NO-PHOTOREALISTIC PROCEDURAL EYE v1.3

The Eye now is compatible with **Mental Ray Shaders, V-Ray Shaders**, **Renderman and Unreal 4**, but is compatible with any render engine, always if the nodes of maya are compatible with the render engine.

New feature ver 1.3:

- Fake Specular and Fake Horizon, this specular is fixed in the eye (texture), is not a physical specular, ideal for cartoon render, if you move the eye the specular follows it.

New features ver 1.2:

- Color Management is controlled now with a parameter in **ProcEye01_CONFIG01.** (Only to Mental Ray)
- Cat eye parameter (**not compatible with Unreal yet**).
- Some minor improvement.

New features ver 1.1:

- The eye is compatible with VRay (Maya 2015) and Renderman (Maya 2015 and 2016), however, some limitations are applied depending of the render engine, below in the documentation I describe these limitations.
- Maya 2016 file is provided, only for Mental Ray and Renderman.
- A new parameter was added (Alpha Tex File Pupil) to fix a little bug in the previous version.
- Unreal shader has it own documentation.
- Fake Light in Mental Ray and Vray Shaders was modified to improve it.

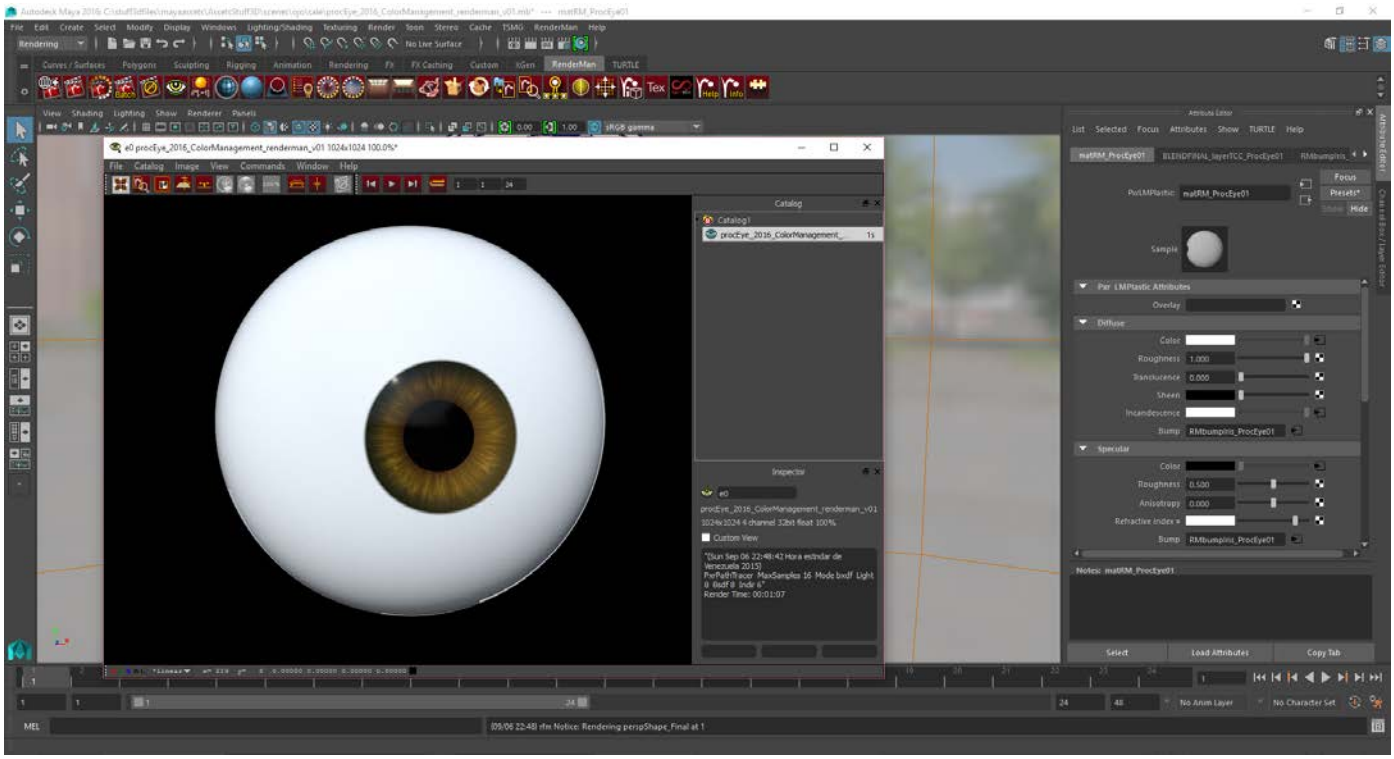
Limitations ver 1.1:

- 4 variables were disabled in Renderman, Offset Border Out, OffsetBorder In, Alphe Border Ext Iris and Bump sclera, I hope in a future version fix a problem that I have with these variables in Renderman.

- Only Bump Sclera was disabled in VRay, I hope fix it in a future version.
- In texture section eyeRig_TexReflection01 was removed in Renderman and VRay file. The outEye01 mesh captures reflection from the3D environment.

Vray

Renderman



The eye isn't 100% photorealistic eye, however, has nice look, that you would use for traditional character 3D and cartoon.

Files Included in the package:

- **procEye_2016_MentalRay_v01.ma**: File compatible with Maya 2016.
- **procEye_2015_MentalRay_v01.mb:** File compatible with Maya 2015.
- **procEye_2014_MentalRay_v01.mb:** File compatible with Maya 2014.
- **procEye_2015_ColorManagement_vRay_v01.mb:** File compatible with Maya 2015 and Vray Ver. 3.05.03.
- **procEye_2015_Renderman_v01.mb:** File compatible with Maya 2015 and Renderman Ver. 20.6.
- **procEye_2016_Renderman_v01.mb:** File compatible with Maya 2015 and Renderman Ver. 20.2.
- **texCC_Iris05.jpg**: Default Iris Texture
- **fix_specular_01.exr:** texture use to fix specular.
- **textures_ProcEye01.psd**: Template if you want to create your own Iris Texture and Sclera.
- **LowRES_HDR_111_Parking_Lot_2_Ref**: Free HDR Commercial License, by HDRI-hub.
    - http://www.hdri-hub.com/hdrishop/freesamples/freehdri/item/113-hdr-111-parking-space-free
- **dagContainer_2015 , 2014 and 2016**: The carpet inside in this .rar file, should be copy in "MayaFolder\2015-x64\presets\attrPresets" or "MayaFolder\2014-x64\presets\attrPresets". These files are the presets, are not necessary copy this file, but are useful if you want the presets that come with the eye.

Content maya file:

- Group **grpGlobalEyeProcedural_01:** contains all the object.
- Group **grpEyeProcedural_01**: contains only the mesh of the eye, please don't delete any object inside the group.
- **outEye01**: mesh just for reflection purpose, by default the cast and received shadow are disabled.
- **inEye01**: is the eyeball (pupil, iris and sclera), by default the cast shadow is disabled.
- **EyeBakeTexture_and_Preview01 (Mental Ray)**: mesh only for bake or preview purpose.
- **placedEnvReflectionTexture_ProcEye01 (Mental Ray)**: control the rotation of the environment reflection map.
- **ProcEye01_COLOR01**, **ProcEye01_CONFIG01 and ProcEye01_TEXTURE01**: assets where you can modify the differents values that configure the eye.
- In the Hypershade you are going to find these node s:
    - **EnvReflection01_Proceye01 (Mental Ray)**: control the reflection maps.
    - **dispProcEye01 (Mental Ray and VRay)**: control the displacement of the iris.
    - **matBakeTexShaderProcEye01 (Mental Ray)**: shader only to use if you want to bake the texture.
    - **matOutEye01 (Mental Ray)**: Mia_Material shader.
    - **matProcEye01 (Mental Ray)**: Mia_Material shader.
    - **matSSProcEye01 (Mental Ray)**: SubSurface Scattering shader to the eye.
    - **setNormalSS_ProcEye01(Mental Ray)**: Control the bump map in the eye.
    - **matVRProcEye01 (Vray):** VRayMtl shader.
    - **matVROutEye01 (Vray):** VRayMtl shader.
    - **matRM_ProcEye01 (Renderman):** PxrLMPlastic shader.
    - **matRMOutEye01 (Renderman):** PxrLMGlass shader.
    - **RMdispProcEye01 (Renderman):** RMSDisplacemente shader.

