Is That Really A Rendering?

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AV1528

It's not enough to know how to create great 3D renderings. You have to make images that really sell, and to do that you need the knowledge of a photographer to really sell your renderings. This class introduces worthy architectural photography principles and shows you how to apply them to 3D renderings. You learn how to translate good image composition, lighting, and staging to your renderings. This class also discusses photographic phenomena such as vignetting, barrel distortion, and glare, and explains how to fine-tune these photographic flaws to your advantage to create compelling visualization that really sells.

Learning Objectives

At the end of this class, you will be able to:

- Differentiate good renderings and photographs from bad ones

- List the 3 principles of photography

- List the 4 rules of photography composition

- Describe at least 4 photographic phenomena and how they affect images

About the Speaker

Ramy Hanna is a partner and 3D artist at TILTPIXEL. He has been in the arch-viz industry for the last decade creating mostly architectural renderings and animations. He is familiar with various 3D software and a variety of rendering engines. He also dabbles in architectural photography and has had the privilege to win several design awards including AIA Design Awards. He has also spoken at several speaking engagements such as Autodesk University, RTC, and VisDay. Ramy is an online instructor for The Gnomon Workshop and Blackspectacles.com. Since 2009 He has helped the 3dsmax team providing input into the design of 3ds Max software. In 2003 He was involved in an animated short nominated at SIGGRAPH, and in 2006 his animated short played in AMC movie theatres nationwide.

What Makes A Good Rendering?

Often when you look at a good rendering you don't say "this is a good rendering because..". Rather the image just grabs you. There are so many things that make a rendering a "good" one. Much of it is really based on photography. So to create good renderings, you have to learn from good work as well. If your sources are bad, then you will create bad renderings. However if you learn from the best, then you can pick up the good things that those before you have done. This is my short list of talents who have inspired our industry, and set precedence in the photography and arch/viz community:

- Julius Shulman
- Ezra Stoller
- Alex Roman
- Juan Altieri
- Peter Guthrie

If you really want to hone your skills, I would suggest looking up these talents and seeing their work. Don't just look at them, but really spend time to dissect and analyze them; doing this will take you further than you know.

Principals of Photography

There are 3 principals of photography. If you can apply the rules of these principals to your renderings, you are well on your way to creating good renderings.

- Mood/lighting
- Staging
- Composition

Mood/Lighting

This can be one of the most overlooked principals of photography. This is what establishes what emotion a rendering or photo is going to evoke. In the below example, the subject in all four images are the same…skies. However each of these photos look and feel different. Where one is calm and serene, another is dark and foreboding. Even though the subject is the same, the lighting evokes a different feel. The same can be applied to renderings.

The images below are Mood Boards. This can also be useful in determining the feel of your rendering. The left board suggests that the content will be educational, a school or something for students. The center board is more trendy, or for a younger generation. The right board is clearly more corporate, business and professional. Notice how each board based on the content creates its own color or mood. Your renderings in turn can evoke the same mood based on the colors you choose.
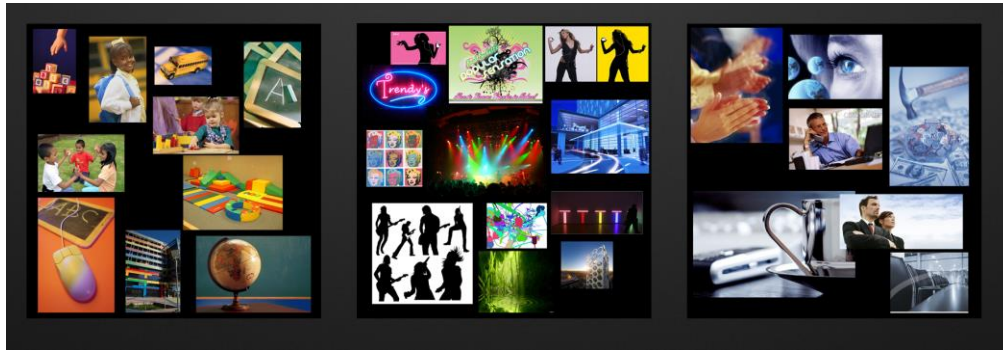
Staging

A good photographer will think and plan out their shot before actually taking it. Attention is paid to location of furniture to maximize the effectiveness of a shot.


