the UberSurface shader.

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You should now see the shader at the top of the Surfaces tab on the right listed as "omUberSurface" instead of "omHumanSurface", "DAZ Studio default", or "<Multiple>" as it was previously. [FIGURE 03]
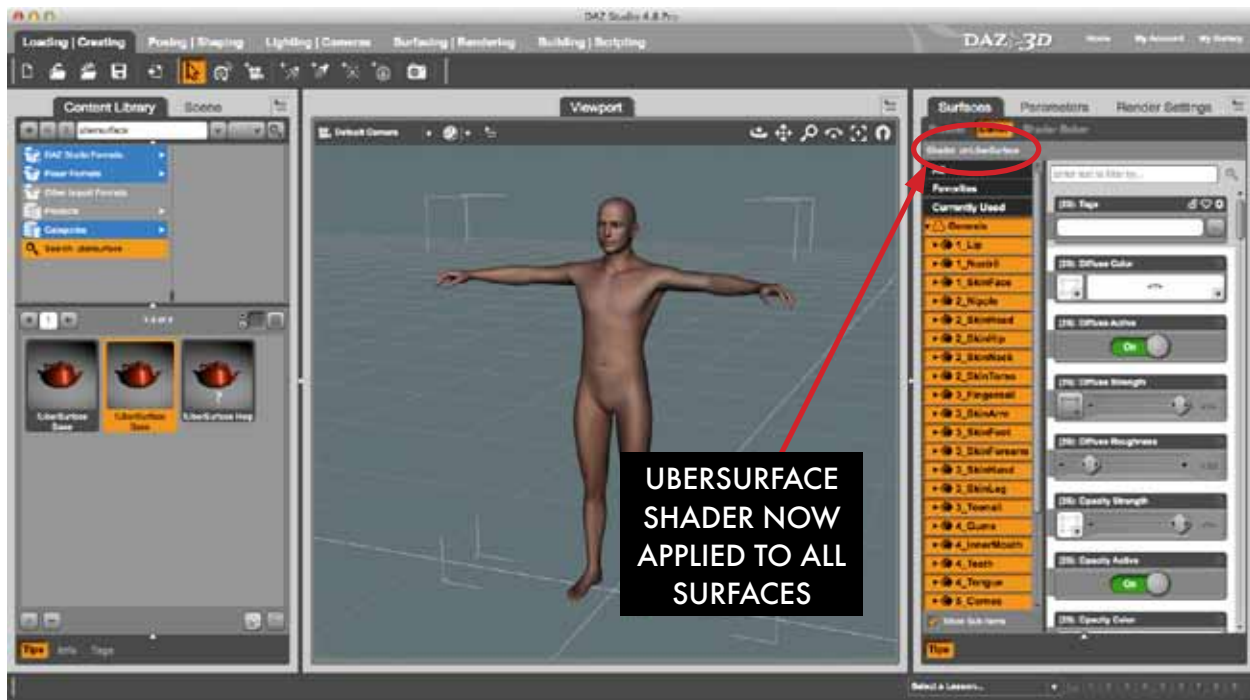

Figure 03: Ubersurface shader now applied to all surfaces.

PART TWO - Surface Selection Sets

Technically, part two is optional, but I'm putting it in here because it speeds things up in the long run. The Selection Sets help us group sometimes disparate surfaces together for quick editing in the Surfaces tab.

The steps to create Surface Selection Sets are:

1. Select Genesis in the Scene tab on the left.

2. In the Surfaces tab on the right, click the flyout menu (top right) and then choose *Edit Surface Selection Set(s)...* from the menu. [FIGURE 04]

Figure 04: The 'Edit Surface Selection Sets...' menu item.

3. In the resulting "Material Selection Set Editor" window, click the "Add..." button on the bottom left. Then give the set the name "01-Face" in the field that pops up and click the "Ok" button. You should now see your Selection Set listed in the right column. [FIGURE 05]

4. Select your newly created set on the left, then on the right click the checkboxes ON for these specific boxes:

1_Lip
1_Nostril
1_SkinFace

The boxes you check will only be assigned if the Surface Set to the left is highlighted at the time, so make sure you have the selection set highlighted. [FIGURE 06]
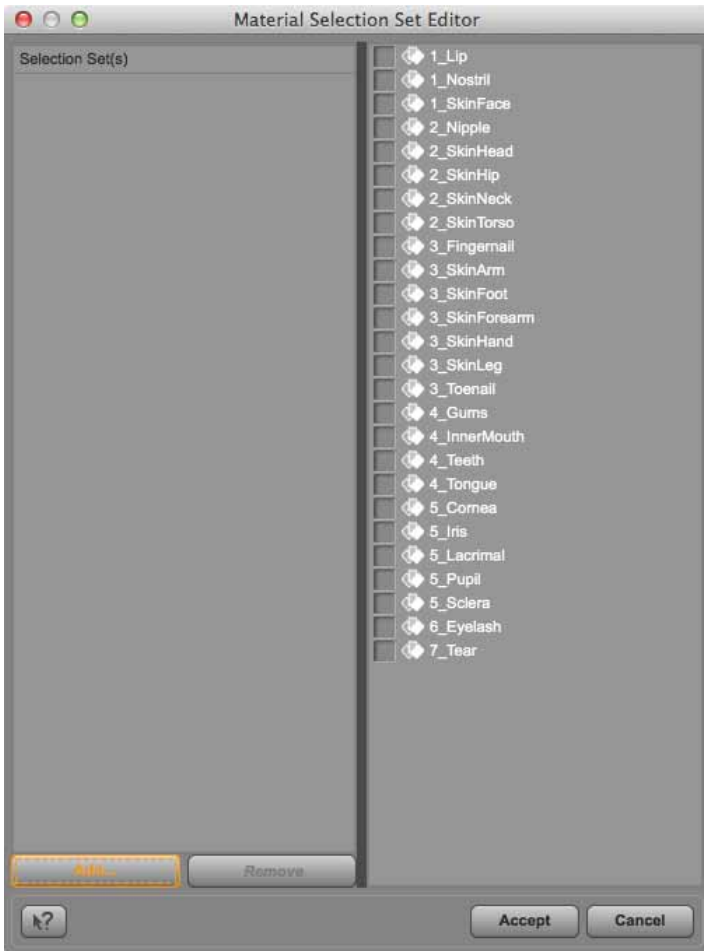
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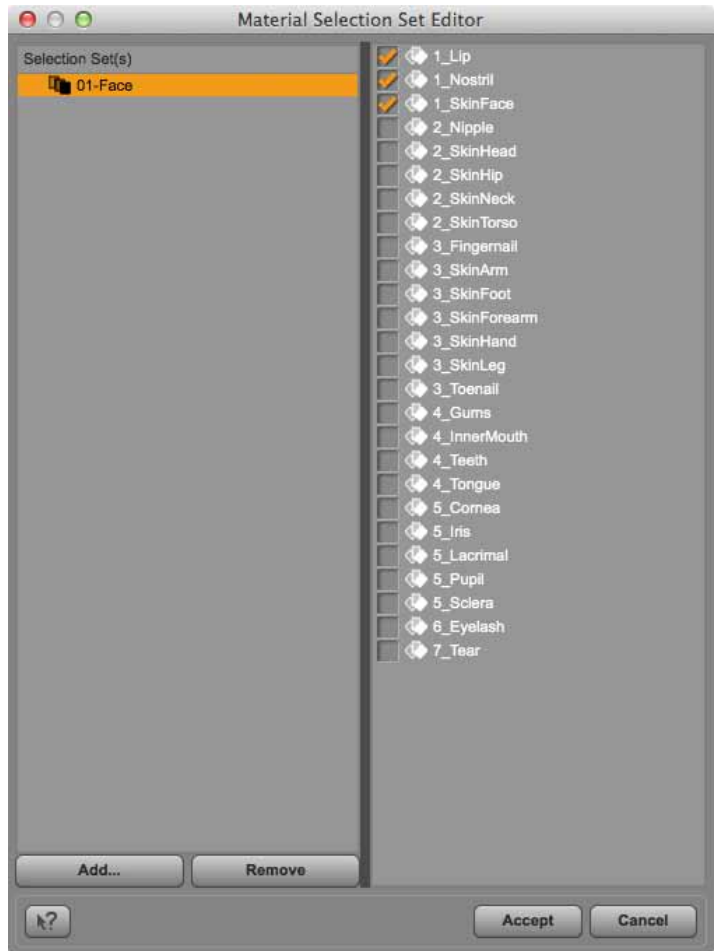Figure 05: The Surface Selection sets window.

