

# HOWTO Use the OpenSceneGraph Exporter for 3ds max



## 1 Install the Exporter

Use the setup.exe to install the plug-in. You should have 3ds max installed. The plug-in is only tested on windows XP and windows 2000 with 3ds max 5.1. If you are installing on windows98, you should add the install directory to your path and reboot your computer. If you are having trouble loading the plug-in when starting 3ds max, then try to load the plug-in directly from 3ds max. Open 3ds max, press Customize -> Plug In Manager, right click the table with plug-ins and press Load New Plug-in, find the install directory and choose OSGExp.dle.

## 2 Tools in the Exporter

With the exporter come some tools:

- OSG Export Toolbar
- OSG Helper Objects
- fIVE Preview (not available in open source version)

### 2.1 OSG Export Toolbar

Under Utilities (the hammer icon) -> More -> OSG Export Toolbar is a toolbar for fast access to the exporter. The first button will preview full scene, second button will preview selected objects. Third button will save to OSG file format to the default export directory as exported.osg, fourth button will save to the IVE format as exported.ive also in the default export directory; the .ive format is only viewable with fIVE preview also installed with exporter. The fifth button will let you control the export options, these will be save to disk such that when reopening 3ds max and exporting again the same settings will be used.

### 2.2 OSG Helper Objects

Under Create (the icon with a mouse pointer and a star), choose the Helper icon (the fifth icon from the left), and then select OpenSceneGraph in the drop down box. Here you have access to more OSG related stuff. You are able to create Billboards, LODs, Sequences, Switches, Occluder, and Imposters helper objects and add geometry object to these. Sampling one geometry object over a period of time can also make sequences. Further more you are able to add nodemasks to a serie of geometry objects, and change stateset properties such as renderbin on a particular set of geometry objects.

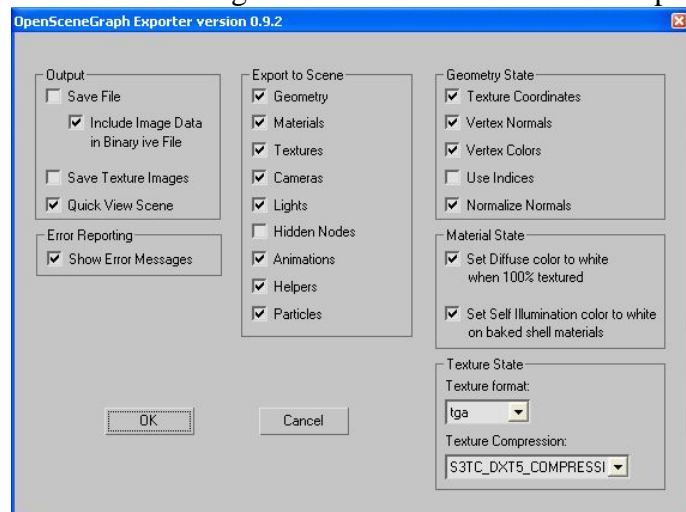
### 2.3 fIVE Preview

NOT AVAILABLE IN OPEN SOURCE VERSION

With the exporter comes a preview function, really useful when changing the parameters directly in the max model and previewing the result right away in OSG. In the fIVE Preview you are able to change motion model, view wireframe, reset view, save in IVE format, start/stop/pause animations and much more. Right click one time in the preview window to find the menu for doing this. fIVE Preview is also installed as separate program, fIVE.exe, which can run independently from 3ds max. By default install a shortcut on the desktop should lead you to it.

## 3 Introduction to the Options Dialog

This section will give a small introduction to the options dialog, which controls the exporting.



Above is a picture of the dialog; it is separate into 6 sections:

- Output
- Error Reporting
- Export to Scene
- Geometry State
- Material State
- Texture State

These are described in the following sections.

### 3.1 Output

Controls the outcome of the exporting. Save it to a file or preview it with fIVE Preview. If we are exporting .ive files, we can include imagery directly in the file. When exporting to .osg files, the “Save Textures Images” should be checked; the images will be saved in an “images” directory in the same directory as the exported file is saved. When using the toolbar, there is no need to use these settings, as these are set automatically. When exporting without using the toolbar, you should select File->Export (selected) in 3ds max. Choose directory to save to, and write name of file. If the name has the ending .ive, it will be save in the IVE format, if the name ends on .osg it will be saved in OSG format.

