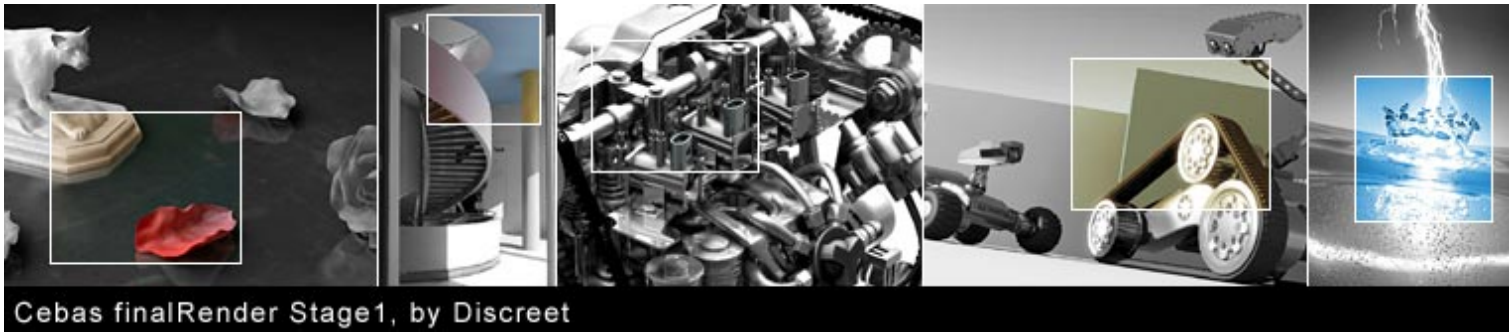
finalRender Stage1 review

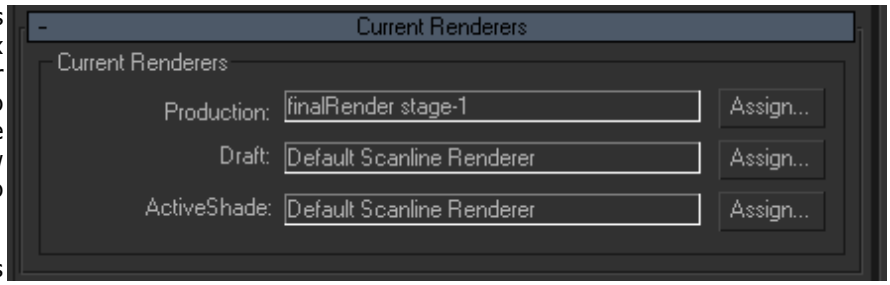
Since January 2003, we know that finalRender Stage1 is a DCP (Discreet Certified Plugin), packaged and distributed by Discreet and Turbo Squid. Of course, Cebas is still the developer of finalRender, but Customer goes now serenely about finalRender capabilities and further developement. finalRender is available for 3dsmax4,5,6 and 3dviz4. You will also have finalToon in the package, and a really complete pdf (350pages !!!) and chm version of the documentation.

Update : service pack 1 is out !

Announced last year during Siggraph2002, finalRender Stage1 was very expected. Contrary to Stage0, which add many function to the standard scanline, Stage1 is an independent renderer, as vray and brazil. On the same way, notice that Cebas have pay big attention to workflow and usability, still giving the user large set of controls. Indeed, the Stage1 renderer distinguish from other competitors on the wide range of controls it give to the user, and its completewise side. Stage1 is develloped with a fully open architecture, and get its own **SDK** !



Intégration



ffinalRender Stage1 is indeed an independent renderer, as vray and brazil. You must assign it as renderer in 3dsmax to get the hand on all its controls, mainly in the renderer itself. All the renderer has been totally rewrite compared to Stage0, to get more functions, better controls, and more speed. The integration of Stage1 is also made with new lights, materials, and object properties (local controls). No more globals, then !