Figure 06: 01-Face set selected with surfaces.

Once these all have checks in their boxes, click the "Accept" button on the bottom right.

5. Now in the Surfaces tab, you should see your Surfaces Set named "Face" listed directly under Genesis, and above the default "Surfaces" heading. If you expand the default Surfaces, then select your "Face" set, you'll see that it automatically selects those separate surfaces under the default heading. [FIGURE 07]

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Figure 07: Surface Selection Set in action in the Surfaces tab.

So as you can see, this makes a bunch of separate surfaces that need to have the same settings easier to select and edit. This way you can select them with one click instead of several shift-clicks every time you need to change them.

6. To create our remaining Selection Sets, repeat the above steps, naming your new set "02-Head". Then add the following surfaces to this one:

2_SkinHead
2_SkinNeck

7. Repeat the above steps yet again, naming your new set "03-Eyes". Add every surface with a "5" at the beginning. So "*5_Cornea*" all the way to "*5_Sclera*" should be added to this set. I've found you can usually leave the eyelash surface alone, unless you're going for an extreme close-up. The "*7_Tear*" surface we will adjust by itself, so leave it out of the set.

8. Finally, repeat the above steps, and this time add a new set named "04-Bodysuit", then add every "3" surface from "*3_Fingernail*" to "*3_Toenail*", as well as the remaining "2" surfaces, which will be "*2_Nipple*", "*2_SkinHip*", and "*2_SkinTorso*".

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For now we'll leave the "4" surfaces alone, since we won't be dealing with the inner mouth at this time.

Again, this part is completely optional, you can still edit the surfaces any way you choose, but taking a few moments to set this up can save you a lot of time down the line. You also don't need to follow my naming structure, but I like to add the numerals at the beginning because that's the order I tend to adjust the surfaces in. If you'd prefer a different sequence or setup you can always do so.

Below is how the Material Selection Set window appears with all of our sets created. [FIGURE 08]
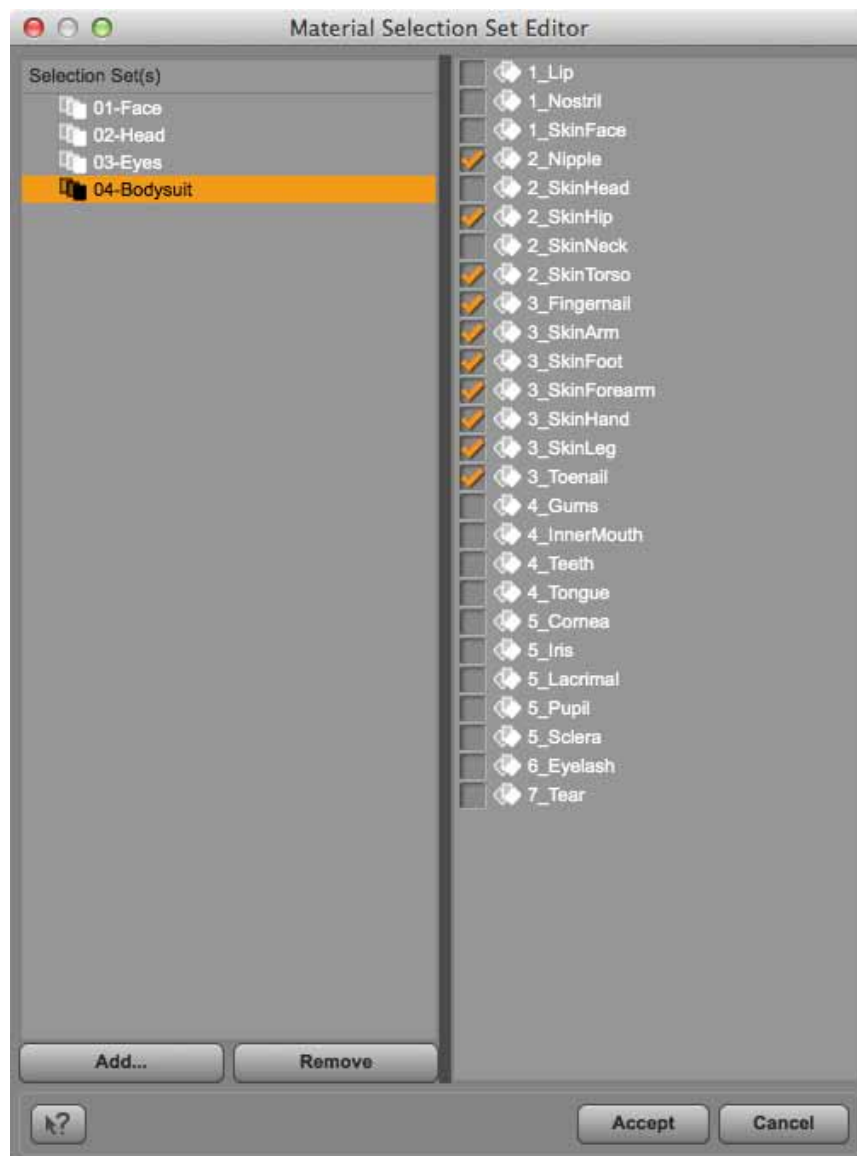

Figure 08: Final Selection Sets window

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PART THREE - Setting the Materials

Now it's finally time to set our materials up. What we're trying to achieve here is a flat 2-3 toned look that is similar to a lot of comic coloring these days. This will get more in-depth in just a bit, but for now we'll just set up the very basics for the materials.

We'll start with adjusting the settings that affect ALL of the surfaces:

1. Make sure Genesis is selected in your *Scene* tab, then select Genesis in the *Surfaces* tab as well.

2. On the right, scroll to the `Diffuse Roughness` parameter (or search for it in the field at the top of the *Surfaces* tab). Lower it's value all the way down to 0.

4. Scroll down to `Specular Strength` and raise it up to 100%

3. Next set the `Glossiness` slider to a value of 0%.

4. Next, scroll down to the `Specular Sharpness` slider and raise that all the way to 100%.

5. Finally, scroll through the whole list from top to bottom and make sure the following parameters are set to OFF:

- `Bump`
- `Displace`
- `Specular2`
- `Ambient`
- `Reflection`
- `Fresnel`
- `Velvet`
- `Subsurface`
- `Translucency`

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Again, this is the beauty of using the UberSurface Shader. We can actually turn these channels directly off instead of having to lower all the values to zero and hope for the best. While some of these parameters can be useful to varying degrees, right now they're not needed for the basic effect we want to achieve.