### 3.2 Error Reporting

Check this option if you would like error reporting. When for instance exporting a material, which uses a map channel, and there are not found any texture coordinates on this mapping channel, when exporting some geometry having this material assigned, an error will indicate it.

### 3.3 Export to Scene

This will indicate what kind of objects that will be exported to the resulting .osg/.ive file. If for instance no animations are wanted in the exported file then uncheck this option.

### 3.4 Geometry State

Indicates what should be exported with respect to the geometry state. If Vertex Normals are unchecked, normals for every triangle will be exported instead. If Use Indices is checked the resulting geometry, vertices/normals/texture cords/colors, will be representing by arrays and indices. If Normalize Normals is checked, GL\_NORMALIZE will set to ON on every geometry object in the exported file.

### 3.5 Material State

Indicates what should be exported with respect material state. Check “Set diffuse color to white 100% textured”, when a 3ds max material having a 100% diffuse texture in the diffuse slot and you will not like the material colour to shine through the texture. Check “Set Self Illumination color white on baked shell material”, when a 3ds max shell material is used and you would like to have a white colour in the self-illumination term.

### 3.6 Texture State

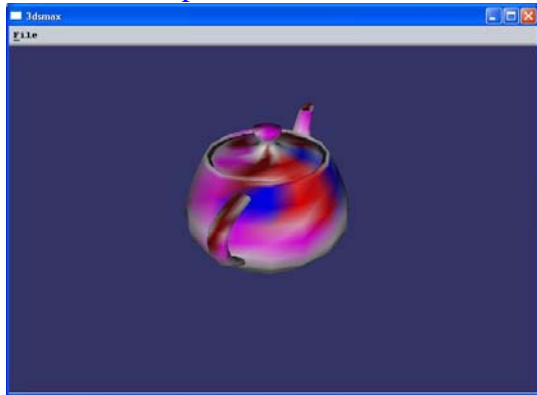
Indicates what should be exported with respect to texture state. Here you can control the image format of the textures. At present time the exporter can handle .tga, .png, and .tiff. We are using 3ds max’s own plug-ins to write the images to disk. If texture compression on the graphic card is needed, it is possible to export arb compression, or dtx1, dtx3, dtx5 compression, or simply use no compression by choosing the image data format.

## 4 Exporting Scenes

In this section we will introduce you to some of the features, which are included in the exporter. Every sub section here will indicate the feature, how to do it, a link to a 3ds max file, and a screenshot.

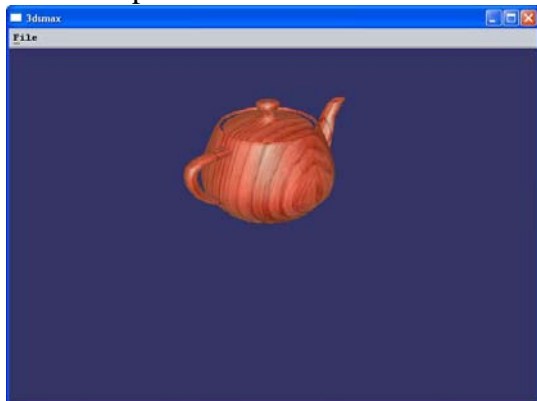
### 4.1 Vertex Colours

Create a geometry object, add a modifier called VertexPaint, and paint some colours on it. Export it using the OSG Export Toolbar. File: [vertexcolor.zip](#).



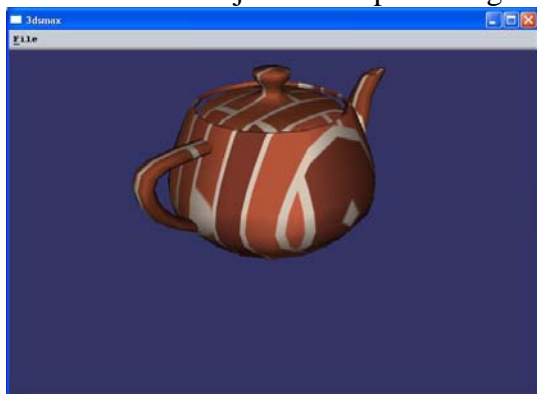
### 4.2 Blending Texture with Geometry

Create a geometry object. Press M for the material dialog, press maps and diffuse slot, then two times click bitmap, find bitmap on disk and press ok. Find the material you applied the bitmap to. To the left of the diffuse slot is an amount box displaying the value 100%, turn this down to only 50%. Give the material a colour of pure red. Attach material to geometry object by dragging the sphere from the material editor onto geometry object. Add an UVW Map modifier from the modifier list. Export using the OSG Export toolbar. File: [blendtex.zip](#).