Composition

This is perhaps the most critical principal of photography, and applying all the rules of composition alone can greatly increase the quality of an image. These are the 4 rules of composition:

- Rule of Thirds
- Straight Verticals
- Diagonals to corners
- Avoiding coincident edges

Rule of Thirds

This is simply a way of framing your subject or content within a frame. If you break an image into 3 parts, in the vertical and horizontal direction, it will create points of interest. The image on the left is not using the rule of thirds, where the image on the right is. For portraits of people, or characters, you want to focus them on where the lines converge (where the circles are). For architectural renderings or shots, you want to line up your building along the lines. Practicing this habit will quickly create a better composition for your renderings and photos.
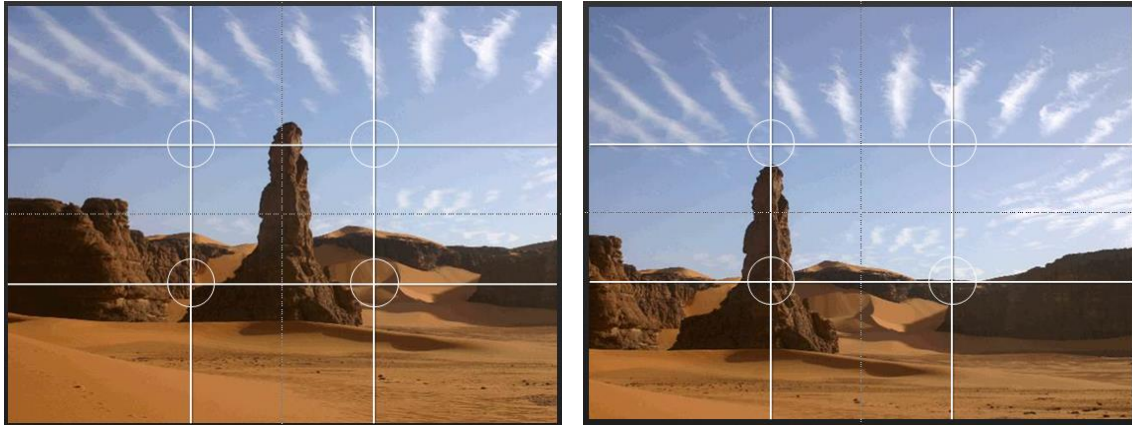
The rule of thirds can be created in 3ds Max simply by using the Safe Frames as a go-by:
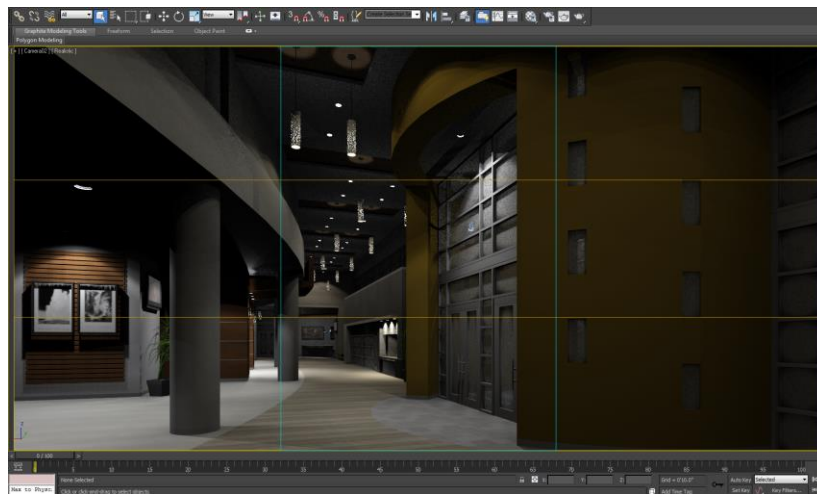
Turn on your Safe Frame (Shift-F), or click on the Camera text in the top left viewport and choose "Show Safe Frames". Now we have to turn on the Action & Title safe. To do this click on the text just to the right of the camera text, and choose "Configure…" Go to the Safe Frames tab, and turn on Action Safe & Tilte Safe. Then turn off the Locks for both Action Safe and Title Safe. For Action Safe set Horizontal to 66, and Vertical to 0. For the Title Safe set Horizontal to 0, and Vertical to 66. Then at the bottom be sure that "Show Safe Frames in Active View" is checked, and then hit OK.
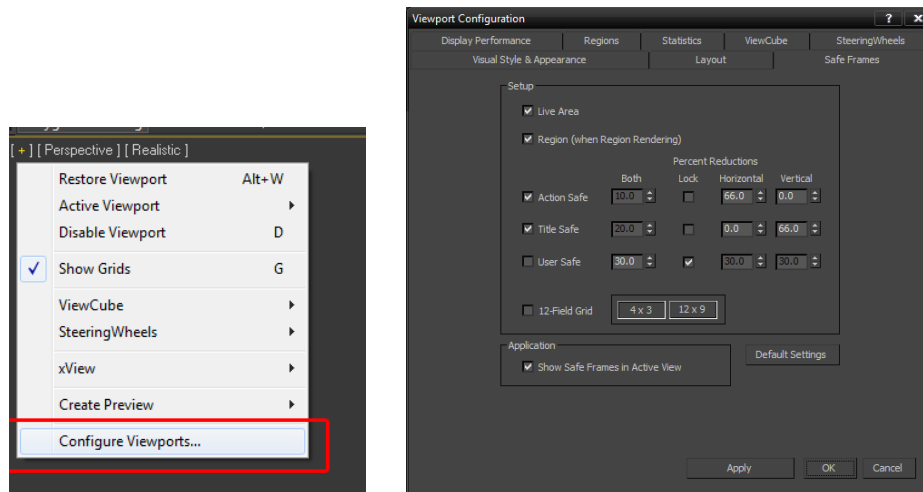
Straight Verticals

