

Atmospheric Cameras for DAZ Studio

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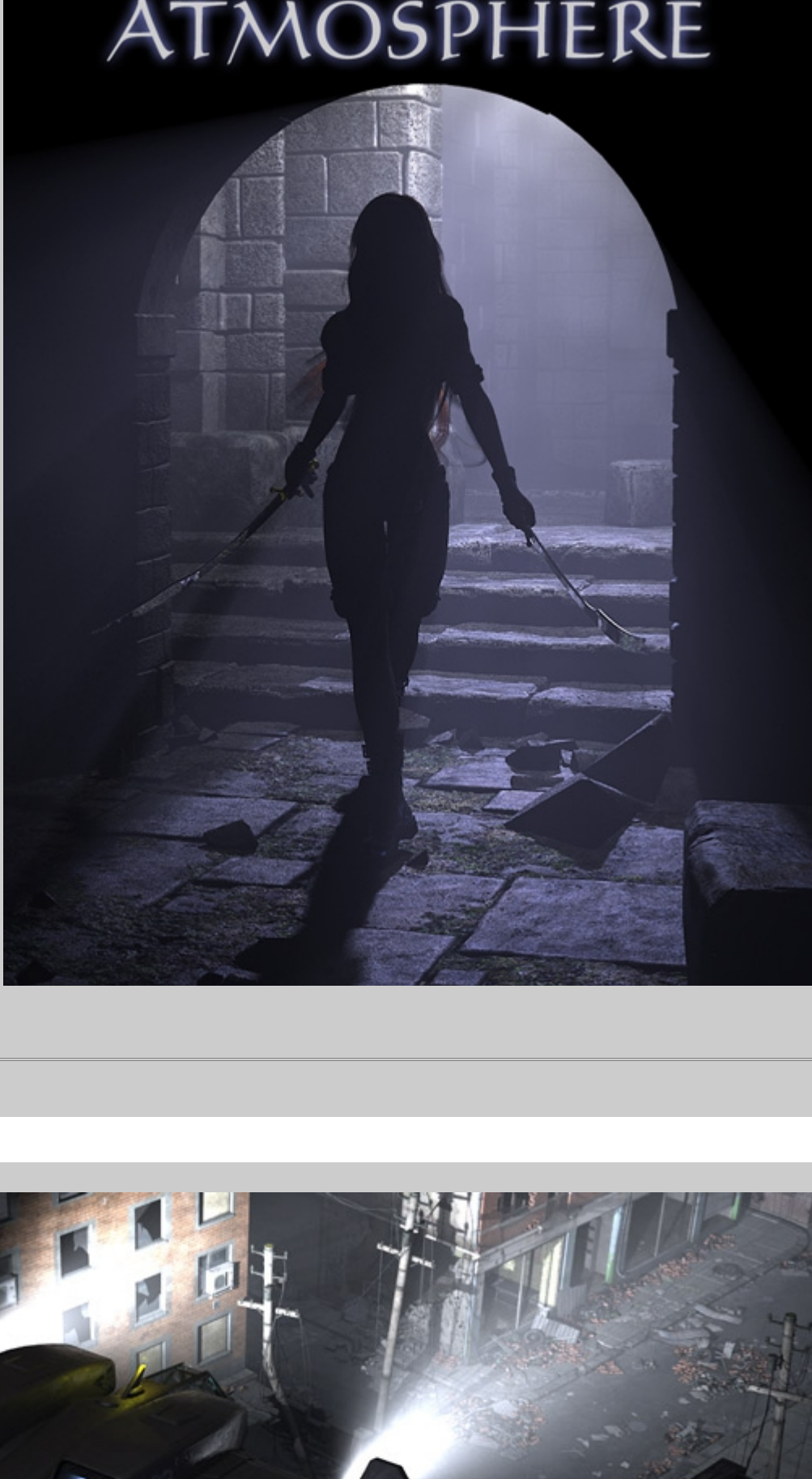
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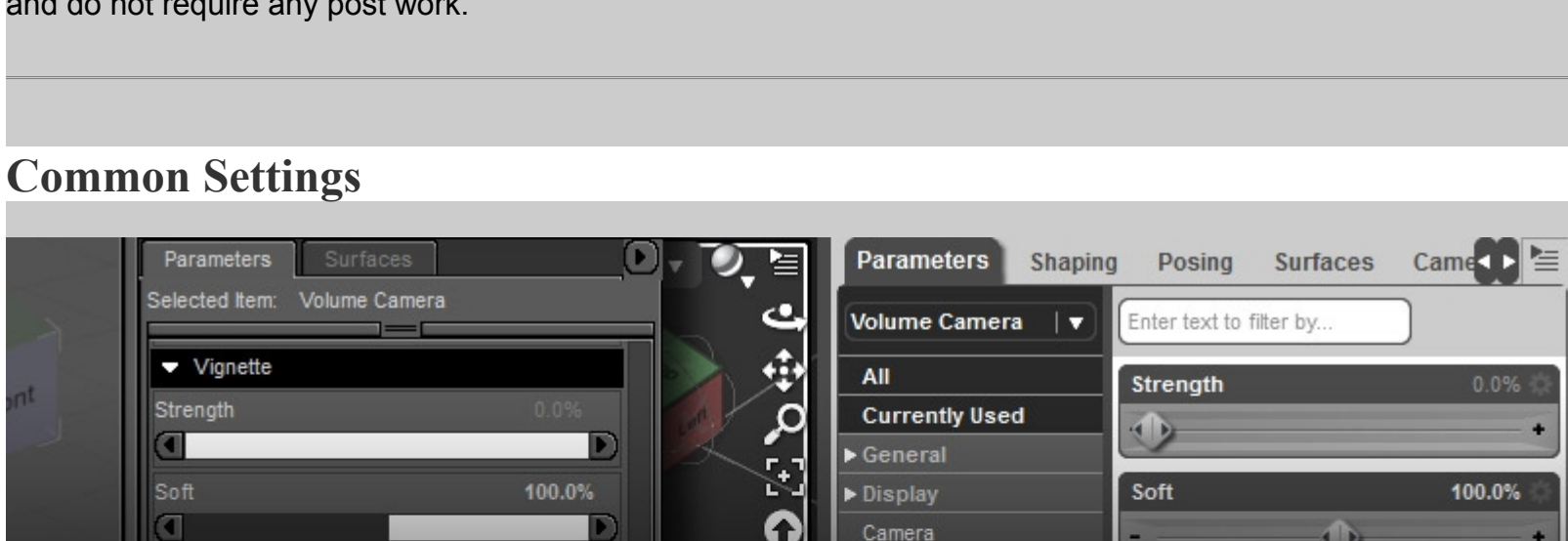
