

## Rendering in 3DS Max 2017

The latest release of Max has introduced a new renderer to its suite of tools. It is called the The Autodesk Raytracer, also referred to as the "ART" renderer. The ART renderer is a fast, CPU-only, physically-based renderer, making it the tool of choice for Architectural, Product, and Industrial Design renderings and animations.



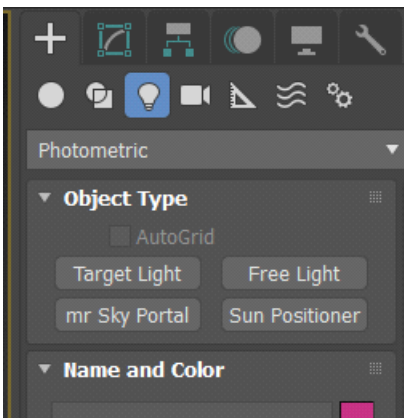
*Sample scene using the ART Renderer - Model Courtesy of Mesh Model Seating & Atelier Feuerroth*

ART is considered to be a successor to the old NVidia Mental Ray Renderer (mr) which was introduced to 3ds max some 10 years ago. Despite being a good renderer, it was found to be too complicated by some and needed a great deal of expertise to get the best rendering results.

'mr' is still available in Max along with the even older Scanline Renderer but for ease of use and for the best quality image without the occasional 'noise grain' it is recommended to use the new Autodesk Raytracer for best output. The interface relates closely to real world camera settings and lighting units like the older MR engine. However, there is less settings to get lost in and the overall output result is much cleaner with less rendering 'artifacts'

To accompany the new renderer users are provided a new sunlight system and sky to although they work in a very similar way to the old mr system and new physical materials which behave very much like real world surfaces and along with a new camera system with more real camera controls. The whole environment looks very much like the Vray Renderer which has also been available to users for a number of years.

The sunlight system, 'Sun Positioner' is now provided under Create>Lights which makes far more sense from a new user's point of view. The old sunlight system are still under 'Systems', should they be required for 'legacy models'.



For internal scenes ART will work with Photometric targeted or free lights which sit alongside the new sun system.

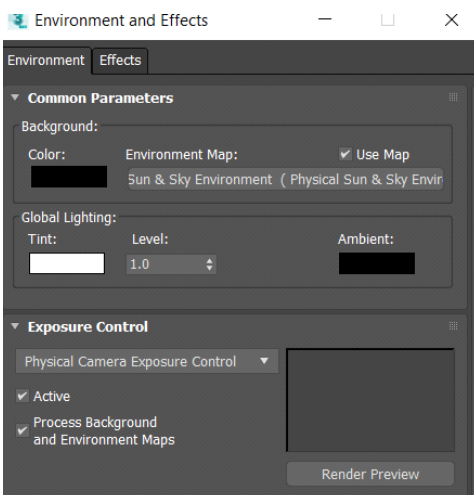
The ART renderer provides a familiar workflow for users moving from Revit, Inventor, Fusion 360, and other Autodesk applications which use the Autodesk Raytracing engine. ART allows you to render large, complex scenes, and take advantage of unlimited rendering on multiple computers via Backburner.

Support for IES, photometric and day lighting from Revit allows you to create highly accurate images of architectural scenes. ART's use of image-based lighting makes it easy to render highly realistic images and incorporate your design into real environments.

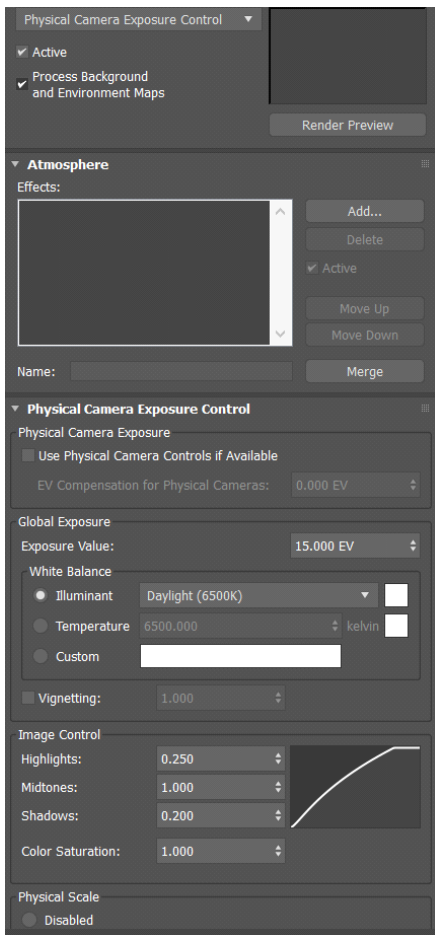
One of ART's strengths is a fast, interactive workflow in ActiveShade mode within the Max viewport. You can quickly manipulate your lights, materials, and objects to see the results refine progressively in the ActiveShade window.

ART includes an Image Noise Filter allowing you to apply a variable level of smoothing to the image, or send the filtered image to a render element for post-processing. Noise filtering can drastically reduce render times and improve the quality of the rendered image.

