



The 'World' buttons within Blender By *Maigrot Michel*

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I n t r o d u c t i o n

Creating an environment for your own 3D scene can be done through several ways. One of the most common trick is to build your scene within a full textured sphere. You can also use any particular function proper to any 3D package. This tutorial will show you the use of the 'World' buttons available within Blender.

Any scene or 3D animation should always start with the creation of a consistent environment. In order to have a good shot at the effect you'll get at the end with your environment, you can add a few simple objects and duplicate them many times. Once the environment is properly created and set, you can delete the temporary objects and store the file in order to import it later (SHIFT+F1) at will.

The following example could be the default environment for a city or a refinery.



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Step 1:



The easiest way to get hand on a Blender window is to cut it in different blocks, one for each of main functions.

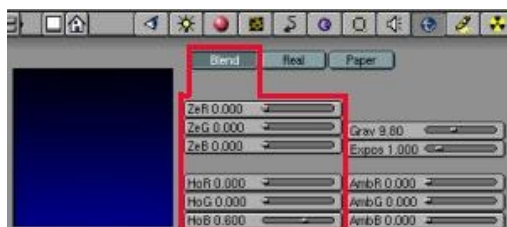
On the left, you can find the parameters for setting the colors and the way Blender will deal with the 'World' settings.

In the middle, you can find the buttons that will be used only if you intend to add a Mist effect or Stars in a sky.

On the right, you can find the parameters for setting textures to the 'World'.



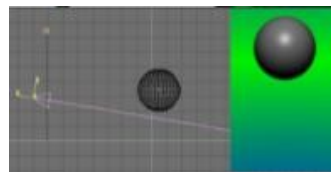
Step 2:



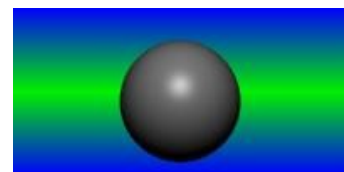
Colors and general parameters:

The 'Blend' button: When it is set 'on', the world then uses two colors. The first three sliders (Ze) controls the color of the Zenith, while the three next sliders (Ho) controls the Horizon color. Blender automatically set a blending based upon these two colors between the zenith and the horizon. If you make use of textures, 'Ze' and 'Ho' colors can mix with the textures. This way, no shadow would be cast on the ground. This method is mainly used when you have objects floating in space rather than objects stuck into the ground. Furthermore, during an animation, horizon line can have a strange behavior when you use it along with a 'terrestrial' scene.

Used along with the 'Blend' button, the 'Real' button is used to relocate the horizon line according to the location of the camera. Blender seems to behave strangely about this. Set this button 'on' and the 'Ze' and 'Ho' colors will switch if the camera points up or down. Just try many camera angular positions to see this by yourself, or check the pics below...

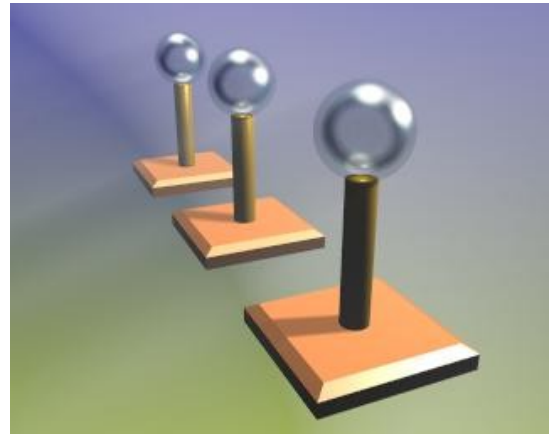
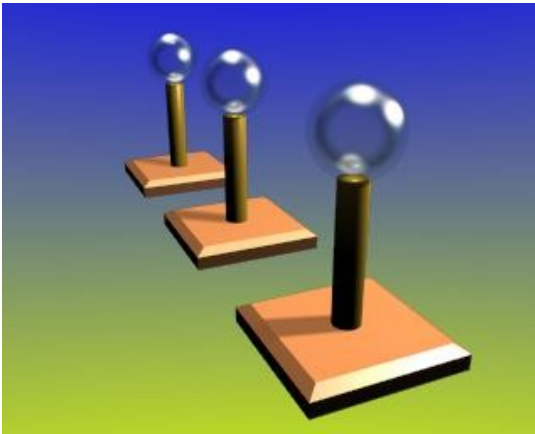


The 'Paper' button will set the horizon line at the center of the screen, whatever is the current Location/Rotation of the camera. Used along with the 'Blend' and 'Real' buttons, you could get something like this.