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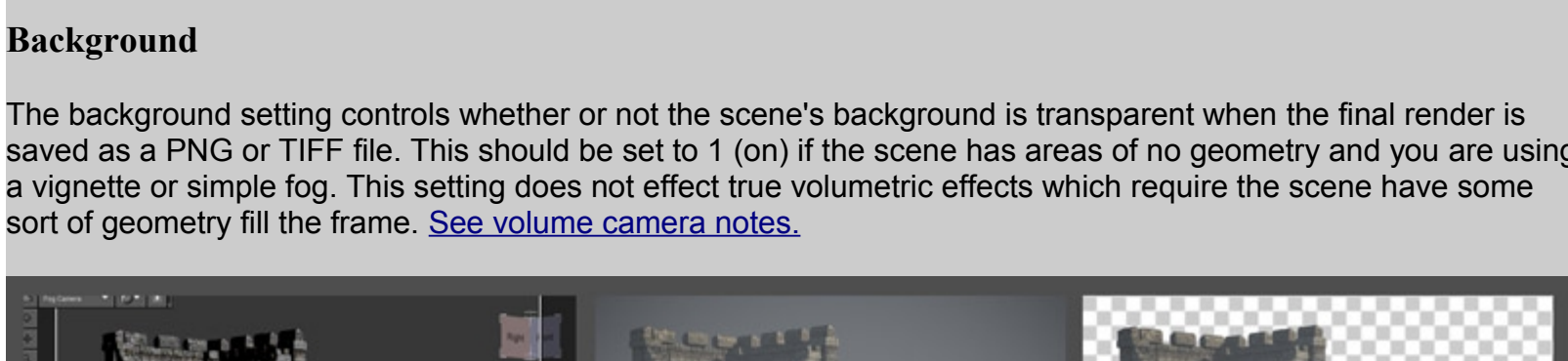
Introduction

Volumetric atmosphere and light cones automatically produced by the camera!



