

## Project Based Tutorials - City Scene

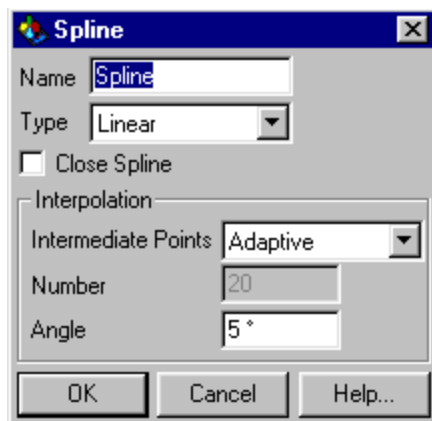
**City Scene:**  
**Fountain**

**Download:**  
[Project](#)

**Works with:**  
GO SE XL  
(Emitters XL  
Only)

**Requires:**  
Version 5+

This tutorial will go through the steps of modeling and texturing a basic fountain. XL users will get additional information on how to use emitters to make their fountains work.

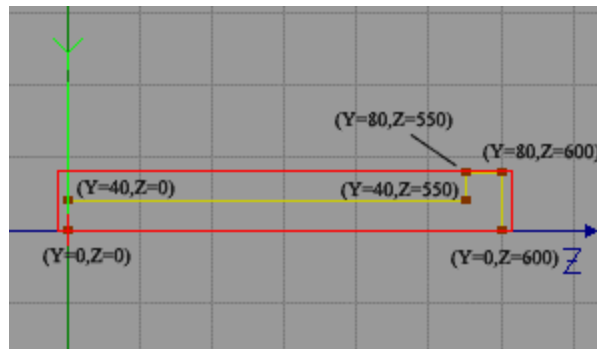


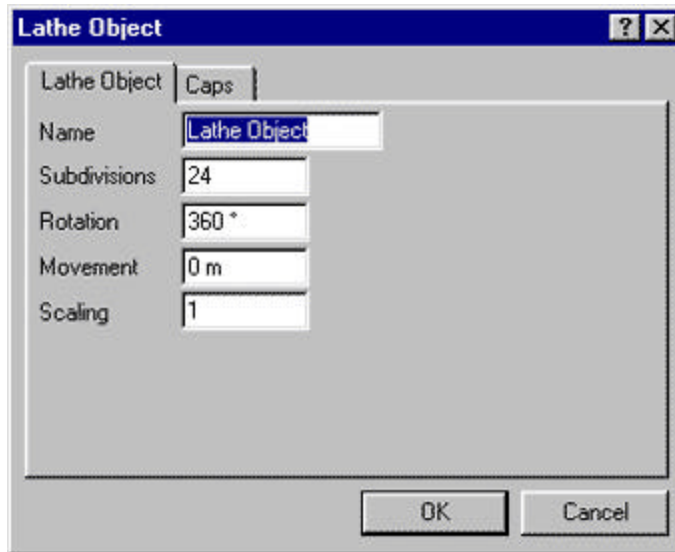
### Modeling

**Step 1:** First you'll draw out a spline which will be a cross section of the base of the fountain. Go to Objects=>Empty Spline... to create a spline. Under 'Type' choose 'Linear', this will give your spline sharp edges and straight lines. Click OK.

Select the points tool and Ctrl + click to create points in the scene. Change your view to the ZY side view and create a point at coordinates X=0m, Y=0m, Z=0m.

**Step 2:** Now Ctrl + click the rest of these points out in order (you can create points in the scene and then use the coordinates manager to input the exact coordinates):  
(X=0m, Y=0m, Z=600m),  
(X=0m, Y=80m, Z=600m),  
(X=0m, Y=80m, Z=550m),  
(X=0m, Y=40m, Z=550m),  
(X=0m, Y=40m, Z=0m).

