

# Exporting a Simple Animated Scene from Maya to Virtools

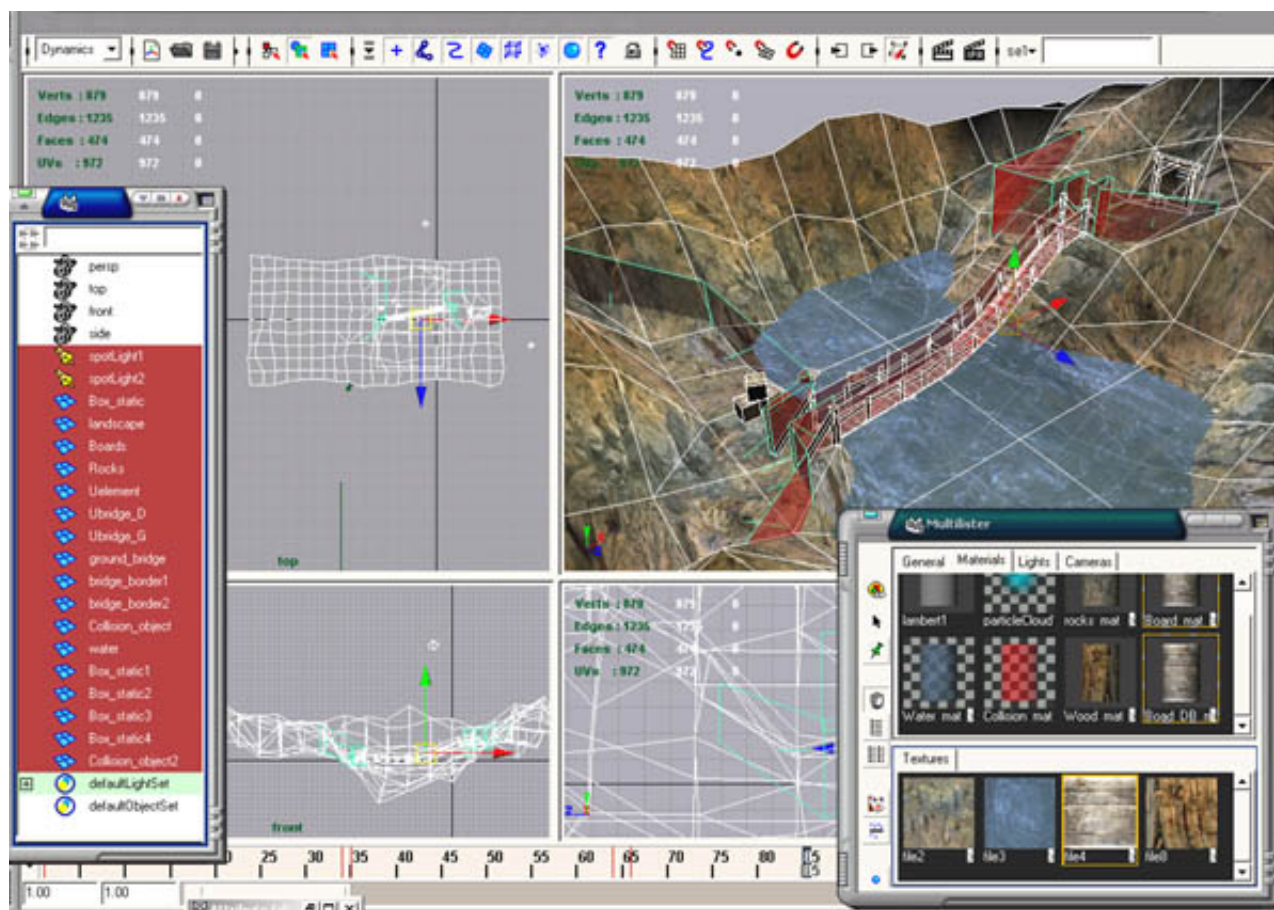
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## Introduction

This tutorial explains how to export a Maya scene including animated objects with simple keyframes. It uses the Virtools plug-in directly loaded in Maya.