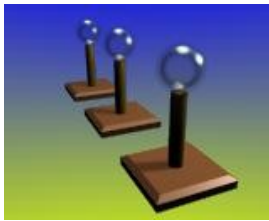


When the 'Blend' button is set 'off', 'World' is given the color set by the three Ho (Horizon) sliders. It is safer to set to 0 the three Ze (Zenith) sliders and to forget about the 'Real' and 'Paper' buttons which then will make sense only if used along with textures instead of colors.

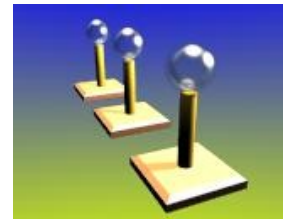
The following two examples intend to show (on the left) that shadows don't mess with the environment set, while it's not the case when using Halos (on the right).



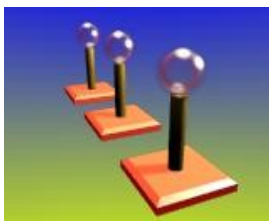
The sliders:



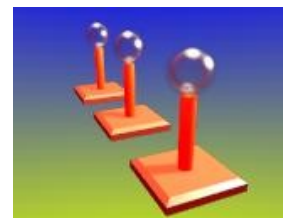
Grav: (Gravity). This setting is to be used with the 'physics' engine made for Game Blender. This gives you control over how much objects are attracted by the ground.



Expos: (Exposition). Sets the global exposure of the scene. The two thumbnails show an example with an 'Expos' set to 0.5 (left) and to 2.0 (right). The default value is 1.0.



Amb: (Ambiant). With this slider you can set an ambient color to the scene. This option is linked to the slider with the same name in the Material Buttons (F5). This has no effect on the scene while:



- I. The three sliders are set to 0.
- II. The slider with the same name in the Material Buttons is set to 0 (the default value is 0.5).

On the left thumbnail, the red 'Amb' slider is set to the maximum in the 'World' buttons, and the Ambient slider in the 'Material' buttons is set to 0 for the cylinder. On the right thumbnail, the setting is exactly the same except for the 'Amb' slider that is set to the maximum.



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Step 3:



Texture mapping:

The buttons and the sliders available for the 'World' textures are almost the same as those found in the Material buttons. The functionalities are the same and won't be documented here. Exception: the 'Nor' slider has no effect on the 'World' textures. At first, let see how the 'Real' and 'Paper' effects a texture. In the following examples, the 'Blend' button is **never set 'on'**.



1/ No button is set 'on': The texture appears as if mapped onto a sphere and looks always the same, whatever the Rotation of the camera could be.



2/ The 'Real' button is set 'on': The texture appears as if mapped onto a sphere, and the mapping varies according to the Rotation of the camera.



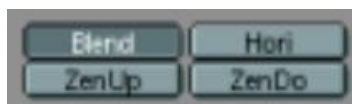


3/ With the 'Paper' button set 'on': The texture appears as if mapped onto a plane et and looks exactly the same, whatever the Rotation of the camera could be. You can use 'Real' and 'Paper' at the same time to see the results.



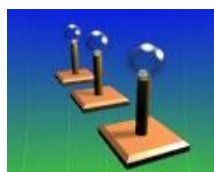
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Step 4:



Texture color and settings:

These 4 buttons define how the texture will be mixed with the general color (zenith and horizon) parameters.



1/ General 'Blend' button and texture's 'Blend' button: The 'Zenith' and 'Horizon' colors are mixed with the texture. The 'Var' slider increases/decreases the area affected by the zenith (set to 0.287 right here) while the 'Dvar' slider increases/decreases the hardness of the texture over the base color (set to 1 on the picture). The 'Col' slider is set off.