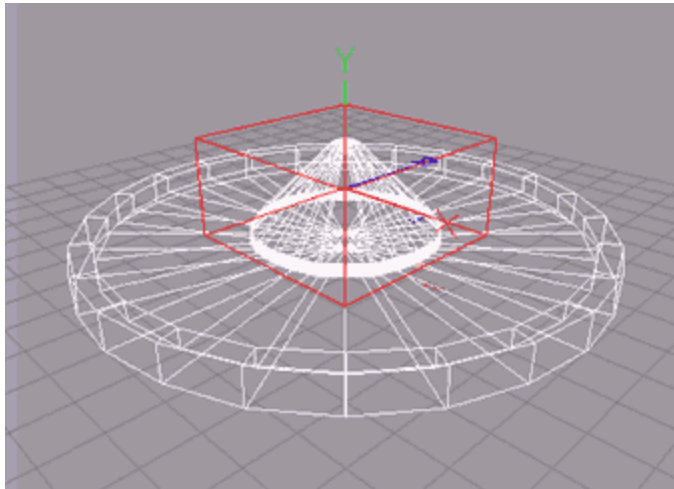
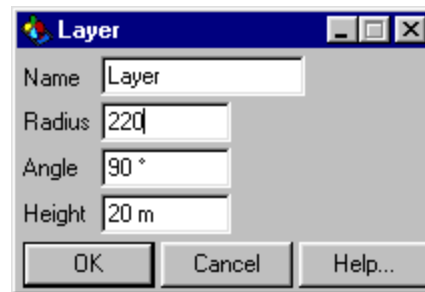




**Step 3:** Use a Lathe Object to create the base of the fountain. Select your spline in the Object Manager then go to Objects=>Spline Object=>Lathe Object... Click OK on the dialog that comes up. This will spin the spline 360 degrees around the Y-axis and create an object from that. Double click on the text Lathe Object in the Object Manager and rename it 'Fountain Base'.

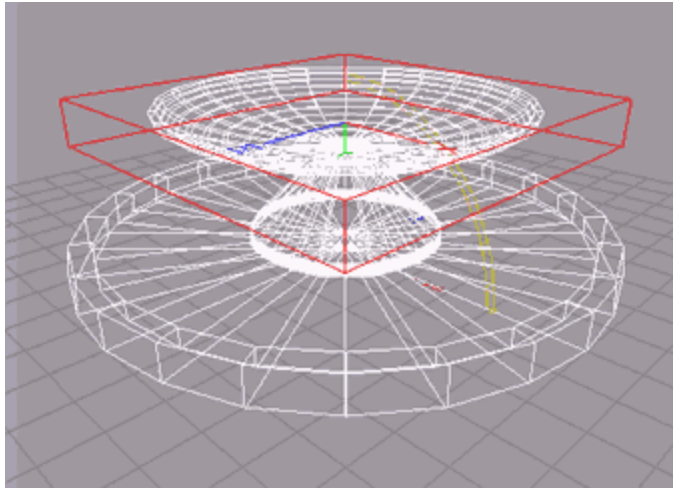
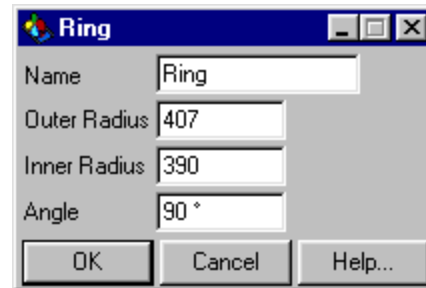
**Step 4:** You can delete the original spline after completing the Lathe. Now you'll create some more Lathe Objects using splines that are already made for you.

Go to Objects=>Splines=>Circle Elements=>Layer. Input 220m for the radius. Switch back to the Object Tool and position the layer at X=0m, Y=40m, Z=0m so that it sits on the fountain base.



**Step 5:** Use the same procedure as in step 3 to create a Lathe Object for the Layer. Delete the Layer spline and double click on the text Lathe Object to rename it to 'Fountain Support'.

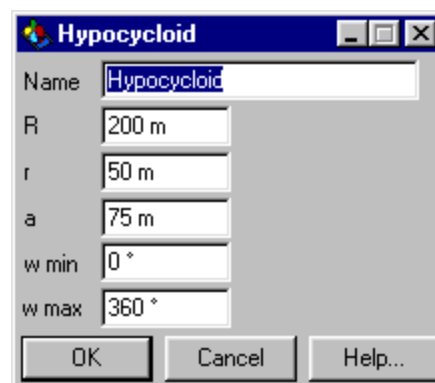
**Step 6:** Next you'll bring in a Ring under Object=>Splines=>Circle Elements. Set outer radius to 407m and inner radius to 390m. Then click OK when the settings window comes up. Create a Lathe Object of the spline and then you'll set it to the right size using the Coordinates Manager.