The AoA Atmospheric Effects Cameras are four, completely procedural, shader based cameras for DAZ Studio. While the primary purpose of these are to produce fog and light reacting volumetric atmospheres they also include fun extras such as vignette, color correction and contrast adjustment. All effects appear right in the render and do not require any post work.

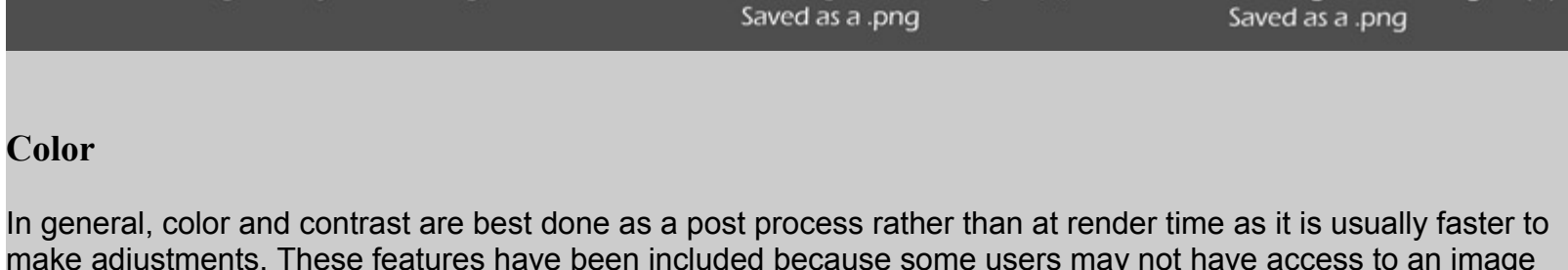
Common Settings



All four cameras have sliders to adjust color, contrast, and vignette as well as a background transparency switch. These features add little or no time to the render process.

Background

The background setting controls whether or not the scene's background is transparent when the final render is saved as a PNG or TIFF file. This should be set to 1 (on) if the scene has areas of no geometry and you are using a vignette or simple fog. This setting does not affect true volumetric effects which require the scene have some sort of geometry fill the frame. See [volume camera notes](#).



Color

In general, color and contrast are best done as a post process rather than at render time as it is usually faster to make adjustments. These features have been included because some users may not have access to an image editor or may prefer not to do any post work.

Settings

- Contrast** - Controls the overall contrast of the render. Settings less than 0 decrease the contrast. Settings above 0 increase the contrast. A value of 0 will produce the same result as default DAZ Studio camera.
- Saturation** - Adjusts the amount of color in the render before colorize is calculated. A setting of 0 renders a black and white image. 100% renders as a DS default camera would.
- Colorize** - Changes the overall Tint of the render. Note that this works like a colored filter on a camera in that it blocks other colors of light from reaching the film (render) so some colors may appear darker in the render. For example, if we have a red ball in our scene and use a colorize setting of 100% cyan (The opposite of red) the ball will appear black.

