

Basic Lighting Tutorial

Setup 3 point lighting, render passes for post processing and combine in Photoshop.
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Tutorial should come with:

- low-poly model of the character bust used in tutorial. OBJ-format.
- higher-poly version of the same model(subdivided). OBJ.
- example Modo-scene (Modo ver. 3 and above). L XO.
- Photoshop-file(psd) showing the minor post processing I did

If you don't the have the files, please check the site where you got this PDF. Files are also available at my site.

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Load the model to your preferred software. Creature.obj is built with subdivision in mind, so please activate that on your model or subdivide the model once or twice. You need some detail to get nice shading on the surface. Or you can load in the second OBJ-file: creature_subdivided.obj



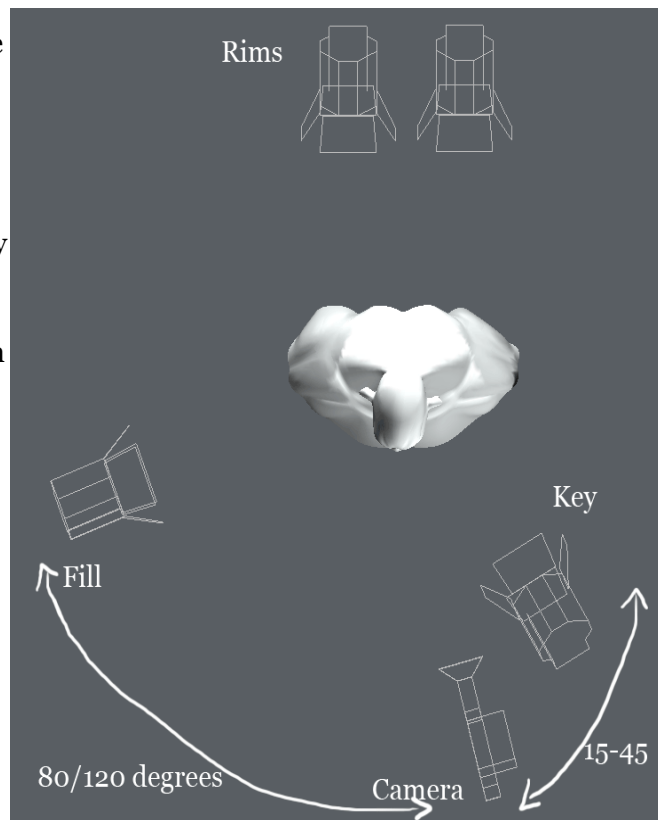
3 Point Lighting

This type of lighting is common for presenting objects or characters. It is used even in motion, like for characters in animation production. Characters may have their unique lighting rig moving and rotating with them, adding sweet lighting on top of the scene lighting they (may) also receive. In this tutorial we use a character bust by yours truly, which provides enough curves and crevices to make lighting interesting.

I use only spotlights in this tutorial because they are directional, ease to control, have falloff and render quickly. You could go with other light types if you like, but use some sort of directional light as that's what this technique is more or less based on. Point is to *model with light* - define those shapes with light and shadow. So there is little point in using wide or otherwise 'overall' light that washes shadows away. We want to accent our subject's shape, yes?

- 1. Camera** is important here. All lights will be placed relative to the camera. Place your camera so you can get a good shot of the subject. Choose something you really like, as changing the camera later will mean changing lighting as well.
- 2. Scene.** Kill all light in the scene - turn lights off and remove all ambient light. Turn Global Illumination off. You can enable it again in the end if you like what it adds to the final, but for the tutorial it should be off. Leave one light on for next step. It will be your Key light. The namesake 3 'points' are key, fill and rim lights. Work with one at a time - turn the other off for a while and when happy try them together again.
- 3. Key Light** is usually placed in front of the subject, slightly over one side and pointing down. It could be 15-45 degrees of to the side of the camera and 15-45 degrees above. You can get creative with this, but if you do please adjust your other light angles accordingly.

Key should usually be the brightest light in the scene, though Rim may go even brighter as long as you use it only for the rim. Adjust Key to your liking, make it look good and don't let any part of your image 'burn out'.



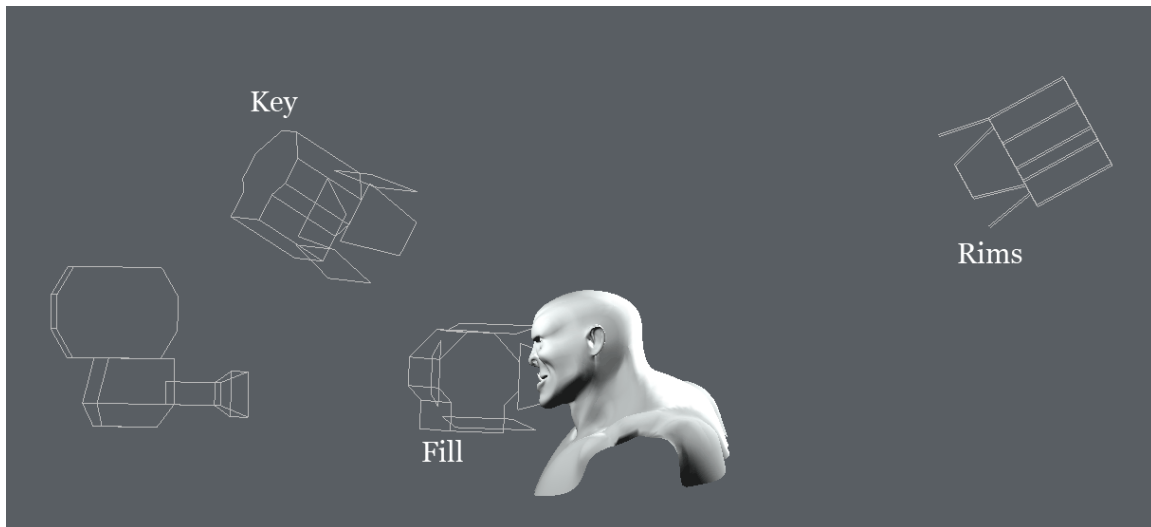
Take a note of where shadow is cast. Shadow going straight to the side means your Key is too low and too much to the side. Eye-areas going all dark, 'raccoon', means your light is too high and/or at too steep an angle. Use light to place the shadow where it looks nice and preferably help define the subject shape.