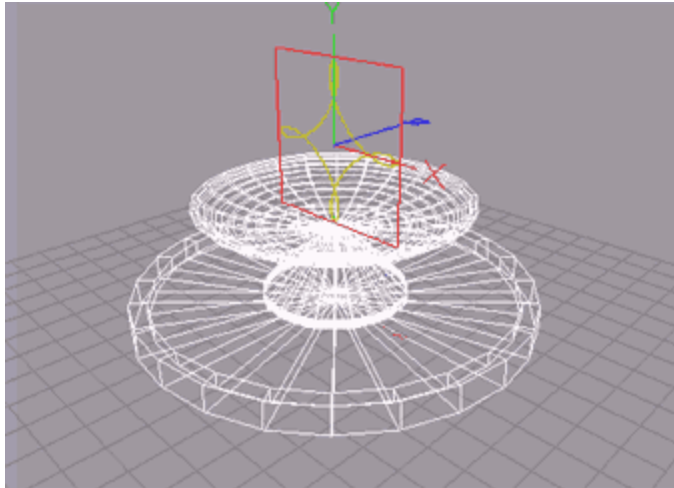


**Step 7:** In the Coordinates Manager, with the new Lathe Object selected, you need to make a couple changes. Input Y=300m under Position, then under size make Y=100m, and under 'P' in Direction input 180m to flip the bowl shape right-side up.

Delete the Ring object and double click on the text Lathe Object in the object manager and rename it to 'Fountain Bowl'.

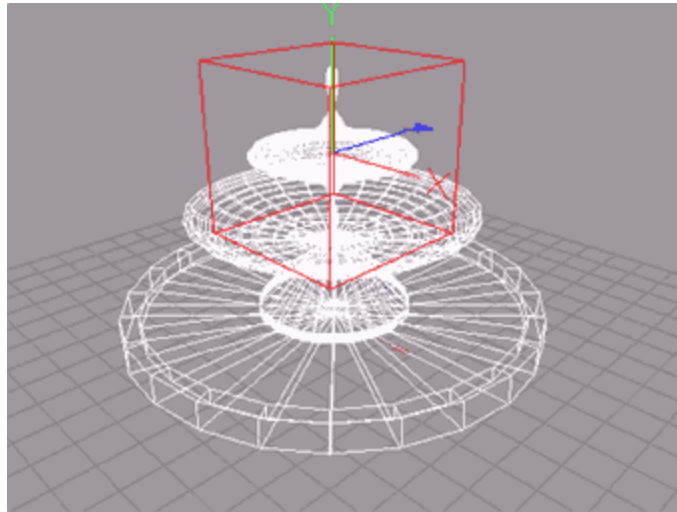
**Step 8:** The final step in modeling the fountain is to create one last lathe object. Go to Object=>Splines=>Curves=>Hypocycloid. Leave the settings as default and click OK.