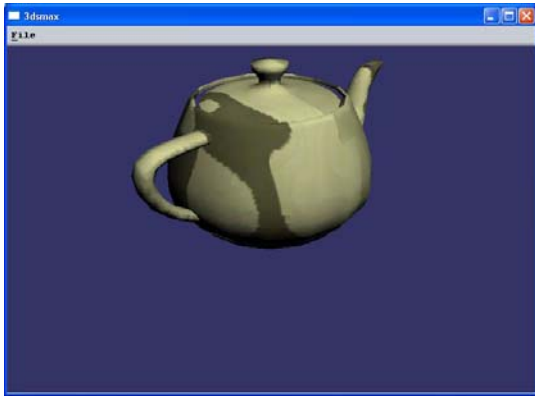
### 4.3 Procedural Textures

Create some geometry. Create a new material; add a procedural texture to the diffuse slot, like the Bricks Map for instance. Now add a UVW Mapping modifier to the object and export using the toolbar. File: [proceduraltex.zip](#).



### 4.4 Procedural Textures and Baked Materials

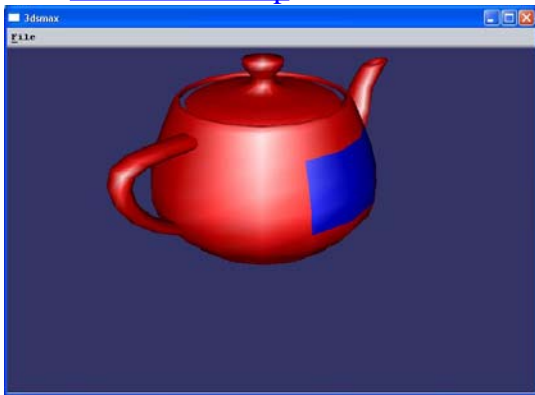
Create some geometry; add a procedural texture to the diffuse slot, like a Marble Map for instance. Assign the material to the geometry. Choose Rendering->Render To Texture. Press add, choose Complete Map, and press Render. Export using the toolbar. File: [proceduraltexbaked.zip](#).



#### 4.5 Multi/Sub Material

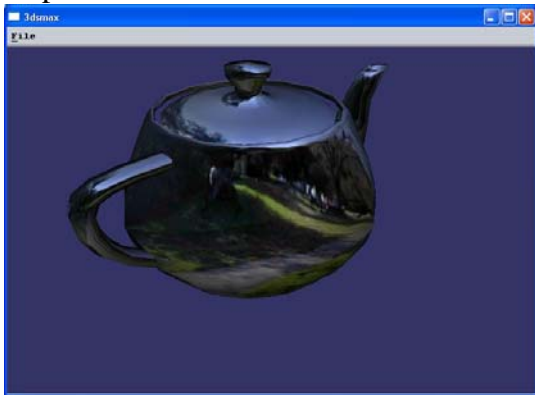
Create some geometry. Press M for the material editor, and create a new Multi/Sub Object Material. Let the first sub material be a red coloured, the second sub material a blue coloured material, and assign the multi material to the geometry. Add a mesh select modifier, and select some faces of the geometry. Add a material modifier and choose Material ID 2 as parameter. Export using toolbar.

File: [multimaterial.zip](#).



#### 4.6 Environment Maps

You can use any map as an environment map. All you need to do is create a new standard material, add a map to the diffuse slot, check the environ box under the Coordinates pane and assign the material to some geometry. Only Spherical Environment is supported at present time. You can also add a map to the Reflection slot in a standard material; this will give the same result. File: [environment.zip](#).



#### 4.7 Cube Mapping

There two approaches to making cube mapping in 3ds max: either you render the six images from the current scene or you can use six already existing images. Create some geometry. Create a new material, and add a Refract/Reflect map. Choose From File as source, and find the six images by pressing the Up, Down, Left, Right, Front, and Back slots. Assign the material to geometry and export. You can turn down the cube mapping by setting the blend amount to 50% in the material editor in the parameter field left to the Reflection slot. File: [cubemapping.zip](#).



