

Moebius - Hatching shader

Jean Giraud also known as Moebius was a french comic illustrator famous for his very specific art style



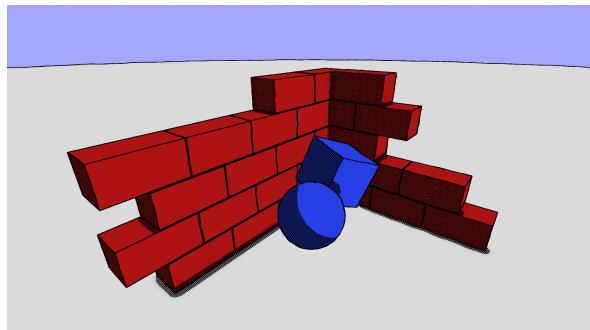
My goal was to create a realtime shader resembling Moebius's work in a familiar 3D environment. For my project I chose Unity engine for its friendly visual way of creating shaders in so-called shadergraphs.

The project consists of a couple of shaders (mostly post-processing) and a URP configuration. This simplicity makes it easy to adapt the shader for any other scene or project.

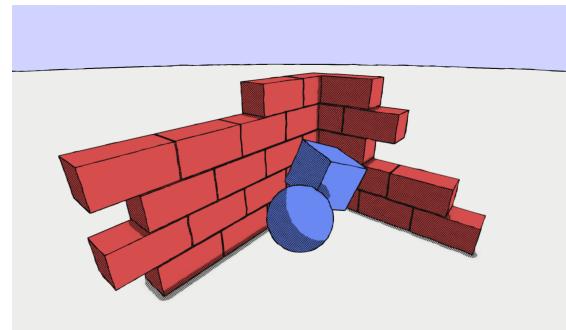
Getting started

As part of the project, you may create any new scene with new objects, colors, textures. The only thing you need to keep in mind is to set an *URP/unlit* shader on every material in order for the shader to function correctly.

You may also put two scripts on a camera object - one, that allows free movement (adapted from the StackOverflow, no credit for me here) and one, that allows for “screenshoting” and saving the images. As the way of rendering into a texture ruins the colors quite a bit I added a second option to capture your in-game screen. This yields lower quality results but with much nicer visual style. The two screenshots are triggered with R and T keys respectively.



RenderTexture screenshot, colors not true to reality, triggered with R key



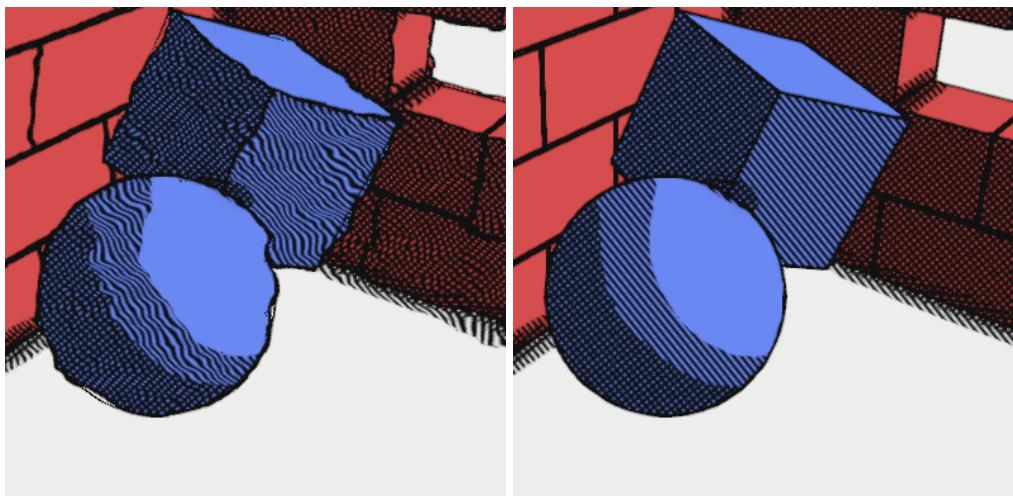
Ingame screenshot, better colors, worse resolution, triggered with T key

I strongly suggest against messing with the settings of URP as they are very fragile at the moment. You are, however, encouraged to tweak the shader itself. It should be nicely labeled and simple enough to read.