## The Scene in Maya

Load the "mountains.ma" scene in the tutorial's "scenes" file into Maya. To do so, place "mountains.ma" directly in your Maya "/scenes" directory. Then place the 4 textures in "/sourceimages". Here is what you should see:

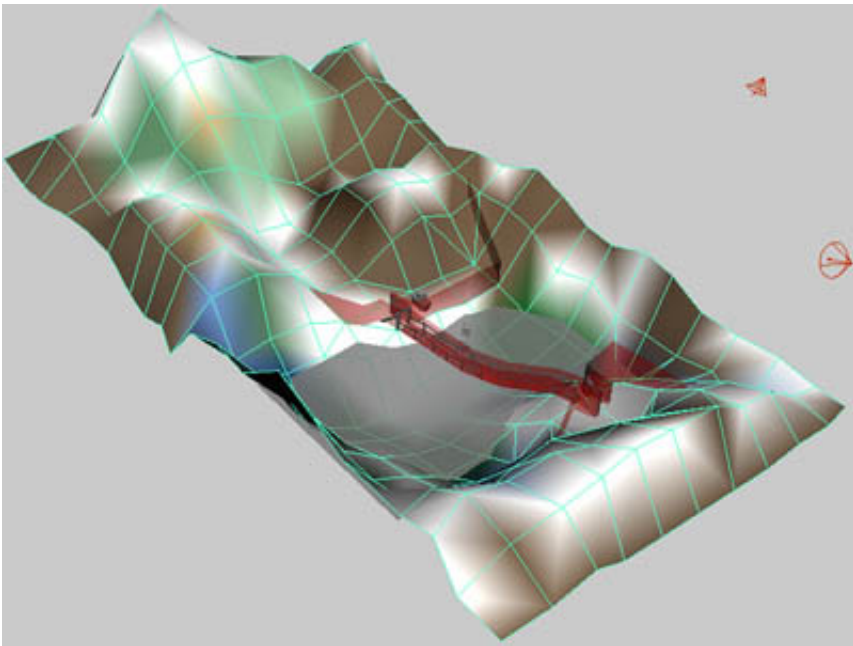


Activate **Display/Polygon Counts** to see the number of faces in the scene, i.e., 474 (quads or triangles).

Note a certain number of specific characteristics before exporting this scene.

- the vertex lighting & the triangulation.

In the **Custom Polygon Display Options**, set **Color** to **Color in Shaded Display** and the **Color Material Channel** to **Ambient+Diffuse**. Then click **Apply**. You will see in **smooth shaded** or **smooth shaded & textured** mode that the main scene is in vertex lighting. These values will be exported in Virtools.



You will also see that this mesh has been manually triangulated in some places (using the Split Polygon) in a specific direction, so that the topology of certain edges will be properly respected when the scene is transferred.