2/ Same as 1., with the 'Hori' button set 'on': The texture's color replaces the horizon's color (pic on the left). The 'Col' slider interacts with colors the same way as usually. We can also set 'off' the 'Blend' button from the textures; the effect on the horizon will then be slightly more obvious (pic on the right). In the later case,

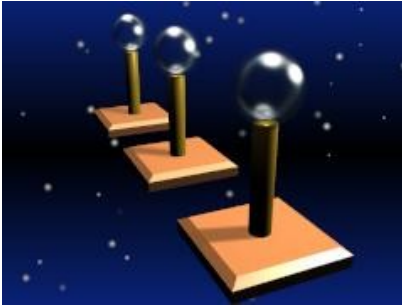


'Var' and 'Dvar' buttons are set 'off' and the sliders in the texture color dialog box will be useful only if 'Rgb to Int' is set 'on'. The 'Col' slider defines how much the general color (given by Zen and Hor sliders) has influence over the texture.

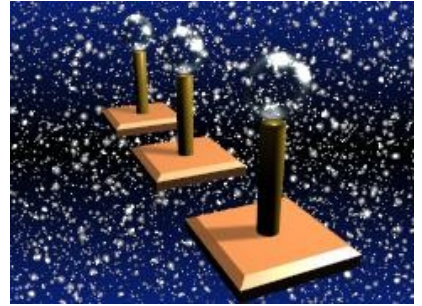
Note: Only the 'Hori' button lets you map a texture if the general 'Blend' button is set 'off'.



3/ The 'Zenup' and 'Zendo' buttons: Toggles the color values. 'Blend' (texture button) can be set 'on' or 'off' in order to ease the effect, but 'Hori' should always be set 'on' in this case, or it will be given priority over the other parameters.



Stars: It's very easy to get stars. You just have to set 'on' the 'Stars' button in the central pannel in order to get a result like the one shown on the left pic. An important note : the camera 'Clip End' (select the camera and F9 to get this parameter) is set to 100 by default. 'Clip End' stands for the distance to which you can



see. Suppose that in this case you want to set 'Clip End' to 500, default parameters will result in the pic on the right. If you want to ease this somewhat noisy effect, you will have to play with some more parameters.



Star Dist: The maximum distance allowed between two stars. Increasing it from 15 to 25 will enlarge slightly the star field.



Min Dist: The minimal distance allowed between two stars. Increasing it to 5 prevents from having stars too close to each other.

Size: The maximum size a star can have. Reducing it to 1 will results in a finer star field.

Colnoise: Gives the stars some color if set to a greater value than 0. On the following picture, 'Colnoise' is set to 0.718.



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Step 5:



Mist:



These four buttons defines how the texture will be mixed with general parameters. Mist ignores troubles you can have with the location of the horizon line, as seen before. You jsut have to add a plane with a high size value in order to get your ground. Of course, the junction between the plane and the sky can't be very realist. But by tweaking a little the mist settings, you can make sure that the bad-looking junction is hidden by the mist. You can then create a 'World' environment like the one on the pic on the right.



Once this is done, set the 'Mist' button to 'on' and make a render to get the strange result on the left. This is a normal situation. The world texture has been moved to the foreground. First thing to do is to increase the 'Sta' parameter, because it defines the distance between the camera and the location where the mist starts to show

(the following values are the one used in this example, but the depends heavily on the size of your scene). Set 'Sta' to 70 and the result will be a little more good looking.



The most useful parameter is 'Di'. It defines the transparency of the mist along the axis (or line of sight) of the camera. On the left picture, 'Sta' is set to 0 and 'Di' is set to 170 in order to get a far mist. On the right picture, 'Di' is set to 60 and 'Sta' is set to 10 in



order to get a closer and thicker mist, although we didn't wanted it too close to the camera.

The 3 parameter buttons defines how the mist behaves.

'Quad': Stands for quadratic progression. The more you get away from the camera, the more the mist gets thicker.

'Lin': Linear progression. The progression of the mist is constant.

'Sqr': Square root progression. You should use this setting if you want to get an underwater effect.