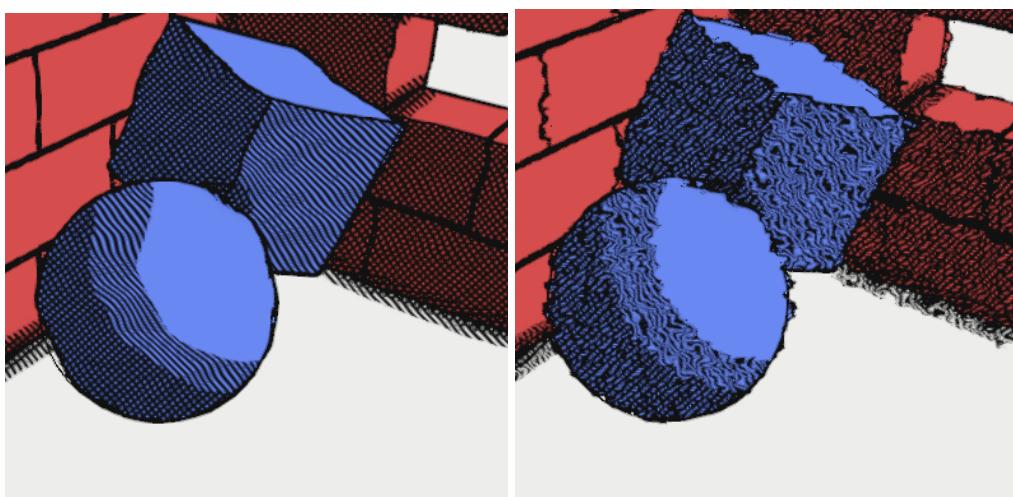
Parameters

You can further tweak the shader parameters in *Assets/Shaders/Moebius* material.

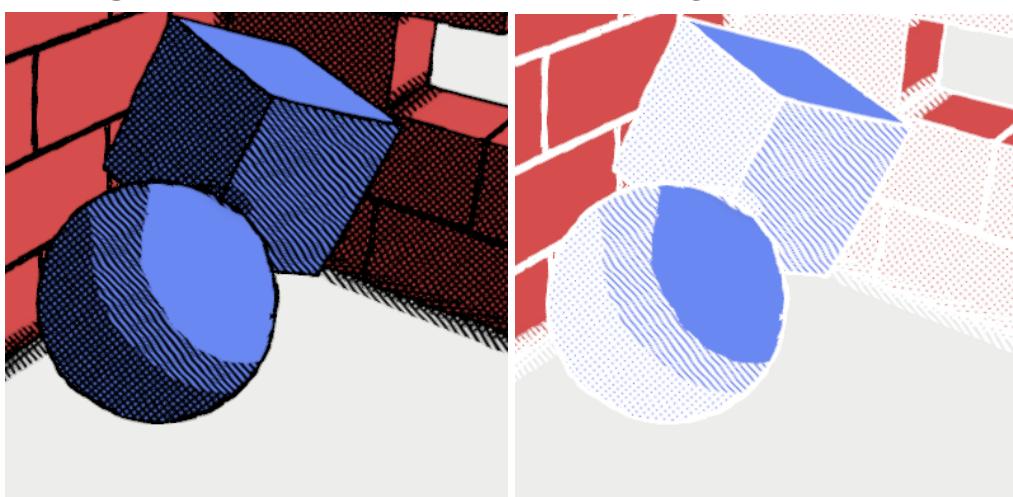
- **Smoothness** - Lower the number, the straighter will the edges and the hatches be



