Realistic Scope Effect

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About

Realistic Scope Effect is a unity package containing assets that allows for easy creation of a realistic sniper scope setup.

The package contains:

- Scope Overlay shader
- ScopeEffectBase script
- Sniper Scope Mesh / Bump Textures
- Demo scene
- Demo FlyCamera script

How to Setup

For a complete demo, open the scene located at *ScopeEffect/Scenes/Demo.*

To create the effect from scratch:

1. Create a new material. Set the material's shader to "*Custom/Scope Overlay*".

2. Set the desired textures and settings for the new material. (See *Shader* section for complete explanation).

3. Add the material to the Mesh Renderer you wish to use as the scope's lens (Rear Lens if using the supplied model).

4. In order to simulate “scope shadow” optic effects, the *ScopeEffectBase* script must be used. Attach this script to a GameObject that you wish to use as a reference point for the centre of the scope. This GameObject’s local forward vector should point in the direction that the scope is aiming.

5. In this new script, set *Material* variable to the material previously created. Set *Camera Object* to the Camera that is being used to view the scope (most likely the Main Camera).

6. In Play mode, the scope material will react to the position of the viewing camera.

Shader

- **Main Color**
  Color tint for *Main Texture.*

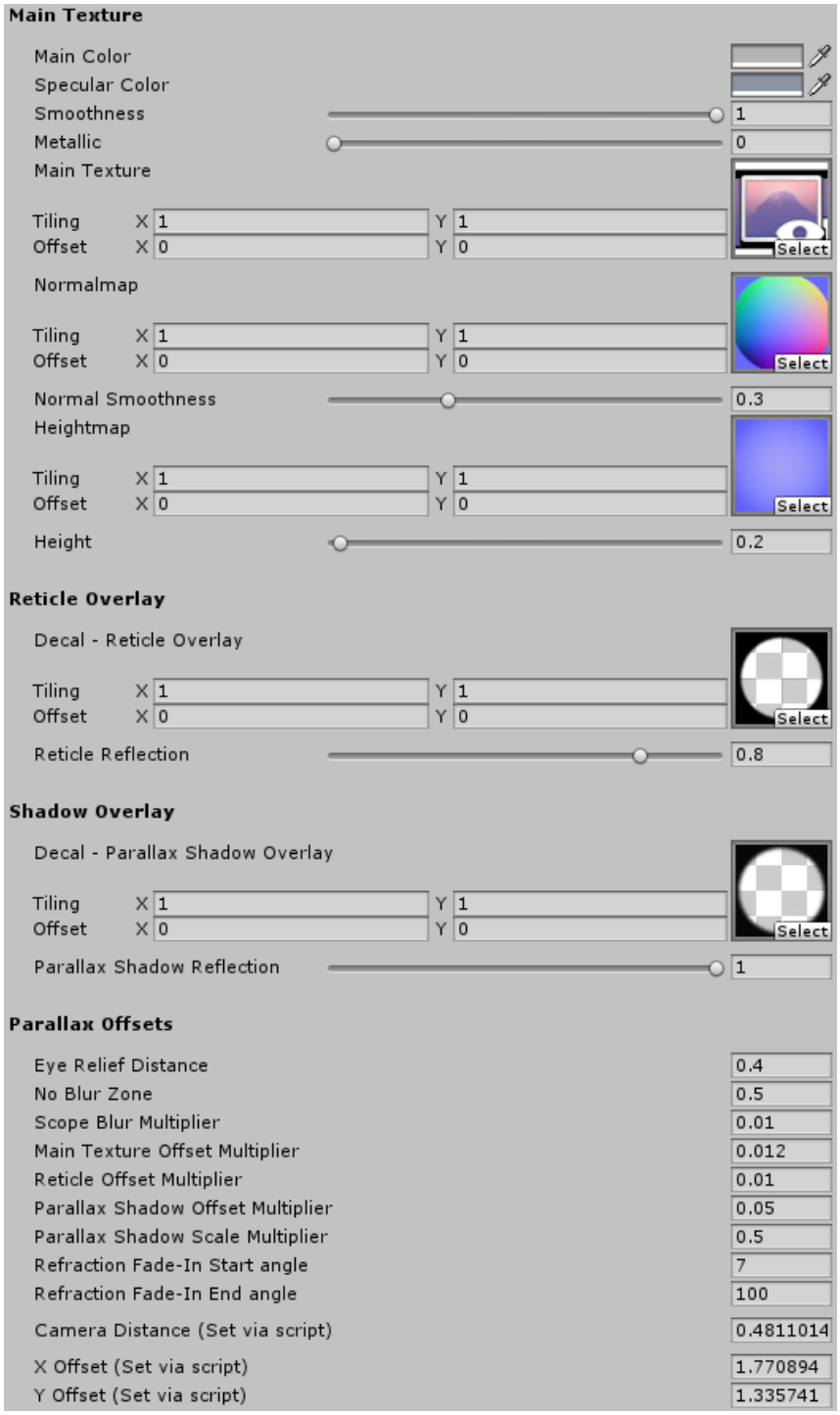
- **Specular Color**
  Lighting color tint.