**Step 9:** Input Y=500 under 'Position' in the Coordinates Manager to raise the Hypocycloid spline to the right height.

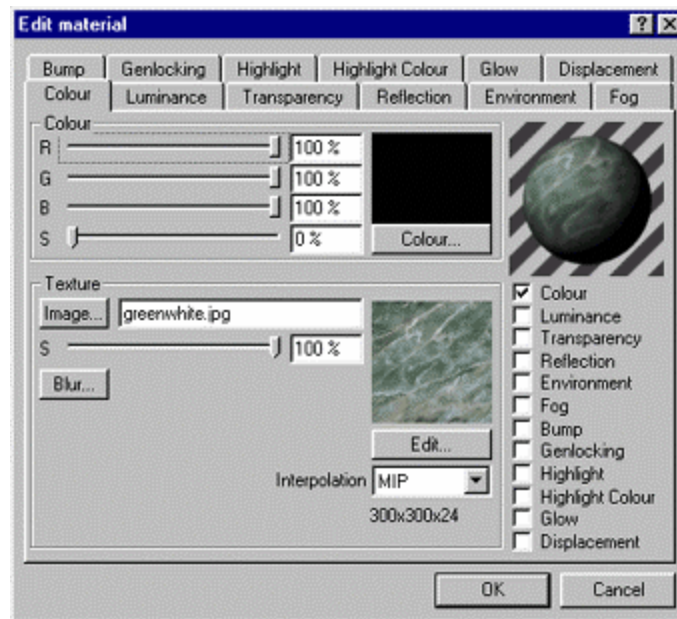
**Step 10:** Go to Objects=>Spline Object=>Lathe Object with the Hypocycloid selected and click OK to create another Lathe Object. Delete the Hypocycloid and double click on the text Lathe Object in the object manager to rename it to 'Fountain Top'. You now have a basic fountain model. Experiment with other splines and lathes to create more ornate designs and different types of fountains.



## Texturing

**Step 1:** A marble material was used to texture this fountain. A separate material was used to simulate a wet marble, as if sheets of water were covering the marble. Create a new material. Double click on the text New in the Material Manager and rename it to Dry Marble.

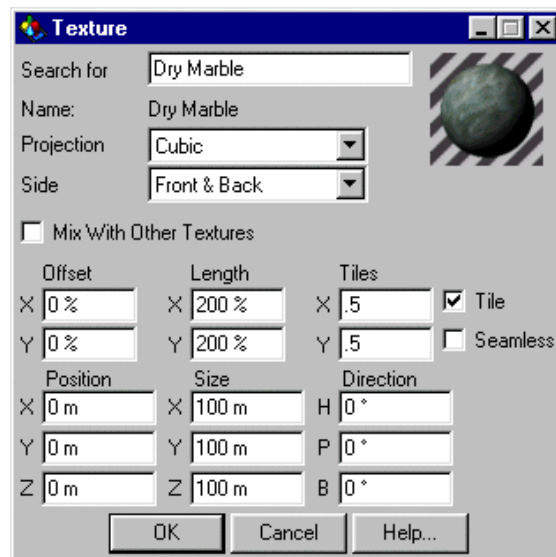
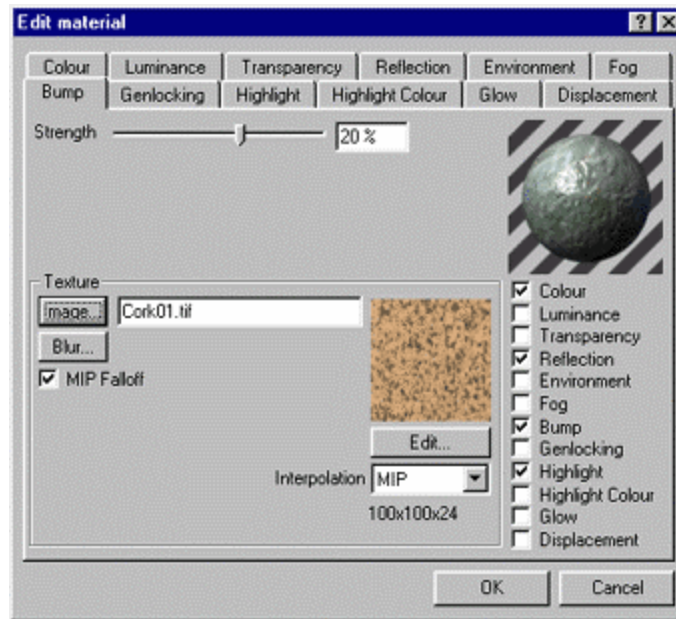
**Step 2:** In the color channel use the file Greenwhite.jpg (included in the downloadable project) for the image to create the dry marble material. Set S=0% so that the image shows through. Leave everything else at default. Click OK.



**Step 3:** Create the wet marble material by making a copy of your dry marble material and then changing the settings around. Rename it to Wet Marble. Leave the color settings as they are. Check the boxes for Reflection, Bump, and Highlight to activate them.

**Step 4:** In the reflection channel, set S=20%. In the Highlight channel set height=100% and width=8%.

Under the bump channel, browse for the Cork01.tif image in the basics folder in the Tex directory (on the product CD). Set the bump strength to 20%. This gives the marble a wet appearance.