To continue on, we'll just change the "Bodysuit" surface settings. With Genesis selected in your scene tab, select the "Bodysuit" surface selection set you made earlier. If you didn't make the set, select all the surfaces that start with the number "3", plus the *2_Nipple*, *2_SkinHip* and *2_SkinTorso* surfaces. [FIGURE 09]
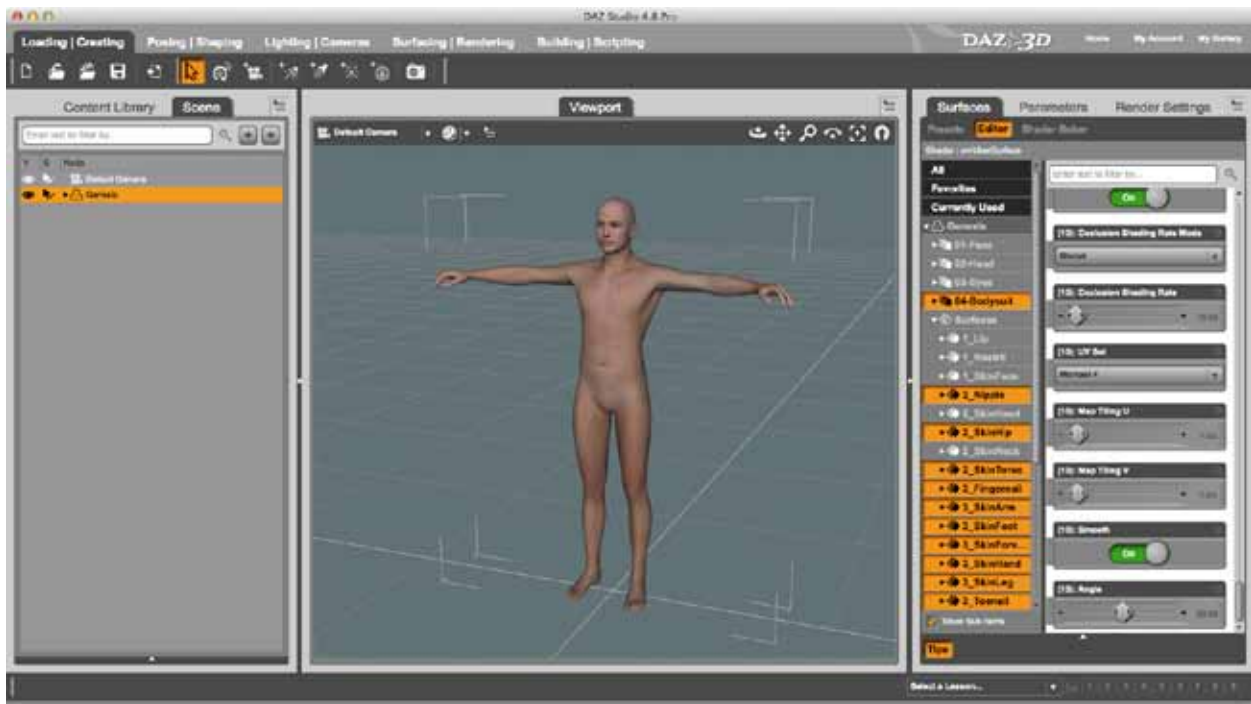

Figure 09: Select all "Bodysuit" surfaces.

Then change the diffuse and specular surfaces to match the values below by clicking on the color bar itself. The *Select Color* window will open. By default, you should be in the "Color Wheel" mode. On the top of the window, click the second icon from the left, which will place you into "RGB Sliders" mode. In here, enter these numbers:

Diffuse Color:

```
R: 0
G: 0
B: 0
```

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Specular Color:

    R: 96
    G: 119
    B: 127

While you're changing those values, make sure to remove the textures from those channels as well. To do this, just click on the square to the left of the color bar, and in the resulting pop-up window, select "*None*" towards the top of the options. That will remove the texture, leaving only color information behind. [FIGURE 10]
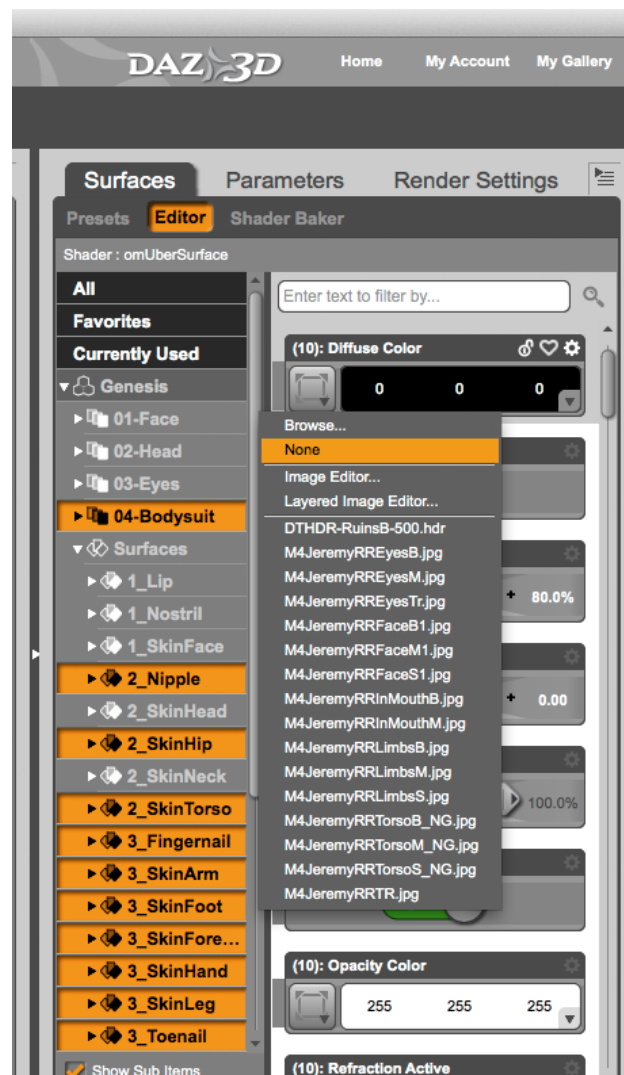

Figure 10: Remove the textures from the Diffuse and Specular channels.

The 3D Comic Creator Method ● John Garrett ● jg@comic-creator.org

Now every part of the Genesis figure except his head and neck should appear to be a light blue-gray color.

Next, we'll set up the lighting before we make a quick render.

PART FOUR - The Lighting

The lighting setup for the Sharp Diffuse method is almost the same as for the Ambient Method.

1. Add a Distant Light by going to the top menu and choosing *Create > New Distant Light...* (or clicking the Distant Light button in the icon bar). Accept the default settings to load it into the scene.