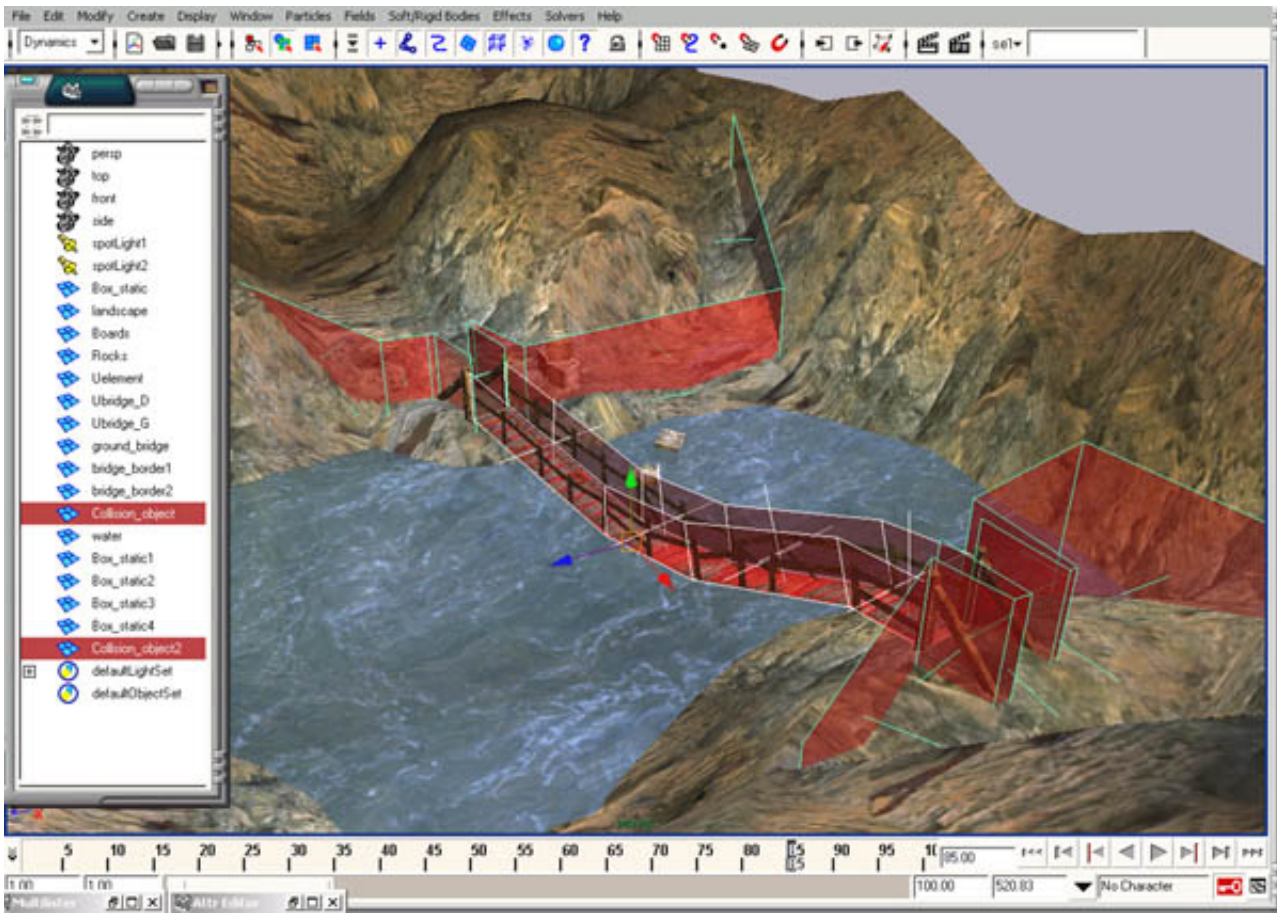
#### - Objects and their materials.

The "water" object is made of a transparent material.

The "ground\_bridge" and "box\_static" objects use the same "Boards.jpg" texture, but they do not use the same material. In this case 2 different materials are used because one will be placed in **Both Sided** in Virtools, and the other will not. We will want to see the top and bottom of the faces of the "ground\_bridge" object; thus **Both Sided** will be activated in the setup of this material. The "box\_static" object, however, will be single sided. In this Maya scene materials are not systematically separated into types because there are few faces, but this separation is given as an example of how to optimize more complex scenes.

#### - Collision objects.

2 objects are modeled so that they can be used as collision objects if you wish to add specific Virtools behaviors. For example, "collision\_object" can be used to test collisions on the bridge, without testing all the faces that make up the bridge. Note the orientation of the normals on this object: pointed towards the inside of the bridge. Note the direction of the normals on this object; they are used by collision detecting Building Blocks so the normals need to be oriented correctly. "Collision\_object2" can be used to limit the movement of a character and prevent him from falling in the water. These objects will be placed in the invisible category in Virtools; they are also made of a very specific material (shown here in transparent red in Maya).

