Tutorial modeling and rendering an interior design

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Draw a rectangle of dimensions $x = 10, y = 6$. With the wall command by setting a thickness corresponding to 0.3 and a height 6 floors draw the wall with the right justification clockwise so snap on the vertices of the rectangle.

With the fixed windows command having active snap on the grid insert a window length of 2.5 and a height of 6 on the right side of the wall. Change the window dividing it into 2 panels with horizontal and 5 vertical profile sheared. Clone the window and move it to the right of 2.5, repeat the cloning of both windows and move them to the right of 5.

Enter other type 3 door sliding width and height 2.2 2.2 positioned at ground level and the third to the first level as shown. Make with the command line with a depth L 1 on two sides of the rectangle, using the extrude extrude modifier of .25 clone and change the thickness to 0.05. move the package that represents the ceiling and the floor of the gallery to share decking $z = 3$. 
Complete the casing wall by drawing a rectangle 10.6 x 6.6 to 0.3 and extruding it to make the ground floor slab. Clone the box and move it to share 6 to make the ceiling of the loft. Drawing with the command Utypestairs a scale of width 2.1 depth 2 with width of the ramp 1. The overall value of the height of the scale is 3 for a number of 16 Raised.

implemented with the command railing, railing with a circular top rail with diameter 0.05 lower circular rail with diameter 0.03 and 3 elements, post diameter circular spaced 0.04 1.5. We complete the upper level by drawing a railing similar to the right side of the balcony. Drawing on the lower part of the wall of the lines as the path to the baseboard, draw a rectangle of dimensions 0.01 x 0.1 for the section. Select one at a time with command lines and loft-click the shape and select the rectangle to create the baseboard.
Il sistema Daylight

We prepare the lighting of the scene taking advantage of the system that we find in the icon daylight system. The daylight and 'an integrated system consisting of mrsun direct sunlight, mrsky indirect light in the sky and compass and that' the rose of the cardinal points. To position the daylight we choose the mode 'date, time and location at which to define the locality' geographical day and time.v

Upon insertion of daylight, a dialog box warns us that this type of light source and 'need to activate a controller photographic exposure and if we agree the tax. This is followed by another dialog box that prompts us to always activate in the window environment as mr phisical sky map of the environment that will allow us' to have both a preview that in rendering a gradient of blue connected to the set time.

The effect of these changes and 'activating visible from the dropdown render the control environment that gives rise to the following dialog box. The controller photographic exhibition allows us as a professional camera to set shutter speed, aperture and film speed. In an alternative way we will be able to avail of u total exposure value EV. to help you set the exposure value of the standard values are available for the most common exposure scenarios, such as scene extension with daylight and so on.
To see a preview in the preview of the level of lighting and the color of the sky and 'necessary in the dialog box viewport background can be activated from the dropdown menu view, select the check parameter on the use environment background. To see the shadows in the menu display style of the window in the current tab, select the setting and shadow lightning illuminates the scene with lights, active shading hardware, operating exposure values in the active window and shadows.

Create two cameras placed in two opposite corners of the loft to frame the interior space with a focal length of 20 mm and retaining control of parallel vertical (parallax). For this purpose, even though the room was not perfectly horizontal axis can be selecting a room with the right button to activate the modifier room correction that restores the parallax.
Shaders management in mental ray

Each rendering engine typically binds indissolubly to the types of light and materials. If mental ray and 'rendering engine active material editor will allow access to library materials for mental ray. The first material and 'architect and design that has a template of the main types of material used in architecture.

With the card special effect in the material, we can activate the Ambient Occlusion effect of emphasizing the contrast of light and shade to accentuate the point of contact between the surfaces, very useful on the walls and the large horizontal surfaces. The board self illumination from 'the opportunity' to define the self-illumination of the material as in opal and neon lights.
In a material typically use three main maps: the widespread that provides us with the color of the surface, the reflection map to highlight the behavior at points of strong light, and the bump map for the purposes of relief. For the material of the parquet floor use maps from a commercial library produced by Arroway.

For each material are provided three maps mentioned with a very high resolution 6000x6000 pixels. We can play with 6 square meters of material in which will be 'avoided the effect of repetition (tiling) typical of small maps. The option use real world scale in the material and in the modifier mapping and setting the size of the texture coordinates in the section of the map will 'do the rest.
To have a correct and fast previewing textures can activate the menu render setup button setup from the card bitmap performance and memory options. Selecting the check proxy system will give 'rise to an indexing process that will allow' to show a preview for maps greater than 512 pixels by half a lighter version of the map. During rendering the resolution of the map will remain unchanged.
Global illumination

The term usually indicates a global illumination lighting method that can represent together the effects of the light that comes directly from the surface (as in the left image made with the standard rendering engine for 3d studio max, the scanline) with the light that spreads indirectly bouncing off the surfaces in the scene (right image illuminated by indirect light in the sky and created with mental ray).

In the picture below made global illumination you notice the effects of direct and indirect light.
Linear workflow and gamma correction.

The use of a range of colors and proper 'need to get images where the colors are more' faithful as possible to reality'. To this end, Microsoft has developed a standard sRGB and that 'common all devices that handle color scanners, camcorders, cameras, monitors and so on. The problem remains in the 3D software where in addition to the color components of the input tools texture, color palette of software photo editing and final rendering we manage the process of illumination of the scene.

The linear workflow also known as gamma correction and 'an inescapable when we use global illumination and controls for the management of exposure such as the photographic exposure control, worth obtaining washed-out images and chromatically however not faithful. The operation is performed by the card and Valuation Range dialog preferences menu 'dropdown Customize. And 'need to enable checkmarks of the various options that the correct range with a value of 2.2.

