

## Environment Mapping

## Gene Miller



## In practice

- Shiny spheres  
Gene Miller
- Interface  
(L. Williams 1985)
- Terminator 2 (1991)



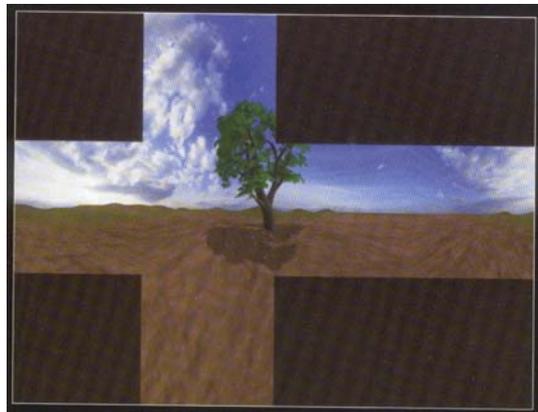
## Gerri's Game

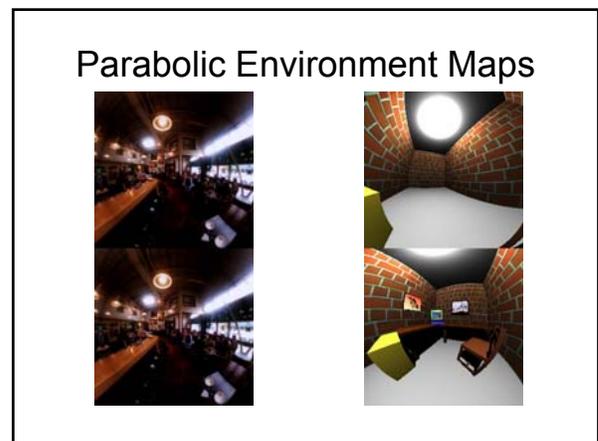
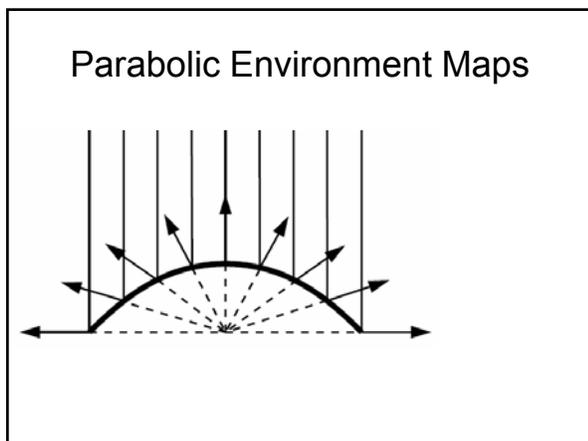
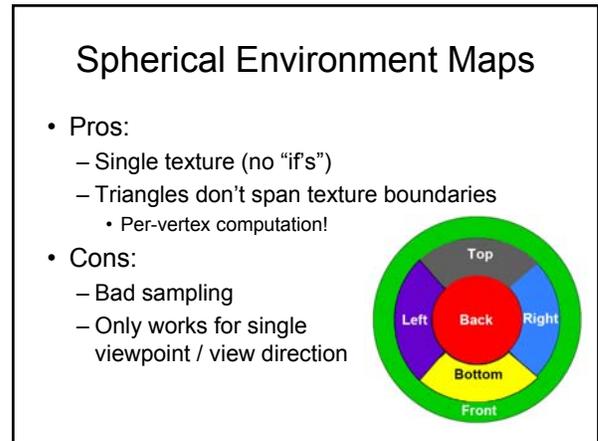
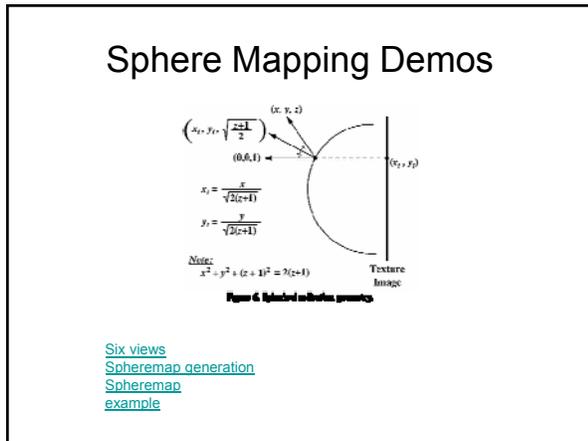
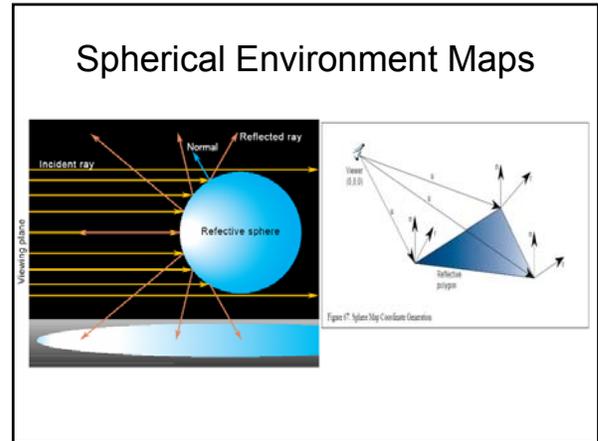
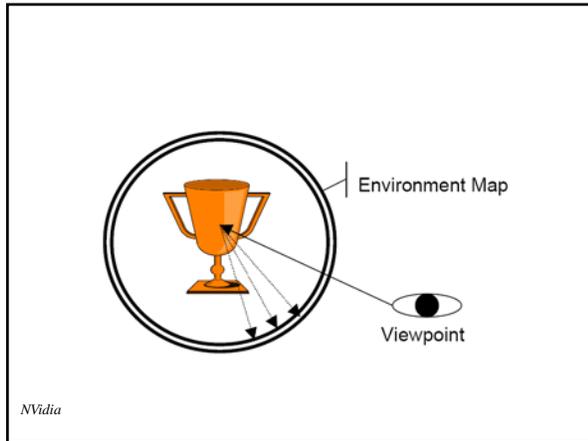


