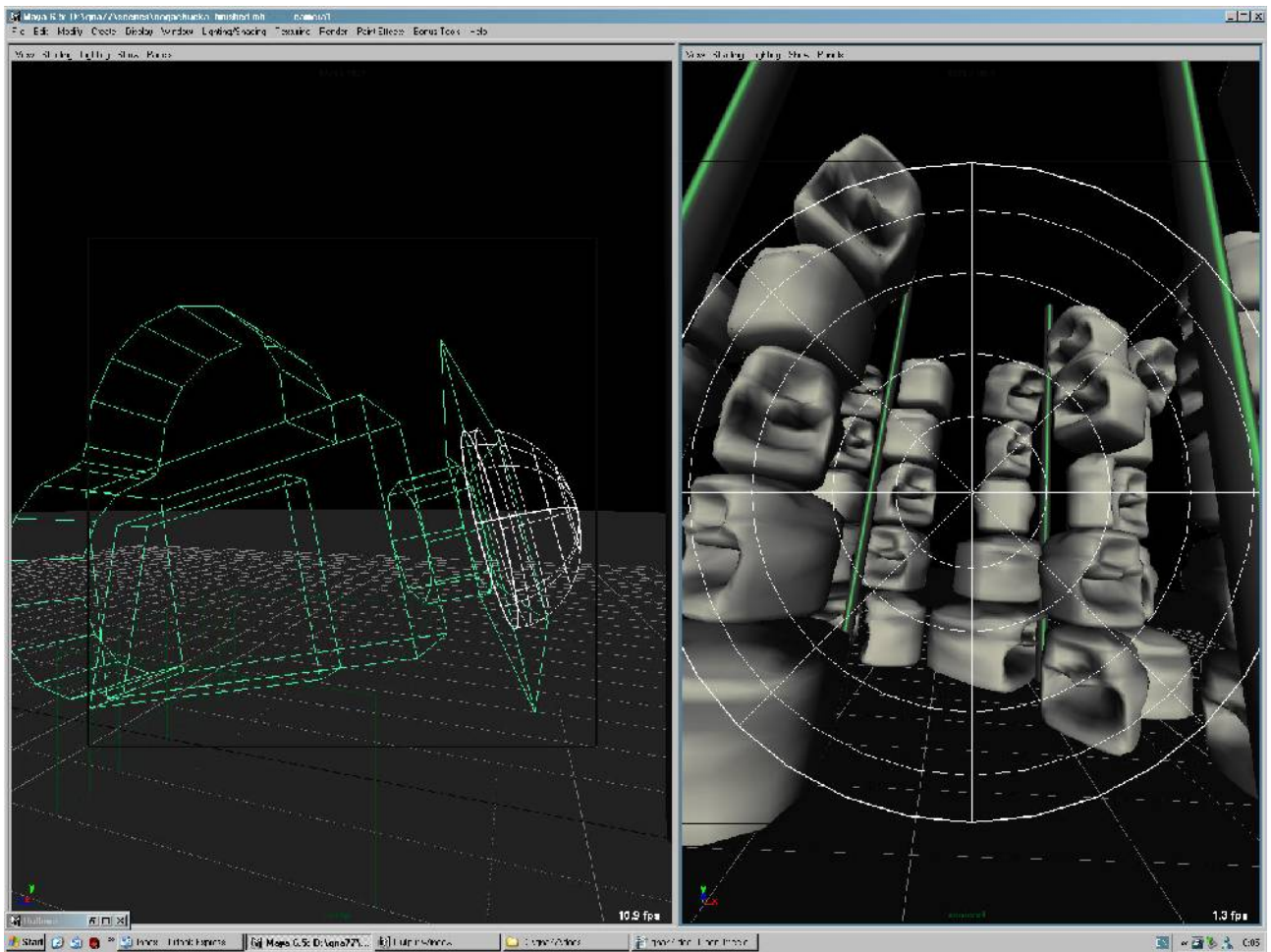


<b>Maya QNA_77</b>	First published in 3DWorld Magazine May 2006
<b>Question:</b>	<i>Is there a Fisheye camera for Maya? - Sotiris / via the 3D World forum'.</i>

Well, yes and no. A camera Fisheye lens is between 6mm and 16 mm, which we can do but 3D cameras are rectilinear which means that straight lines are always straight and do not distort at extreme focal lengths. Curvilinear Fisheye lenses, which were created to take hemispheric photographs of the sky, distort dramatically. So if we want a distorted lens in 3D we make one. Yes, we fudge it. Most people tend to create fisheye effects in Compositing packages, rendering an image at a higher resolution than required and then using distortion to bend the picture. But not Resolutes of true 3D renders, no Sir. We create 3D lenses in our scenes, we do.

Open up the scene oogachucka.ma. In it we've a camera with a focal length of 10 and fixed aspect ratio of 1:1 to see the full fisheye effect. Now create a nurbsphere and selecting the widest isoparm around its middle detach the surface to create two hemispheres. Delete one then parent the other to your camera. Inheriting the camera's transform, your new hemisphere's position and rotation values have all changed, so set those back to 0. Now move and rotate it until the concave side is facing the camera and filling the resolution gate. Assign a new blinn to it set completely transparent. Set its reflectivity to 0 and its refraction index to 5 turning refractions on. In the render Globals turn on raytracing. If you test render now you will notice two things. If you have raytrace shadows and any reflections you won't see them. Whoops. The reason for this is if you attach a lens by parenting it's like adding kryptonite to Superman - you make it pretty powerless. The simplest way to solve this is unparent the lens and picking the camera first then the lens select Constrain > Parent. This essentially does the same thing and gives you back the reflections. The shadows are another matter unfortunately and the only way to shadows in refractions is if they are depthmaps.



Here is the constrained hemisphere sitting in front of the lens and in the other view is the view of the lens from the camera



A simple render, but showing how the lens effect can turn your scene into something more dramatic. And a little bit bonkers

Lenses can create interesting distortions. For example, a repeating bump map of a hexagon or circle can help to create an insect eye style view.