Basic Lighting in Daz Studio 4.x

This one was, again, something that I ended up posting over on the HiveWire forums to help out a new Studio user. Many thanks go out to both **SkyLab** and **Sanbie** for their help converting my lengthy dribbles into a coherent PDF document.

This is aimed at new users of Daz Studio, beginners, or those who might just need some information on how to use the very basic default DS lighting types. It covers the distant lights and the DS spotlights, as these are the two most common needed lighting types in most scenes. Please note that this tutorial is for **3Delight** users. I am not an Iray user, so I can't help with that engine, sorry!

Lights are always something to be added by the user. DS by default, loads with no lights in the scene at all. Here's how you add some lights...

1.) Click on the LIGHTS tab. If your Lights tab is displaying the "PRESETS," then please click on "EDITOR" right next to that. On my screenshot here, you'll see the "Presets" and "Editor" right up above the top red circle.
3.) Now click the box directly underneath where "Presets" and "Editor" are shown (displayed in the red circle!).
4.) This will then open a drop-down box. At the bottom of this box is another box, labeled, "Add a light." Click on that.
5.) Yup. This will open another drop-down box. Now, from here you can choose to add a distant light, a point light, a spotlight, or a linear point light.

6.) These are your basic, default DazStudio light types. For a good "fill" light to start with, select the "Distant" light. This will now open another, floating box for you :

In this new box, the default name will be "DistantLight." If you already have a distant light in the scene, DS will put the number 2 at the end of the name, or 3, 4, in sequence as you add more of them to the scene. For now, just add ONE distant light to the scene.

You'll notice you can choose to change the name of the light at this point - I've chosen "Scene Fill Light" because we're going to use this as just the filler light. The next thing is you can choose to apply the default settings, or the active viewport transforms. For distant lights, I always apply the default settings. For spotlights, I will SOMETIMES apply the active viewport transforms, but normally I apply default here as well and just move the lights myself.

So. Type in a name for your new distant light. Then make sure "Apply Default Settings" is selected. Now click "Accept."

7.) Once you click the accept button, you should now have this in your Lights tab :

Familiarize yourself with the settings here. I'll go over each setting one at a time.

Illumination :
This is where you can decide if you want the light on, off, casting specular only, or diffuse only. By default, the light will be "On" when you first load it. Click the word "On" and it'll open a fly-down menu/list :

Color :
This is where you can choose the color that your light casts onto the scene. To use it, just click anywhere in the color swatch, and it will pop up your color palette to choose from.

Intensity :
This is where you set the strength of the light. You can turn it up or down to where you like it. A lot of this part is just playing around until you have what you like. For a basic, scene filler light, I usually set the Intensity down to about 45%, and usually with either the defaut white, or a light/medium grey in color. So go ahead and do that now.

Intensity Scale :
This is similar to Intensity, and basically allows you to further fine-tune and adjust how intense or how dark the lighting will be on the light. It might seem a little bit redundant, but you can play around with it on some primitives and see the effects by doing simple renders with it. It basically just allows for a little more control over the intensity of the light.

Shadow Type :
This is where you decide whether the light casts a shadow using raytracing or depth mapping. If you want to turn OFF the shadow for your light, you do it in this option as well. By default, the lights always load with shadows OFF when you add a new light to the scene. Clicking in the box under "Shadow Type" will open the fly-down list for you to choose your shadow options on the light.

I want to issue a word of caution about the shadow types in DS. Deep Shadow Map takes less time to render, while Raytraced takes more time. ***However....*** when using Deep Shadow Map as your shadow type, the program is VERY prone to rendering unwanted artifacts in your scene. Oddly colored pixels, and things of this nature. I only, ONLY render with "Raytraced" shadow types. It takes a little longer, but it looks better overall, and I don't get the graphic/pixel artifacts mucking up my renders. (And sometimes those pixelized artifacts can DESTROY a render!)

So, you don't have to do it this way, but I would strongly suggest to always render with Raytraced shadows.

Shadow Color :
Just like your "Color" box at the top, this is where you can set the color of your shadows. I normally leave my shadow color flat black *(color 0, 0, 0)*. Sometimes you might want a lighter color, or maybe if you have strong colored lights, you might want the shadows to be a darker shade of the light color being cast on the scene. This is where you set the shadow's color.

Shadow Intensity :
Just like your Light Intensity, this is where you set how dark or how opaque your shadows are. For most renders, I will adjust my shadow intensity down to about 85%. If I'm rendering a scene that I want very dark, then I might use 90% to 100% here.

Shadow Softness :
This is where you set how much blur your shadows have. Again, this is something you have to play around with. If you have a scene where you want crisp, sharp shadows, then leave the Softness set to somewhere around 0-20%. If you have softer lighting in mind, and the shadows would be a bit more blurry than that, then you can increase the softness as much as you like.

The higher the value on this setting, the more blur your shadows will have. The higher the value on this setting, the longer it will take to render. It does increase render time a little bit as you add more blur, but it's usually not too bad on my machine. Also, a quick note, the more blurry your shadows are, the more likely they are to be a little bit grainy. If you do a spot render and find that the shadows are coming out really grainy, try turning the blur value down a bit.