This unfortunately is not 'necessary for all elements of the texture as bump and displacement are older than the range 2.2 output. For this reason the maps that we will use for the bump and displacement
we will have to perform a selective modification of the range to about 1 in the material editor.

In mental ray have two main algorithms for the computation of global illumination: The final gathering and photon mapping that can be used separately or in a complementary manner. The first fundamental difference between the two algorithms regards the calculation method of indirect light which in the case of the final gathering is done with respect to the observation point while in photon mapping and relative to the scene as a whole; from what follows that the first and "view dependent" and requires recalculation at every change in the position of the camera while the second and always applies regardless of point of view. Another important difference concerns the use of the two algorithms, the final gathering is suitable for exterior scenes, while the photon mapping is used mainly in the interior with natural and artificial light alone or in connection with the previous year. The interior illuminated with natural light that we are going to render will begin to use only the photon mapping. Precondition that is present in the scene one or more photometric light sources that our case and the represented by the daylight system with mr sun and mrsky which are respectively a source of direct and indirect lighting. In this algorithm the indirect light is achieved through the emission of a certain amount of rays of light, photons of which you can vary over the number also the diameter and the accuracy. To enable the photon mapping and need to activate the check parameter global illumination tab of the same name in the indirect illumination tab of the dialog box render setup. It also need to check the option to enable the generated object and receive global illumination.
At this point, with the average parameter gi photon light come on in 1000 to emit photons defining the radius to 0.1 with the maximum parameter sampling radius. We get the picture below.
Now we are going to increase both the number and the radius of the emitted photons, respectively, 1000 and 0.2. Of course this involves a calculation time even though the image and far from satisfactory. Photons overlap but there are still spaces completely black.

In the next step we bring to 10,000 the emitted photons and disabling the max sampling radius let the software determine the optimal diameter of the photons to illuminate the scene. The results are still quite substantial artifacts in the form of dark spots and a substantial inhomogeneities the spread of indirect light.
We increase by a factor of 10 the number of photons bringing their number to 100,000. Gradually, the area in indirect light is more `evenly lit. It `good to clarify that the net increase in computation time of the emitted photons does not always allow for better light diffusion.

This is highlighted by the next test where we issued 500,000 photons getting a worse result than the last. There is that `a threshold beyond which not only employ more’ time to render the scene but mostly we get quality `bottom. Sara `own experimental approach to help determine this threshold value which in our case and 100,000 photons. In general, for the greater part of the scenes depending on the number of polygons of which comprises a value of 500 thousand, 1 million photons can `be correct.
With the RAM player tool called up from the pulldown menu render a comparison we can put the last two rendering, for sincerarci differences.

To save the map of photon mapping set the read and write to files photons in this way to the next rendering will create a file with the extension .pmap. The calculation of the photon mapping will be 'skipped with the reading of the map.
To eliminate the remaining artifacts will use the final gathering as a finishing tool. Tab of the final gathering indirect illumination tab tick the check of the same name to enable the algorithm. The panel on the calculation of the final gathering presents an easy-to-use template with a slide bar that allows the user to increase the quality 'of progressively from the calculation mode' piu' rapida Draft and inaccurate passing through low, medium, high and very high with quality 'and increasing computation time. Fortunately the accuracy of mental ray and 'extremely high and difficult to achieve high-quality rendering' mode must be set to a 'better than Low. We start by activating a mode 'draft keeping the spread at 0 bounces.E' important to remember that having already 'used the photon mapping you can' avoid making rebounds to calculate the final gathering.

Nell'eventualita' il final gathering si utilizzasse da solo potremmo impostare 2 rimbalzi per gli esterni e 4 per gli interni. Come si puo' vedere dall'immagine prodotta il final gathering ha eliminato gran parte degli artefatti ancora presenti nell'immagine. Ripetiamo la prova questa volta elevando a low la qualita' di calcolo migliorando ulteriormente l'immagine.
To obtain a light and shade effect underscore the points of contact of the surfaces and increase the quality of the image to apply the ambient occlusion material of the walls in the card special effect in the material editor.

In order to make a comparison between the coordinated use of photon mapping and final gathering and use only the first algorithm we render the same scene without photon mapping and 4 rebounds for the indirect light. How can ‘see from the quality’ and very high but we do not get the same heat as the previous image obtained with the photon mapping.
Loft furnishing.

To furnish the loft will use furniture from commercial libraries produced by Evermotion
These libraries are divided into several collections:

Archmodels: homogeneous collections of furniture items such as tables, upholstered furniture, bathroom furniture, kitchen etc. ..

Archinteriors: complete scenes related to interior design kitchens, living rooms, bedrooms and so on.

Archexteriors: architectural exterior scenes full of contextualization.

The first libraries were designed for the rendering engine vray then when imported into mental ray you have to proceed with the conversion of the materials or can also be done automatically with a tool in the public domain. We'll also add mirrors and pictures hanging on the walls to enrich the scene.

For the mirror shader you can take advantage of mental ray material library and the material Autodesk mirror.
To make a painting to hang on the wall, we create a box of size $x = 1.5, y = 0.02, z = 1.5$ we apply a modifier mapping uvwmap with a set planar mapping coincides with the surface of the disabling framework 'option real world map size. The material to be assigned to the framework will be 'an arch and design and will use' a diffuse map with the texture of the picture and the real world map size mode turned off to avoid the effect of repetition.

For the final image we place a camera with a focal length of 20 mm in the bottom of the environment to raise double the height at a height of 4 meters and control the roll rotate on its axis to define a dynamic frame can to give a complete description of the entire space.