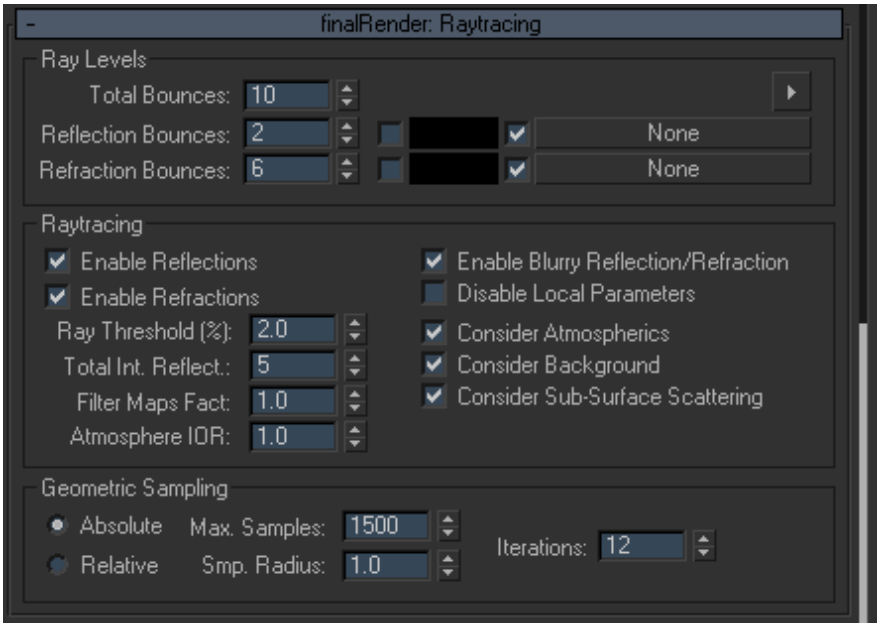
One of the greater point of Stage1 regarding integration is that it support mainly all 3dsmax interface and features. No black materials in viewports or material editor, messed G-buffers, etc !

Distributed Rendering

Stage1 support distibuted rendering, to let you render one image on several computers. The gi, raytracing etc calculation are then divided per number of processors. HyperThreading is also supported. Effects are also fully supported, so are psdmanager and finalToon. Distributed rendering is limited to 10 cpu per licence with the standard package. A full unlimited DR license is of course available.
Of course, the standard network rendering (backburner) is fully supported and unlimited.

Raytracer

the raytracer core have been rewriten to add more functions and speed. It also introduces a new concept, the GeomSampler (geometry sampler), which collect geometrys informations to calculate SSS accordingly yo these informations. Then, you have better controls on speed/accuracy of SSS. Geom is also used for ultrablur, which is a fast glossy reflection/refraction engine (less accurate, but faster). Of course, geom sampling can be controlled per object. This Geom can be disconcerting at beginning (maybe because it's new !), but after a few practice, it's powerfull and fast !



Global Illumination

fr_image :

To talk shortly about Stage0, let's say that fr_image engine was fast, but not free of flaws. Many render test, and hard to get clean artefact free image, specially in corner and along edges. On this side, Stage1 has made enormeous progress, and now requires around three times less samples to get even cleaner result ! Redertimes are then really faster, divided par two or three. I even got some complexe scene which render 8 times fastest than Stage0 !!
For the Stage0 users, notice that densities are now absolutes (older system is still available). No more problem with small objects in large scaled scenes. It's also way more intuitive, as densitie is now in scene units.

HyperGi :

The HyperGi engine has been developed specially for free animation. The fr_image engine works pretty well for flythrough animation (and is really fast in such case !) but it needs lot of samples if objects (characters etc) are animated. The new HGI engine is quiet different and is designed to solve that. It's more like a hybrid solution between fr_image and radiosity engine, and fix the samples to the meshes. So, even if samples vary in intensity and colors, the solution won't flicks even on deformable character. You can also make fast still rendering with it, but you won't have as detailed solution as with fr_image.

Of course, QuasiMonteCarlo engine is still there. The skylight function now also get its own QMC engine.

Rmq : Nice option is now the ability to see the samples in viewport (same with caustics) to easily check your gi distribution.

Matérials

Stage1 offers three new materials, among fr_adv which is a complete fully controlled material, which is really one of the strong points of Stage1.
fr_metal : As it's name implies, this shader is specially dedicated to metal surfaces.

fr_glass : Likewise, this one is dedicated to all sort of glass, windows, etc. It is perfectly supported by GI, specially transparency.
These two materials got just a few params to stay simple/fast to tune, and render faster.