- **Smoothness**
  The overall smoothness of the lens surface.

- **Metallic**
  The overall metallicity of the lens surface.

- **Main Texture**
  The main background texture. This should be a Render Texture that a separate camera attached to the front of the scope is rendering to.

- **Normalmap**
  Lighting normalmap. Used to change the way light bounces off the surface.



- **Normal Smoothness**
The "smoothness" of the *Normalmap* (Level of bumpiness for light).

- **Heightmap**
Surface heightmap. Used to simulate height and bumpiness.

- **Height**
The "Smoothness" of the *Heightmap.*

- **Decal – Reticle Overlay**
Texture to use for the scope's reticle.

- **Reticle Reflection**
The smoothness of the lens surface in the alpha areas of the *Parallax Shadow Overlay* texture.

- **Decal – Parallax Shadow Overlay**
Texture to use for the scope interior "shadow effect".

- **Parallax Shadow Reflection**
The smoothness of the lens surface in the non-alpha areas of the *Parallax Shadow Overlay* texture.

- **Eye Relief Distance**
The ideal distance to view the scope from. This affects the parallax shadow scale and blur.

- **No Blur Zone**
  Absolute distance measured from the eye relief distance. Anything below this distance will result in a sharp scope picture. Anything above will cause blur.

- **Scope Blur Multiplier**
  Value used to determine how quickly the scope blurs up when out of the *No Blur Zone.*

- **Main Texture Offset Multiplier**
  Value that determines the rate of offset for the *Main Texture* when the viewing angle changes.

- **Reticle Offset Multiplier**
  Value that determines the rate of offset for the *Reticle Overlay* texture when the viewing angle changes.

- **Parallax Shadow Offset Multiplier**
  Value that determines the rate of offset for the *Parallax Shadow Overlay* texture when the viewing angle changes.

- **Parallax Shadow Scale Multiplier**
  Value used to determine rate of change of the scale of the *Parallax Shadow Overlay* texture, scaled from the centre of the image. This is useful to simulate the change in size of the *Parallax Shadow Overlay* based on distance.

- **Refraction Fade-In Start Angle**
  Viewing angle, above which the refraction effect begins to fade in.

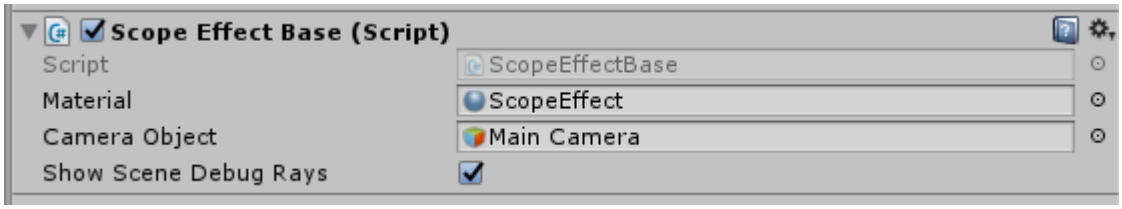
- **Refraction Fade-In End Angle**
  Viewing angle, at which the refraction effect is at full strength.

- **Camera Distance**
  Distance from the lens object to the viewing Camera (automatically set by *ScopeEffectsBase* script if *Material* variable is set to this material).

  X Offset
  Offset to use for "scope shadow" effect on the x axis (automatically set by *ScopeEffectsBase* script if *Material* variable is set to this material).

- **Y Offset**
  Offset to use for "scope shadow" effect on the y axis (automatically set by *ScopeEffectsBase* script if *Material* variable is set to this material).

Script



The *ScopeEffectBase* script is used to automatically set values in the *Scope Overlay* shader at runtime, based on the viewing angle and distance from the scope.

- **Material**
  Material to set values for. This should be of the type "*Custom/Scope Overlay"*, and should be set in the Mesh Renderer on your lens model.

- **Camera Object**
  Camera GameObject that scope is being viewed through.

- **Show Scene Debug Rays**
  Show the debugging rays in the Scene View.

In the following screenshot from the Scene View, a few things are demonstrated.

- The blue ray represents a perfectly centred view down the scope.
- The red and green lines represent the X and Y components of the viewing angle
- The selected object is a GameObject with a *ScopeEffectBase* script attached
- The yellow / black line represents the viewing angle and distance from the camera. The yellow component represents the set *Eye Relief Distance* value.