

MEMO – Advanced SSS Effect

Problem / Task

Create an effect that resembles sub-surface scattering.

Solution

1. Create a specular map: load an HDRI with many bright light sources, set Intensity so that the light sources show bright and the rest dark. Export as Spherical BMP.
2. Set sky to *Atmosphere Off*, Background Hue and Ambient Color to fully white and Sky Dome Color to fully black; no sun, no shadows.
3. Ground plane material: Default and all controls to 0. *Diffuse* black, *Metallicity*, *Reflection* and *Refraction* 100.
4. Load an object with some complexity in the mesh (e.g. a Stanford dragon). Set it firmly on the ground and adjust camera and document size as desired
5. Object material: Default and all controls to 0, *Transparency* and *Refraction* 100.
 - a. Set *Diffuse*, *Specular*, *Specular Halo* and *Volume* to fully white.
 - b. Set a dot in the first three channels of *Ambient*, one dot in channel 4 of *Transparent* and one dot in channel 1 for *Ambience*. Set *Ambience* to about 1 (the value depends on the power of the Hypertexture used).
 - c. Channel 1, positive Hypertexture. Set the *Combination* to *Linear Interpol3* or *Spline Interpol* and colour swatches to the desired colour (none of any RGB lower than 2). Enable *Alpha Scaling* for this texture.
 - d. Channel 2, load specular map created in step 2, set mode to *Reflection Map*.
 - e. Channel 3, *Component 1* [A]lpha only, *Noise Type Nothing*, *Filter Sin* with $a \sim 0$, $b \sim 0.33$. The colour value should be around 200 to 220. *Combination* no Filter, no colours.
 - f. Channel 4, *Component 1* [C]olour and [A]. All colour swatches to same colour as in step 5c, *Spline Interpol*. *Noise Type Nothing*, *Filter Clip* $a=8$, $b \sim -0.3$. Copy *Component 1* to *Component 2* and *Blend Curvature*. Set (L)ightness in HLS model for the colour swatches about 25% brighter (e.g. 127 to 192; or reduce Saturation) and check *Combination* for a brighter to darker blurred transition. *Combination* mode is *None*.
 - g. In the Material Options set *Find concave* and *Hard edges*. Also check that *Calculate curvature* and *Linear scaling* are enabled.
6. Copy object from step 4 and modify material.
 - a. Keep only the Hypertexture in channel 1 for *Ambient* and *Ambience*. Set the remaining colours to fully white, all controls to 0 except *Refraction* 100 and a low value for *Ambience*. A good start is 20 times as set in step 5c.
 - b. Channel 1 negative Hypertexture. Copy *Component 3* into *Component 2*, disable *Component 3* and blend *Components 1* and *2* with *Multiply*. Set the *Combination* to *Linear Interpol3* or *Spline Interpol* and colour swatches to the opposite colour used in step 5c. Enable *Alpha Scaling* for this texture.
 - c. In the *Material Options*, set to *Fuzzy* and disable *Cast Shadows*.
7. In the *Edit > 3D Transformations* set the size of the object to X=Y=Z around 99%.