4. Fill Light

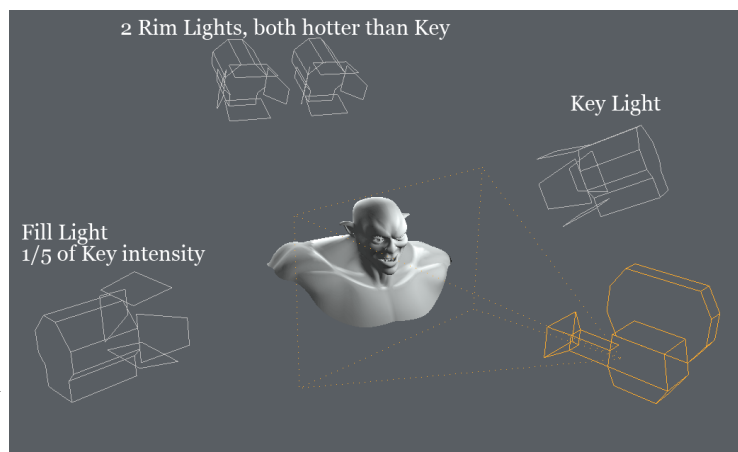
Fill provides supporting ambient light and is placed on the opposite side of the camera than where the Key is. Angle to the camera, sidewise, is about 80-120 degrees. If Key is up, Fill should be lower. But avoid going much below camera level as low-angle light is often somewhat unflattering for the subject.

Depending on the needs of your scene, you may need to add more Fills. Make sure the amount of light they add to the scene is not more than half of what Key adds, because if you go higher with Fill(s) you start to lose the form (shadow and light contrast). If you find yourself fixing Key-light results with Fills, better fix the Key instead.

The ratio between your Key and Fill(s) light power in the scene is called Key-to-Fill-ratio. Low ratio (3:1) stands for scenes where Fill(s) contribute more than third of the light. High ratio is for those moody scenes with strong shadows (like 8:1).



5. Rim Light separates your model from the background. It can also be for the coolness-factor, if you like what it does. Set your Rim(s) so that they illuminate mainly just the subject edges, aka rim. Adjust intensity to your liking. I've turned off the specular effect for my Rims to avoid a too bright specular highlight on the rim.

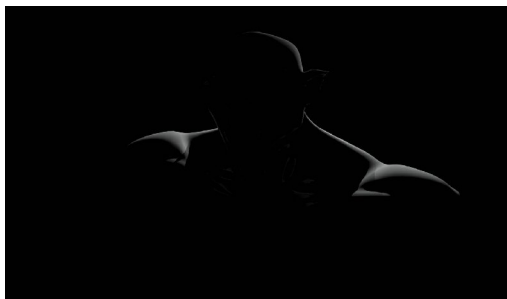


6. Rendering

Render should be ok already , but a bit more tweaking as post process couldn't hurt. To do that you need images to work with, so render with each of your 3 lights (or light groups) separately. Then do one more render with all lights active and this time output more passes:

- Main render
- Alpha
- Depth
- Ambient Occlusion
- and whatever other passes you like

You will use these to enhance your render in Photoshop(or in some other).



Post processing in Photoshop (or in other image editing software)

This is will be brief. Note that if in other software than Photoshop, the layer effects may differ.

- Place basic all-lights render on the bottom layer – all the rest go above it with some layer mode enabled.
- Add more shadowing and dirt/grime/life with Ambient Occlusion layer(multiply).
- If you like, make your picture 'pop' with addition of rim-light layer(color dodge).
- Make a copy of what you have now(Edit>Copy Merged or Shift+CTRL+C)
- Add more contrast to depth-layer and use the layer to make selection of areas outside the focus-point(face). In other words select the whitest area(face), and invert selection. Now go back to the copy-merged layer, and, using the selection you just made, apply Gaussian Blur to your liking. You should get passable depth of field-effect and nice glow around your object.

That's all for me. Depending on how many different passes you rendered, you may have a lot more options for post processing. Try with the separate light passes we did. Play with layers, have fun! And if you like this tutorial, please say so on my blog. Thank you.

<http://www.cgmascot.com>

Other Resources

There's a lots of tutorials about lighting on the net, but I would recommend a book: Digital Lighting & Rendering by Jeremy Birn. <http://www.3drender.com/light/index.html>