#### 4.8 Composite Material

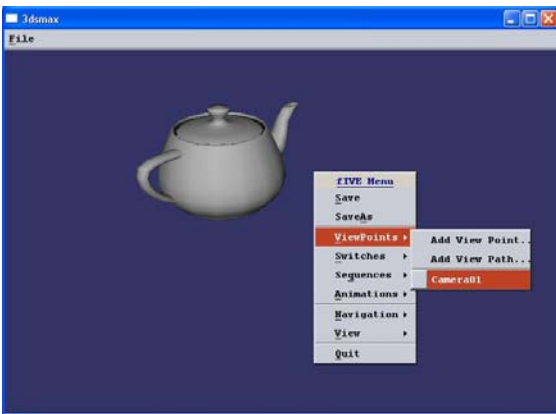
In the composite material you can use any kind of materials that the exporter can handle. You can render light maps, shadow maps, baked maps and put them all together in the composite material. Notice, that it is only the first texture attribute in the sub materials, which are used in the composite material. When blending the materials in the composite material, you have four possibilities: A, S, M, or blend amount. When using A the texture is Added to the previous colour/texture, when using S the texture is Subtracted from the previous colour/texture. Using M will Multiply with the previous colour/texture. If a value different than 100% is found in the spinner field, neither A, S, or M is used, but then we simply blend the previous colour/texture with the amount given in the field.

Create some geometry. Press M for the material editor. Create a composite material. Create the first sub material, add a Brick Map to the diffuse slot, and set the map channel to 1. Add a UVW Mapping modifier, set it to use map channel 1, and set the U and V tile to 3. Create a second sub material, add a bitmap map to the diffuse slot, and set the map channel to 2. Add another UVW Mapping modifier, and set it to use map channel 2. Add the Composite material to the geometry; set first sub material to 50%, set second sub material to 50 %, and export. File: [composite.zip](#).



#### 4.9 Camera

Create some geometry. Press the camera icon and choose a target camera. Using the mouse place the camera and target in a good position and export using the toolbar. Right click in the FIVE Preview window to activate the menu and move the mouse to the ViewPoints menu entry. Here will all cameras created in 3ds max be listed. Choose a camera entry to jump to that position. File: [camera.zip](#).



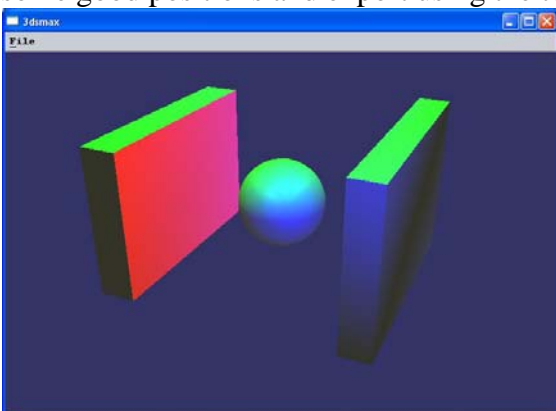
#### 4.10 Lights

The Exporter supports four kinds of lights found in 3ds max:

- Target/Free Spot
  - The cut off value in OSG is set to half the size of the falloff value found in 3ds max.
  - The spot exponent in OSG is set to the difference between the falloff and the hotspot value found in 3ds max.
- Directional Light
  - The last value in the light position in OSG, w, is set to zero such that the light is treated as directional in OpenGL.
- Omni light
  - The direction of the light in OSG is set to (0,0,0), in this way the light is treated as an omni light in OpenGL.

If the 3ds max light is located in the root node, it will be treated as a global light in OSG and never culled away. If located in the other places than the root node, the light will be culled away just like any other kind of geometry.

Create some geometry in 3ds max. Press the light icon and choose one or more of the Target/Free Spot, Target Direct, or Omni lights. Place the lights in some good positions and export using the toolbar. File: [lights.zip](#).



