A Gallery of Mathematical Cow Shaders
CS 519 (“Shaders”) Class Assignment – Spring Quarter 2007
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http://eecs.oregonstate.edu/~mjb/cs519

William Brendel & Nadia Payet
Cow Wineglass
The glass cow was created by using refractive cube-mapping, with Phong lighting for the specular highlights. The “wine” was created by restricting the cow height to a certain level. The red spot in the real wine glass was mimicked in the cow with a noisy elliptical oval. Cheers!

William Brendel
Lava Cow
This cow is given a lava look by using a noisy black-red-yellow texture, bump-mapping on the cracks between the lava and the rocks, and a per-pixel Phong lighting model. The lava effect also incorporates the different colors of the lava in each of the three dimensions. With the light shining, it looks like a lava circuit board.

Benjamin Brewster
Printed Circuit Board Cow
This effect was achieved by using a pattern with a 3D noise function, with patterns on both sides and each edge. A noise function then controls the irregular edges of the cutouts in the outer two cows, revealing smaller cows inside.

Will Dillon
Credit Cow Hologram
The “hologram” appearance was created by turning the cow’s back facing a few degrees clockwise. With the right coloring, it looks like a printed circuit board.

Swamy Korada
Distorted Decimated Flying Cow
Each wood “panel” is composed of light and dark concentric cylinders perturbed with a noise function to look more irregular. The “nail holes” are added as a final pixel equation.

Nick Hogle
Pen & Ink Cow
This effect was done by hand. It was created using a Tonal Art Map, which is a series of denser and denser crosshatch patterns. Those patterns are then applied to the 3D object in lieu of lighting.

Kannan Jeyakuma
Displaced Decimated Cow
This effect uses a Tonal Art Map created by hand in Photoshop. The Tonal Art Map is a series of denser and denser crosshatch patterns. Those patterns are then applied to the 3D object in lieu of lighting.

Ray Lin
Demon Glow Cow
This effect uses a Tonal Art Map created by hand in Photoshop. The Tonal Art Map is a series of denser and denser crosshatch patterns. Those patterns are then applied to the 3D object in lieu of lighting.

Christopher Moore
Impressionist Cow
This effect includes a defocused image as a height map, then applies an intensity slope to the neighboring pixels in the image produced a “normal” by looking at the intensity slope to the neighboring pixels. The cow was then textured with the image, with pixels being discarded in between the strands of wire.

Nadia Payet
Barbed Wire
In this effect, a cow is geometrically morphed with two spheres. Each sphere’s radius and location are separately controlled, along with a blending factor between the sphere and cow coordinates.

Scott Proper
Bull Caricature
In this effect, a cow is geometrically morphed with two spheres. Each sphere’s radius and location are separately controlled, along with a blending factor between the sphere and cow coordinates.

Joe Graphics
Disco Cow
This cow is a refugee from the disco era. The 3D location of each pixel is compared with the 3D light source location and the 3D location of the disco ball to see how close one of the mirrored facets comes to illuminating that pixel.

Ben Weiss
Cow Coming Out of Warp
On a sphere, this looks like islands on a water planet. Unfortunately, if one tries to illuminate that pixel, someone has been throwing poop. The islands start out as ovals, with a lot of noise added.

Mike Bailey
Throwing Dung
On a sphere, this looks like islands on a water planet. Unfortunately, if one tries to illuminate that pixel, someone has been throwing poop. The islands start out as ovals, with a lot of noise added.

Joe Graphics
Corroded ChromaDepth Cow
This cow is decimated with a noisy erosion pattern and then colored using ChromaDepth colors to give it the appearance of depth when the glasses are worn.

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mjb -- June 22, 2007