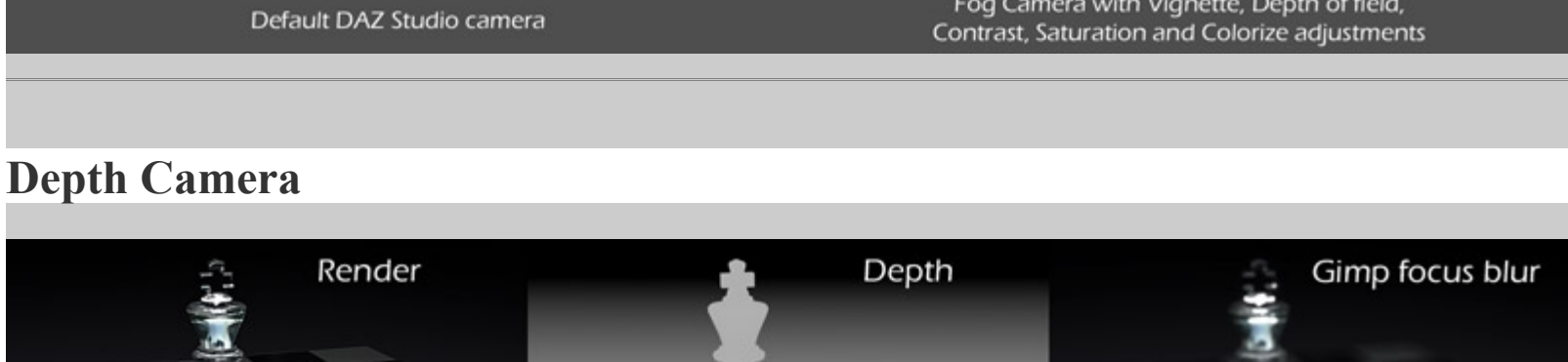
Vignette

Vignette emulates the darkening near the corners of a photograph caused by inexpensive or wide angle lenses and cameras using long lens hoods. Vignettes can be used to add realism to a render, giving the feel of an actual photograph, or artistically to draw more attention to a subject in the "hot spot" near the center of the frame.

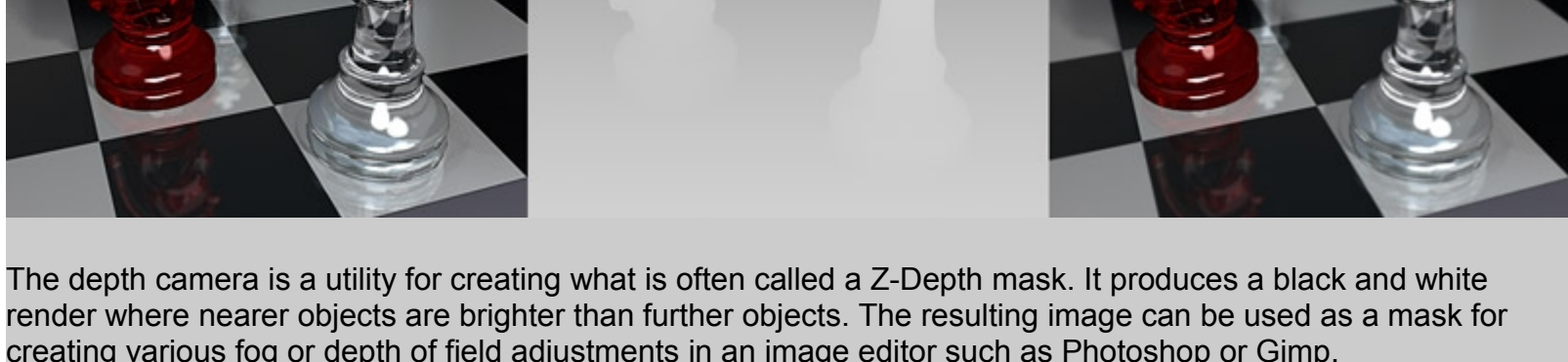
Settings

- Strength** - Sets the overall strength of the vignette effect
- Softness** - Controls how blurred the vignette will be. Low values produce a more defined ring and may work well to emulate the look through a telescope or pinhole camera.
- Width** - How far the vignette encroaches inward from the left and right sides of the frame.
- Height** - How far the vignette encroaches inward from the top and bottom edges of the frame.
- Threshold** - A subtle effect which controls the amount a vignette darkens darker areas versus lighter areas of the frame. In real photographs vignetting tends to affect bright areas slightly less than dark areas. Higher values produce a darker and higher contrast vignette. Lower values create a vignette that is lighter and more evenly effect various light levels

Create an old time photograph effect without postwork.



Depth Camera



The depth camera is a utility for creating what is often called a Z-Depth mask. It produces a black and white render where nearer objects are brighter than further objects. The resulting image can be used as a mask for creating various fog or depth of field adjustments in an image editor such as Photoshop or Gimp.

Coin displacement map created using a depth mask render.



Rendering depth masks can also be a handy method of creating displacement maps from geometry.