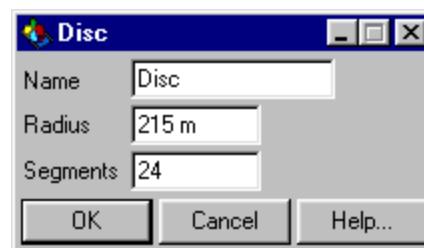


**Step 5:** Apply the dry marble material to the Fountain Base. Use the Cubic projection and under 'Tiles' input Y=0.5 and X=0.5. Now apply the wet marble material to the remaining Fountain objects with the same settings as the dry marble.

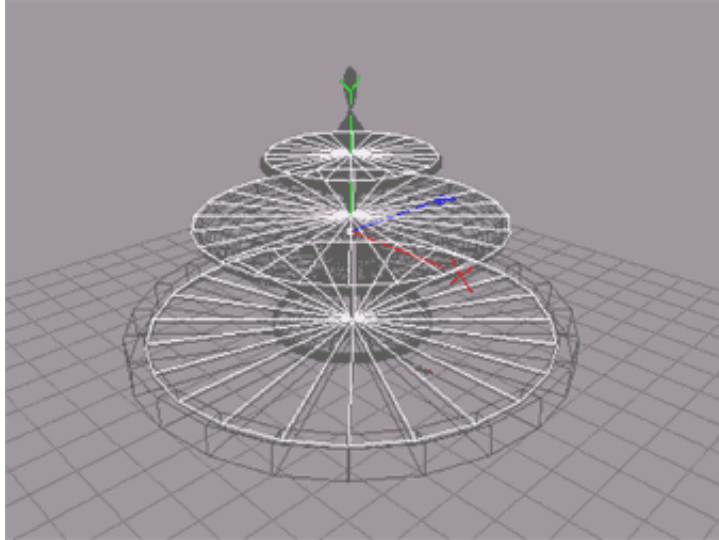
## Adding Water

**Step 1:** There are several ways to simulate water in this type of situation. To create a simple look in which water appears to be at rest within the bowls of the fountain, you can create three disks to place at different levels of the fountain.

Go to Objects=>2D Objects=>Disk to create a disk object. The first disk will have a radius of 215m and then position at Y=515m.