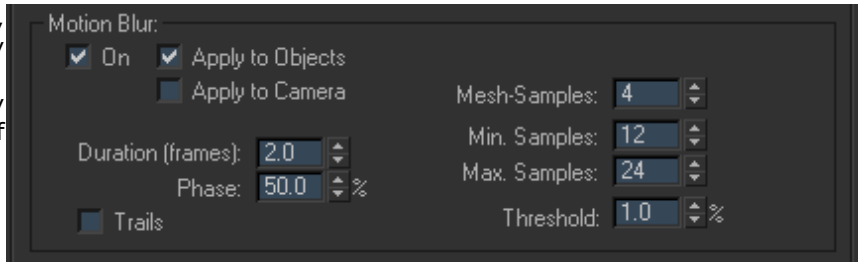
fr_advanced : This one allow you to create whatever shading you want, with SSS, dispersion, absorption, etc. You will also be able to configure custom reflection curve, and multiple specular highlight layers (one to four). this material also introduce a new shading algorithm, called Zauner, wich give you perfect curve control of diffuse and specular channel per color !

Baking

As Stage0, Stage1 offers baking solution for GI, lighting etc. It was first question of use max5 RenderToTexture functionnalities, but as max4 users also need a baking solution, Cebas has developed its own. finnaly, it is intuitive and works as expected.

Motion BLur

Stage1 also support 3D Motion Blur, which support reflections, refractions, shadows, etc. On the other hand, it isn't really fast with complex scenes :/
It also offer a 2D mblur, as realtime effect, which works pretty nice in most of the case. If not, you are still able to use rpf mblur into Combustion !

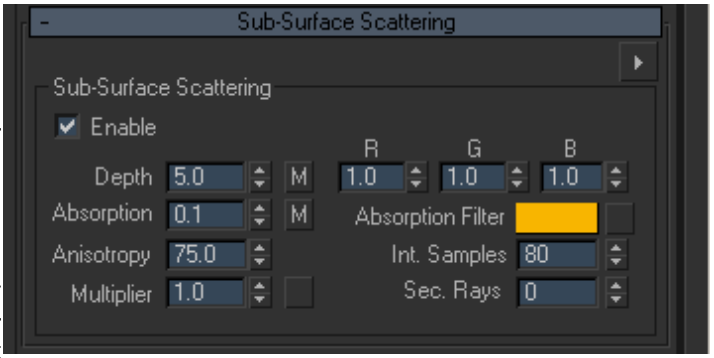


Micro Poly Displacement

Stage1 supports now MPD, called here MTD for MicroTriangleDisplacement. MTD is developed to add details on surface, but not really to create big geometrys like mountains. Here vray displacement is better. MTD works with SSS, but with original mesh polygons, not MTDed ones. Other things have to be developed before integrating a full enhanced MTD in a future update. Anyway, GI and Caustics fully support MTDed polygons.

Sub-Surface Scattering

The Stage1 SSS seems to be one of the most complete of the market. Parameters are mappable, and the speed depends of GeomSampler, which drastically speed things.
the GeomSampler (geometry sampler), collect geometrys informations to calculate SSS accordingly to these informations. Then, you have better controls on speed/accuracy of SSS.
SSS also support Caustics and GI, and fRaytraced shadows support SSS !



RenderElements, RPF G-buffers.

Contrary to some others renderer, fR Stage1 fully supports all RPF channels and G-buffers (ID, mtl effect channel)! It also support render elements, and adds three new one : fr_caustics, fr_Global Illumination, et fr_Sub Surface Scattering. Stage1 is so fully compatible with psdmanager.
The Combustion users who do lot of post-prod using elements/rpf will then be able to use same technics with Stage1 !
Stage1 also support rendering output in 8bits per color channel, 16bits per color channel, or 32bits (float) per color channel.

Workflow

Workflow has been a lot decryed in Stage0, and Cebas have done a lot regarding UI/workflow in Stage1. As pure renderer, all settings are now in renderer (no more globals), and UI seems clear and compact, even with all the controls Stage1 offer. Many other renderers simply cut out many controls to keep workable workflow, and I would say that here, Stage1 is really great. It also has some dynamic rollout, which allow all settings in same rollout. On the same way, all rollouts have preset fast access, and same with fr_advance material.

SDK

Stage1 has been develloped from beginning like core with plugins. fr_cameras, AA, shaders, Gi engine, etc are plugins, pluged into the core raytracer. Thanks to its SDK, a studio will be able to develop its own AA, fr_cameras, and directly use core Stage1 functions in its own shaders. Actually, the SDK isn't include in the package.