#### 4.11 Shapes

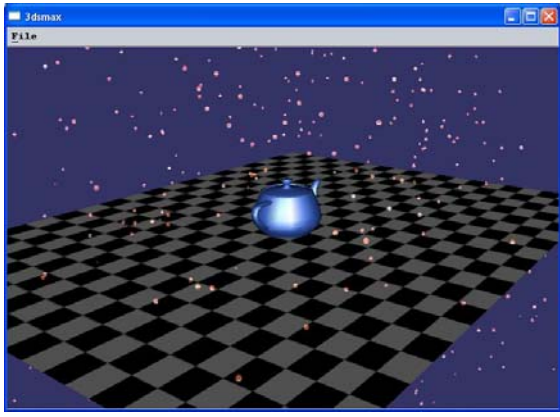
Go to the shape icon, the icon right next to the create icon you normally use when creating boxes, spheres, planes, etc. Here you can use all the different kinds of shapes: text, star, ellipse, rectangle etc. If you create a shape, select the modify pane, extend the Rendering table and choose Display Render Mesh, you can change for instance the thickness of the shape. This is done with the PreView text in the picture below. Export using the toolbar. File: [shapes.zip](#).



#### 4.12 Simple Particles

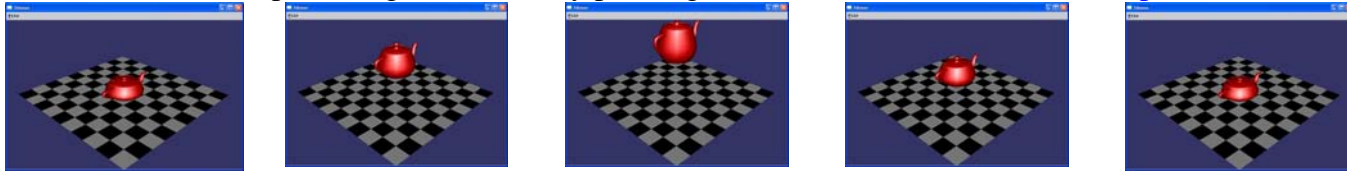
In the exporter we have support for simple particle systems. Here you can use the snow or the spray particle system from 3ds max. To create a particle system choose Particle Systems from the dropdown list right below the create, shape and lights icons. Choose for instance the snow particle system and place it in the scene, create some additional geometry in the scene. You can change count, size of the flakes, speed, variation, etc. for the particle system. Further more, you can also add a material with texture to the particle system. File: [particles.zip](#).





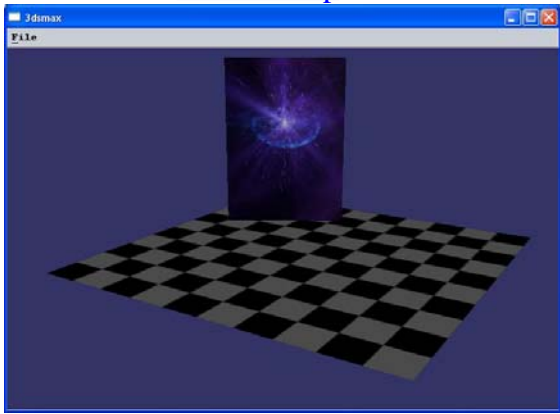
### 4.13 Simple Animation

Create some geometry. Press the “set key” button in the bottom pane of 3ds max. Select the geometry you want to animate, and press the big key icon button to record the initial starting position of your animation. If the key button is not activated then press escape. Move the time slider to another position and translate/rotate/scale your geometry into the position you want. Press the key button to record this position. Keep on doing this until your animation is done. Export using the toolbar by pressing the first button. File: [animation.zip](#).