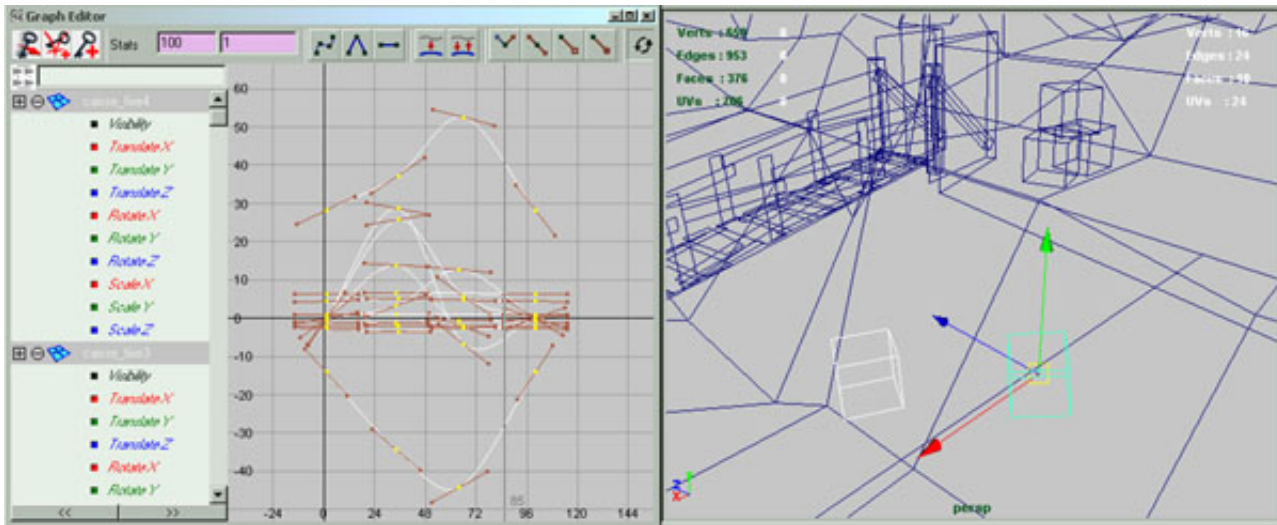


- Lighting.

2 spotlights are used to light small objects in the scene, since the "Landscape" object is self-illuminated with vertex lighting.

- Animated objects.

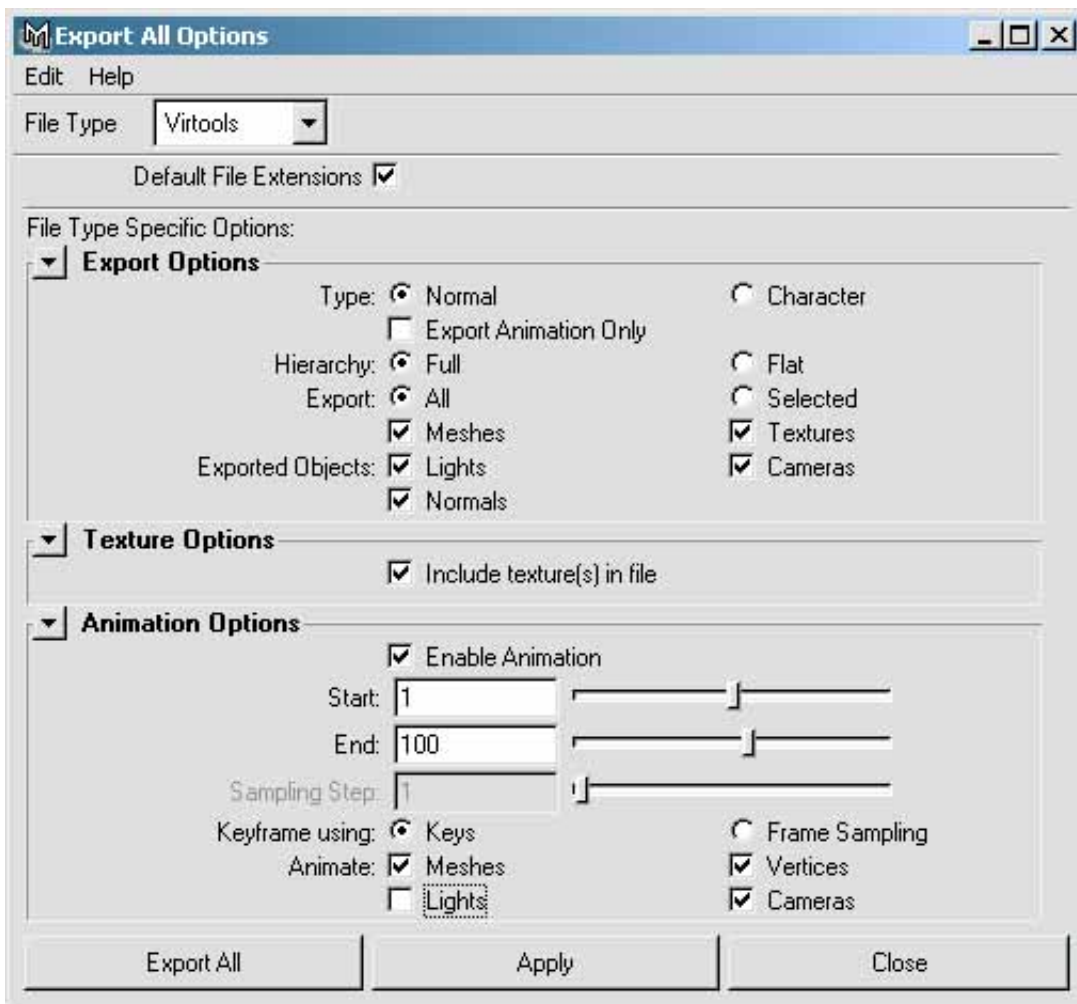
"box\_static3&4" are the animated objects. Although the animation uses spline curves, it will be saved only in break mode. Four keyframes are set between images 1 and 100. The overall length of the animation can be changed later in Virtools to adjust the speed of movement. The most important thing in this example is to have 4 independently set keyframes.