## Story of Reflection Mapping

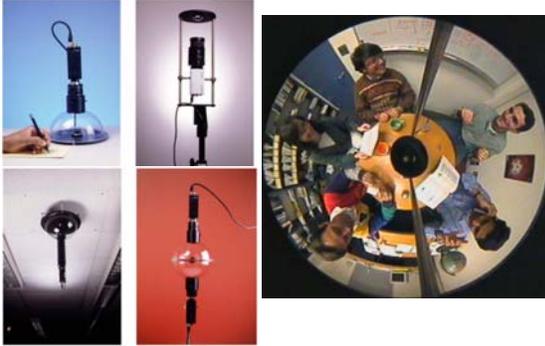
[Paul Debevec's Story of Reflection Mapping](http://www.pauldebevec.com/ReflectionMapping/)

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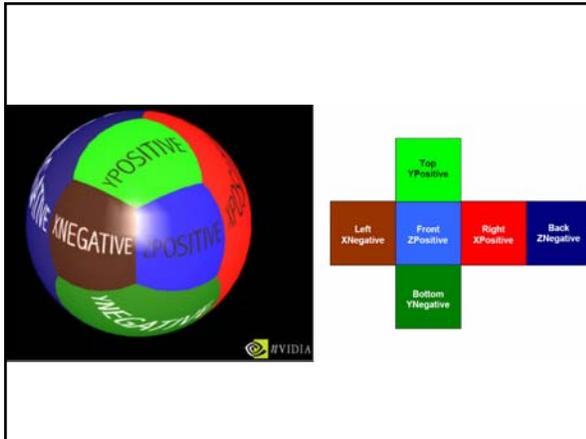
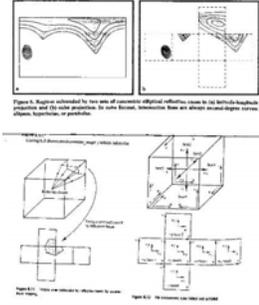


## Nayar '97



## Cube Environment Maps

- Per-fragment
- Supported in HW
- No warp (perspective maps)



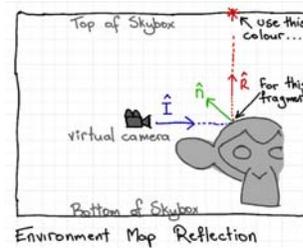
## Cube Environment Mapping

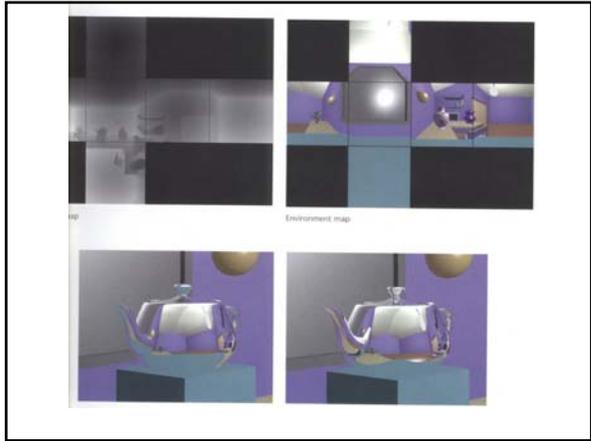
Superbible example

## Skybox

- Big box with the environment map on it
1. Draw a box around the viewer and cubemap it
    1. In eye-space
    2. Rotate the cube by upper-left 3x3 modelview and draw in world space (ensuring far plane doesn't clip)
  2. Render a full-screen quad (NDC space)
    1. Compute the texture coords for the corners of the viewport (by full-screen quad rotated by the 3x3 modelview)
    2. Cubemap it

## Skybox





### Paul Debevec

- St. Cross
- Panorama stitching
- Cube projection