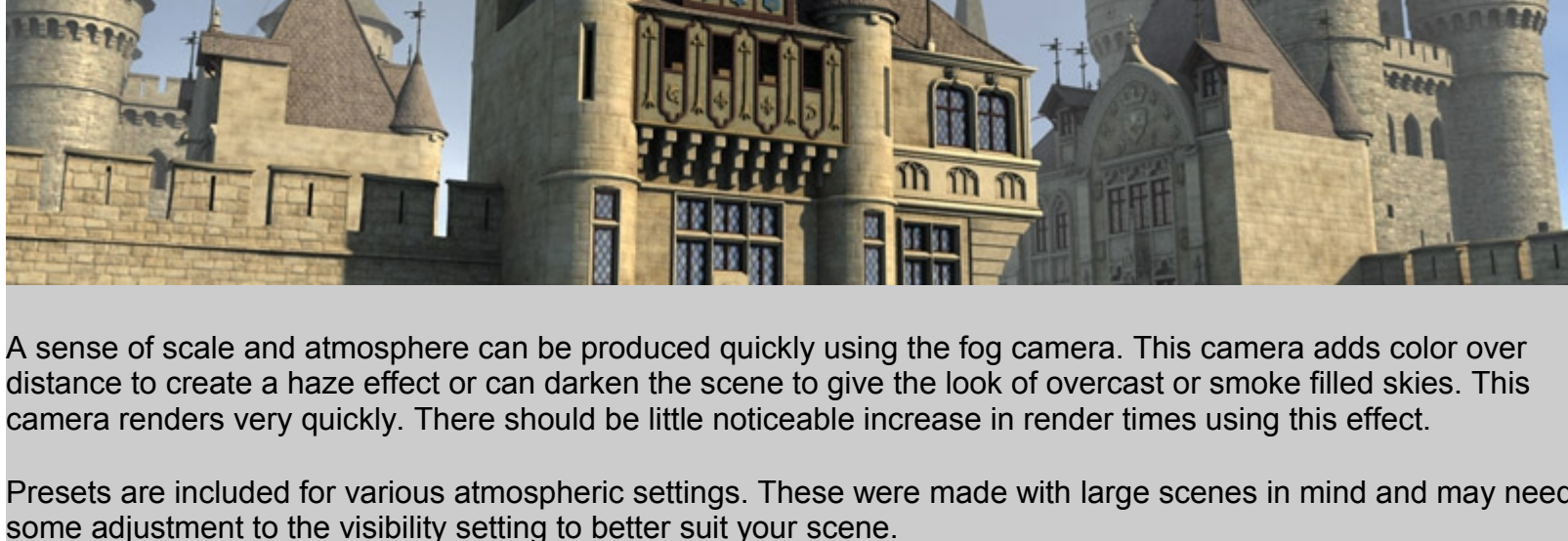
Settings

- Off - On** - A setting of 1 enables depth mask rendering.
- Minimum Distance** - The distance from the camera where white begins to fall to black (in meters). A setting of 0 is best in most cases but can be increased to provide more contrast.
- Maximum Distance** - The distance in meters where the depth mask becomes pure black. Limits can be safely adjusted if a greater value is needed for very large scenes.

Tip: This camera needs no lighting to produce a depth mask so all lights should be turned off for faster rendering.

NOTES: The depth mask does not take opacity into account. If it were to render the depth value behind transparent objects then items such as the chess pieces pictured below would not blur properly in post while using this mask. An unfortunate drawback is that transparency mapped items, such as hair, render as solid objects in the depth mask. See [Quick Tips](#) for a solution using the fog camera.

Fog Camera



A sense of scale and atmosphere can be produced quickly using the fog camera. This camera adds color over distance to create a haze effect or can darken the scene to give the look of overcast or smoke filled skies. This camera renders very quickly. There should be little noticeable increase in render times using this effect.