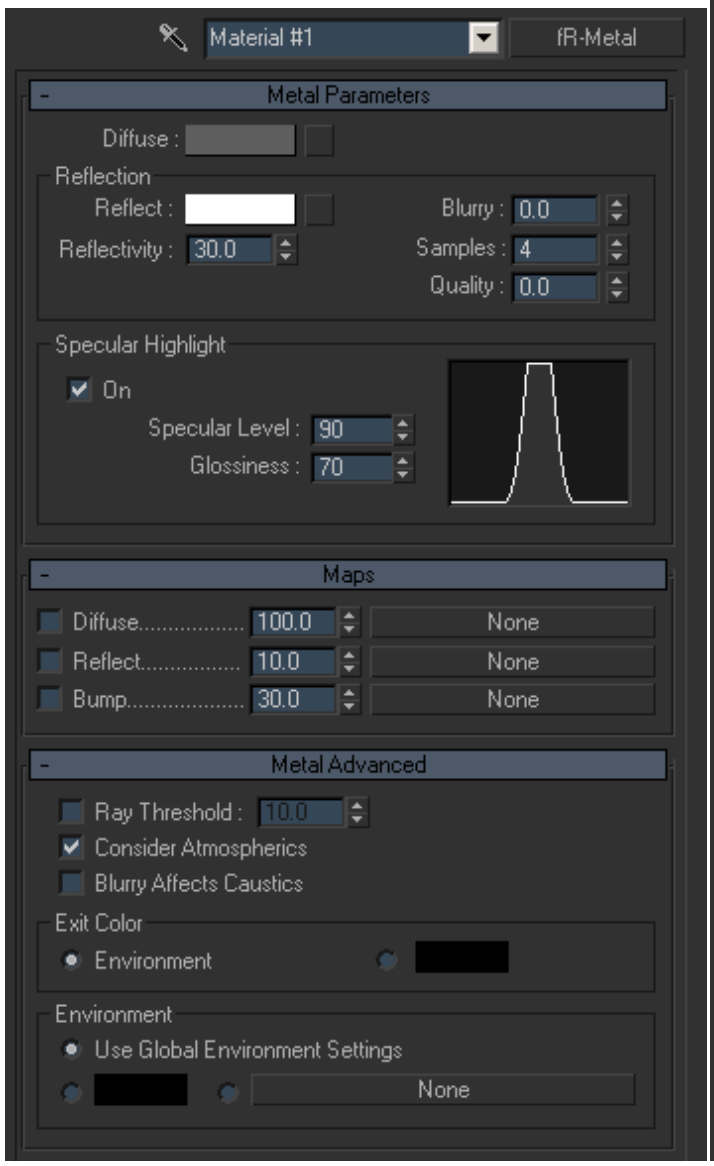
Divers

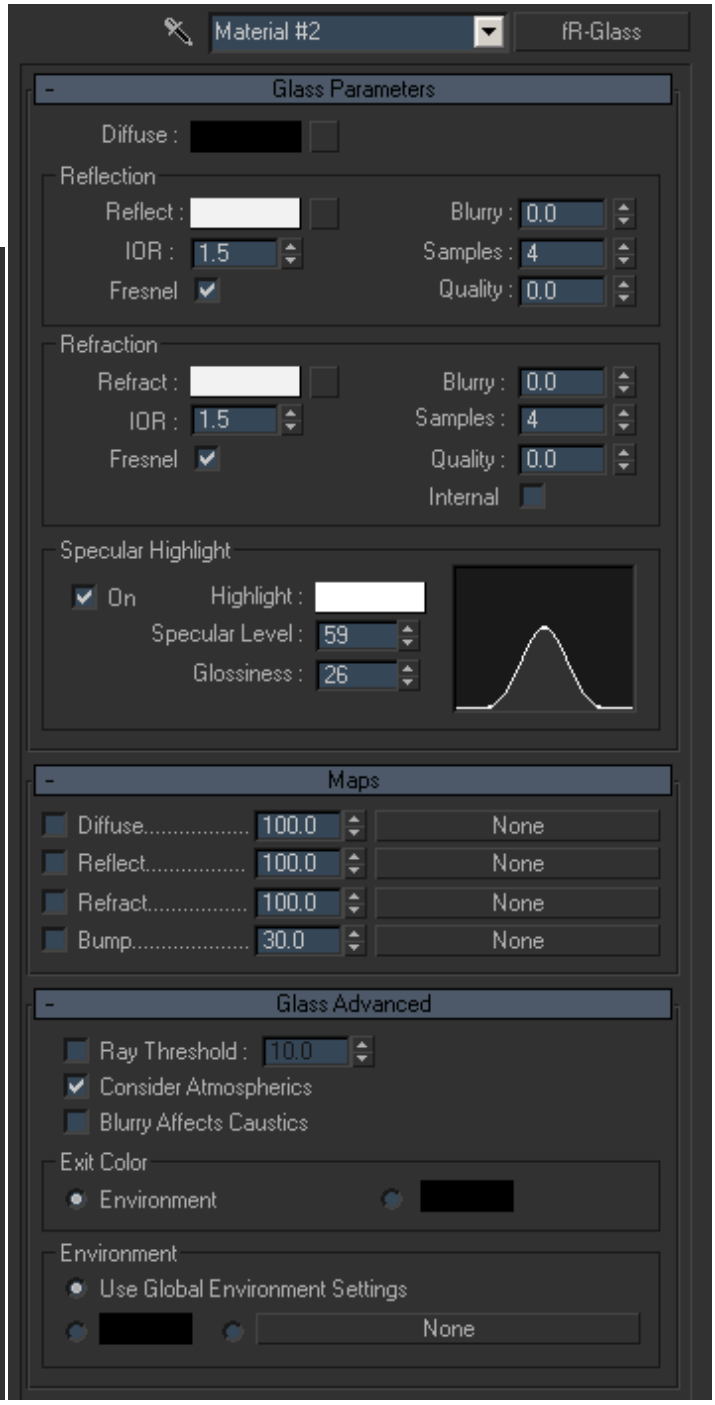
Stage1 also offers a material converter, which convert Stage0, Vray, Brazil, Raymax, renderdrive, standard materials etc to Stage1 material.
You will also got some lights and shadows type (aera, shd maps with transparency supported, etc), new volumetric light (one as effect, in realtime !).