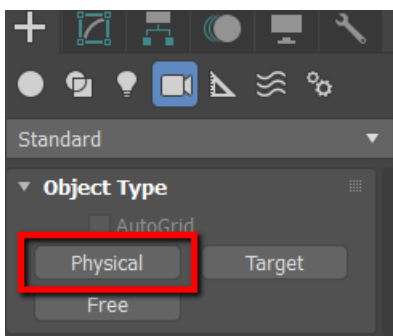
For both internal and external scenes using real world lighting a new exposure control is provided, called Physical Camera Exposure control it supercedes the old 'mr exposure' control used by Nvidia's mental ray.



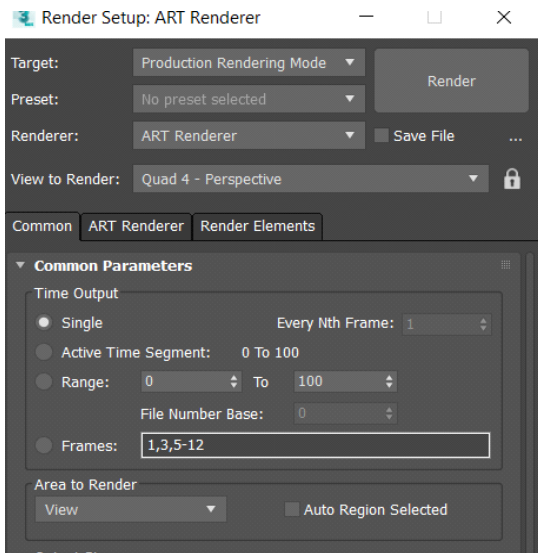
This new exposure control can be adjusted in a similar way the old solution with an EV (exposure value) adjustment or by changing the new physical camera settings as seen below. Typical values are EV values 12-15 for exterior scenes and 8-10 for interiors. These suggested values are again very similar to suggested mr EV values.



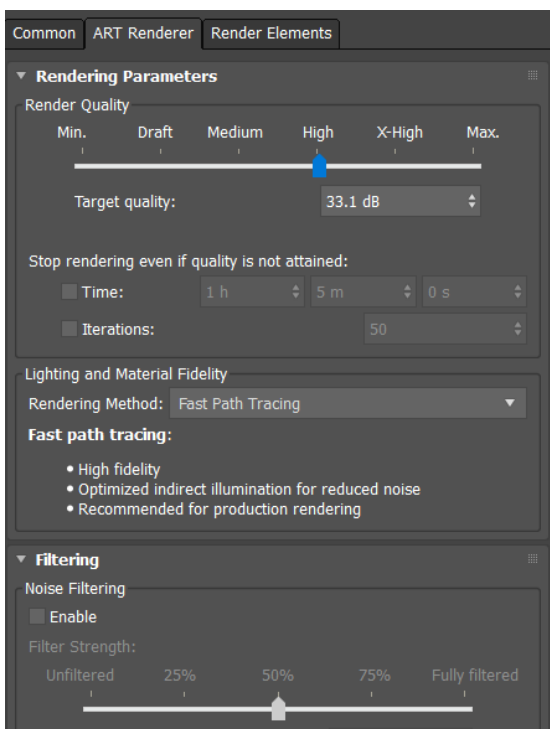
Mood lighting and temperature can also be adjusted to give vibrant or more suppressed lit images as appropriate. For best results it is recommended to use the new Physical Camera as the rendered view. The new camera is located under Create>Cameras (next to the legacy camera objects)



For output the rendering options using the ART renderer are greatly simplified. With logical options for render duration, size and output. Along with rendering quality iterations with either a quality target or a time target where ART will provide the best result in a desired time frame.



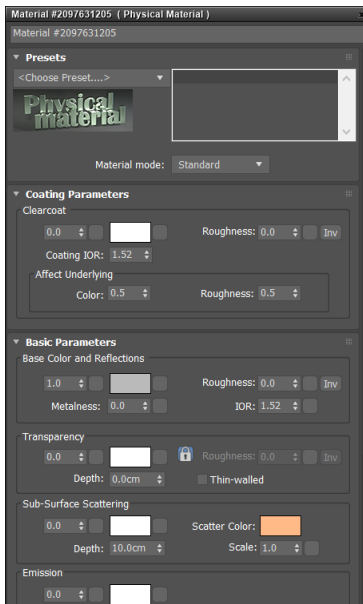
*Basic rendering options*



*Quality Control and Noise Filtering Options, left (worst quickest) to right, (best, longest)*

To get the best out of the new Raytracer Max now has a new 'Physical Material' which is very similar to the old 'Arch&Design' material for mental ray. However, it is easier to use and has all of the capabilities of the old material along with some quick 'cheat templates' for woods, stone, metals and glass. The physical material is compatible with

all standard texture types and has full control to allow accurate depiction of translucencies, transparencies, refraction, colour bleed etc. Combined with photometric lights and the new camera, excellent results can be achieved much more quickly with minimal rework.



*Physical Material Properties showing templates, and basic parameter controls*