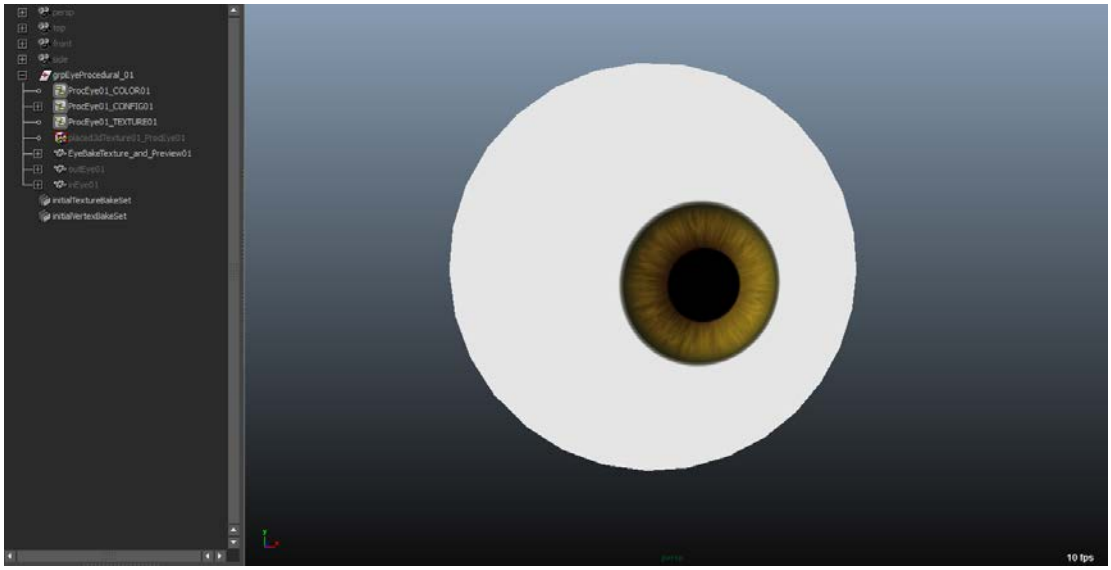
Please don't delete any of this node.

Sub-surface Scattering only works in Mental Ray, I hope in the future adapt the SSS in VRay and Renderman, however you are free to use the nodes and try to do it.

PREVIEW

It is possible that you can't see the texture applied in the eye, even if you use Viewport 2.0, in some video card the texture is showed and the transparency in the outEye01 is applied. But in the case that you can't see anything, you can hide the outEye01 and inEye01 and show EyeBakeTexture_and_Preview01.

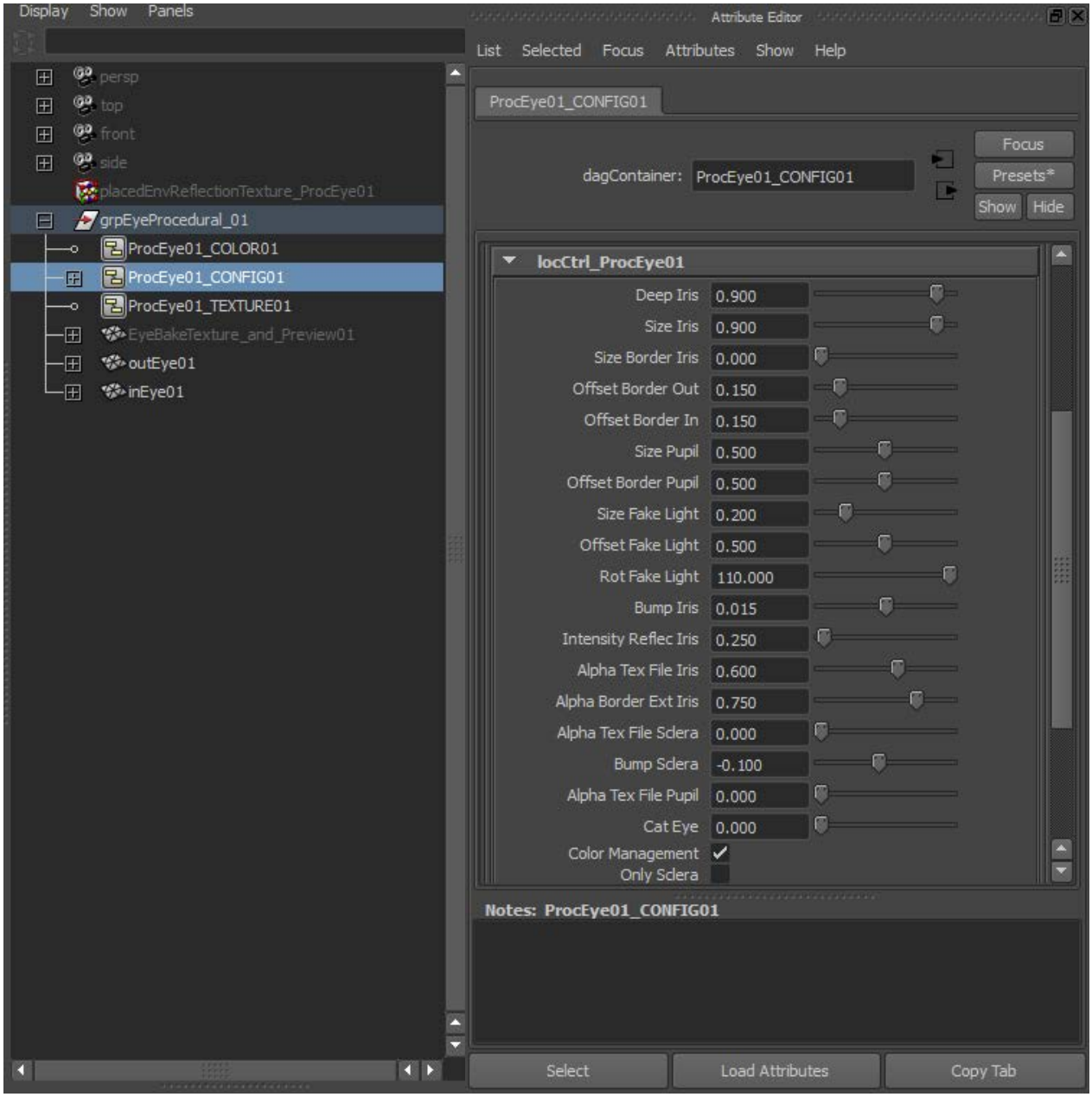
Using Directx 11, you should see the texture applied in the mesh.



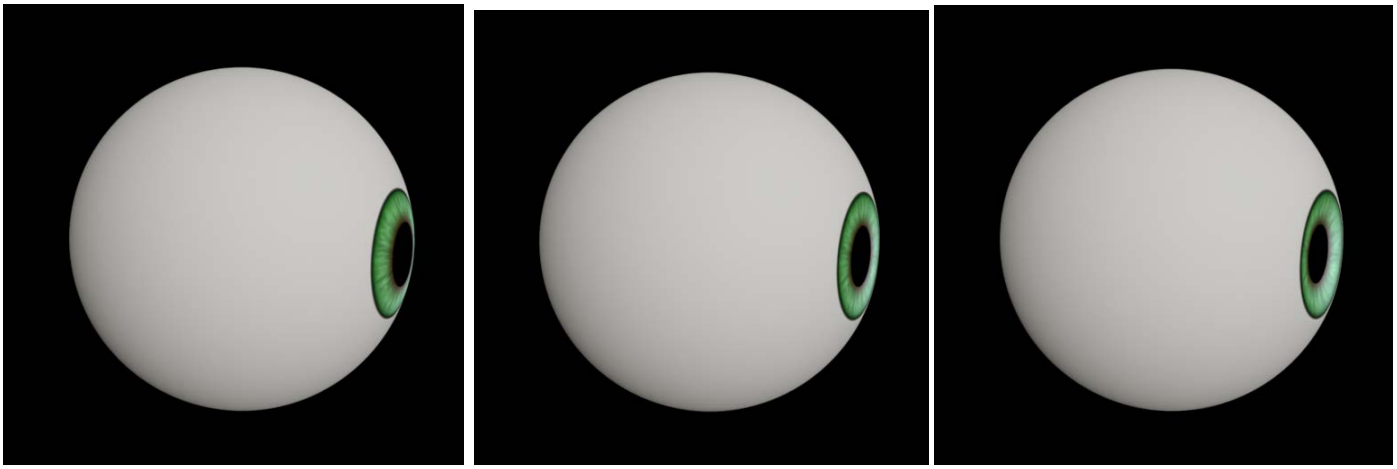
Preview behavior can be different depending of the render engine that you are using.