2. You can rotate it however you want (remember that the position of a Distant Light does not influence it's effect on the scene at all). If you want to follow my settings they are as such:

        X Rotation: -187.51
        Y Rotation: 95.55
        Z Rotation: -145.66

You can change these values in Rotation section of the Parameters tab which is under the *General > Transforms* headings in the left column of the tab. [FIGURE 11]
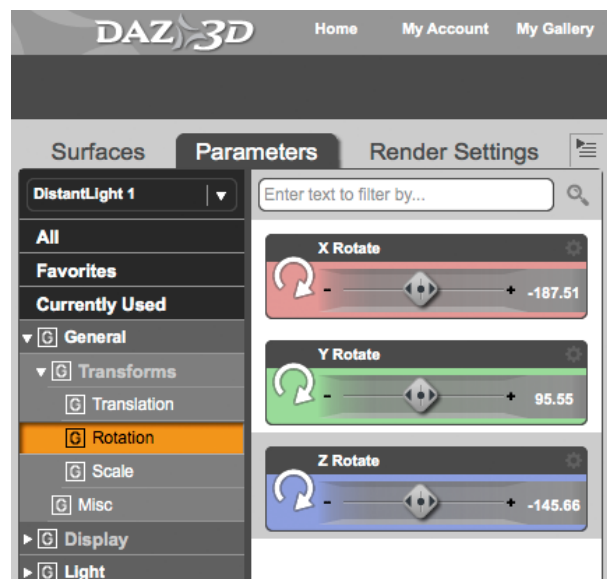

Figure 11: Change the rotation of the Distant Light.

Further down in the left column of the tab, click the "*Light*" heading, and set the "*Intensity*" value on the right to 70%. [FIGURE 12]

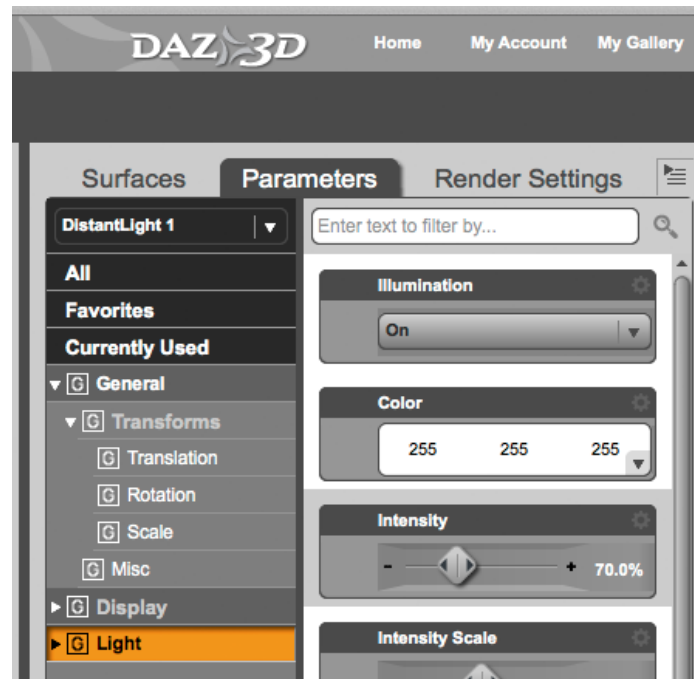Figure 12: Change the intensity of the Distant Light.

3. Next, add another Distant Light with default settings. After it loads in the scene change it's parameters to match the following:

        X Rotation: -19.71
        Y Rotation: -130.57
        Z Rotation: 0
        Intensity: 200%

This setup is going to give us a strong light from the top right of the scene, and an even stronger rim light from the back left. [FIGURE 13]

Figure 13: Add another Distant Light for backlit rim lighting effect.

Now I'd like to get closer on the figure, and just render the top part so the effects of our changes are more easily seen. If you want to get my exact image you can set your camera to my view, as well. Below are the values in the Transform section of the Parameters tab (make sure your camera is selected in the Scene tab) [FIGURE 14]:
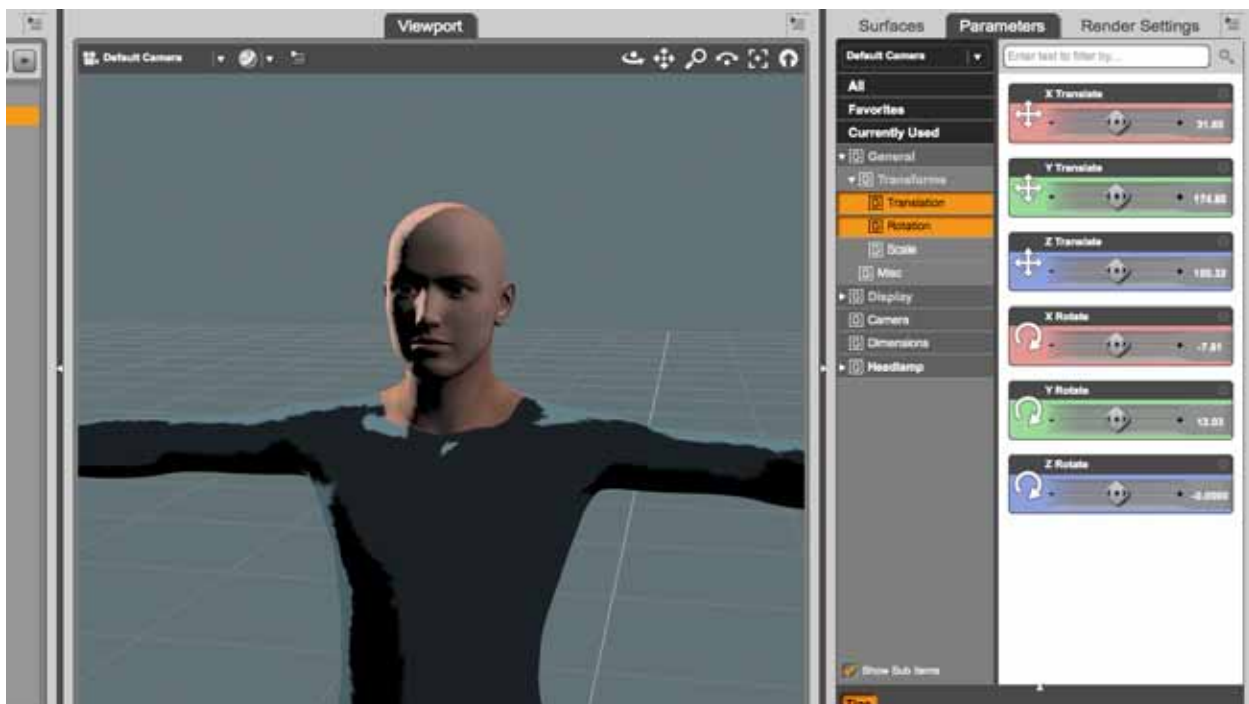

Figure 14: Select camera and change settings to zoom in.