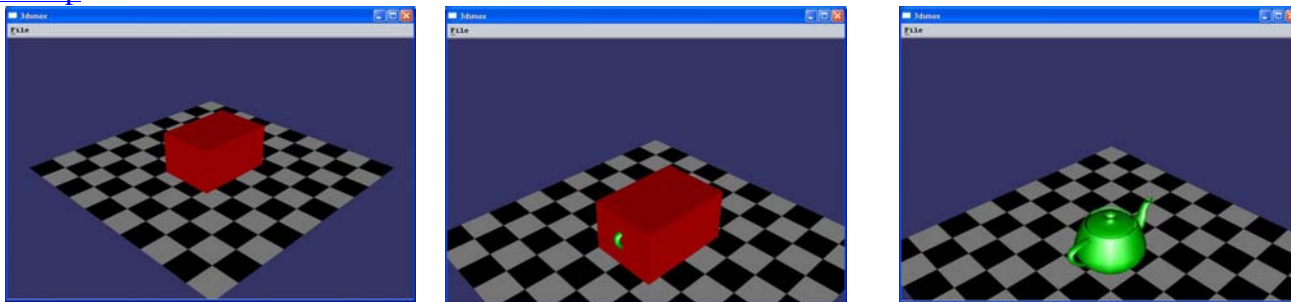
### 4.14 Billboard

Create some geometry. Press the helper icon and choose the “OpenSceneGraph” entry from the drop down list (see section 2.2 for more info on OSG helper objects). Press the Billboard button and place a new OSG\_Billboard object in the scene. Make sure the OSG\_Billboard object is selected and go to the modify pane. Press the Add or the Add Multiple button to select the geometry you would like to add to this billboard object. Export using the toolbar. File: [billboard.zip](#).



### 4.15 LOD

Create some geometry. Press the helper icon and choose “OpenSceneGraph” from the dropdown list. Press the LOD button and place a new OSG\_LOD object in the scene. Select the OSG\_LOD object and go to the modify pane. Press the first None button and add the first geometry object which is going to be part of this LOD. Fill out the minimum and maximum values to indicate in which range the object is going to be visible. The values given in the minimum and maximum range is passed directly into the LOD object created in OSG, hence there is no unit conversion. Export using the toolbar. File: [lod.zip](#).



### 4.16 Impostor

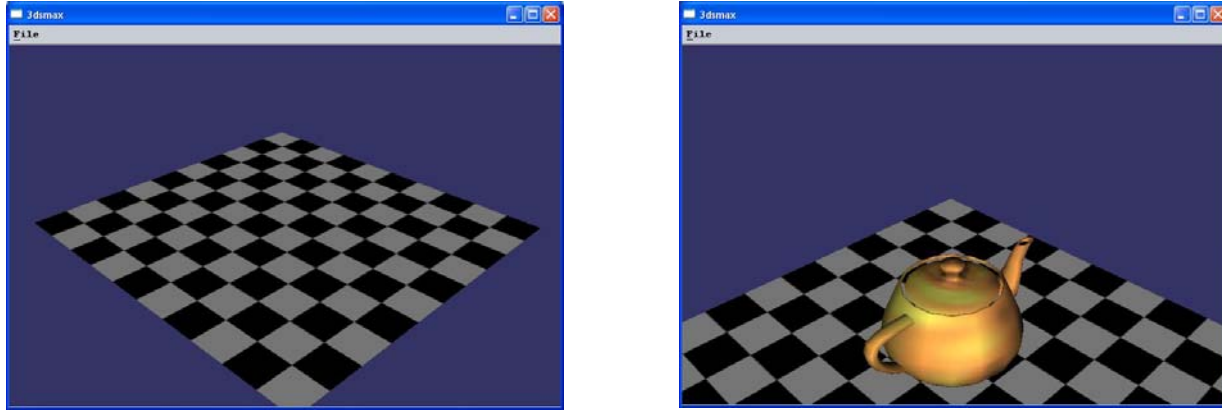
Create some geometry. Press the helper icon and choose “OpenSceneGraph” from the dropdown list. Press the Impostor button and place it in the scene. Select the OSG\_Impostor object if not already selected and go to the modify pane. Press the Add or the Add Multiple button and add some geometry to the impostor object. Export using the toolbar. All the teapots presented in the picture below are impostors; they are simple quads with textures on. File: [impostor.zip](#).



### 4.17 Occluder

Create some geometry. Create and place a closed shape, a rectangle for instance, to represent the occluding shape. Go to the helper icon and choose “OpenSceneGraph” from the dropdown list. Press the Occluder button and place the OSG\_Occluder object in the scene. Select the OSG\_Occluder object if not already selected and go to the modify pane. Add the occluding shape to the OSG\_Occluder object by pressing Add. Export using the toolbar. Whenever the occluding shape is in front of the object, the object is not visible (culled away from the scene). Whenever just a small part of the