This is what I call the signature of architectural photography. You know the photographer was an architect if the verticals are straight. Simply, if you can take your shot and keep your verticals straight, your image will look much more professional. This can easily be achieved in Photoshop using the Lens Correction filter.

This can also be achieved in 3ds Max using the Camera Correction modifier. To apply it to your camera, select your camera, then choose Modifiers->Cameras->Camera Correction.

Diagonals to Corners

This is a very simple rule. Basically, when your diagonals, or perspective lines, die into the corner of your image, this adds visual interest or a more interesting composition.

Avoid Coincident Edges

This is a rule where camera placement and staging are critical. If objects in an image are placed in such a way that their silhouettes are tangent with other objects, the depth gets lost and the image becomes

very difficult to read. The image below on the left appears more flat because objects edges are sitting right next to each other. The image on the right is a better composition because there is more overlap or space between objects. This produces a more legible image and adds more depth.

Photographic Phenomenon

Along with the 3 principals of photography are also photographic phenomenon that can be applied to renderings.   Photographic phenomenon are flaws that exist in the simple nature of taking photos with a camera. These are actually effects that professional photographers typically try to avoid. Obvious examples of these phenomenon usually point to the image being taken with a bad or cheap lens. It may seem counter intuitive to apply these "flaws" into renderings. However creating a realistic rendering is simply trying to replicate what the camera does when taking a photo. So applying these to a 3D rendering when used correctly actually brings more life to the CG image. The most common or impactful phenomenons are:

- Vignetting
- Chromatic Aberration
- Barrel Distortion
- Glare / Light Blooming / Flares
- Grain / Noise