ASSETS - ProcEye01_CONFIG01

Expand the Published Attributes in the Attribute Editor, in locCtrl_ProcEye01 you will find the next parameters:

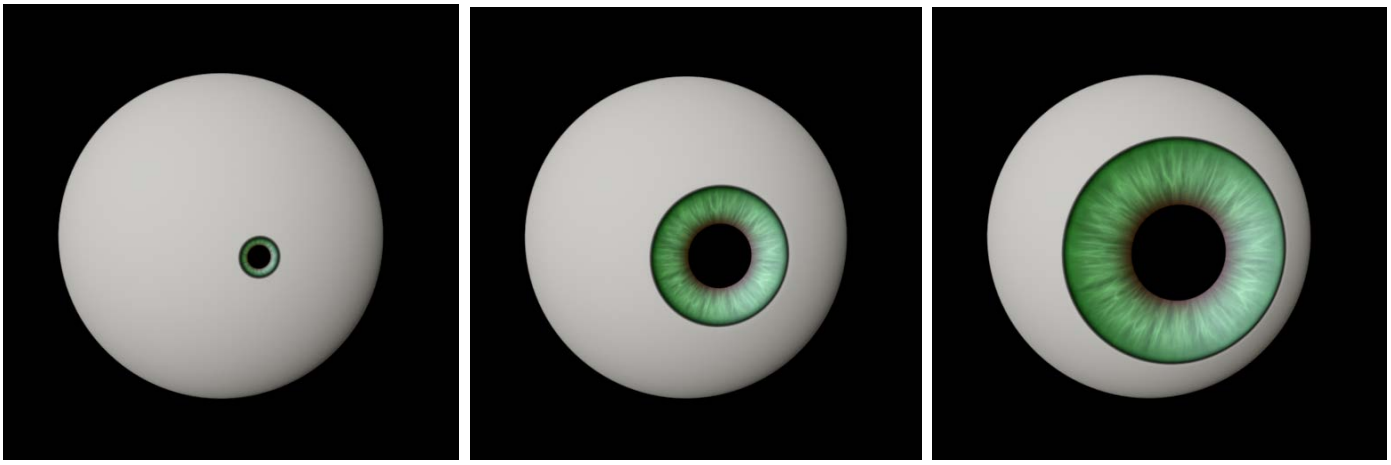


- **Deep Iris**: changes the displacement of iris. Valid range: 0 to 1.



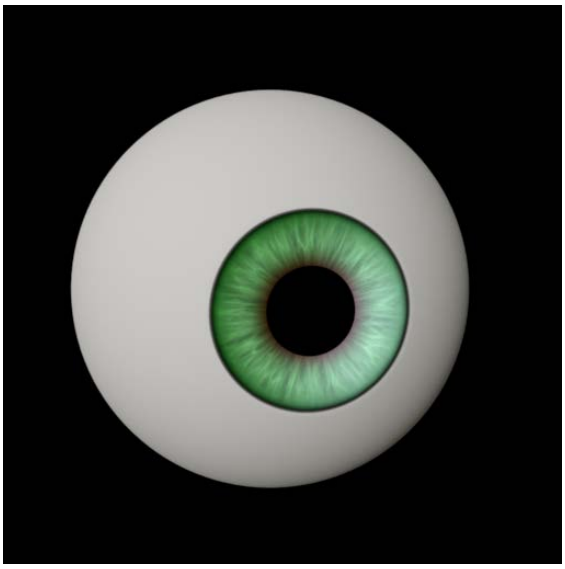
Deep Iris = 0 | Deep Iris = 0.5 | Deep Iris = 0.9

- **Size Iris**: control the size of iris. Valid Range: 0 to 1.



Size Iris = 0.1 | Size Iris = 0.5 | Size Iris = 0.9

- **Size Border Iris, Offset Border Out and Offset Border In (only for Mental Ray and VRay)**: are parameters that work together, and determine the behavior of the dark border around the Iris.



Size Border = 0.0

Offset Out = 0.15

Offset In = 0.15

Size Border = 0.5

Offset Out = 0.15

Offset In = 0.15

Size Border = 0.5

Offset Out = 0.70

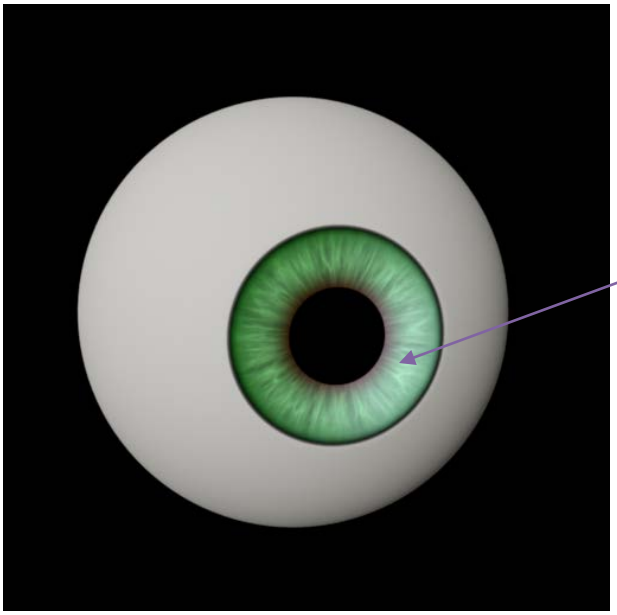
Offset In = 0.20

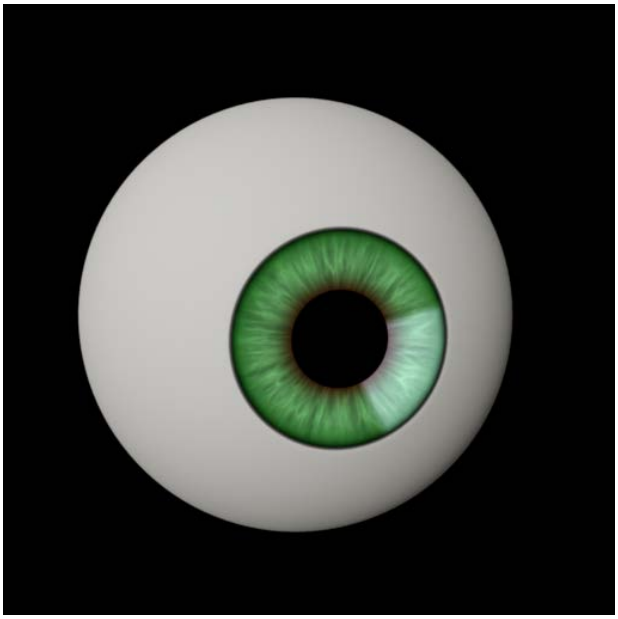
Size Border = 0.5

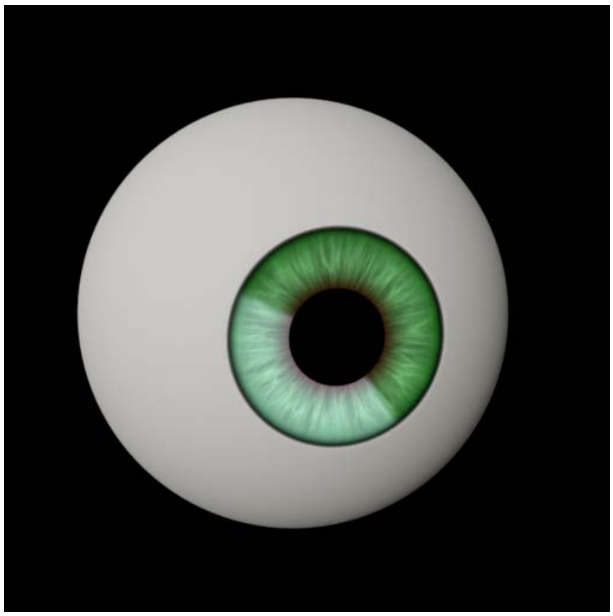
Offset Out = 0.70

Offset In = 0.80

- **Size Fake Light, Offset Fake Light and Rot Fake Light**: are parameters that allow to you manipulate a fake brightness in a specific area on the eye.