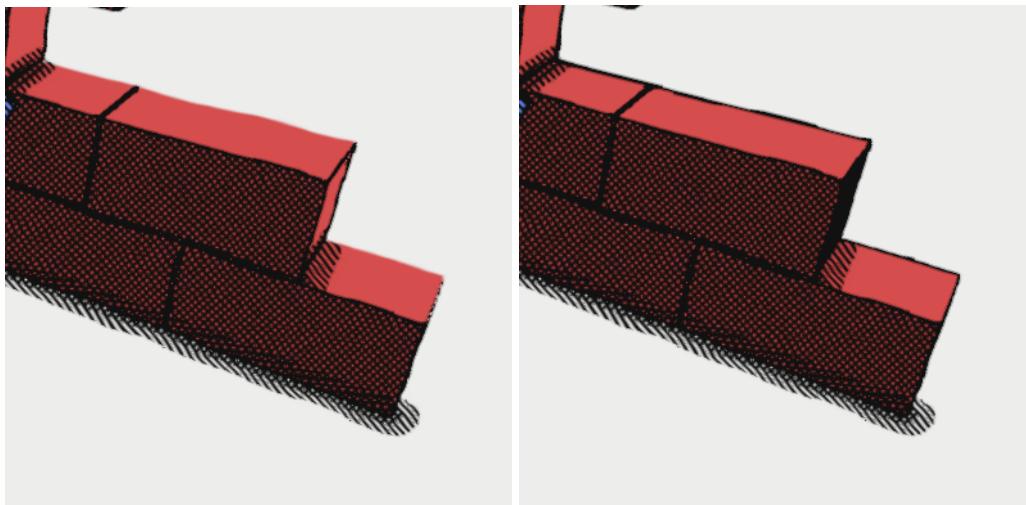
- **Noise scale** - The scale of the waves on the edges and hatching



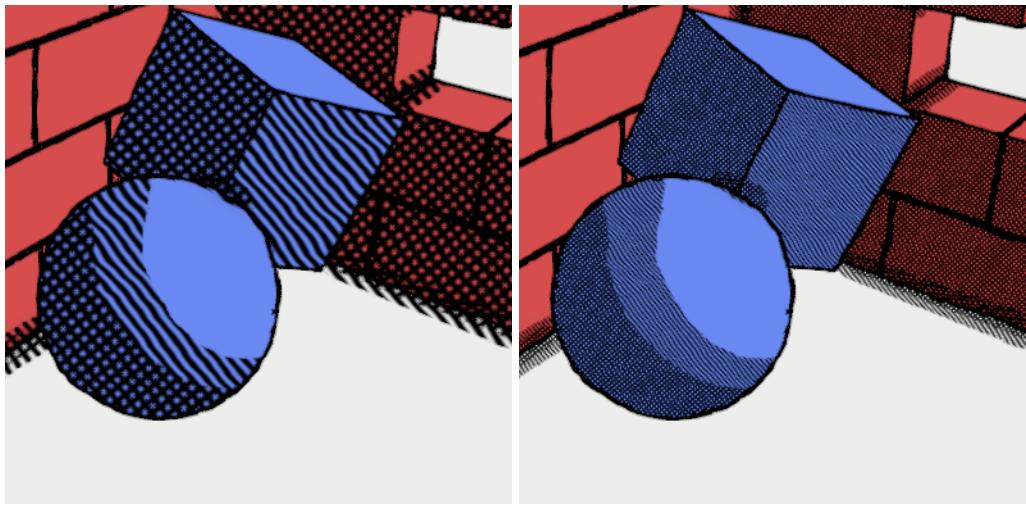
- **Hatching color** - The color of the hatches and the edges



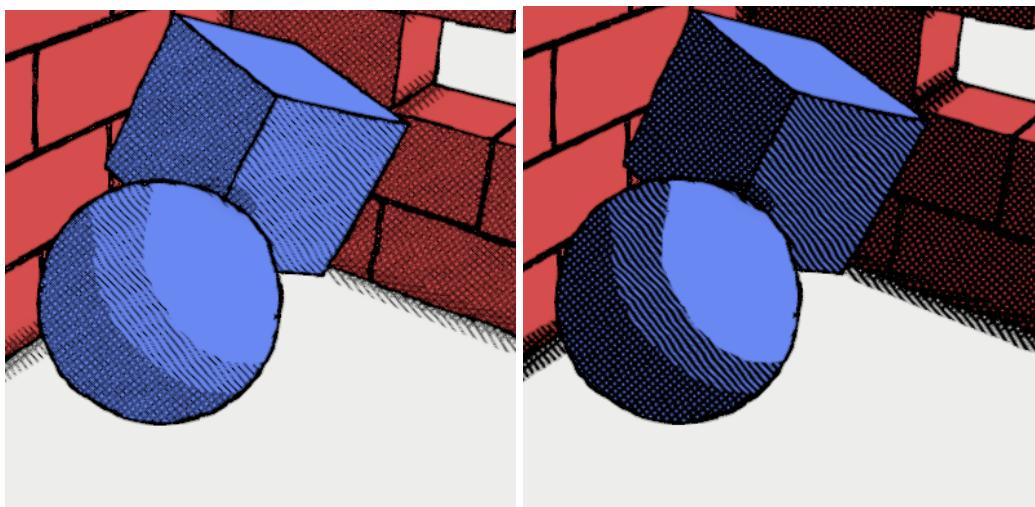
- **Depth sensitivity** - Higher value makes the edges more sensitive to depth, but more prone to false positives (black walls)