Vignetting

This is when brightness is reduced around the periphery of an image. This is traditionally a lens limitation; however it can be used intentionally for a creative effect. This can easily be created in 3ds Max, if using mental ray, through the environment settings. Simply go to Rendering->Environment (8 on keyboard), and you'll find the vignette setting under "Image Control"
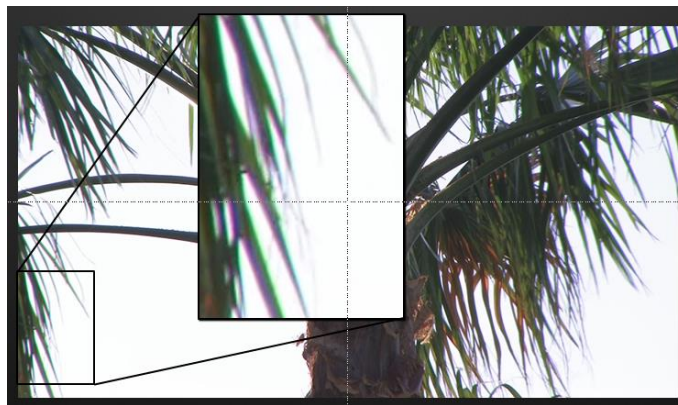
<table>
<tr><td>Vignette=0</td><td>Vignette=10</td></tr>
</table>

Chromatic Aberration

Chromatic Aberration (CA) is a type of distortion where a lens can't focus all of its colors to the same convergence point, resulting in color fringing. This is especially noticeable in areas of high contrast such as a tree against a bright sky, or a window frame against the sky.

This effect as of recent has become a very popular one to add to renderings to make them look more real. Unfortunately it has been very over used, and I have seen this effect executed very poorly to create some very distracting images. When using this effect it needs to be very subtle, and the viewer should not be able to point it out. Just remember, if someone comments on your color fringing, then you're using too much CA. This effect can be created in Photoshop with the Lens Correction Filter, and can also be created in 3dsmax using the "Arch: DOF / Bokeh" shader. Open your render settings window, go to the renderer tab, and scroll down to "Camera Shaders". Next to Lens choose the node slot. Under mental ray maps you will see "DOF / Bokeh". Choose that one and drag an instance of it into a slot of your material editor to access the settings.

The settings below will give you good results using this shader. The Bokeh map here is a simple map that I created in Photoshop that will add the fringing to the DOF. This map will make the fringing more noticable in areas that are more out of focus. Even though the results from this shader are interesting, you will get some very long render times! This effect can also be created in post programs such as Photoshop using the Lens Correction Filter.
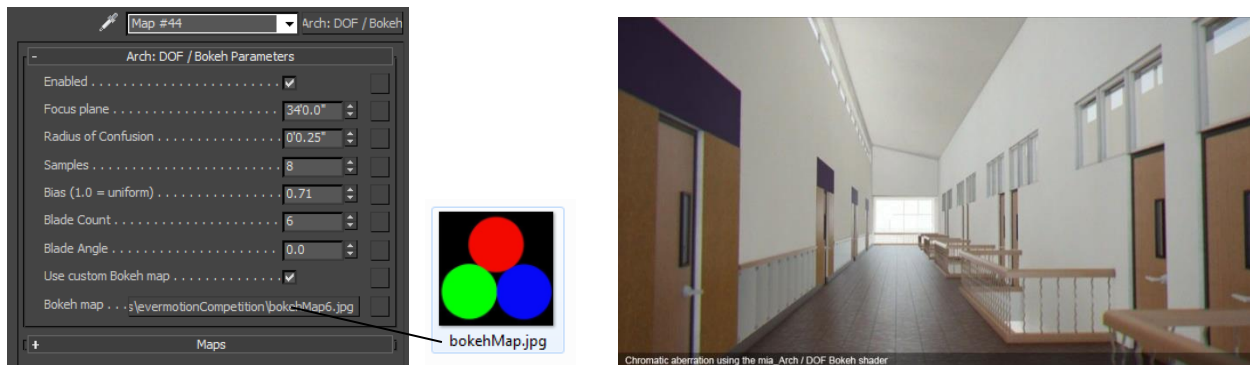
Barrel Distortion

This is an effect that is caused by camera lenses. Almost all lenses have even a hint of this distortion, and most photos will display this effect. Of course renderings do not create this flaw, but it can be added to your renderings for an artistic effect.