Size Fake Light = 0.2

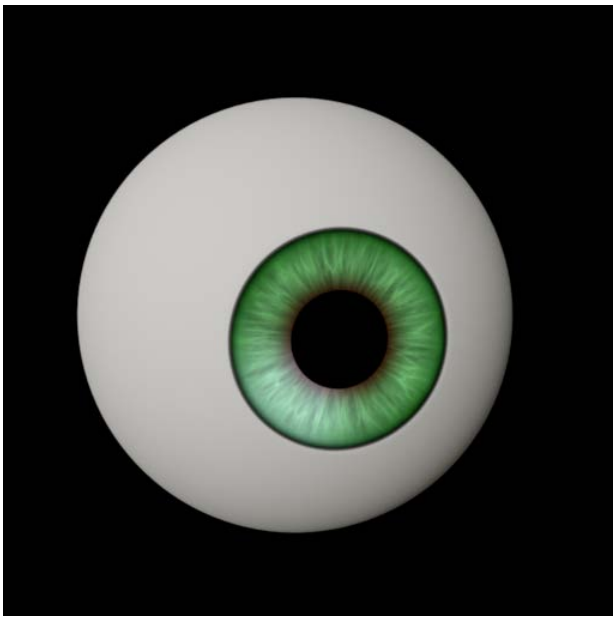
Offset Fake Light = 0.028

Rot Fake Light = 113.258

Size Fake Light = 0.4

Offset Fake Light = 0.028

Rot Fake Light = 220

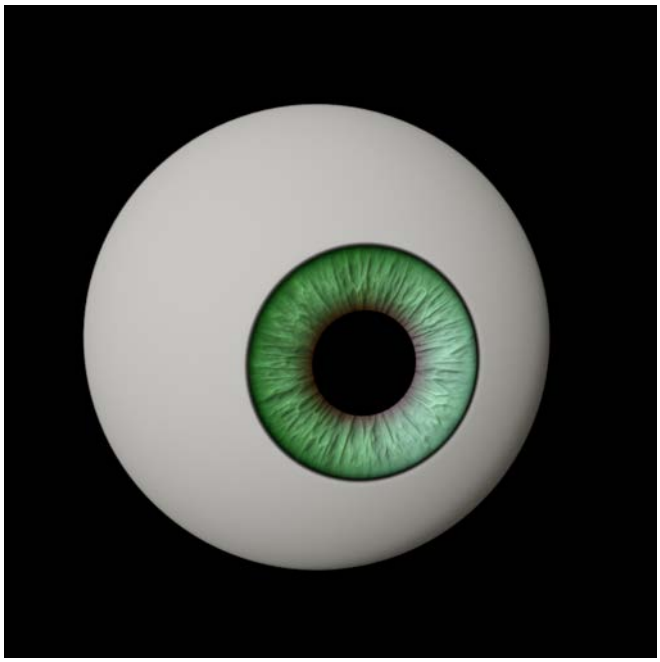


Size Fake Light = 0.1

Offset Fake Light = 0.331

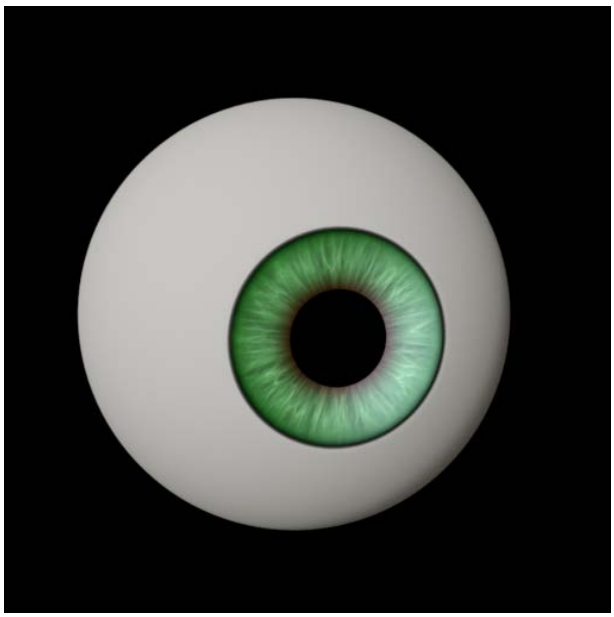
Rot Fake Light = 220

- **Bump Iris**: variable that control de bump mapping on Iris, this bump map is not a separate image, is taken from the color file. However, you can use this freely and assign a separate texture to the BumpChannel.

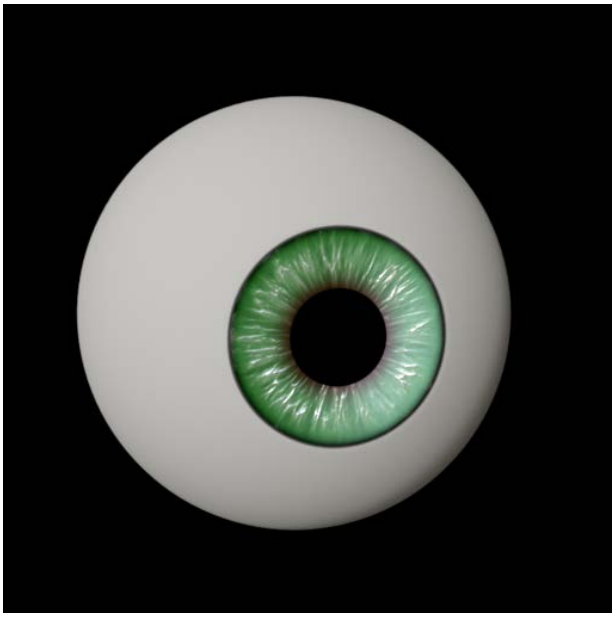


Bump Iris = 0.2

- **Intensity Reflect Iris**: controls the reflection in Iris section, this map is taken automatically from the color texture.



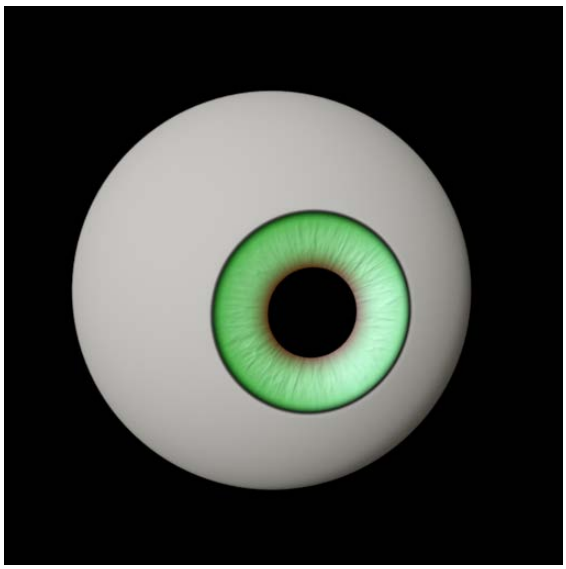
Intensity Reflec Iris = 1.0



Intensity Reflec Iris = 4.0

Is not a mandatory to use Texture file iris and sclera, but if you use it, is possible mix the texture file that you applied with the color that coming to default.

Alpha Tex File Iris and Alpha Tex File Sclera: control the mix between texture file and only color.



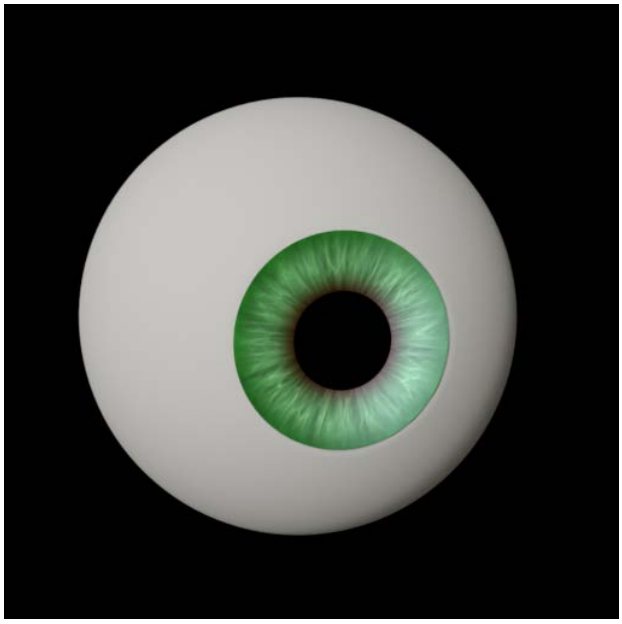
Alpha Tex File Iris = 0.0

Alpha Tex File Sclera = 0.0

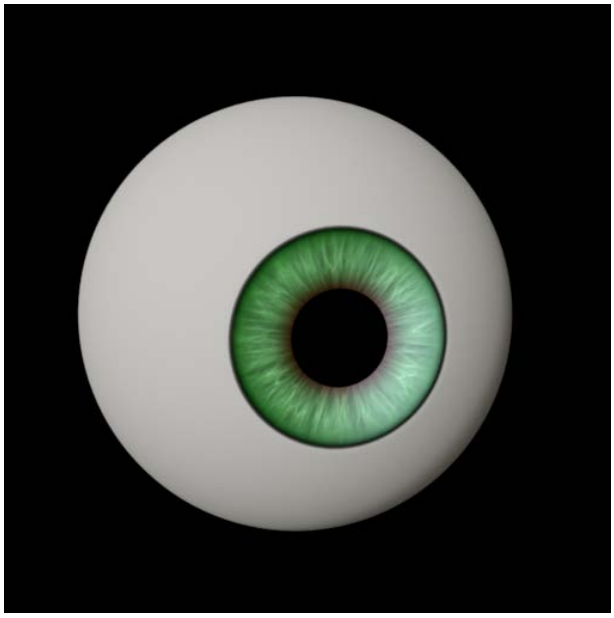
Alpha Tex File Iris = 0.6

Alpha Tex File Sclera = 1.0

- **Alpha Border Ext Iris (only Mental Ray and Vray)**: variable that allows you to control if you want or not a border in the iris.