Shadow Bias :
This is what tells the render engine how close to the objects in the scene the shadows should be cast. I usually set my lights to have a shadow bias of about 0.20. Again, play around with some primitive shapes and different values here to see what it does. By default, DS will apply a Shadow Bias value of 1.000 when you first add the new light to the scene.

8.) So those are the basic settings and what they do on a Distant Light. So for a scene fill light, you can set up a distant light with a white or light/medium grey color, intensity about 45-60%, shadow color black or a dark grey. I'd turn the shadows OFF for a fill light, as you aren't interested in shadow casting with this light, just providing ambient color to the scene.

If you DO want the light to cast shadows, then I'd suggest starting with a Shadow Intensity of around 85%, and a Shadow Bias of 0.20, and a Shadow Softness of somewhere between 0% and 20%, and set the Shadow Type to Raytracing.

Now for the spotlights in Studio...

1.) Go into your Lights tab.
2.) Click on the box at the top left of the tab where you did before to add your distant light. Click on "Add a new light" at the bottom of that box, and choose SPOTLIGHT.
3.) You can rename your spotlight if you wish. Select "Apply default settings." Once you've done that, you will now have the settings visible for the spotlight, which will look like this :

Please note, that if you add the spotlight FIRST, and do NOT have any other lights in the scene, then when you first add the new spotlight, your scene window will go completely black. This is perfectly okay, and totally normal, I promise you

did NOT just screw up your scene. The light just hasn't been positioned yet is all.

Now... I'm not going to repeat the settings that I went over in the last post - the same holds true for those on a spotlight also. But I will cover the new settings that the spotlights have. For the moment, ignore the black scene window if you did this without adding a distant light first.

Here's the spotlight specific settings and what they do :

Spread Angle :
This is what allows you to choose how wide or narrow a cone of light your spotlight is going to cast on the scene. The higher the number, the wider the cone. The lower the number, the more narrow the cone. DazStudio allows you to actually look through the spotlights, so you can aim and set up your cones while seeing exactly what the spotlight sees.

Beam Distribution :
This one, I honestly have no idea what it does. I've done all sorts of renders with adjusting the value, and I can't ever see any differences, so I have no clue what the purpose of this one is. By default, DS sets a value of 2.00 to the Beam Distribution. I ignore it when setting up my lights. If I can ever figure out what it actually does, I'll look more closely at it then.

Decay :
This setting is where you can control how quickly the light will "decay" to black from the position of the spotlight. By default, this is set to a value of 0.00 when you first add a spotlight to the scene. The higher the value, the faster the light will decay, thus the darker the shadows will be.

So in other words, the decay controls how far away from the light shadows begin to take over. Things will be more brightly illuminated closest to the position of the spotlight, and the further away you get from the light, the darker the shadows/lighting will become. A Decay value of zero tells Studio to not render ANY light decay at all, so that the brightness from the spotlight is the same 3 meters away as it would be 3 centimeters away from the physical location of the spotlight.

Here's two renders to show you what I mean. Both renders have ONLY a single spotlight in the scene. The light intensity on both renders is set to 65%, true white *(255, 255, 255)*.

First render - Decay of zero :

Second render - Decay of 0.20 :

Again, the ONLY thing I changed on the lighting here, was the Decay value. As you can see, the decay acts very quickly in Studio on the spotlights, so you want to go very lightly on the dial, or you can quickly end up with nothing but flat black for a render.

These are really the only spotlight-specific settings for a DS native *(default)* spotlight.

Now as far as USING that spotlight. Look up at the top right corner of your scene window, where you're setting up your picture. You should see a box that says "Perspective View."

If you have added cameras to the scene, there will be other cameras listed in that box. Clicking on this box will present you with a drop-down of all available cameras and views that you currently have in your scene.

Now, by default, when you start a new scene in Studio, the only things that will be in this dropdown are Perspective View, Front View, Left View, Right View, Back View, Top View, and Bottom View. I have four separate cameras added into the scene, so those also appear here.

Remember that I said DS allows you to look THROUGH your spotlights in order to aim the light and set up the cone sizes? This is where you do that. When you have a spotlight in the scene, this is what you will see in that dropdown box :

4.) So, click on that box where it says Perspective View, and then click on SPOTLIGHT 1 (or whatever you named your spotlight when you added it). Once you do that, this is what you will see :

Now, in my case, the spotlight was already set up from the previous renders showing the effect of the Decay setting. But if you look at this screenshot, you can see a thin white circle. That white circle is the boundaries that your spotlight will illuminate. Anything outside of the circle will not be lit by the spotlight. Everything INSIDE the circle WILL be lit.

You are now looking through your spotlight. You are seeing exactly what your spotlight sees. THIS is where you aim the light and adjust the light cones.

5.) Now, look back over to your Lights tab. Click on GENERAL. Use the translation and rotation dials to aim the light. Once you have the light aimed where you want it, go and click on LIGHT once more.