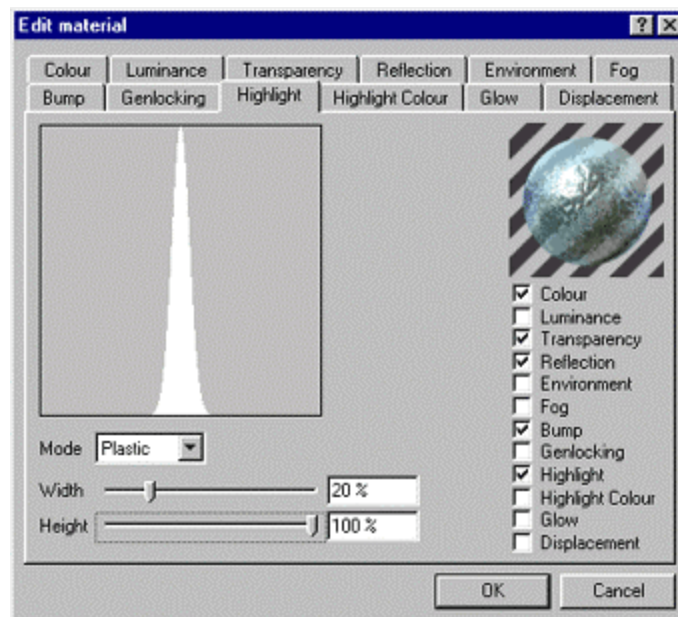


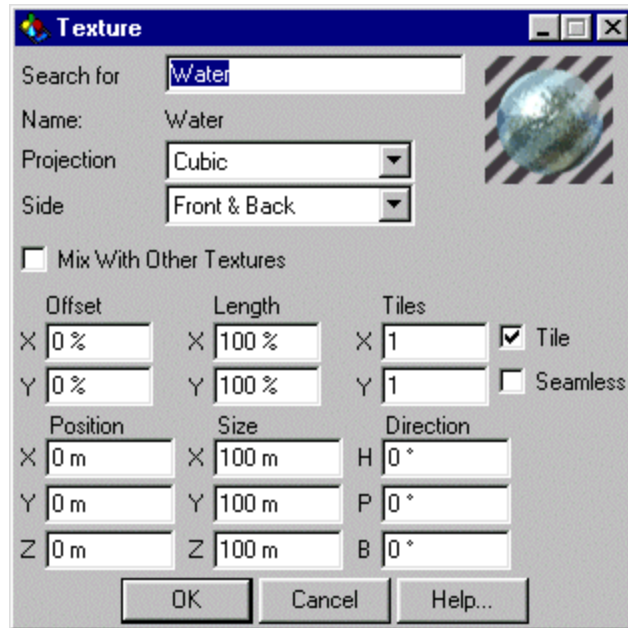
**Step 2:** The second disk has a radius of 407m and is positioned at Y=350m. The third disk has a radius of 550m and is positioned at Y=50m. Group the three disks together and rename the group 'Water'.

**Step 3:** Now create a water material to apply to the three disks. The settings for the water material used here are:

Color: R=0% G=60%  
B=80% S=20%  
, Transparency:  
R=82% G=95%  
B=97% S=40% n=1.5  
Reflection:  
RGB=100% S=50%  
Bump: Use Cork01.tif  
for Image,  
strength=20%  
Highlight: width=20%  
height=100%.

Be sure that all the boxes for these channels are checked.

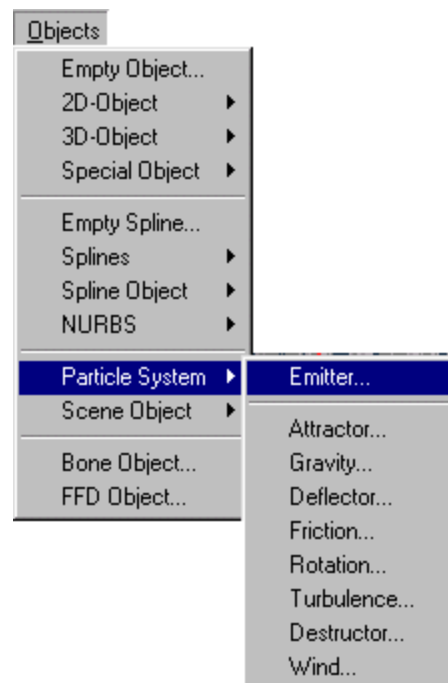




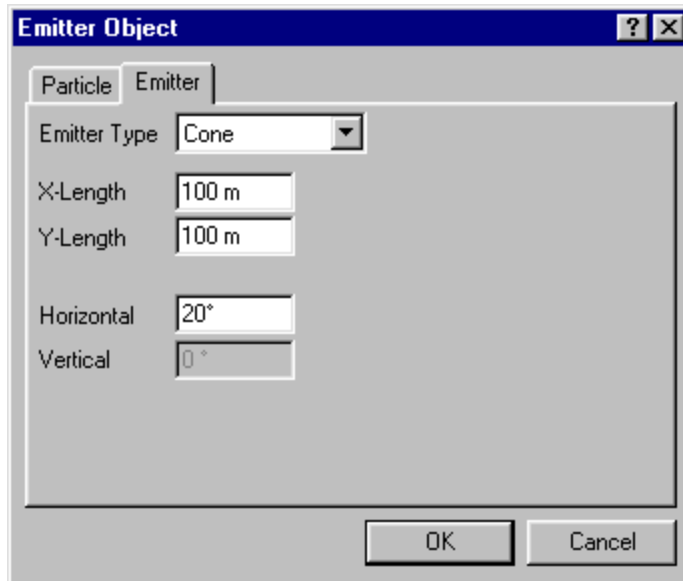
**Step 4:** Apply this material to the Water group using a cubic projection.

### Adding Spouting Water with a Particle Emitter (XL only)

**Step 1:** If you are working in Cinema 4D XL you can use a particle emitter to simulate water being spouted from the fountain. Go to Objects=>Particle System=>Emitter to create an emitter object.