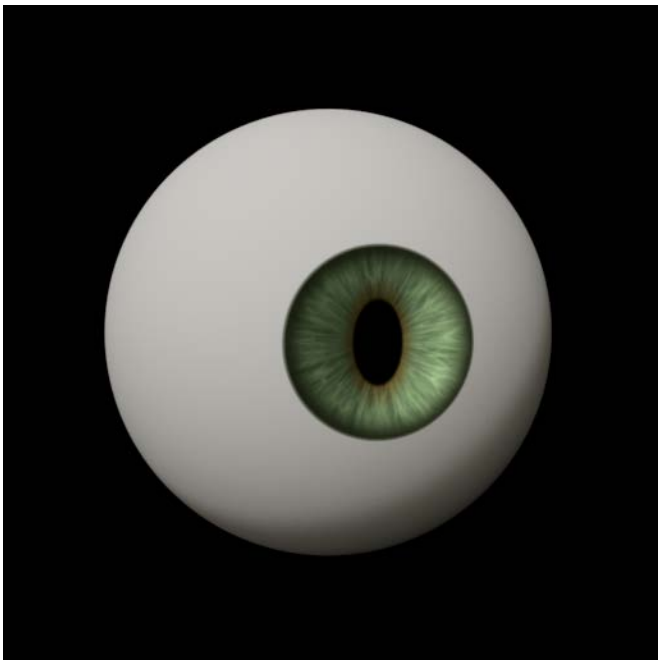
Alpha Border Ext Iris = 0.0



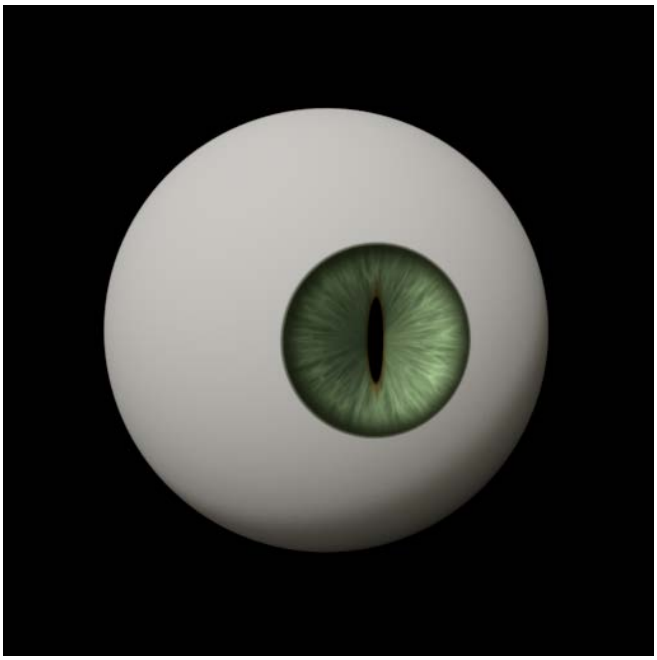
Alpha Border Ext Iris = 0.75

- **Bump Sclera**: variable that control de bump mapping scale, if you use a file texture in the sclera.

- **Cat Eye**: variable that controls the stretch of the pupil.



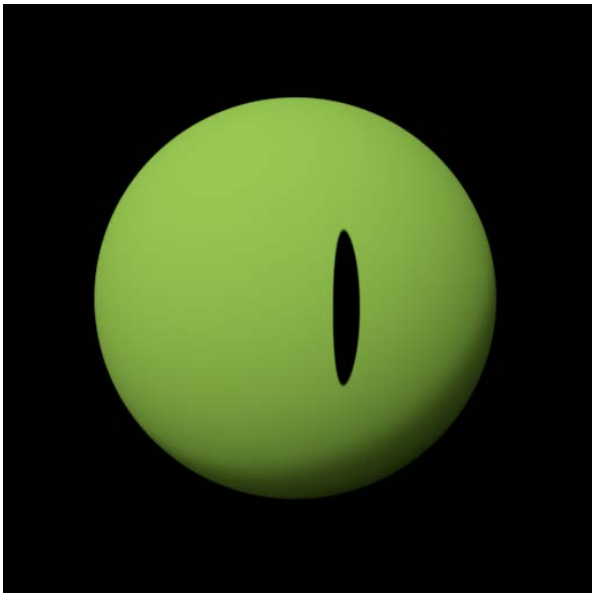
Cat Eye = 0.4



Cat Eye = 0.8

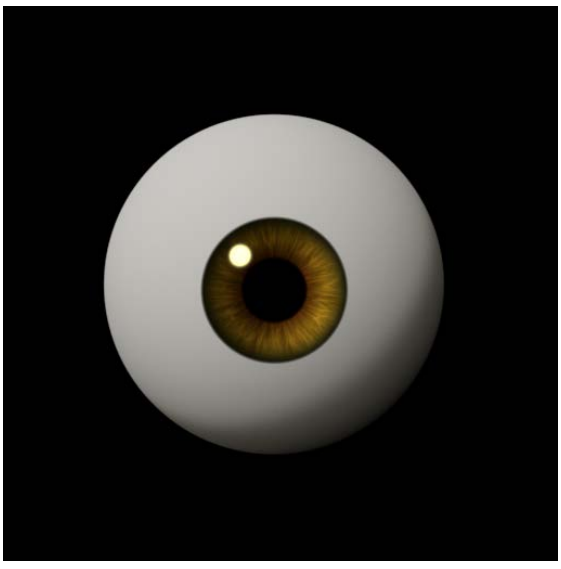
- **Color Management (Only Mental ray):** variable activate by default, disable if you not use Color Management in yours render. In Renderman and V-Ray by default are set to work with Color Management.

- **Only Sclera**: Disable all the Iris Color, and only use the Sclera Color and Pupil, ideal for some Cat Eye Effects.

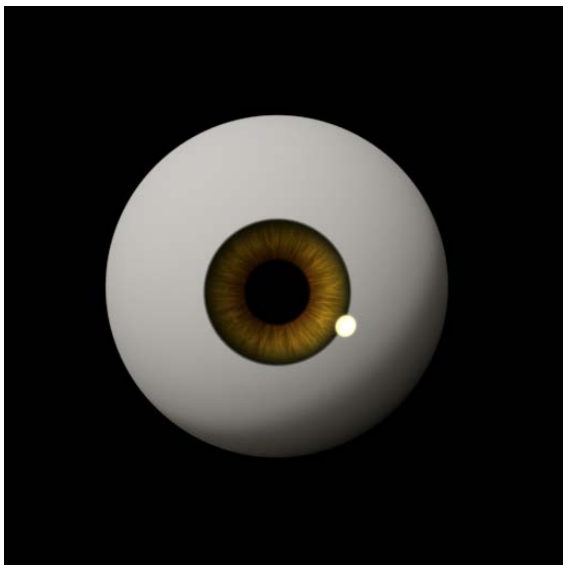


Only Sclera = on

- **Fake Specular, Latitude FixSpec and Longitude FixSpec**: variables that allow to you to fix a Specular highlight using a texture (fix_specular_01.exr).