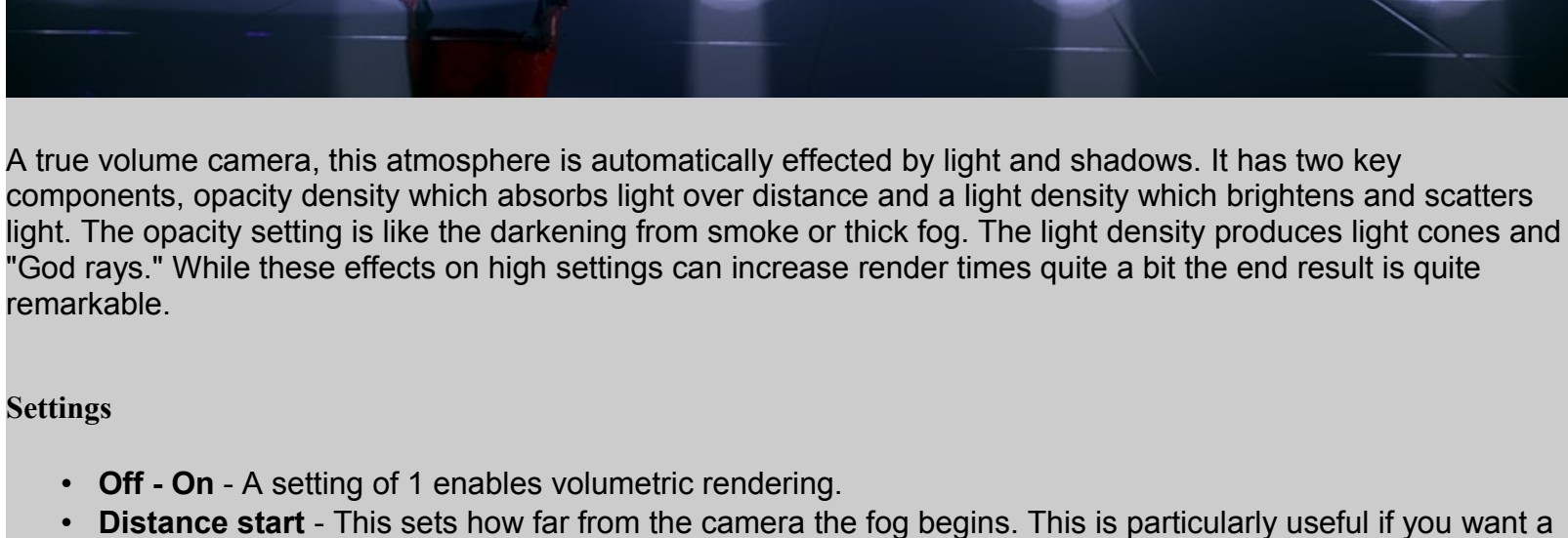
Presets are included for various atmospheric settings. These were made with large scenes in mind and may need some adjustment to the visibility setting to better suit your scene.

Settings

- Off - On** - A setting of 1 enables fog rendering.
- Visibility - Meters** - Controls the strength of the effect over distance. The value is the approximate distance where objects disappear completely into the fog.
- Color** - The overall color of the fog.

Tip: In nature, overcast skies generally produce softer shadows than clear skies. To make the effect more convincing I find using a pale blue ambient light with occlusion and a white distant light with soft shadows, both set to around 50% intensity, works fairly well for foggy daytime lighting. The foggiest the scene the higher I set the ambient strength and lower the distant light.