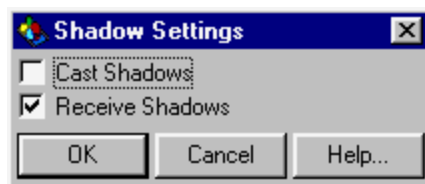
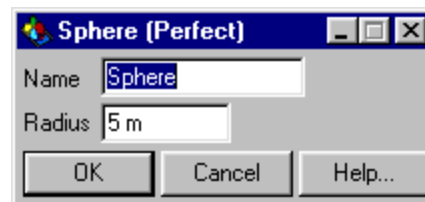




**Step 2:** In the settings window that comes up, change speed to 200, then under the 'Emitter' tab change emitter type to 'Cone' and input 20 degrees under 'Horizontal'.

Click OK and then in the Coordinates Manager, input 90 for 'P' under 'Direction' and under 'Position' input Y=555m.

**Step 3:** Now you'll create what will be water droplets for the emitter to spew out. Go to Objects=>3D Objects=>Perfect Sphere to bring in a sphere. Give it a small radius anywhere from 5 to 10 m. Now apply the Water material to the sphere using the spherical projection. Finally drag and drop the sphere object on top on the Emitter Object in the Object Manager. This will set it so that the emitter emits these small textured spheres as its particles.

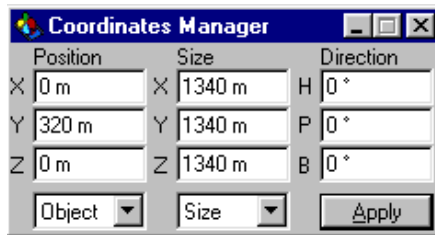


**Step 4:** You may want to have the sphere not casting shadows. The shadows produced by actual water coming out of a fountain are barely noticeable. Use a Shadow Tag to tell the Sphere not to cast shadows. With the Sphere highlighted in the Object Manager go to Function=>New Property=>Shadow... In the dialog uncheck the box next to 'Cast Shadows'.

**Step 5:** If you preview your animation by sliding the time slider you'll notice the particles fly out without ever coming down. So, you'll need to add a Gravity Object so that the particles will fall back to the ground.

Go to Objects=>Particle System=>Gravity and in the settings window set acceleration to 4 and set the width, height, and length to 1340m.





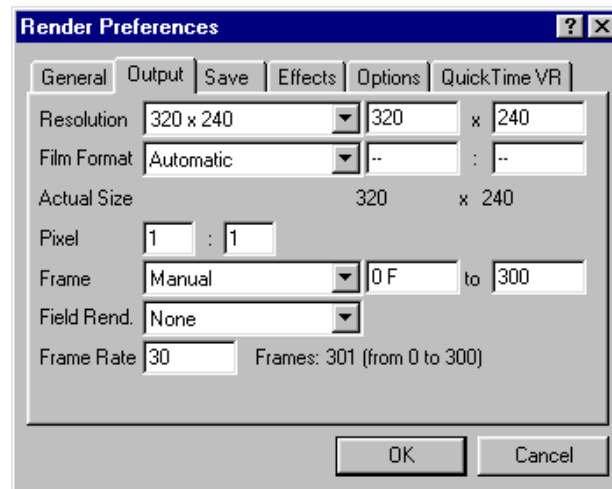
**Step 6:** Input Y=320m under position in the Coordinates Manager with the gravity object selected so that the entire fountain is within the gravity object cube.

Group all of the objects in the scene together and rename the group 'Fountain'.

**Step 7:** You should now be ready to render out a movie of your fountain. The render settings used here are:  
 Render Mode - Raytracer  
 Antialiasing - 1.5 Edge & Color  
 Oversampling - 3x3  
 Transparency - With Refraction  
 Reflection - All Objects  
 Shadow - Soft Only.

In the Output tab for the frames, select Manual and input 0 to 300. This renders out enough frames so that you will be able to see the effects of the particle system.

And you are done! Feel free to tweak any of the settings for different results.



For more information about CINEMA 4D tutorials: [info-usa@maxon.net](mailto:info-usa@maxon.net)

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