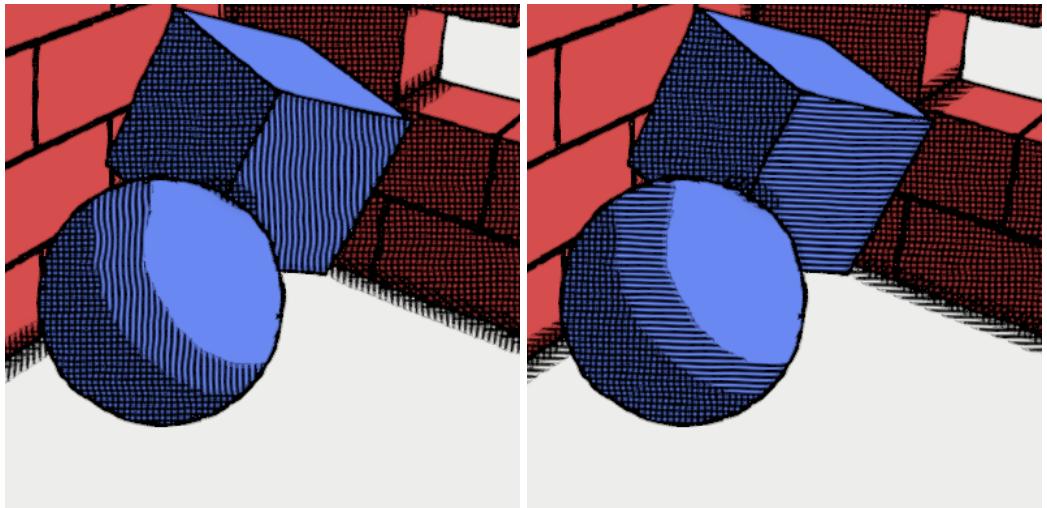
- **Hatching density** - Changes the scale of hatching



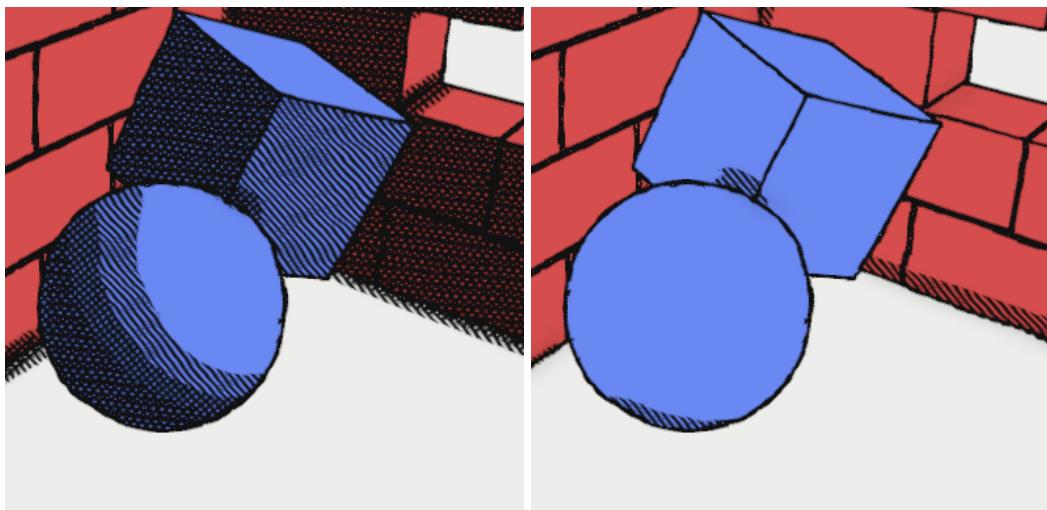
- **Hatching thickness** - The weight of the hatching stroke