Stage1 also offer some new cameras (fisheye, panoramic, distort, etc etc). And don't forget finalToon !

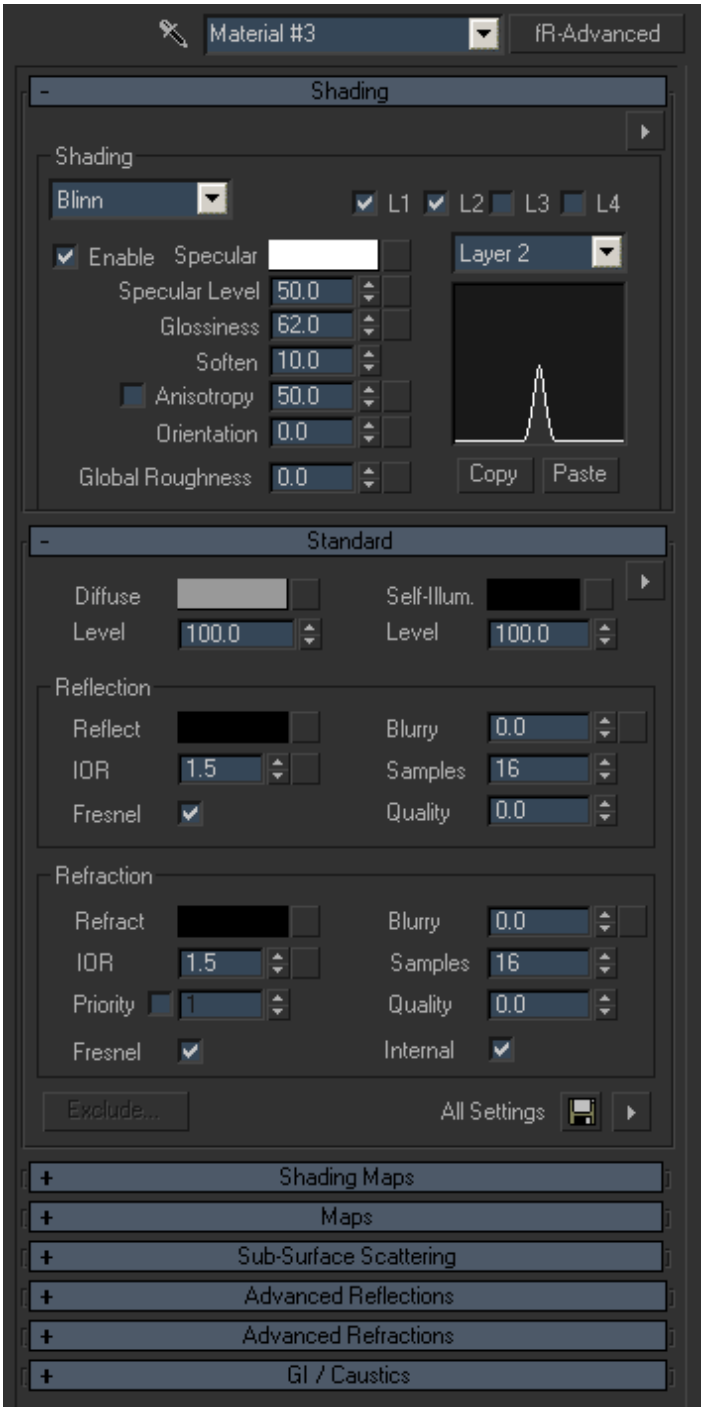
I've just seen that I forgot to talk about Caustics : Of course, Stage1 fully support **Caustics** and **Volume Caustics**, working with MTD, Dispersion, etc...