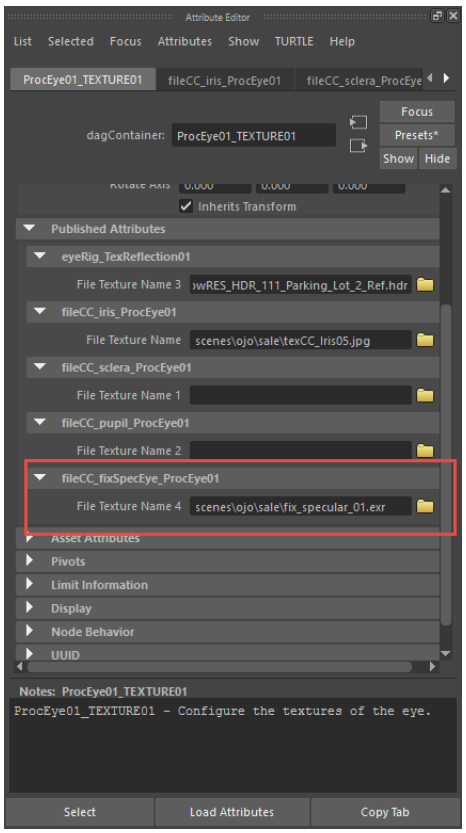


Fake Specular =on, Latitude = 0.4, Longitude =0.4



Fake Specular =on, Latitude = 0.7, Longitude =0.6

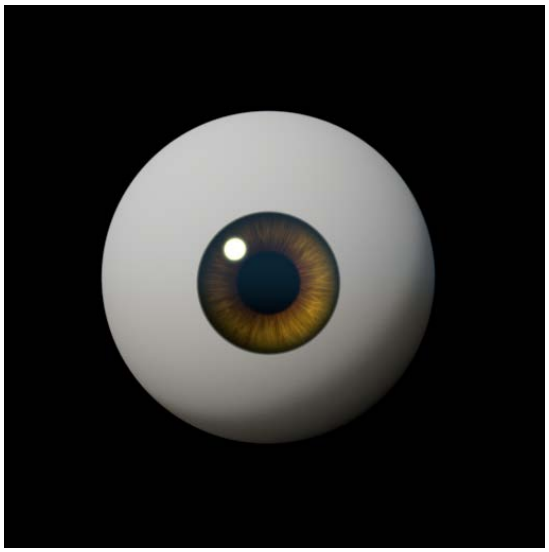
NOTE: Latitude = Longitude = 0.5, center the specular in the eye, if you want to change the shape or size of the specular highlight, change the texture:



This specular highlight is not photorealistic or physical specular, doesn't follow any rule, it's just a texture in the eye, if you move, rotated or scale the eye, the specular highlight keep the same position. In cartoon project sometimes is useful this effect.

It is advisable to set reflection = 0.0 on "matOutEye01", however, you can combine physical reflection with this feature.

- **Fake Horizon:** is a single ramp that recreate a fake Horizon



There are 3 color “ProcEye01_COLOR01” that allow to you controls the intensity and color of these new features.

ASSETS - ProcEye01_COLOR01

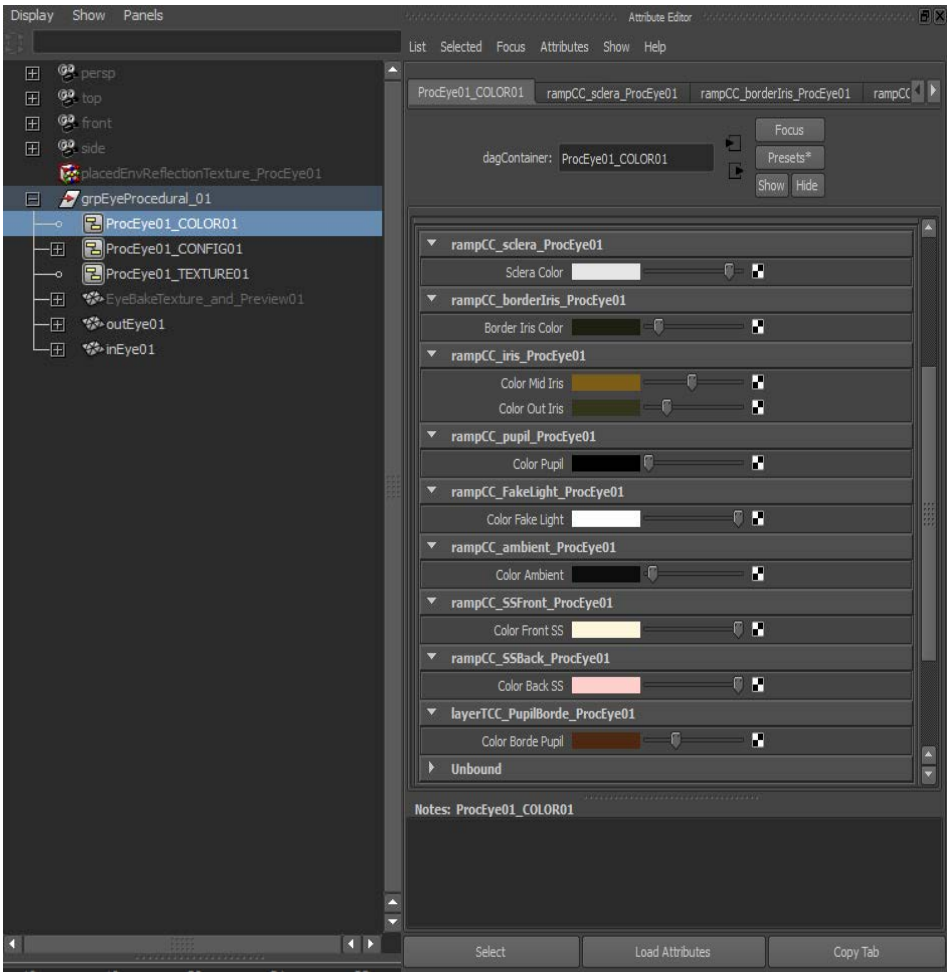
SHADERS AND COLORS

There are two shaders that you can apply to the mesh “inEye01”: matProcEye01 is a mia_material and matSSProcEye01 if you want SubSurface scattering, by default the eye has the second one.

In renderman and Vray for now, are only one (1) shader that you can apply to the mesh “inEye01”

The outEye01 has a mia_material shader that only reflects the environment. If you want to reflect objects in the scene, increase the Max distance parameter in Advanced Reflection in the shader, by default is 0.001.

In the outliner you can find an Assets **ProcEye01_COLOR01**, this assets control the parameters that change the color in the eye.



IMPORTANT: to work properly, you have to enable the Color management in the render options. If you use Color Management.

NOTE: Color In Iris was changed by Color Borde Pupil, the appeal of this border changed a little bit to make it compatible with a new feature (cat eye)

NOTE ABOUT COLOR:

1. In Vray and Renderman there is not Color Front SS and Color Back SS.
2. In renderman there is a new color rampCC_SoftLight_ProcEye02, this color help to create a depth feeling in renderman.

In renderman the fake light works a little bit different that Mental Ray and VRay, to get a nice feeling you have to combine the color FakeLight with SoftLight properly to get a nice effect, also don't use full white in fake light, if you use color in the fake light, will get a nice effect.

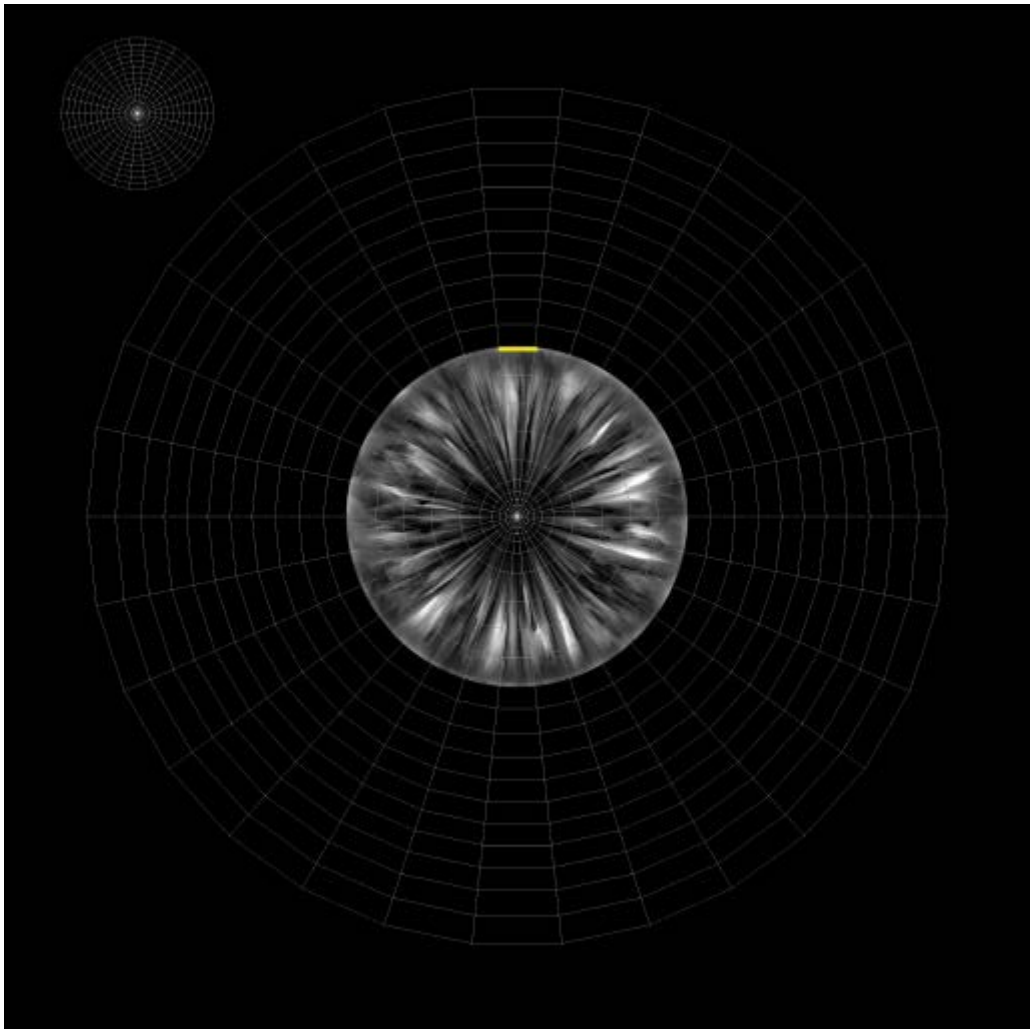
In the Fake Light in Mental Ray and VRay you can get nice effects if the V (HSV) is a little bit greater than 1.