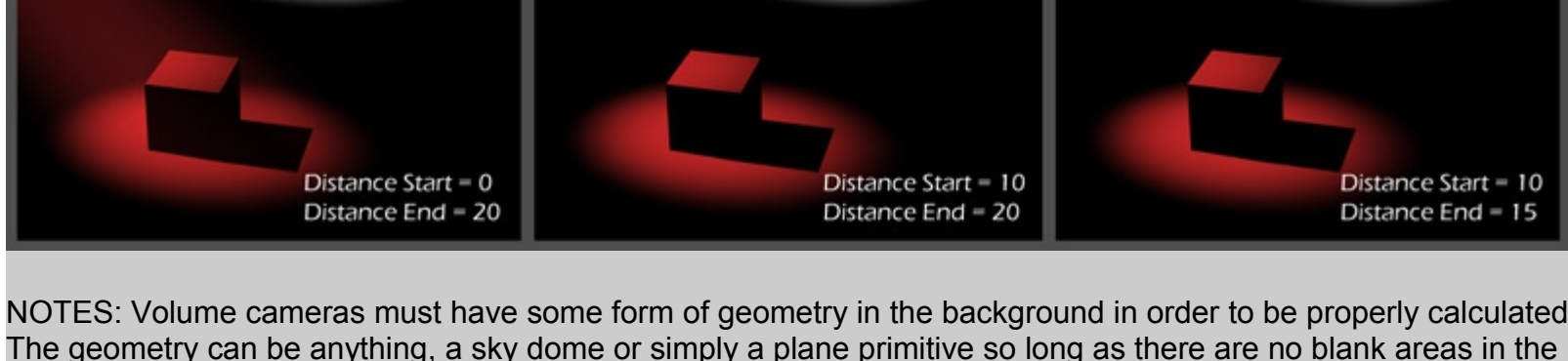
Volume Camera



A true volume camera, this atmosphere is automatically effected by light and shadows. It has two key components, opacity density which absorbs light over distance and a light density which brightens and scatters light. The opacity setting is like the darkening from smoke or thick fog. The light density produces light cones and "God rays." While these effects on high settings can increase render times quite a bit the end result is quite remarkable.

Settings

- Off - On** - A setting of 1 enables volumetric rendering.
- Distance start** - This sets how far from the camera the fog begins. This is particularly useful if you want a clear subject standing in front of very thick fog.
- Distance end** - Sets the furthest distance from the camera that the fog will be calculated. In some cases this may remove essentially unseen fog and speed up rendering.
- Quality** - The render speed to quality adjustment. Lower settings render much faster but may produce more noise.
- Volume Color** - The fog's color primarily affecting the color of the Opacity fog. Light density color is affected much more by the color of the lights in the scene.
- Volume Density** - Controls how much light is absorbed with distance. This component is affected by the scatter color.
- Light Density** - Controls how strongly the fog is affected by lights. If you only desire "God rays", light cones like those produced by stage lights or glare around bright lights then this setting can be used by itself, turning down or off the Opacity Density setting.
- Turbulence Frequency** - Scales the size of the fog variation. Smaller values produce larger "puffs" of smoke.
- Turbulence Variance** - The contrast of the turbulence variation. Smaller values produce a smoother appearance.



NOTES: Volume cameras must have some form of geometry in the background in order to be properly calculated. The geometry can be anything, a sky dome or simply a plane primitive so long as there are no blank areas in the frame. For instance, if you place a point light in a blank scene and render nothing will show. Place a plane primitive anywhere behind the point light and the render should show the volumetric glow from the light.

These effects react to all light sources in the scene including the default "Headlamp" DAZ Studio provides when no other lights are in the scene. I highly recommend setting up some lights for your scene before turning on these volumetric effects.

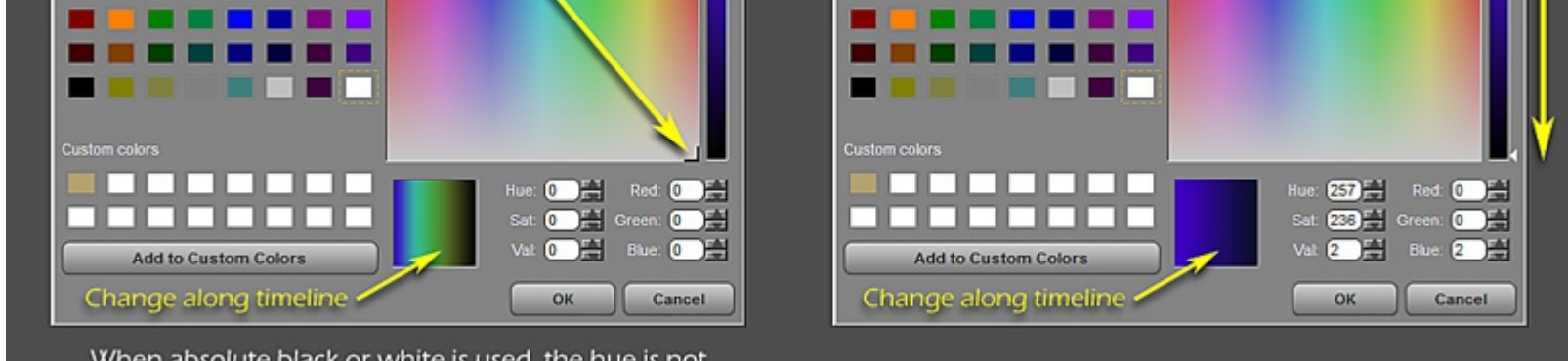
Use low render and volume settings while making adjustments to speed up test renders. Things to watch out for are high shadow or ambient occlusion samples, low shading rates and high quality settings on the volume camera. Light shining through transparent items may also increase render times.