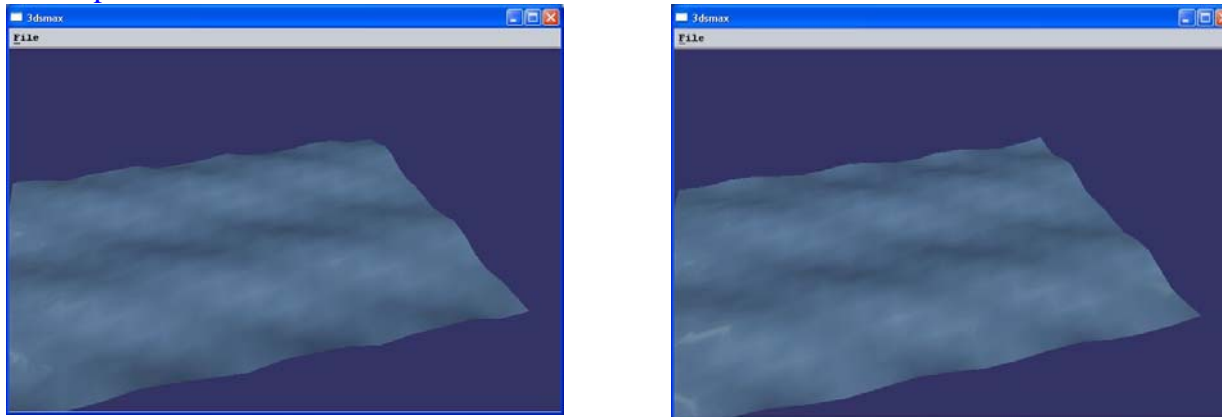
objects is out of the occluding shape the object is visible. File: [occluder.zip](#).



#### 4.18 Sequence

With the OSG sequence helper object you can do two things: sample a single object over a period of time or specific up to five objects to represent a sequence.

To sample some geometry into a sequence, you will need to create some geometry and for instance add a mesh modifier. Over a period of time you can change the mesh modifier in the curve editor in 3ds max. You then go to helper icon and choose “OpenSceneGraph” from the drop down list. Press the Sequence button and place an OSG\_Sequence object in the scene. Select the OSG\_Sequence object and go to the modify pane. Add your mesh-modified geometry to the OSG\_Sequence object by pressing the button just below the text “Sample Geometry”. Export using the toolbar. File: [wave.zip](#).



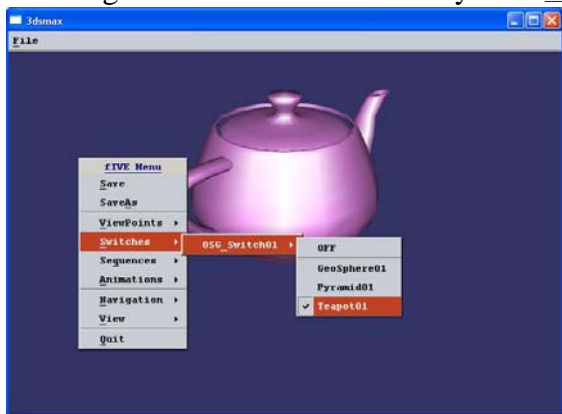
To make a sequence from a number of geometry objects instead, you create the geometry objects and create an OSG\_Sequence objects as described above. Select the newly created OSG\_Sequence object and go to the modify pane. Choose “Use Static Geometry” in the OSG\_Sequence object and press the “None” buttons below to add the geometry objects. You can specify the frame time for each of the geometry objects. If you want the geometry objects to be shown 1 second after each other, you type 1 second in all the “Frame Time” input fields. In the example given here, the green sphere is shown in 1 second, then the yellow sphere is then shown in 1 second, and finally the red sphere is shown in 1 second. File [sequence.zip](#).



#### 4.19 Switch

Create some geometry. Press the helper icon and select “OpenSceneGraph” from the dropdown list.

Press the switch button and place the OSG\_Switch object in the scene. Go to the modify pane to add some geometry to the switch. Press the Add or Add Multiple button to add the geometry. Export using the toolbar. In the FIVE Preview you can switch among the different objects by right clicking and selecting the “Switches” menu entry. File [switch.zip](#).



#### 4.20 StateSet

The StateSet helper object in the exporter was mainly created to assign objects to different renderbins. Renderbins in OSG is used to specify which objects are going to be drawn first. So if you would like an object always to be drawn last, you can give it a high renderbin number using the OSG StateSet helper object in 3ds max.

#### 4.21 NodeMask

The NodeMask helper object in the exporter was created to assign nodemasks to geometry objects. This is especially useful if there is going to be intersection tests in the exported scene.