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Many have commented on the low quality of the fog in trueSpace and for the most part I am inclined to agree. I have discovered several factors that help to make decent looking dense fog in tS, which are outlined in this document.

What are the basics of good fog?

Fog looks better when it has some kind of visible 'depth'. Simply put, flat fog in tS looks awful. To get visible 'depth' with fog you need to see 'layers' of fog with varying density.

'Layered' fog adds a degree of realism to one's scene and objects dissapear progressively into the fog, instead of being 'cut' off by the fog.

The best looking dense fog in reality is probably that where a thin fog is apparent in the foreground, (which can be enhanced with 'dust particles'). At a certain point in the distance, several fog layers should be evident close together, ending with 100% dense fog. When dealing with dense fog in tS you may want to consider this...

Fog should drape in layers over objects in the scene, this means altering the near and far fog distance settings, designing the layout of your scene with this in mind and the location of the camera.

How should the camera be manipulated to get the best fog effect?

Always have your camera at an angle on the x-axis, this gives decent layers of fog.

Capturing a scene from a straight forward viewpoint with thick fog (80% or higher) is not advisable, the 'layered' fog effect will be minimal, if present at all.

A camera angle looking 'upwards' to objects in the scene, (however slight that 'camera' rotation is on the y-axis) generally, does not work well. The fog layers/changes in density of the fog are not that visible in TS unless the difference in 'fog layer density' is seen against something. The fog layered across the 'ground plane' becomes less visible the more the camera angles upward. Thus, something in your scene needs to compensate for this, such as a focal object which the fog can drape over.

The best camera angles are those that look down at the scene. The fog layers become clearly visible against the "ground" of your scene and with good angle on the x-axis, several layer's of fog will become apparent. This greatly enhances the look and mood of your image. At the right angle, the fog will appear thinly for a good portion of the foreground and then several fog layers will be apparent around the background, culminating with the 100% dense fog. Fuzziness around the base of the fog layers which are close together, is easily apparent when looking down at the scene and improves the look of the fog considerably. Anti-aliasing will unfortunately deteriorate this fuzziness, making the

edges of the fog layers 'sharper'. A good bump map on the "ground plane" can help add fuzziness.

How do I get realistic non flat, misty, distant fog?

This type of fog is good if you're trying to show misty distant fog at higher altitudes (such as the side of a mountain in the background.) where the density is clearly visible.

Position the camera, taking into account the notes from the previous section, "How should the camera be manipulated to get the best fog effect?".

Set the fog "near" setting to a distant setting. The larger the scene the better for the most part. This allows you to set the fog "far" setting to a high value, giving you a large distance between the fog beginning and end, which should be set at 100% density.

You need something to break away and hide the 'flat' 100% dense fog and capture the front 'misty' layer which has now been 'stretched' further. Landscape, such as the side of a mountain or a hill works well, though you'll have to experiment with the positioning of your mountain side in the scene.

What should be known about the interaction between lights and fog?

When placing lights in the dense part of the fog, (for example, this would happen when backlighting a focal point of the scene) and then raytracing, the rendered image will often show no shadows or diluted shadows.

Negative shadows also seem to be ineffective. If you just scanline render the scene and use shadow mapping, the shadows will often come out fine, so if you have no reflective objects, I recommend not raytracing. Furthermore it may be a good idea to delete the default light system, especially since it appears that fog can alter the placement of lighting highlights. The default light system would most likely make matters worse.

What's up with the reflection of fog?

Fog does not reflect well, fog 'layers' are rarely, if at all visible when reflected.

How useful are alpha maps in creating a fog effect with trueSpace?

From my experiments, alpha maps do not integrate well with tS's fog. Often 'cloudy' alpha maps are highly effective in giving fog more substance, but mostly alpha maps in tS just stick out like a sore thumb when fog is present.

Using multiple alpha mapped planes or well constructed material mapped planes instead of tS's fog can work, but of course this means a lack of fog particles inbetween these mapped planes. This gives a sense of depth that is both fake and not visually appealing.

If your image is a composite, alpha mapping can be implemented quite succesfully and is worth experimenting with.

Any other tips or methods for improving the look of fog?

If the scale of your scene is unimportant, select all your objects scale them larger. You're more likely to get better results when the fog covers a greater distance between the 'near' and 'far' settings.

A popular way of creating fog, especially if you'd like your fog to dissipate at a certain height is by creating several (the more the better) semi transparent planes packed close together.

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