MAKING STEREO PAIRS WITH 3D STUDIO
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3DTV glasses can work in conjunction with 3D Studio flics to make animation look fully, realistically three-dimensional.

The 3D effect comes from the fact that your two eyes being a few inches apart, see slightly different scenes. To understand the difference, try standing close to a pole, doorway or other partial obstruction. Stand in such a way that you can see both the obstruction and some objects far away. Close one eye and note which faraway objects look "closest" to the obstruction. Next, switch eyes and note the difference. Some objects near the obstruction have either appeared or disappeared.

When you're looking around in the normal course of life, your brain takes the images from each eye and compares them. Your brain then uses the difference in the two images to determine how far away objects are. This all happens very quickly and without any effort on your part.

The 3DTV glasses work in the same way. Two slightly different animations or images are displayed in such a way that each eye sees only one of them. Your brain does the rest.

The easiest way to make the two flics in 3D Studio is to set up two cameras in a mesh file. The two cameras represent the left and the right eye views. These cameras should be a small distance apart with their targets in the same spot. Later in this document you'll learn how to determine camera placement and distance.

Once the two flics have rendered, you can then play them back from the DOS prompt with the 3DFLIC.EXE player. The 3DFLIC player will play both flics, alternating rapidly between the two in synch with the glasses. Put on the glasses and look at the screen for a 3D ride. It's that simple.

Two images or animations designed for left and right eye viewing are called stereo pairs. In order to make a pair of flics that will work well as stereo pairs, some guidelines should be followed.

CHOOSING A MESH

To start working with stereo images, load up 3D Studio and load any mesh you like. It's best to use a mesh that has more than ten objects in it. This will give you a wide choice for camera placement.

If you are making a new mesh for stereo pairs, think "wide open space." Don't crowd all your objects together. Some users find that making objects "large" (using lots of units" helps them think big.

CAMERA PLACEMENT

Correct camera placement is very important for convincing stereo pairs.

Initial Camera Setup

When setting up camera pairs, work with one camera at first. Position the camera correctly for the first frame, then keyframe all the animation. As with any animation, you may want to make a few test renderings before continuing.

Later on you'll place the second camera. For now, try to design your animation so the camera stays still throughout the animation. It's a lot easier to create stereo pairs with still cameras.

Object Near and Far

In stereo pair images, objects that are far away will look the same in both views, while objects that are close up will look radically different. The 3D effect works best in a scene when you have objects both close-up and far away from the cameras.

Alternatively, you can set up a scene with just close-up objects, and use a bitmap background. The background will appear the same to both eyes and will thus "recede" into the distance when viewing the stereo pairs.

The only no-no is to avoid scenes with only faraway objects. In this case, your stereo pairs won't give the 3D effect. If both camera views look the same or very nearly the same, try moving the cameras closer to at least one object in the scene.

Distance Between Eyes

Once the animation is set up for one eye, it's time to set up a second camera for the other eye. The most important aspect of camera placement in stereo imaging is the distance between the two eyes. If the distance isn't right, your viewers will become uncomfortable while watching the animation.

Determining the camera distance is not hard. It just takes a small amount of calculation. To start with, choose an object in your scene for which you can guess the approximate size in real life. In an architectural model, this could be a wall or floor. In an abstract model, guess how big the object would be. Do you want it to appear to be large or small? Make an estimate as to the object's dimensions.

You simply have to figure out how large the object is in real units, such as feet or meters, and look at how large it is in 3D Studio units. Most people's eyes are about three inches apart. Based on the ratio of the object's real size to its 3D Studio size, you can figure out how many units makes three inches, which is the number of units apart the cameras should be.
For architectural models, this isn't hard. For example, you could choose a certain wall to look at. You know it should be so many feet high. Even if you're making abstract imagery, you probably have an idea of how big the objects should seem to the viewer.

Moving Cameras

You can also make a 3D animation with moving cameras. Please attempt this only after you have created a few good stereo pairs with still cameras.

To make a moving-camera stereo animation, first set up all the animation for the first camera. Render the camera view and make sure it looks the way you want it, then copy the first camera's path to the second camera.

Now you must "clean up" the animation. Go to each keyframe and move the second camera to sit at the proper location for that eye in relationship to the first camera. Does a spot-check on other frames between the keygrames, and move the second camera as necessary.

BACKGROUND

In 3D Studio you can get a good stereo effect by using a bitmap background for a the image or animation. The background will be the same for each eye, which will make it appear to fall far into the "back" of the scene. The 3D objects, in comparison, will "come forward."

ANIMATION

When designing the animation, start out with slow-moving objects. When you have the animation looking good in stereo, you can increase the speed of the movement if necessary.

Once the animation has been set up, simply render each eye's view as a separate flic.

TROUBLESHOOTING

When the flics have been rendered, watch them carefully. (Make sure the glasses are working first!) If something isn't quite right, try to isolate it. Below are some problems the flics might have, and some solutions to these problems.

I can see the two separate images when I look through the glasses. This problem is caused by one of two things -- either the glasses are not working properly (wrong COM port, not plugged in, etc.) or your left and right cameras are too far apart in relationship to the size of the objects in the model.

I have to sit very close to the monitor in order to really get into it. Unfortunately this is one of the limitations of 3D. If you can block all other things from view, you get the effect much more fully. Try putting a black cloth over the viewer and the monitor, or use a bigger monitor if you can. Some users have had success with projecting the images through an RGB projector onto a large (6'x9') screen for a truly realistic 3D effect.

It doesn't really look 3D to me. This can happen if the camera is too far away from all the objects in the scene in relationship to their size. Remember that the 3D look comes from

objects being both near and far away. This problem can also be caused by the glasses not working properly.