Old version (Mental Ray)

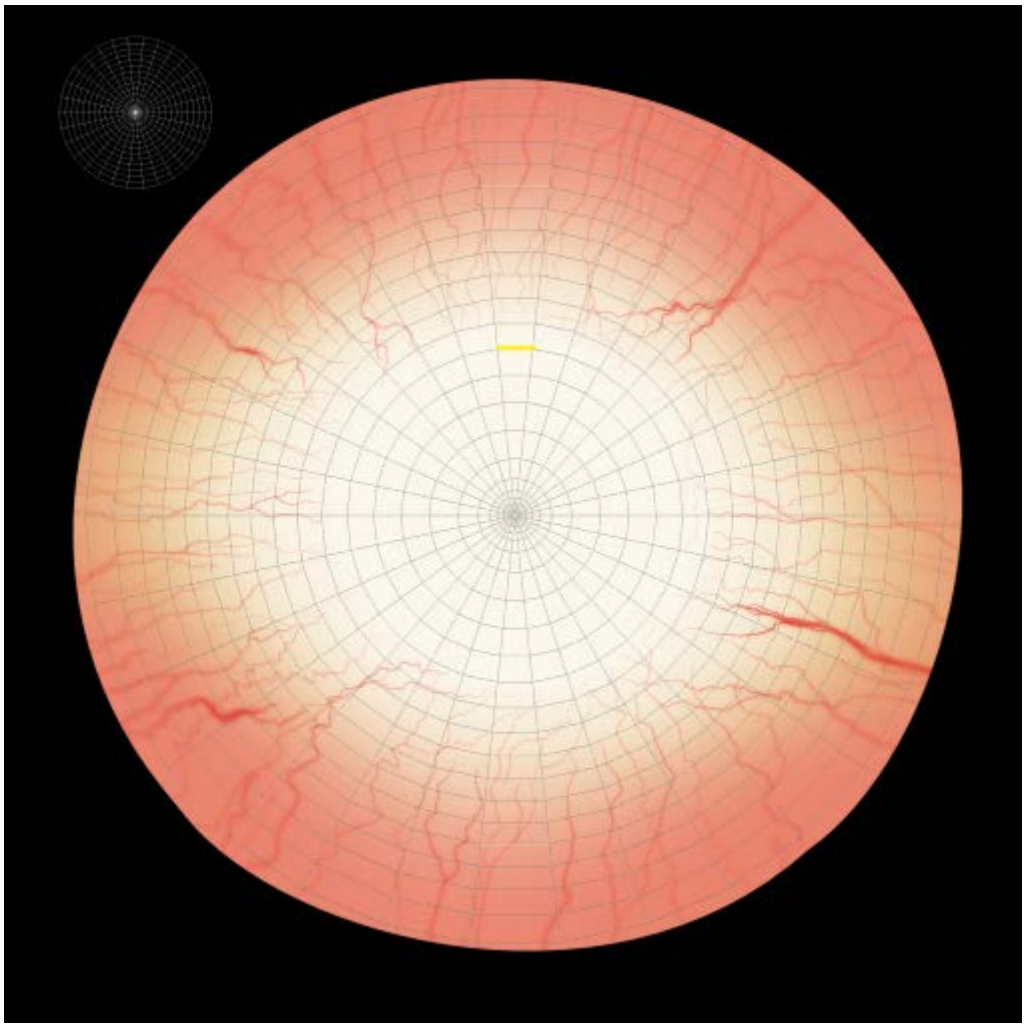
New Version (Mental Ray – Vray)

ASSETS - ProcEye01_TEXTURE01

You can apply your own iris and sclera texture; however, to work properly, there are some rules that you have to follow. In the package received a .psd file that you can use to work the texture.

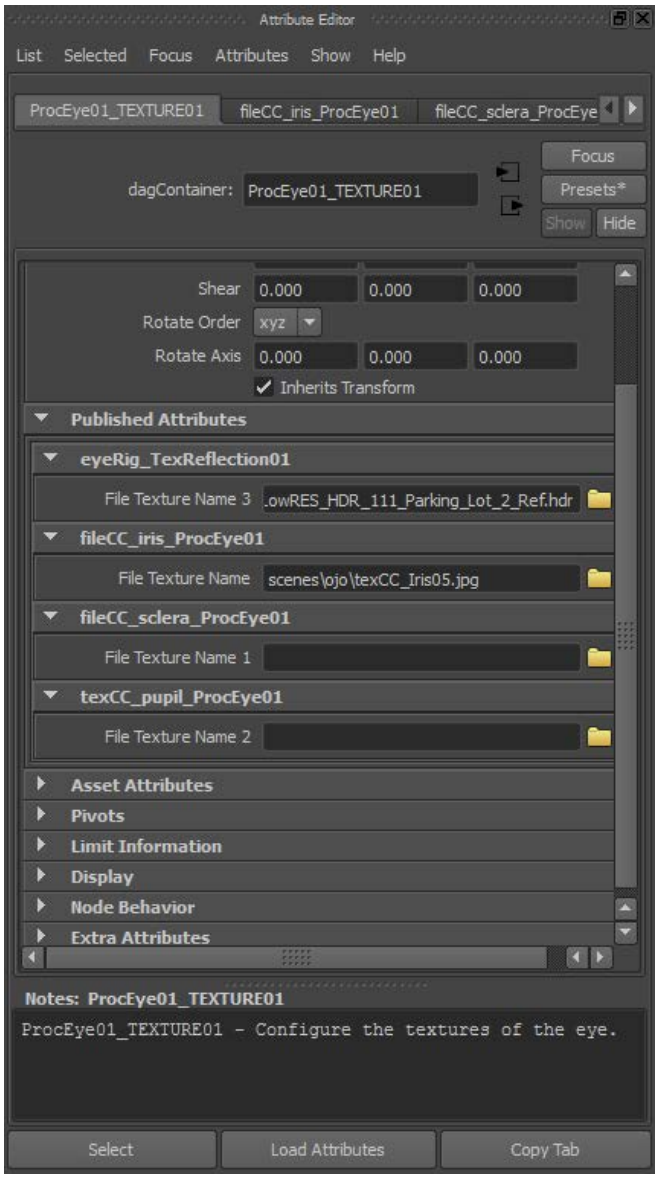


Iris texture should be contained within the circle marked (yellow line), and the sclera can fill the remaining space.



You need to create two textures separately, one for the iris and the other one to the sclera. If you don't use sclera texture keep 0.0 the AlphaTexFileSclera variable.

Both textures are placed in the **fileCC_iris_ProcEye01** and **fileCC_sclera_ProcEye01**, but use the Assets to change the texture.