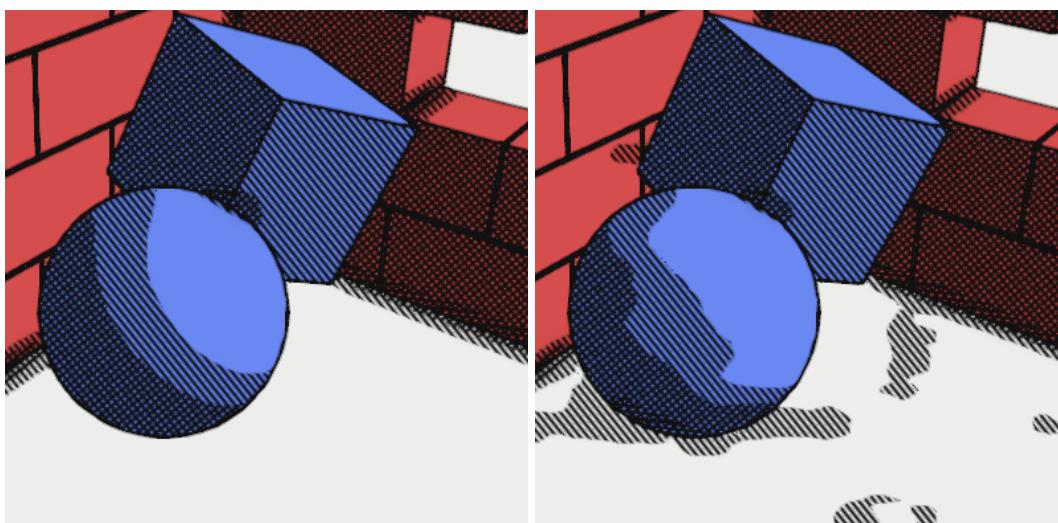
- **Hatching angle** - The angle of the hatches in radians in relation to the screen



- **Hatching thresholds** - A set of values determining how dark the image must be in order to start hatching with a certain angle of hatches (vertical, horizontal, diagonal)