In conclusion, I think that Stage1 is sure not a "one click" renderer but a full control one. Its workflow is really userfriendly, and give you real controls over each part of the engine, with one of the better integration into 3dsmax. No doubt freelances and studio which have many different productions will appreciate it, also on the developement side with its SDK. Some great studios ever use it in production, such as Scanline, or Dysney.
Personnally, I think that some aeras (AA, mtd, tbaker, 3dmblur) need enhancements, specially regarding speed, but Stage1 v1.0 lay of some serious foundations toward a high-end renderer, and Cebas have now to confirm with regular updates and a serious support.
As all DCP plugins, Stage1 is sold online on Turbo Squid at 795$. One bought, you can immediately download it on Turbo Squid, which will also send you the CD and DVD. It contains 10 DR rendernodes, and illimited network rendering.

Nicolas Genette, 16/07/2003


Material #1
fR-Metal
Metal Parameters
Diffuse :
Reflection
Reflect :
Blurry : 0.0
Reflectivity : 30.0
Samples : 4
Quality : 0.0
Specular Highlight
On
Specular Level : 90
Glossiness : 70
Maps
Diffuse..... 100.0 None
Reflect..... 10.0 None
Bump..... 30.0 None
Metal Advanced
Ray Threshold : 10.0
Consider Atmospherics
Blurry Affects Caustics
Exit Color
Environment
Environment
Use Global Environment Settings
None


Material #2
fR-Glass
Glass Parameters
Diffuse :
Reflection
Reflect :
Blurry : 0.0
IOR : 1.5
Samples : 4
Fresnel
Quality : 0.0
Refraction
Refract :
Blurry : 0.0
IOR : 1.5
Samples : 4
Fresnel
Quality : 0.0
Internal
Specular Highlight
On
Highlight :
Specular Level : 59
Glossiness : 26
Maps
Diffuse..... 100.0 None
Reflect..... 100.0 None
Refract..... 100.0 None
Bump..... 30.0 None
Glass Advanced
Ray Threshold : 10.0
Consider Atmospherics
Blurry Affects Caustics
Exit Color
Environment
Environment
Use Global Environment Settings
None


Material #3
fR-Advanced
Shading
Shading
Blinn
L1
L2
L3
L4
Enable
Specular
Specular Level
50.0
Glossiness
62.0
Soften
10.0
Anisotropy
50.0
Orientation
0.0
Global Roughness
0.0
Layer 2
Copy
Paste
Standard
Diffuse
Level
100.0
Self-Illum.
Level
100.0
Reflection
Reflect
IOR
1.5
Fresnel
Blurry
0.0
Samples
16
Quality
0.0
Refraction
Refract
IOR
1.5
Priority
1
Fresnel
Blurry
0.0
Samples
16
Quality
0.0
Internal
Exclude...
All Settings
Shading Maps
Maps
Sub-Surface Scattering
Advanced Reflections
Advanced Refractions
GI / Caustics