The three following pics show the slight differences between 'Quad', 'Lin', and 'Sqr'. 'Unified render' also has a slight influence on the mist effect. It has been activated for each of these three pictures. Please note the difference between the rendering of the square bases on the first pic and the one on the last previous picture on the right.



The last button is 'Hi'. If the 'Hi' value is different than 0, the mist spread is given a maximum height value. The low values (pic1: Hi=0.4) are not so good looking. Pic 2: Hi=60 gives better results. Pic 3: 'Hi' is set to 90. 'Unified Render' was set 'on' for these 3 pictures.



Some stars in the mist ? The two effects don't get along very well... On the left, with the standard rendering engine, the result is very bad looking. On the right, with the 'Unified Render' it's even worse. Nobody's perfect, just forget about this combo...



Planets in the mist ? It's a better idea. Please note that mist hides everything on the background, so there are two solutions: on the left, the 'No Mist' material setting is 'on' for the two planets. This is not very good looking, because of the edges of the plane that show again. Setting the 'Hi' parameter will help with a satisfactory result !



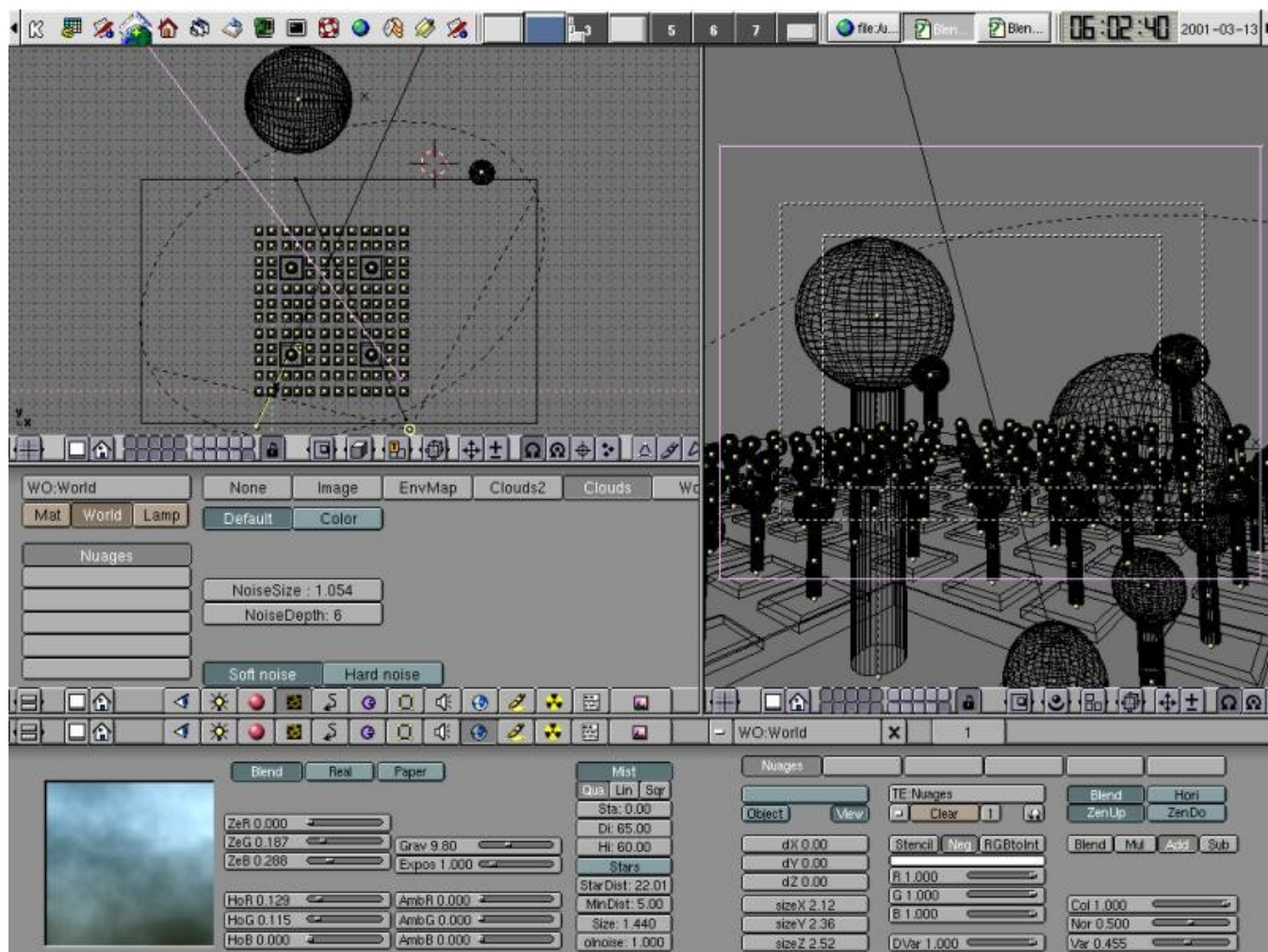


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Step 6 :



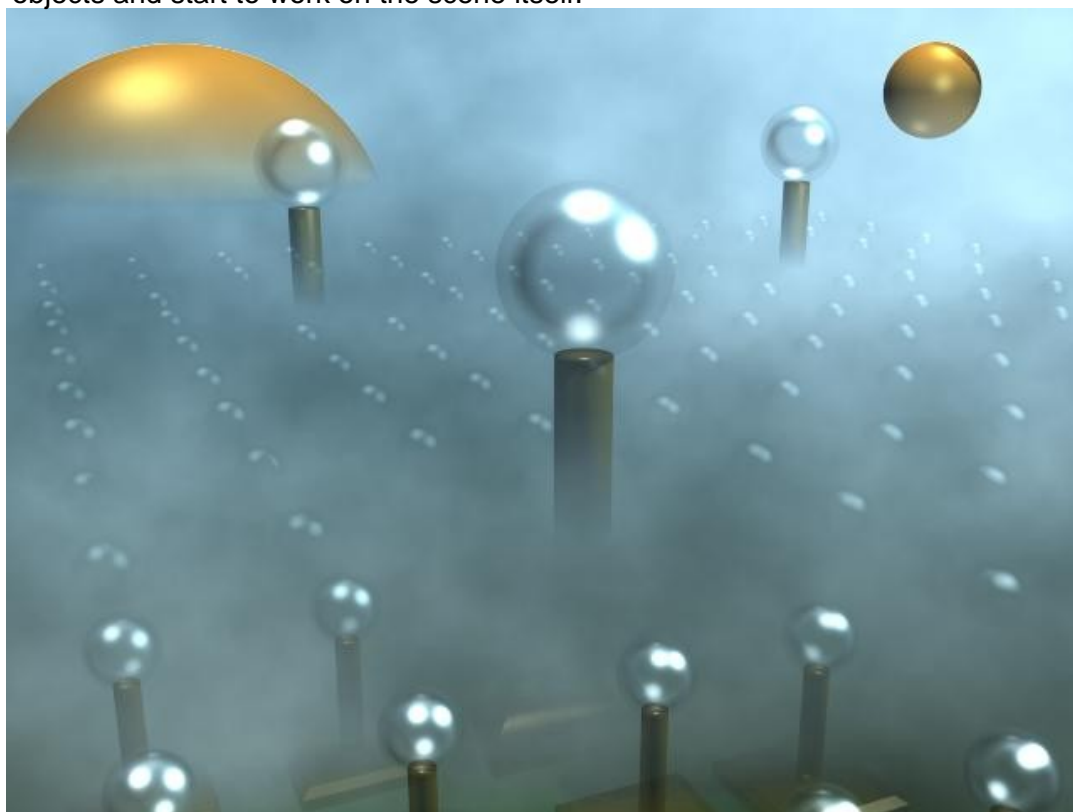
Here's a screenshot of the various 'World' settings that give us the rendering showed in the next step !



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Step 7:

Once the environment and light settings eventually appear satisfactory, you just have to delete the temporary objects and start to work on the scene itself.



Hint: If you plan to make an animation using some world effects, please do some preliminary renderings at various key frames in order to make sure that the general effect is really the one you were waiting for...