## Exporting Data

To export your Maya scene with its animation and textures, select **File/Export/All/**.

Select the parameters shown in the window below, in particular **Enable Animation** starting at frame 1 and ending at frame **100** and the **Keys** keyframe method to export animation of the 2 boxes at the same time.



Then click **Export All** and call the file "mountains". The exporter will create a ".nmo" file. You are now ready to go into Virtools and load your converted scene.

## Loading the Scene in Virtools

The result of this export should be exactly the same as the "mountains.nmo" file provided with this tutorial in the "Virtools\_scenes&files" file.

Start up Virtools, select **Resources/Import File** and find your "mountains.nmo" file. You are now ready to adjust certain parameters and add a few behaviors to reconstitute the ambiance of the scene.

## Adjustments and Behaviors

In the camera selection menu of the 3DLayout top bar, select the "persp" camera to obtain an overall view of the scene.

- Materials.

Two-sided materials: Remove the **Both Sided** flag for all materials except "wood" and "Board\_DB\_mat", which should remain dual sided.

- Textures

One more adjustment should be made on these textures. Set the **Video Memory Format** to <0555> for all textures except for the texture on water ("file3"), for which the **Video Memory Format** should be set to <8888> in order to obtain a good level of transparency.

You should now obtain the following in the 3D Layout :



- Collision objects.

Now go into **Level View/Globals/3D Objects** and remove the "Visible" flag from "Collision\_object" and "Collision\_object2".

bridge_border2	
Collision_object	
Collision_object2	
ground_bridge	

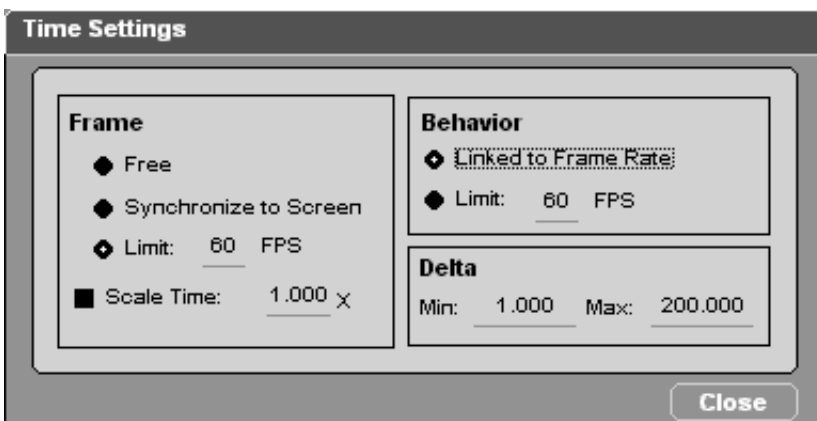
These collision objects can be used to test collision behaviors not described in this tutorial. They should not be visible in the final scene.

- Animated objects.

The "box\_static3" and "box\_static4" objects were animated in Maya. To play their animation, simply go into the **Building Blocks/ 3D Transformations/ Animation** window, and drag&drop **Play Global Animation** onto the "box\_static3" object in the **3D Layout** or the **Level View**.

The **Edit Play Global Animation's Parameters** window will open. Select the "mountains" animation and then enter the following **Duration** parameters: **Min 0, S 20, Ms 0**.