6.) Look for your SPREAD ANGLE option. Adjusting this slider is what will determine how wide or how narrow the spotlight's cone will be. You'll note that this thin white circle which indicates the spotlight boundaries will move with your dial turns on the spread angle. By default, the spread angle is set to 60.00 when you first add a new spotlight to the scene. Higher values widen the cone, lower values decrease the size of the cone.
This is a SPREAD ANGLE set to a value of 120 :

The cone has widened, to take in more of the scene's contents.

This is a SPREAD ANGLE of only 20.00 :

You'll note that the box is MUCH closer to the "camera" now, because the cone has narrowed to only encompass part of the box, and a tiny bit of the surrounding environment.

7.) Once you have the light aimed where you want it, and have the light cone set the way you want it, you now go back up to that box and select your PERSPECTIVE VIEW from the dropdown. DS will NOT perform a render while you are looking through the spotlight's camera. You must be in one of the default views, or an actual camera that you've set up.

So once you have the light aimed, and the cone adjusted, and you're now looking back at the Perspective View, you can render the scene, or do a spot render to see how the lighting works on the scene.

Here's two comparison renders so you can see what the Spread Angle setting really does :

This should, I hope, be enough to get you started at least enough to light your scene window so you can see what your doing when you're working, and maybe even enough to get started on the actual renderings. LOL

As far as the length of time it took to render... some of my scenes can take as long as 5-8 hours to render for a still image. Mind you I render with a lot of advanced settings, and a lot of transparency and DOF effect, all of which will increase the render times. I also render at large image dimensions/pixels. But about an hour on a frame to render... I can see that, depending on the settings you've got in use for your render settings, lights, shadows, textures/items involved in the scene, whether or not there's any SSS on the figure's skin, etc...

For a basic (3-point) setup in Studio, here's what I like to start with :

1 Distant Light (used as a "fill" light)
-- Light color white or light/medium grey
-- Light intensity about 45% - 65%
-- Shadows OFF

1 Spotlight (used as the casting "front" light)
-- Light color light/medium grey
-- Light intensity about 50% - 60%
-- Shadows ON, set to RAYTRACE
-- Shadow Bias set to 0.20
-- Shadow color black
-- Shadow Softness set to 10%
-- Decay set to zero *(this is something I adjust later in the setup, as I decide what kind of shadows I want)*
-- Spread Angle left at the default 60.00 *(again, this is something I'll change later on in the setup as the scene takes shape)*
-- I usually aim this to about 3/4 frontal on the subject of the scene I'm using. Again, I'll adjust the actual aim of it later on in the setup as the picture is forming up into something closer to final.

1 Spotlight (used as a backlight)
-- Light color true white
-- Light intensity about 85% to 90%; sometimes I'll just leave it set at 100%
-- Shadows OFF
-- Spread Angle, again I'll usually leave this at the defaut.
-- I don't fuss with any of the other settings

That's a pretty basic 3-point light rig at least for setting up a scene. If need be, you can add two more spotlights to the sides of the figure, again with shadows off, just for setting up purposes. Remember, you can always delete or turn off the lights later.

One last note on the distant lights... scale and translations dials really don't do a whole lot. The Y Rotate, and X Rotate, however, WILL allow you to aim your lights north/south or east/west respectively. If you're having difficulty figuring out where you're "sourcing" your light from, what you can do is add a SPHERE primitive (top of the window click on CREATE --> New Primitive and choose the sphere and set a size).

Then once you have the sphere in your scene, go to the SCENE tab. Left click and HOLD on the distant light, and drag it down to the SPHERE and then release the mouse button. This parents the distant light to your sphere. From there, you can just select your sphere primitive and do all of your aiming/rotations with the sphere. The light direction will folllow, and when you're happy with it, turn the sphere's visibility OFF in the SCENE tab *(the little "eye" icon next to the sphere's item list in the tab will do this in one click).*

Another way to help aim a default DS distant light, is to click on the dropdown in the upper right of your scene window where it lists all your available views and cameras. You should see a “Distant Light” item listed there; if you click on that, you’ll be able to see what your distant light is seeing, and you can aim your distant light a little better this way as well. Just remember to go back to your render view before trying to render your scene.

Oh, you'll see lots of mentions of UE2/Uberenvironment2 or AOA/Advanced Ambient lights... don't worry about those. The first one is a more advanced lighting system that comes with DS, and the second one is a more advanced lighting system that can be purchased out of the Daz store. Both of them took me about a year or so to really get used to them and learn how to manipulate them, so for the moment while you're learning the program interface, I'd suggest just sticking to the standard DS lights.

Point lights are dirt simple also. They're basically little mesh lights that you can use to make things glow. Treat them as a little glowing prop sphere. I stick them inside of things like light bulbs/fixtures, or inside of objects that I'd want to have casting a "glow" light... it's not perfect, but it works.

Like anything else we do, the more you practice, the better you’ll get with it. Enjoy, and good luck!