Reflective Puddles

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APCG 330 Spring 2007
Puddle Characteristics

- They are more transparent near the edges.
- They are more reflective in the center.
- Their shape is dictated by the space they fill.
Summary of Steps

- Begin with the object that will define the puddle’s shape.
- Create a texture map based on the shape of the area the puddle will fill.
- Create a puddle polygon and give it the reflective properties and texture map.
- Combine the two shapes and render.
Step 1: Create Texture Map

- Since the shape of the puddle is limited by the shape of the depression it will fill, we are going to create a reference render to guide the creation of the texture map.

*Begin with the ground object. Highlight all the polys you think will be under the puddle’s surface.
*Press “q” and give them a different surface name and a bright contrasting color.
Step 1: Create Texture Map

- Bring it to layout and render it with the camera directly overhead. This can now be used as a rough guide to create the texture map.
Step 1: Create Texture Map

- In a Paint program (Photoshop used here), create a texture map with a gradual fading to black where you want the water to be most reflective. Also, save a separate copy with colors inverted.
Step 1: Create Texture Map

- The completed texture map:
Step 2: Create Puddle Polygon

- Create and name a flat polygon in the same dimensions as the render so the texture map will remain accurate when applied.

*Measure the size of your starting object and create a similarly-sized flat polygon with the box tool, pressing “n” to bring up the numeric keypad and enter exact values.*
Step 2: Create Puddle Polygon

- Bring the Puddle into Layout, open up the Surface Editor and apply the following values in the sections provided. These can be adjusted depending on the desired end result.

**Specifications:**
- Color: Black
- Luminosity: 50%
- Diffuse: 80%
- Specularity: 41%
- Glossiness: 49%
- Reflection: 90-100%
- Transparency: 80%
- Refraction: 1.6
- Translucency: 0%

Turn on smoothing.
Step 2: Create Puddle Polygon

- From the Surface Editor, open up the Texture Editor Panels for Transparency and Reflection and apply the two texture maps.

  * Click the "T" buttons for the Transparency and Reflection options.
  * Keep the projections planar and load the texture map into both the Transparency and Reflection panels.
  * Change the Texture Axis projection to the Y axis and click Automatic Sizing.
  * Click the "Use Texture" button and exit Surface Editor.
Step 3: Preparing for Renders

- In Modeler, finish texturing and modifying the defining object (in this case, the ground) as needed, then send it to layout with the Puddle object. Consider subpatching it with “Tab” to smooth the edges of the puddle.
Step 3: Preparing for Renders

- With both objects in layout, adjust the puddle object so that it is filling the depression without its edges showing.
Step 4: Render!

- In the render options panel, make sure that all Ray Tracing options are on and limit the Ray Recursion Limit to 5 or 6.
References:

- **Essential Lightwave 8.5** by Timothy Albee
- **Puddles in Lightwave 3-D** by Erik Nichols
  
  [link](http://www.ecst.csuchico.edu/~ranger/samples/CSCI140/tutorialsS05/PuddlesinLightwaveErikNichols.pdf)