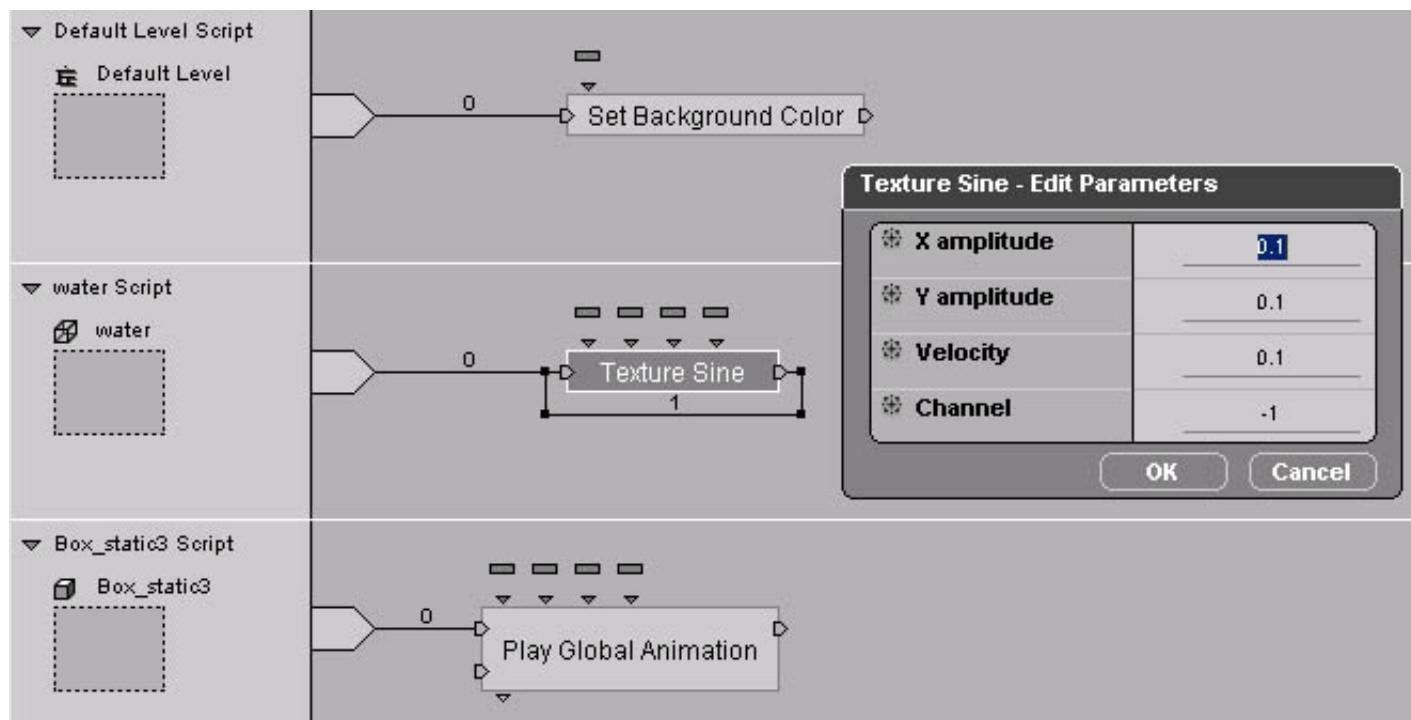
Placing a **Play Global Animation** building block on "box\_static3" will also trigger an animation Play on "box\_static4" because the animation was integrated when the ".nmo" file was exported. Before clicking on **Play** to see the animation, use the right button on the mouse to click the Play icon and open the **Times Settings**. Set the **Frame Rate Limit** to **60 Fps**.



- Behaviors on inanimate objects.

