- HOW TO MAKE A MIRAGE EFFECT (HOT AIR EFFECT) -

Hi! Someone asked me how I would make something like a mirage effect, like heat coming off the roads.

As I can't leave a question without answer, I shaked my brain and found this method the methode here under.

TUTORIAL:

- First, put a subdivided plane in front of the camera, and Apply it a Subsurf modifier (Level 1 or 2).

- The material of the plane must be transparent (Alpha=0) and not specular. Toggle Shadless and set all parameters to Zero.

- Choose white for the color of the plane, even if the plane is not visible, because you will need it later for a Blend texture.

- Activate Raytracing in the Render panel.

- Select Raytransp in the Mirror Transp panel.

- Apply an IOR around 1.2 to the material of the subdivided plane1.

At this point, you can achieve a quick result by adding a wave effect to the plane, but you will get a much better

result using the following method:

- Apply a musgrave texture to the subdivided plane, and stretch the texture horizontally.

- Set the texture to displacement mapping, and apply a Z Offset to the material.

- Apply an Y Offset too, with a variation quicker than the Z Offset variation.

When a plane is created in front view, the Y axis is vertical, and its X axis is horizontal.

When Z and Y offset are applied to the musgrave texture. The Y Offset is for the vertical displacement of the heat effect and the Z Offset is for changing the texture along depth axis.

Now, render the movie.

You will get a picture continuously deformed by a random looking pattern, simulating hot air mirage effect.

Setting well the parameters for offset, displacement and else is not easy, and you may have to spend some time playing with them.

In my first trial, the effect was too important and looked more like a reflection on a water surface with waves.
I had to decrease a lot the displacement and a bit the IOR as well.

Now, we are going to improve the method. In first attempt I thought of adding a blend texture used as a stencil layer to decrease the strength of the effect from the bottom to the top of the image, but strangely the effect didn't worked as well as expected, so I finally gave up and found this other method:

- Raytracing uses optical rules. This allow us to act like in real world.

Using Raytracing optical properties

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- This image shows that an hemispherical mesh with Raytransp enabled can be used as a magnifier.

- This phenomenon can be used to increase the effect of the deformation produced by the Musgrave texture.

- The Displacement parameter will be set very low (0.004), and the effect will be amplified where needed in the picture by deforming the subdivided plane supporting the Musgrave texture. You can do that in Proportionnal Edition Mode, by moving a row of vertices.
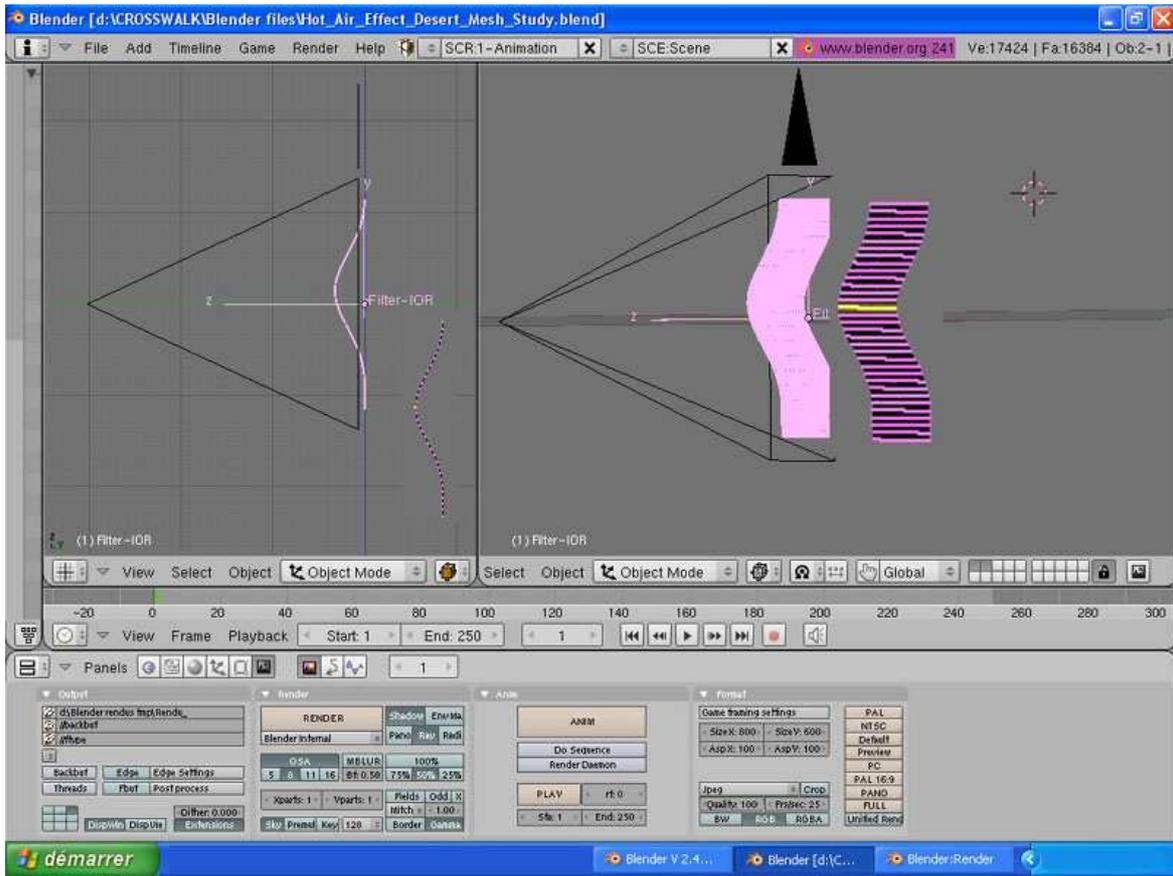
Using Raytracing optical properties

This is a picture showing the effect:

Argh... I'm thirsty!

I think that the result is convenient for shots with a steady camera, but if you have to do a zoom or a travelling, the effect will have to be controlled differently.

Moving the camera through the decor, on a long distance keeping the effect good seems to be a little more difficult than for a still picture.

First I thought of using the texture of the effect mapped on a large sphere or a cylinder not linked to the camera, but the texture would increase or decrease according to the camera displacements, so it is not a good solution.

The better way I see for now could be to change the speed of the displacement of the texture according to the linear speed of the camera on it's path, by tweaking manually the X and Z Offset Ipo Curve. A driver could also be used to control the X and Z Offset of the Musgrave texture with the camera displacements.

This has still to be tested...

Feel free to tell me if I have done some errors or if you know a better way of making this effect.

I hope that this tutorial will be usefull.

To be followed!

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