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```
[Camera Parameters settings]
```

> *X Translation: 31.85*
> *Y Translation: 174.80*
> *Z Translation: 150.32*
> *X Rotation: -7.81*
> *Y Rotation: 12.03*
> *Z Rotation: 0*

Finally, my render settings in the *Render Settings* tab have the pixel settings changed to 600w x 570h. [FIGURE 15]
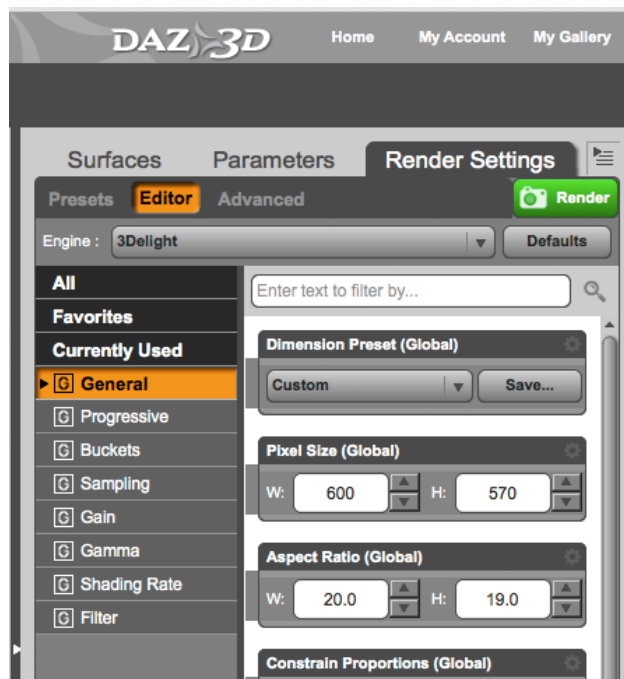

Figure 15: The settings in the Render Settings tab.

If you do a render now you'll see a very flat render with sharp distinctions between the colors. [FIGURE 16]
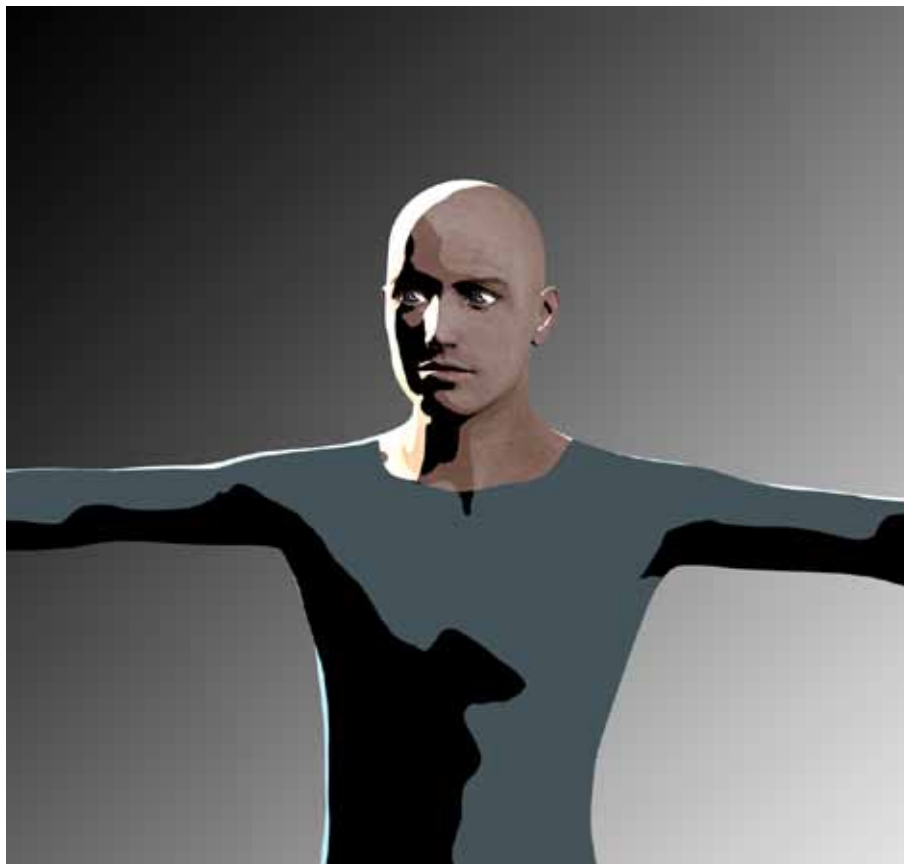
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Figure 16: First render.

This is the BASIC setup for the Sharp Diffuse treatment. If you've followed along this far you can already see how little work is involved compared to the Ambient Method. We don't have to create a separate shadow render and combine it later, for example.

However, there's still a lot that we can do to improve the look of our first render.

PART FIVE - Sharp Diffuse Customization - Textures

The following customizations should be tested with every surface, character and scene. What looks good on one surface or scene may not look good on the next one. You'll have to determine if their use is warranted for yourself.

The first thing I usually do is remove all of the textures in the `Diffuse Color` channel. This is because I want a flat color result when I render, and many times the supplied textures on the models interfere with that.

Unfortunately, when it comes to characters this requires a little extra elbow grease. For example, select Genesis in your Scene tab, then in the Surfaces tab select the "01-Face" surface selection set.

In the right column of the tab, scroll to the `Diffuse Color` channel, then click the texture icon and choose "None" from the resulting pop up menu. The face of your Genesis character should change to a blue/white color in your center Viewport.

Now click in the color field of the Diffuse channel where the three RGB value numbers are listed. Once you click on it the `Select Color` window will pop up. We'll change the color of the surface in here.

Click the second icon from the left to go into "RGB Sliders" mode, then enter these numbers:

```
R: 221
G: 173
B: 153
```

This will give you a pink/tan-ish color that I'm using to approximate skin. It might appear a bit blue at first, but that's because the default Specular Color is a blue color.
`[FIGURE 17]`

Figure 17: Face texture removed. It appears a bit blue because of the specular color.

We'll need to change the specular color to something closer to our diffuse color. I usually pick a lighter shade of the base diffuse color. Remember, we're not trying to approximate real human skin here, we're trying to approximate a comic book drawing.

To do this, scroll down to the *Specular Color* field, then select the icon to the left of the color and set it to "none". We don't want that texture map controlling how the specularity is applied, we want it to be directly affected by our lights.

Then in the color field, click to pop up the *Select Color* dialogue and change it to:

    R: 239
    G: 187
    B: 166

Then you should see the blue color disappear from the face. [FIGURE 18]

Figure 18: Changing the specular color removes the blue tint for the face.

TIP: You could also hover your mouse over the numbers directly in the color field of the Diffuse Color channel. Your mouse pointer will become a double-sided arrows cursor, which will allow you to slide the numbers up or down. Yet another way is to simply right-click on the number and it will become editable, then you can enter the new number right there. I don't normally use either of these ways, because back in the Daz 2 days trying those methods would result in a crash 50% of the time on my Mac. As such, I've trained myself not to do it, even though it appears perfectly safe now.

A quick render now will show a render that is somewhat similar to your first one. You'll see immediately that the face is much more flat compared to the skin texture which is still on the neck. To me, this is a desirable effect. I want to start this thing out flat and build up the modeling myself without the skin texture interfering with the process.

But that's not the main thing. The main difference is that the character doesn't have any eyebrows! Curses! [FIGURE 19]
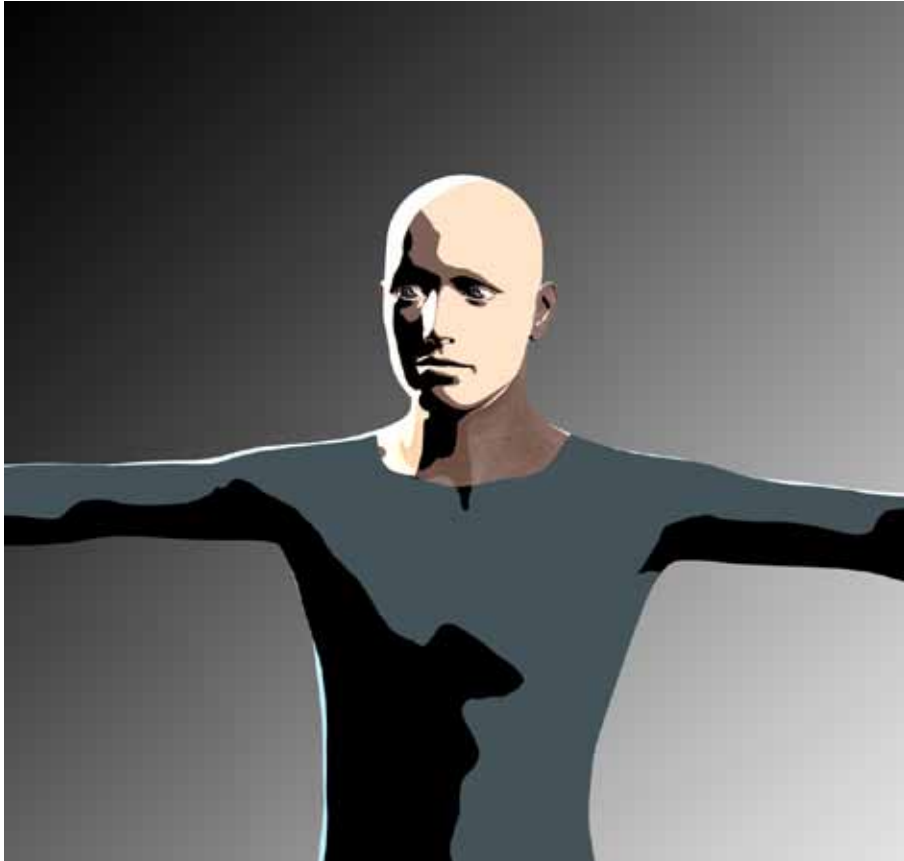
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Figure 19: Render with no face texture...and no eyebrows....

This may or may not be an issue for you, but the vast majority of the characters I make are human with their faces exposed, and they need eyebrows to look normal.

I tried a few methods to make eyebrows, including using a transparent .png with only eyebrows as the `Diffuse Color` texture, or using a black and white mask in the Ambient channel to only darken the eyebrows, but it just didn't work well, and was cumbersome, to boot.

In the end, the only reliable method was to go back to the actual face texture template for the character, completely cover the face with a flat color, then paint the eyebrows on top [FIGURE 20].
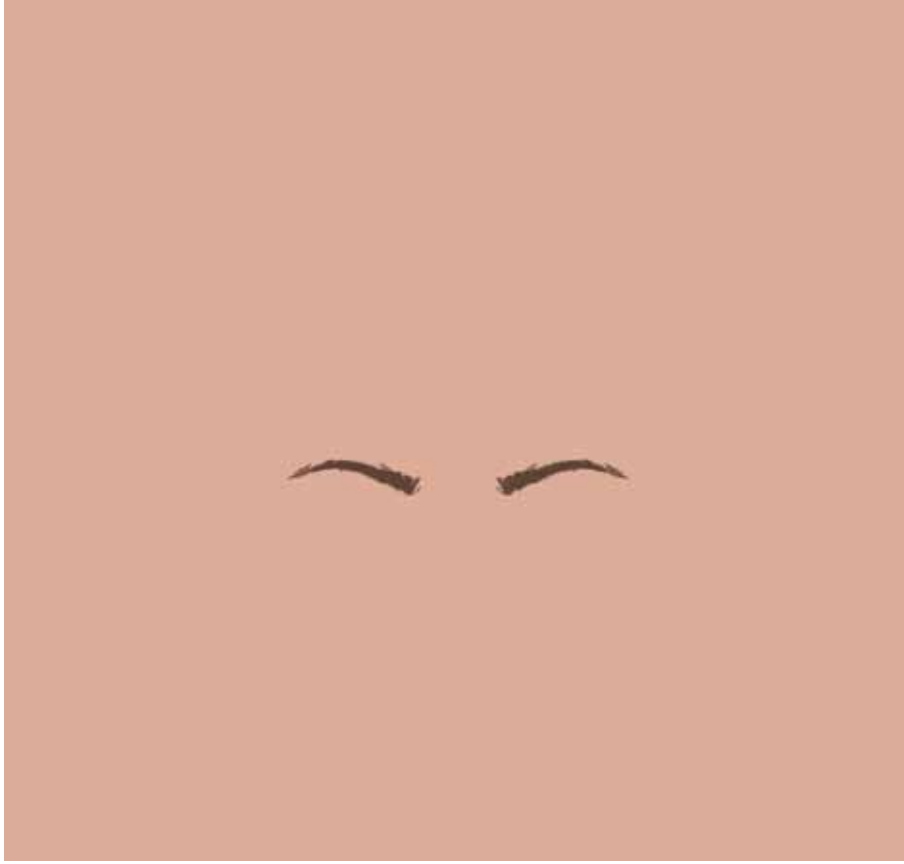
Figure 20: The "Basic Face Texture" I created.

Using this as a texture works well, but it likely won't match up well with the color in use by Daz for the *2_SkinHead* and *2_SkinNeck* surfaces.

I've found that even if the color set in Daz is the exact same RGB value as used in Photoshop/Gimp, you may still see a line where the seams meet in some renders.

To prevent this I just went back to Photoshop and removed the eyebrows I had painted, leaving only a solid square of color. I then saved that file to use as the texture for the head, neck, and pretty much every other skin part of the body that would be exposed. [FIGURE 21]

You could have different textures for the nipples, fingernails and toenails, but since they have specific surfaces (unlike the eyebrows), I can usually distinguish those by raising the glossiness or changing the color, etc.

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Figure 21: The "Basic Body Texture" I created. Yes, it's just
a block of color...

I've included many of the face eyebrow textures I created for Genesis, Genesis 2 and the M4/V4 line of models. You can adjust them or share them as you wish.

For now, with the "01-Face" selection set selected, go back to the *Diffuse Color* field, click the icon for the texture map to the left of the color field and load up the "Basic_Face_Texture.jpg" *(included with your download).*

Once you load it in, the face will appear very reddish. This is because of the color we put in the color field earlier. That color is multiplying on top of the texture and making it come out a lot darker.

Since our texture map already has the necessary color in it, we don't need that color set in the *Diffuse Color* field any longer. So now just click on that color and set it to pure white *(255, 255, 255)*. Having pure white here will leave the color of the texture to show as is. [FIGURE 22]

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Figure 22: Face texture loaded and showing in viewport.

If you render now you'll see the same flat color that we wanted, but this time he has eyebrows. Yes! [FIGURE 23]
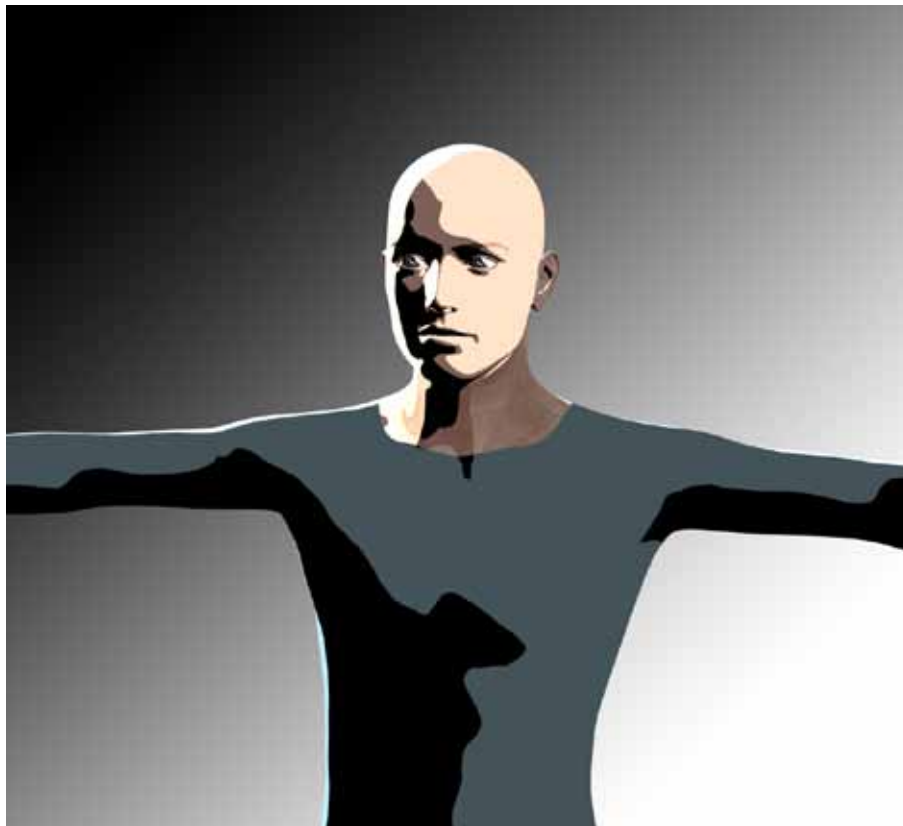

Figure 23: Rendered with the Basic Face Texture. Eyebrows intact.

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However, the neck and back of the head (ears) are still using the default skin textures, which we need to get rid of. So now select your "02-Head" selection set, then go to the *Diffuse Color* field and load the "Basic_Body_Texture.jpg" file there. If the color in the color field isn't pure white, then change it to white now.

Also remember to scroll down to the *Specular Color* field, remove the default specular map and change the color to the same color we used for the face.

Doing a render now should show that face and neck are all the same flat color.
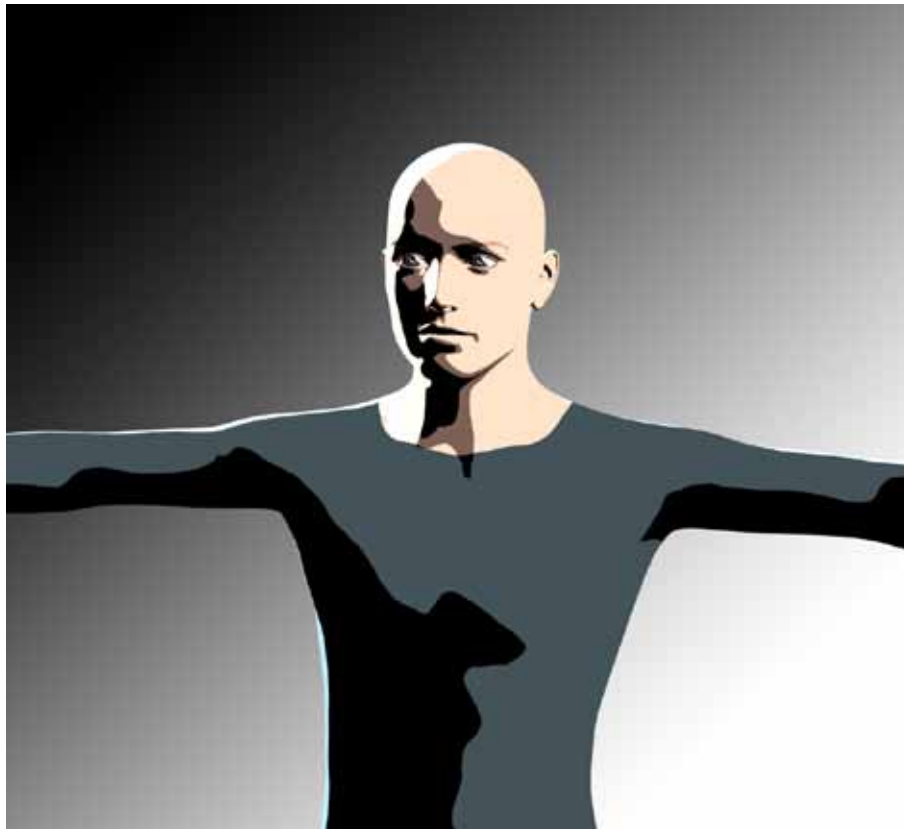[FIGURE 24]

Figure 24: Face and body textures are now matching.

OPTIONAL: The Tear Surface.

One thing I like to do with the tear duct surface is to turn it solid black. This way it kind of underlines and defines the bottom edge of the eye and provides a solid line in case our linework methods don't cover that area well.

To do this, select the "*7_Tear*" surface of your Genesis character. The change these settings to match the below:

```
Diffuse Active: Off
Opacity Strength: 100%
Specular Active: Off
Ambient Active: On
Ambient Color: 0, 0, 0 (solid black)
Ambient Strength: 100%
```

As we learned in the "Ambient Method" chapter, setting ambient to 100% while turning off diffuse and specular results in a color that doesn't really respond to the lighting, and for the most part stays as a flat color.

So setting the `Ambient Color` to black will leave a solid black line that won't lighten up even if there's a light shining on it. This makes it look like an ink line that was added on top of the color.

If you don't see a change in the viewport, it's probably because the `Diffuse Strength` and `Specular Strength` can override the Ambient Color. It won't render as long as you have `Diffuse Active` and `Specular Active` set to Off, but if you want your preview to look more like the render, just make sure the `Diffuse Strength` and `Specular Strength` is all the way at 0.

Changing the "*7_Tear*" surface isn't necessary by any means, so feel free to skip this part of you don't like the look. The below image shows how it looks in a render.
[FIGURE 25]

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Figure 25: Tear duct rendering as a solid black line.

PART SIX - Sharp Diffuse Customization - Bump Maps

Here's another set of optional methods I use to punch up this Sharp Diffuse method. Again, this may not be a good fit for every character, but give it a shot and see if it gives you a style that you like.

I've repeatedly stated that I'm trying to achieve a simply, "flat" look with these techniques, and normally that precludes the use of bump maps, which are intended to raise or lower surfaces to trick the renderer into thinking the surface is much more diverse than it really is.

However, if we use the right kind of map, and are very careful with the strength settings then we can really punch up the artwork.

Similar to the "textures" customization above, I almost always dump whatever

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bump map was included with the surface by default. This means all the skin bumps for the characters, as well as bumps for buildings or other props. Just get rid of them entirely.

Generally, you want to use bump maps that are closer to black and white linework, as opposed to grayscale with a lot of subtle variations. Subtle gradients in a bump map can really muddy your color and flatten out your comic texture (an ironic twist, since bump maps are usually meant to infuse a bit of life into otherwise flat textures).

If I replace bump maps at all, I tend to use a somewhat generic "pattern" texture. For example, I might use a crosshatch pattern for skin, a simple line pattern for objects like metal, or even a dot pattern for alien skin or other rough surfaces.

To give it a try, select your Geneis figure, then make your Surfaces tab visible. Select the 01-Face and 02-Head selection sets we made earlier (or just select all the visible skin portions if you didn't make the sets).

Now in the `Bump Strength` parameter, add the "crosshatch.jpg" texture *(included with your download)* from the texture dropdown menu on the left.

For settings, use these values:

```
Bump Active: ON
Bump Strength: 25%
Bump Minimum: 0.10 (make sure it's POSITIVE .10, not NEGATIVE
-.10)
Bump Maximum: 0.15
```

Rendering now will show you a slight roughness to the shading on the face and neck, as if there's a little "tooth" to the paper or roughness on a brush if it were colored in a traditional 2D way. [FIGURE 26]
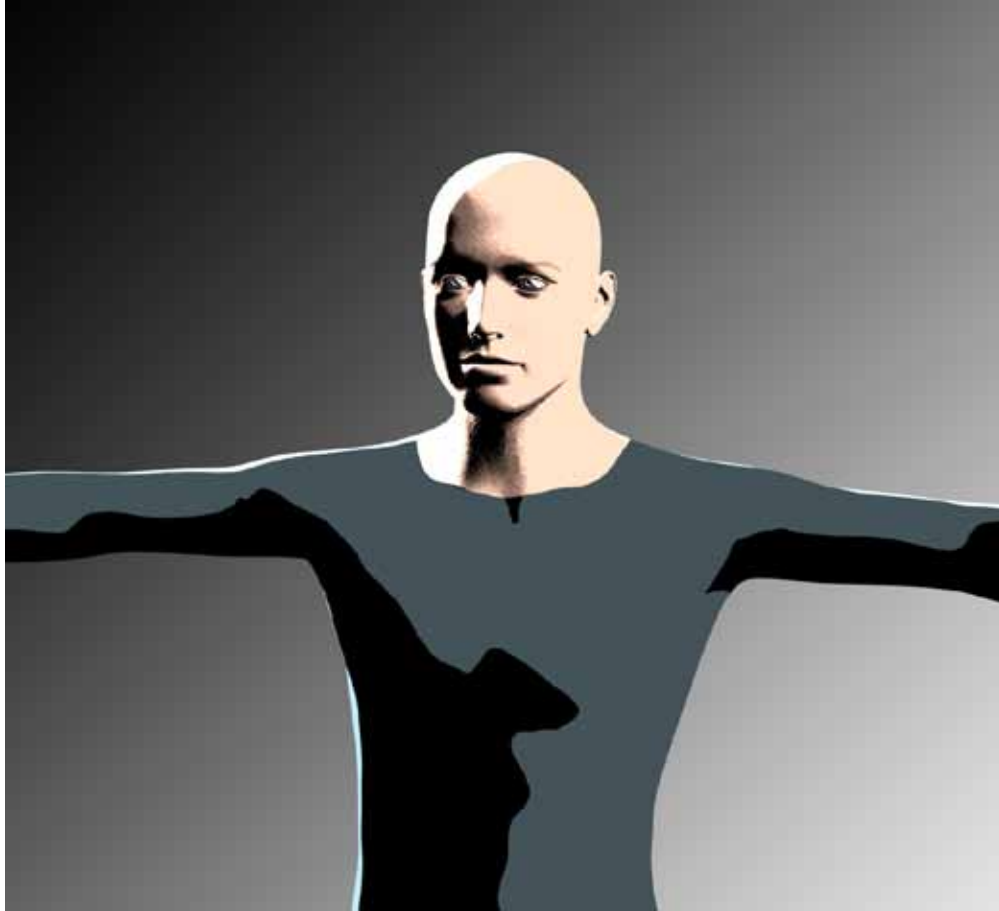
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Figure 26: Rendered with the crosshatch texture applied in
the Bump Channel.

Now we'll try a little bit of bump on the "suit" portions of the Genesis character. In the *Surfaces* tab, select the "04-Bodysuit" set and change the *Bump Strength* map to the "horizontal-lines.jpg" file.

When that's loaded, change the bump setting to match the below:

Bump Strength: 25%
Bump Minimum: Leave at default, which should be -0.010 (NEGATIVE -0.010, not POSITIVE 0.010)
Bump Maximum: Leave at default, which should be 0.010

Rendering now will show the bodysuit with the shading having a bit more tooth along the edges, to give it a bit more style. [FIGURE 27]
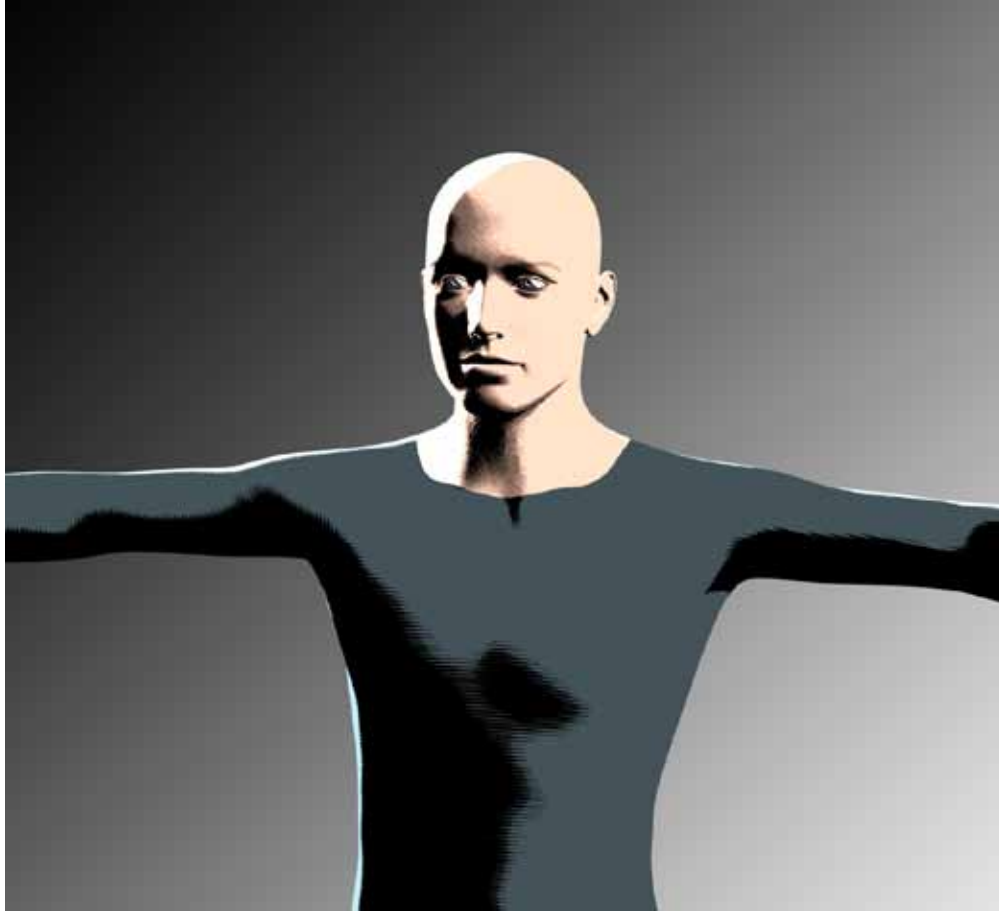
Figure 27: Rendered with the horizontal line texture applied in the Bump channel

You always want to start low with these bump settings, as they can easily overpower the color and make it look like you're trying (and failing) to make a realistic render.

A final caveat of using bump maps in this manner is that you will constantly need to adjust them depending on how close or far you are away from the subject.

If you're far away, you might have to increase that bump strength or minimum/maximum values in order to see it at all. If you're close up you may need to reduce the strength and min/max values so that the effect isn't overpowering.

I wish there was a "one size fits all" setting for this (and many other settings) but you'll have to constantly be on the lookout with each render.

So that's the very basics with the Sharp Diffuse method. Following are some examples of comics I've made with this technique:

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