Animating Parameters

All settings are key framable so can be animated. This allows for color, fog density, turbulence, depth of field or whatnot to be changed throughout your animation.

Off-On sliders are absolute so they would not be good candidates for animation. If one were to set Fog off at frame 1 and fog on at frame 48 the animation would show no fog for the first 24 frames then suddenly turn on for frames 25-48.

Because of how DAZ Studio treats 100% black or white some care should be taken when animating color values to or from black or white. To get an animated fade from, say, bright blue to black it is best to set the final frame to 0,0,1 (a very dark blue) than to use 0,0,0. This insures a smooth transition from blue to 99% black. The image below illustrates why this works best.



When absolute black or white is used, the hue is not retained and the marker moves to the bottom right corner. The marker will translate linearly between the two points and your animation will change hues as it progresses.

Setting the value to almost black or white causes DS to retain the hue value. The color will darken or lighten as the animation progresses maintaining the same hue.

Quick Tips

General

- Contrast is fairly sensitive. Use for minor adjustments. Excessives may cause render artifacts.
- Colorize is highly sensitive. Tints near white tend to work best.
- Most parameter limits can safely be turned off or increased if needed.
- To change parameter limits in DS3 simply double click the parameter name. A window will pop up where you can turn off or change that setting's limits. In DS4 left click the gear icon in the parameter's upper right corner and select "Parameter Settings" from the pop up menu.
- A few settings should *not* have their limits changed: Off - On switches and the quality slider of the volume camera.

Depth Camera

- Depth masks can be useful for creating displacement maps from complex geometry.
- This camera does not need any lights to create a depth mask. Turn all scene lights off for faster rendering.
- Several presets are included to change the Distance End limit. This helps make fine tuning the settings easier depending on your scene size.
- If a mask is needed that shows depth through transparency, such as a render with transmapped hair, the Fog camera may be used as an alternative. See fog Camera notes.

Fog Camera

- Generally speaking, scenes with heavy fog or smoke tend to look more realistic with very soft shadows. Ambient occlusion lighting such as the ahEnvironment light (DS 3 only) or the UberEnvironment light (included with DS Advanced or higher) tend to work well.
- Fog can be rendered right in the camera but if you prefer to adjust it separately in an image editor you can render 2 passes and composite them. To get two separate passes simply render one with fog set to off then turn off all scene lights and render with the fog on.
- To render a depth mask using this camera set the fog color to white, adjust visibility to best suit your scene then render with all scene lights turned off. The result will need to be turned to a negative image to work properly with most image editor depth of field filters.

Volume Camera

- Start with low volume quality and render settings while setting up your scene.
- The camera's volumetric lighting detects both mapped or raytraced shadows.
- Gel lights can create some spectacular effects when used with the volume camera.
- Volume camera renders using DS4 Linear fall off point lights can be improved by setting the light's Falloff Start to 0.00.
- Lights with a squared distance fall off, such as the default DS point light and some add on products, are physically correct and tend to add realism when using the volumetric camera.
- Spot lights usually look cleaner and render faster than other types of lights at lower volume quality settings.
- Distal lights tend to flood too much light into the scene when using the light density feature. Far off spotlights are usually a better alternative.
- Lights passing through gaps in complex geometry render faster than through a simple object with a complex transparency map.
- If rendering a forest scene with rays of light passing through the tree canopy, especially if the leaves are transmapped, you may find using a gel light with cast shadows turned off and a gel that breaks up the rays to render much faster than using a normal spot light with shadows turned on.
- Volume camera renders can slow down when using raytraced reflections. Raytrace depth can be turned down to 1 in the render settings or turned off to increase render speed.

Known Issues

You may see an error in the render message window similar to "3Delight message #145 (Severity 1): S2073: 'SceneMin' is not a parameter of shader 'brickyard/ba652b84...' I believe it to be a DS internal error which I have no control over. This should not cause any problems.

Do not use the volume camera with Shader Mixer created mesh lights. An unresolved bug can cause DAZ Studio to crash when Shader Mixer created mesh lights are used with the volume camera. The camera does work with Uber Area lights.

DS4 Linear fall off point lights may have some artifacts when using the volume camera. This can be improved by setting the Falloff Start to 0.00 on the light.