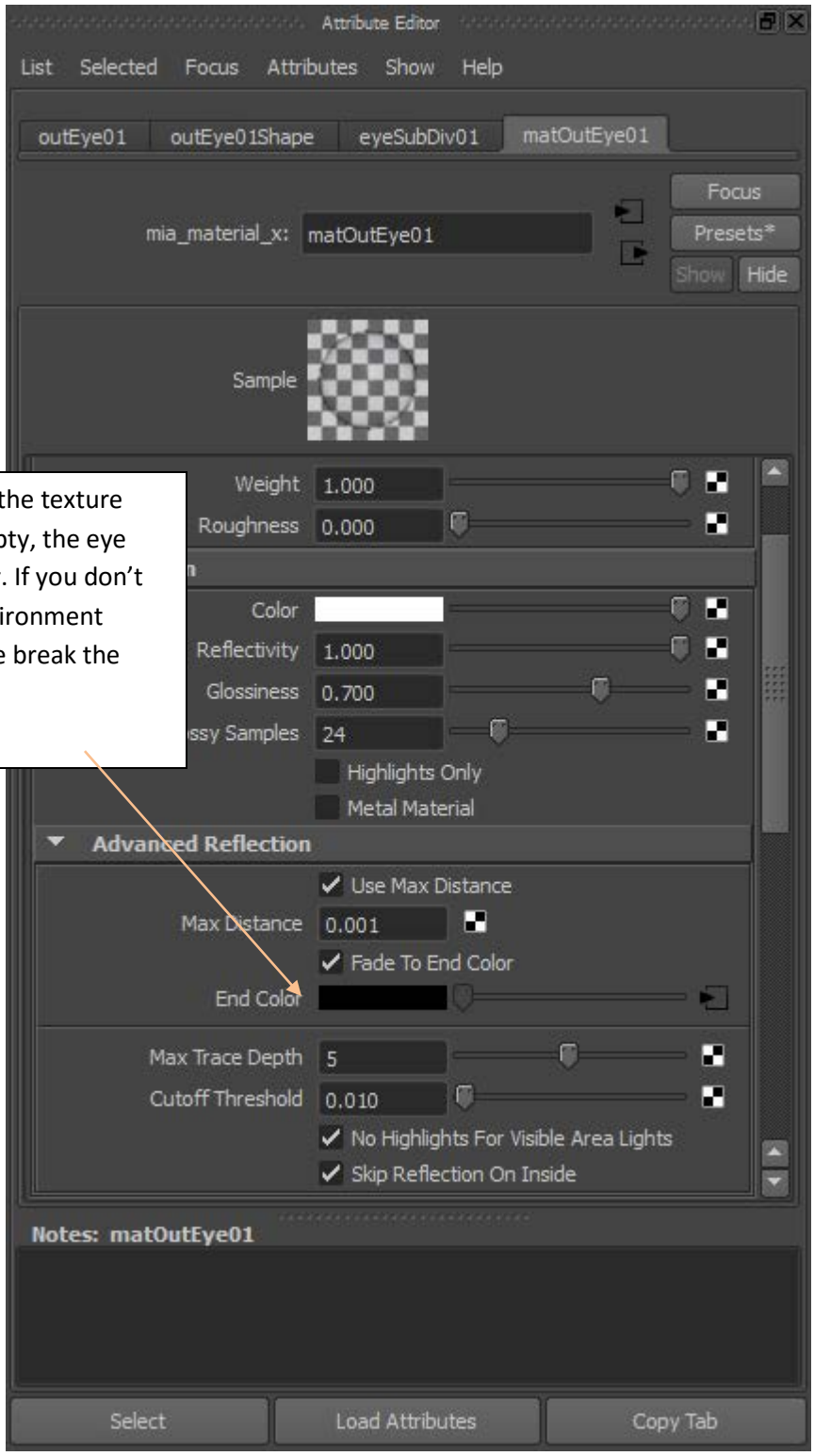


NOTE: the sclera file is not provide with the eye, by copyright issue.

You can apply texture to the pupil and environment (I recommend hdr to get a nice reflection).

TexReflection is only for Mental Ray, Renderman and Vray reflect 3D Environment.

Next sections are only for Mental ray files.

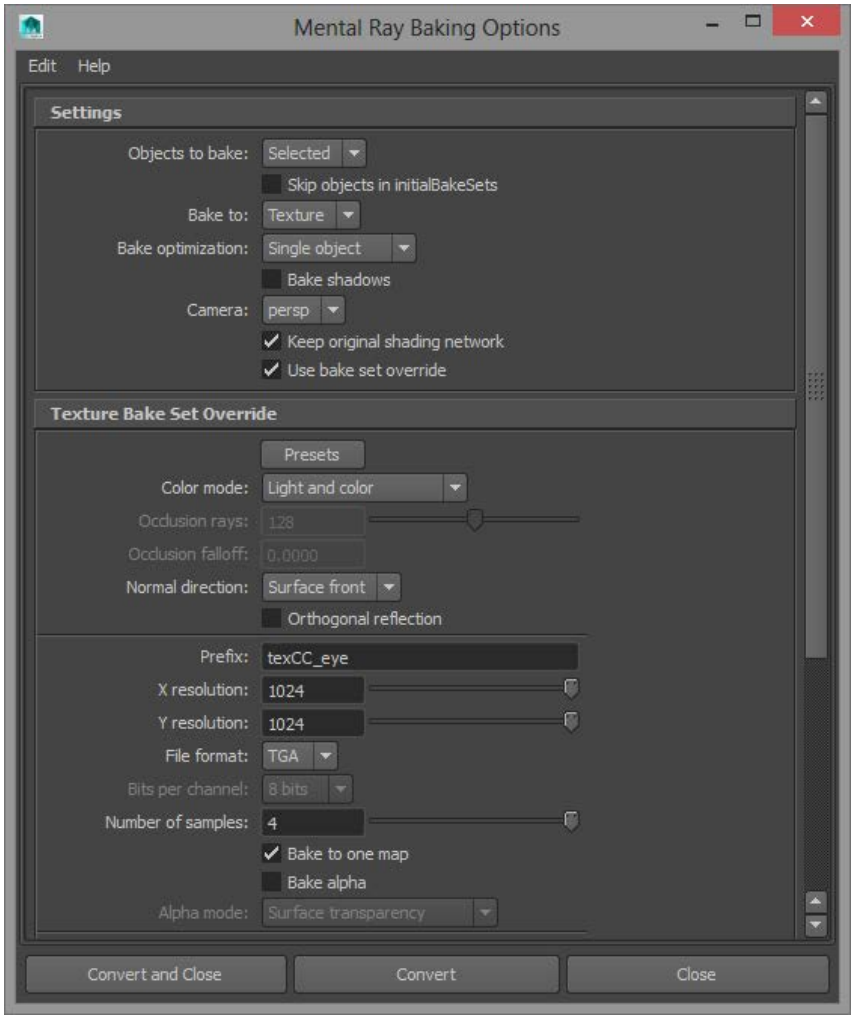


IMPORTANT: if the texture reflection is empty, the eye won't be render. If you don't want to use environment reflection please break the connection.

BAKING TEXTURE

It is possible to bake the texture after modify the parameters and use the texture in video game or 3d animation. If you want to do that, please follow the next steps.

1. Disabled the Color management if you use it.
2. Select the EyeBakeTexture_and_Preview01 mesh and set visibility = on.
3. Go to Rendering (menu) Lighting/Shading – Batch Bake (mental ray) with option.



Now you can apply the texture that you get, in a copy of the inEye mesh, and use the texture in video games for example.

IMPORTANT NODES

The Iris in the procedural eye was created using some maya nodes and a mel script, there are some nodes that are important if you wish to implement the eye in another render engine like V-Ray or Renderman (REYES).

Iris – inEye01 Mesh.

The final color is managed by "**layerTCC_ProcEye01**", this node is connected to the gamma correction node "**gammaCC_diffuse_ProcEye01**" that apply the color management.

You can use the "**layerTCC_ProcEye01**" to assign the final color in any shader in another render engine, always that the nodes involved in the process are compatible with the render engine.

Other nodes may be useful:

layerCCSS_Back_ProcEye01: control the final color of the back scattering, useful if you have a shader with SubSurface Scattering.

layerCCSS_Front_ProcEye01: control the final color of the front scattering, useful if you have a shader with SubSurface Scattering.

mul_specIntensity_ProcEye01: the final color for the specular channel.

layerTCC_Ambient_ProcEye01: control the ambient color.

Each of these nodes is connected to a gamma correction node for color management.

bumpIris_ProcEye01: control the bump mapping of the iris.

dispProcEye01: control the displacement of the iris, this node maybe would need some adaptation depending of the render engine.

Reflection – outEye01 Mesh.

This mesh has a shader with 100% transparency and full reflection using Fresnel law. The environment reflection uses Mental ray nodes, therefore, you need to adapt the logic applied to this shader in another render engine. It is common that each render engine has it's own node to management environment reflection.