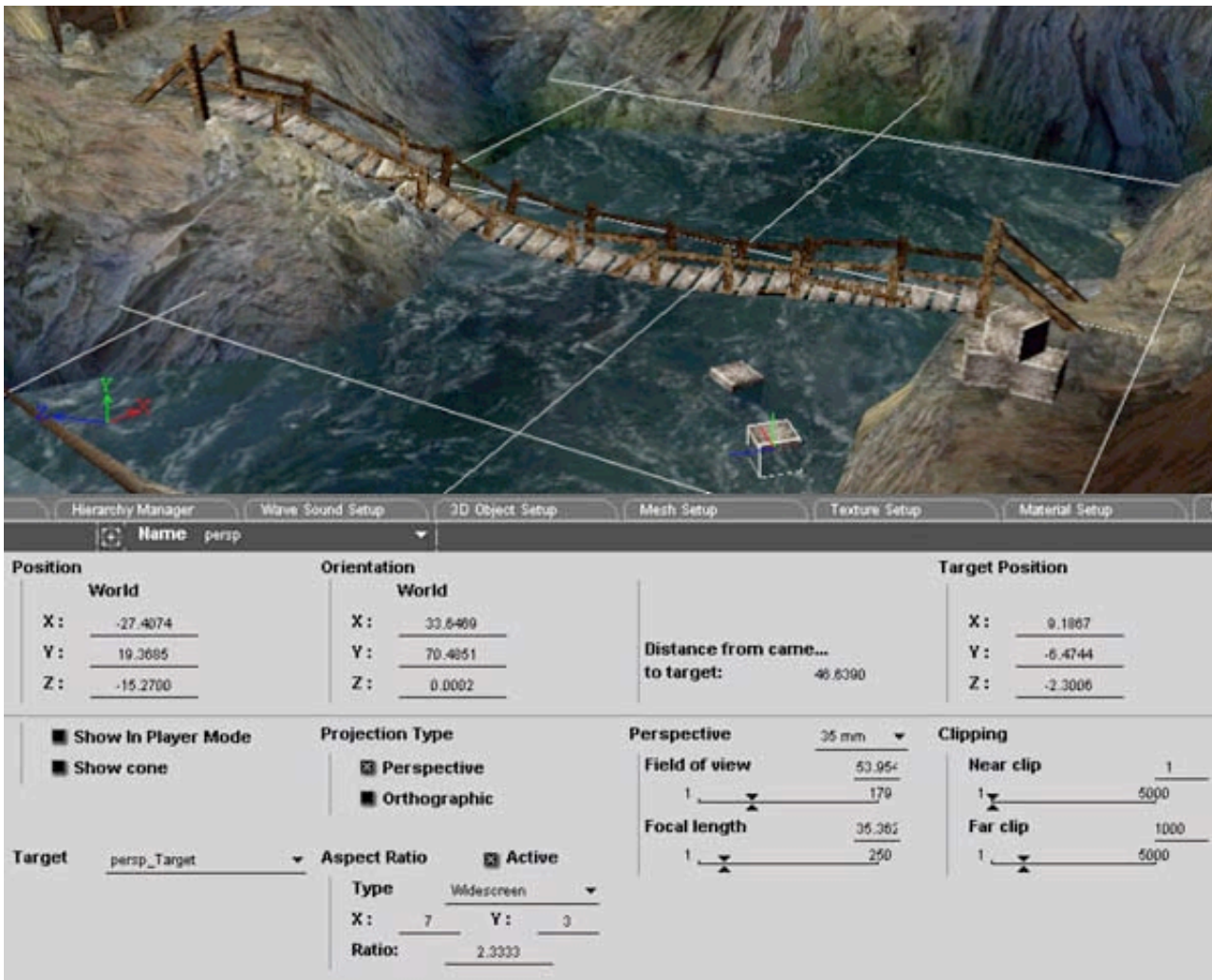
To bring this scene to life, a **Texture Sine** building block is added to the mesh of the "water" object, with X amplitude=0.1, Y amplitude=0.1, Velocity=0.1 and Channel=-1.

In the **Default Level** the **Set Background Color** is also set to <255,255,255,255>.



- Camera.

Try the following adjustments for the "persp" camera:



A **Widescreen** camera with a **35 mm** perspective for a cinematic effect, and the Position, Orientation and Target Position parameters given above to see the boxes moving with the water when **Play** is activated.

- Sound.

Finally, a sound file is provided with this tutorial: "wind18bit.wav". It must first be placed in the **Sounds** file of your "Database Virtools" so that you can use a drag&drop to load it in the **Level View**. Once the file is in **Level View**, place the Wave Player building block on top, with the following parameters: **Fade In**=0, **Fade Out**=0, **Loop** ON. Then open **Wave Sound Setup** and set the **Loop** flags to ON and the **Type** to **Background**.

## Conclusion

You have just finished exporting and integrating a complete Maya scene, including simple animation and Virtools behaviors. Now you can test other behaviors on this set for collisions (with the collision objects hidden in the scene), by importing characters... This entire scene is modeled under Maya with the unit used in the Virtools world (1 unit = 1 meter). The Textures respect the Virtools format (size in powers of 2) required by graphics adapters. The final file of this Virtools composition, "mountains.cmo" is provided with this tutorial in the "Virtools\_scenes&files" file.

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