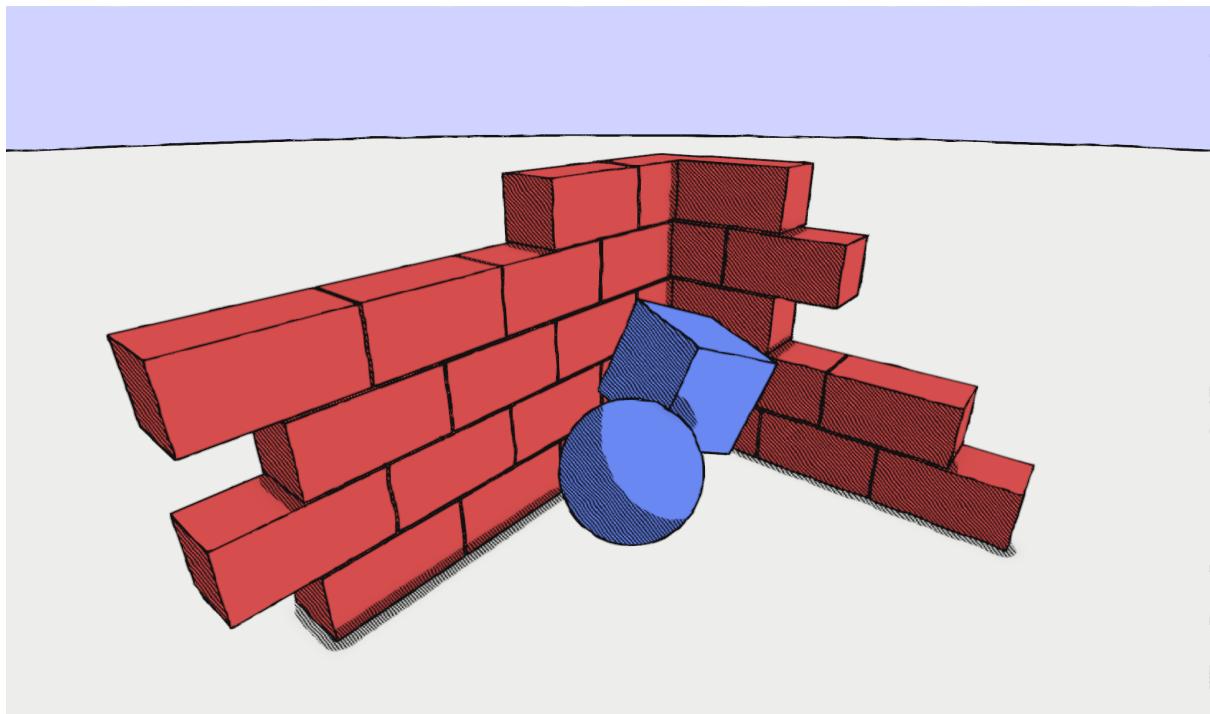
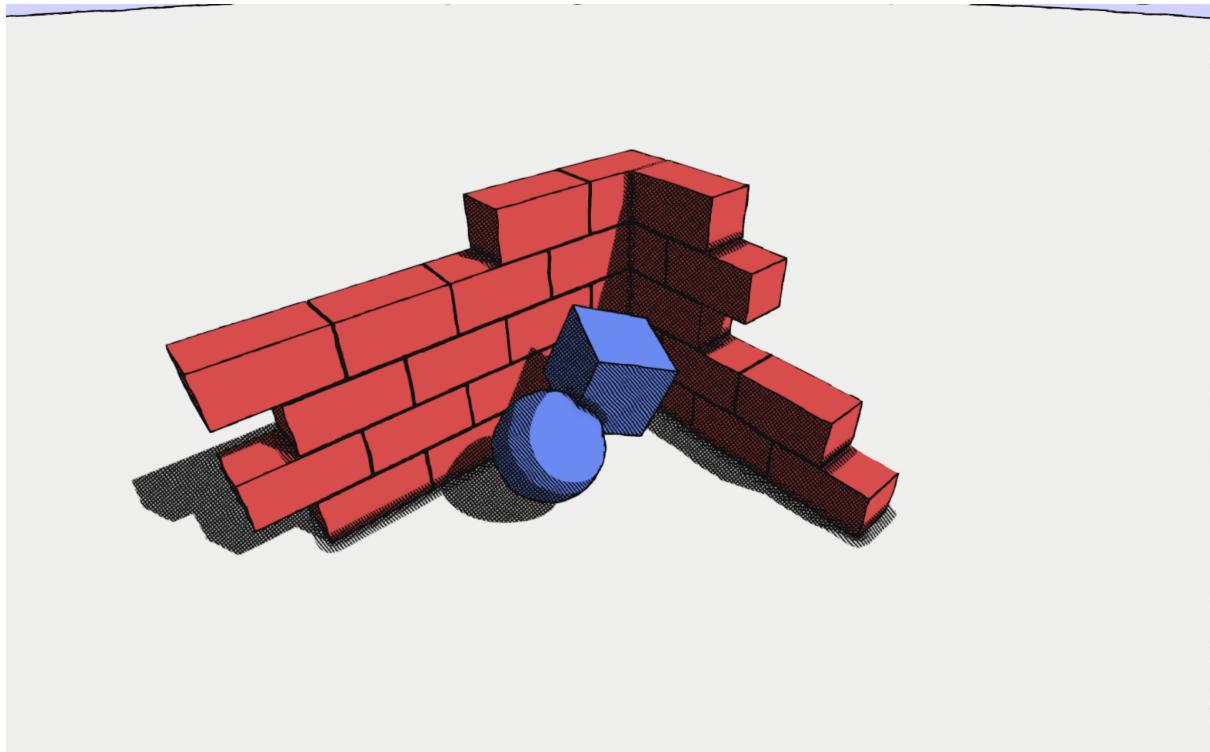
- **Shadow noise** - How much and how large noise should be added to the borders of the hatching (usually yields undesirable results)



The outcome

The results of your renders only depend on your fantasy and the creativity of your models. The shader works the best with low-poly models with flat colors. Even though it has no problem with textures, I strongly suggest against them as they do not look very nice.

Sample scene with higher and lower hatching thresholds



[Low-Poly Simple Nature Pack](#) from the Unity Asset Store