To create distortion in 3ds Max, be sure you have "un-hidden" the mia_lens_bokeh, as in the CA example above. Much like the DOF shader, open your render settings window, go to the renderer tab, and scroll down to "Camera Shaders". Next to Lens choose the node slot. Under mental ray maps, choose the Distortion map, then drag an instance of it into a slot of your material editor to access the settings. Choosing Pin Cushion, causes the image to distort inward and squeeze the image, whereas choosing Barrel causes the image to distort outward bowing the image.
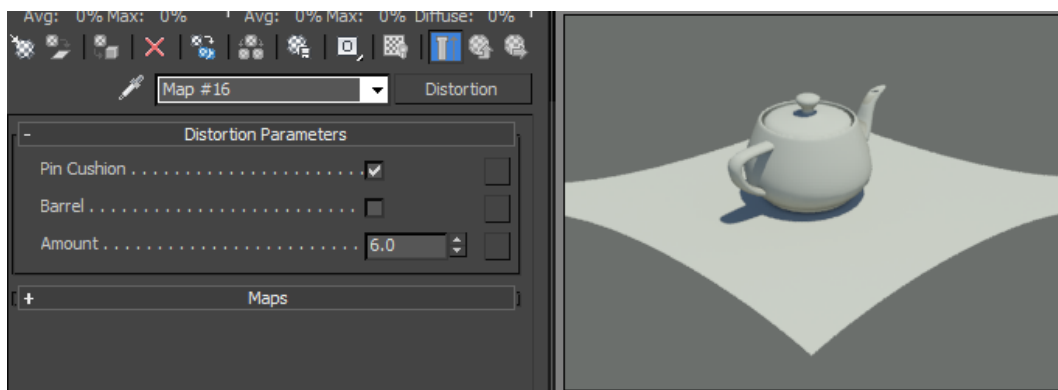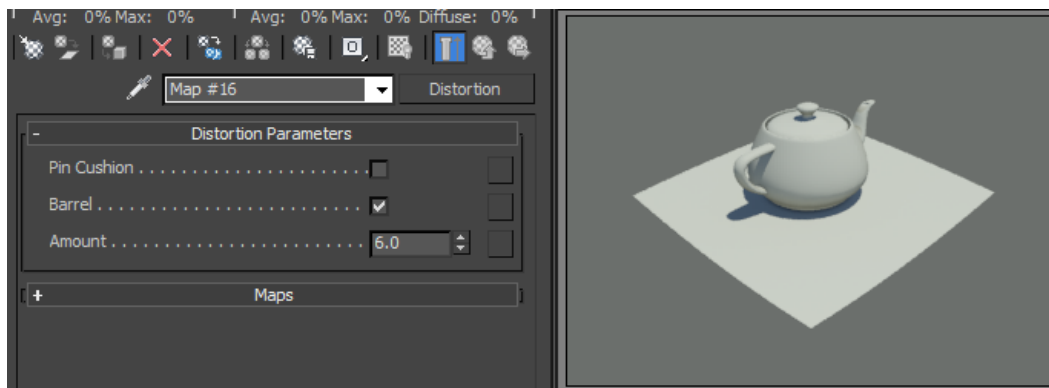
Glare / Light Bloom / Flares

This is caused by strong light sources scattering into the lens usually into unwanted shapes. This effect can cause images to look washed out, or create starbursts and rings into an image. Again usually undesirable in photography, but can be simulated into a rendering to make it look photographic.
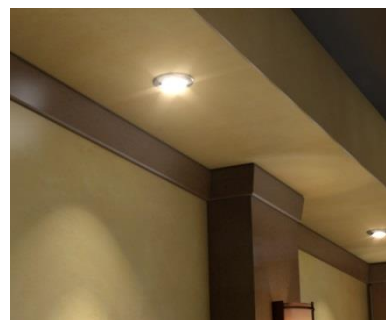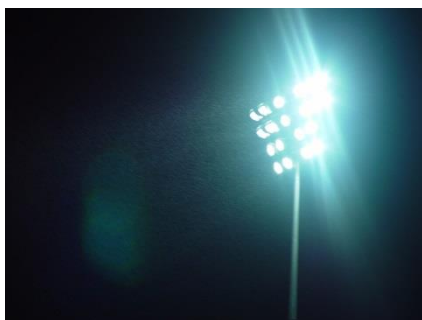