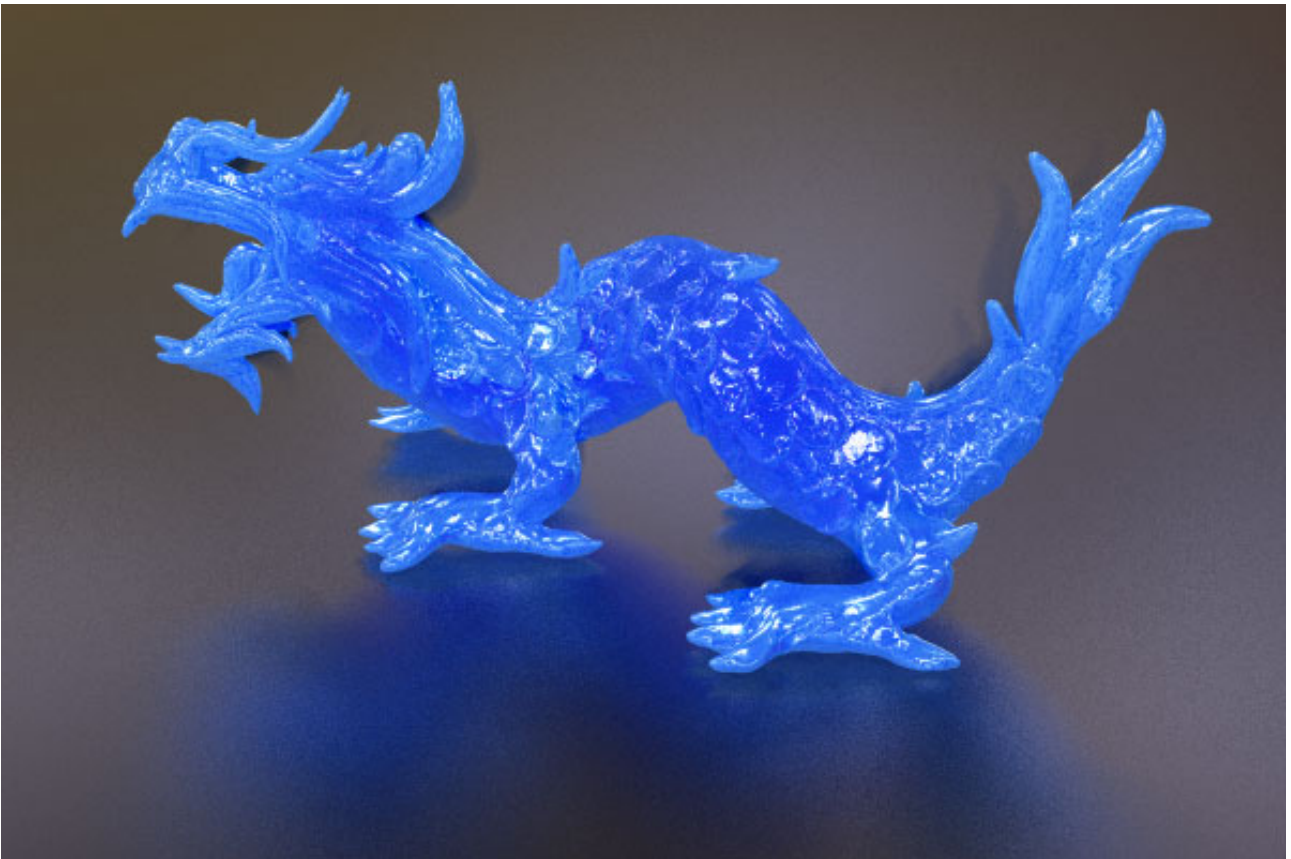
Bryce 7.1 Pro — Quick Reference (based on David Brinnen's video *Advanced_SSS_effect1*)

8. Set in *Render Options Premium*, *Blurry Reflections* and *Blurry Transmissions*, high *Rays per pixel* (64+). To improve render efficiency, lower *Maximum Ray Depth* to 4 and set *Maximum Internal Reflection (TIR)* to 2.

Note: The procedure described in the steps above is a bit different from the original video, I deem them simpler and the result is the same.

Adjustments

- *Ambience* value of outer object (step 5a) for overall brightness.
- *Ambience* value of inner object (step 6a) for darkness of inside.
- Set sky (step 1) *Background Hue* to black, load the same HDRI as used for the specular map (step 2), but a specular convolved one. Set all controls in IBL tab to lowest value, except *Intensity* for a pleasing backdrop. Do not *Tonemap*. Use *as backdrop* and *Add to sky*.



GarageClosed_1280 for specular map and *GarageClosed_SC250_800* for backdrop were used.

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