To create this in 3ds Max, again, go to the Renderer tab in the render settings window. Under "Camera Shaders" simply turn on "Output". This will activate the Glare shader. To access the settings, click and drag an instance of the Glare shader into an empty slot of the Material Editor. You will have to play with the settings of the Glare shader depending on several factors: the light sources intensity levels, the scenes exposure settings, and the resolution/size of your rendering. Typically the "Resolution for Glare Processing" should be a similar size to your render size. The "Quality" and "Spread" are also a factor of the image size and light intensity. If you want to render streaks, as in the image below, simply check that option on.
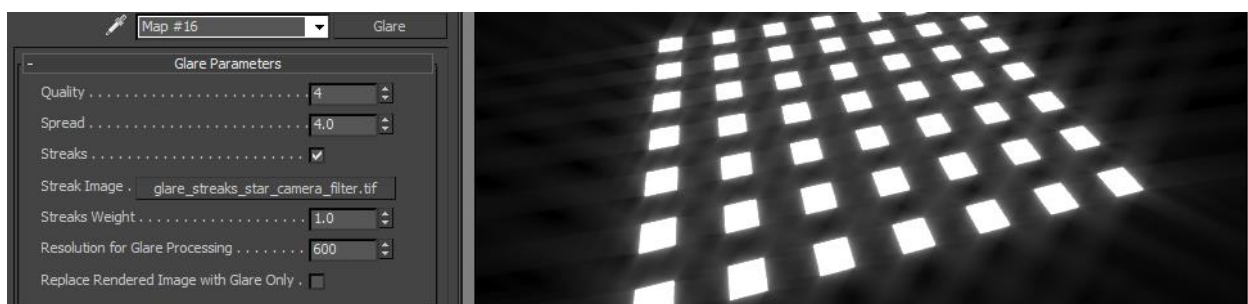
The glare process is a post process in 3ds Max, so it will render your image, then apply the glare after your image is created. If you would like to apply the glare yourself in post, you can check "Replace Rendered Image with Glare Only", and render out a glare-pass.

Grain / Noise

This effect in photography is often caused by having a high film speed on the camera. A high film speed (ex: ISO 800), is often used in dark settings. This will allow more light to be exposed but at the cost of increased noise in your photo. We can also add grain or noise to our renderings to give it a photographic feel. This is achieved by going to the environment settings under Rendering->Environment, or 8 on your keyboard. Go to the Effects tab and hit the "Add…" button, and choose "Film Grain". Under the Film Grain Parameters, you can simply increase the grain amount. Now when you render you will see 3ds Max apply the noise to your render.
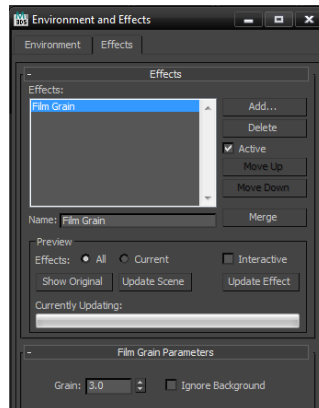
The combination of using photography principals along with adding some of these effects to your renderings, will give you an edge in creating your imagery. The more of these effects that you can mix together along with applying the rules of composition will truly enhance the quality and interest of your renderings. There is no one correct way to apply these, but understanding how they work in reality will also give you and edge.

Resources

There are many resources for the arch/viz community, and knowing where to go can be the key to giving you an edge.

There are plenty of resources on the internet for creating images with post work for architectural visualization. Some websites that are chalk-full of knowledge are:

evermotion.org

peterguthrie.net

area.autodesk.com

jeffpatton.net

ronenbekerman.com

bertrand-benoit.com

You can also follow me at:

ramyhanna.com

twitter: @ramy3d

tiltpixel.com

If you ever have any questions, feel free to contact, me and I almost always reply ☺