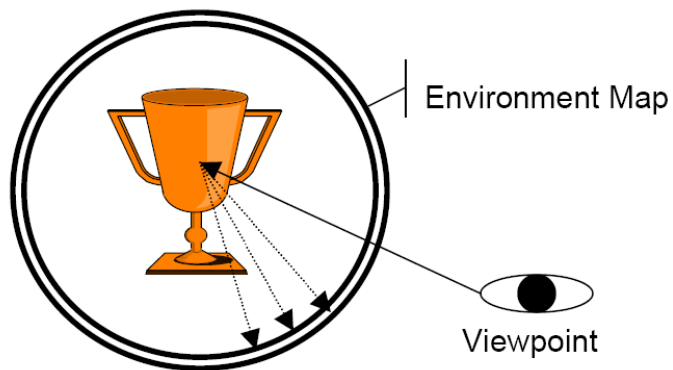
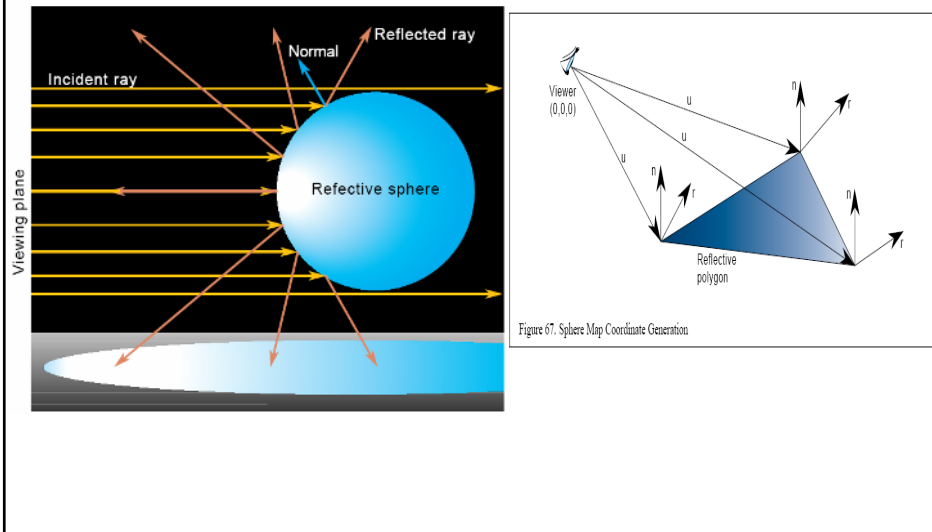


Environment Mapping



NVidia

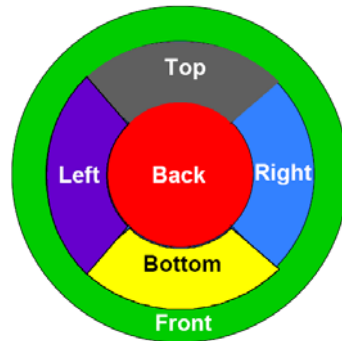
Spherical Environment Maps



Sphere Mapping Demos

Spherical Environment Maps

- Pros:
 - Single texture (no “if’s”)
 - Triangles don’t span texture boundaries
 - Per-vertex computation!
- Cons:
 - Bad sampling
 - Only works for single viewpoint / view direction



Gene Miller



In practice

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

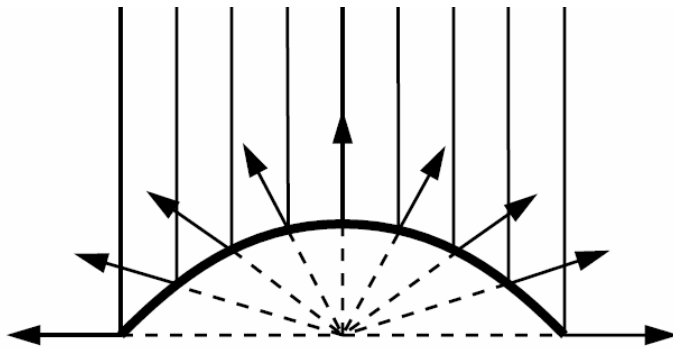


Gerri's Game

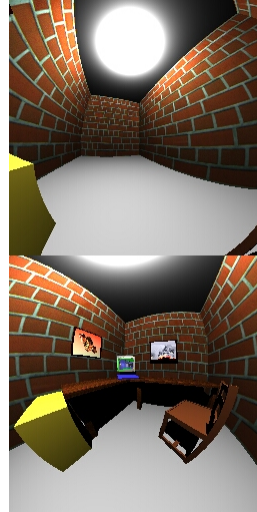


Story of Reflection Mapping

Parabolic Environment Maps



Parabolic Environment Maps



Nayar '97



Cube Environment Maps

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

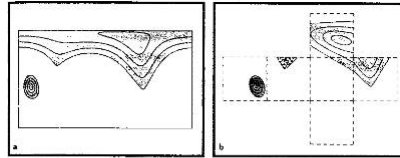


Figure 6. Regions subdivided by two sets of concentric elliptical reflections come in (a) latitude-longitude projection and (b) cube projection. In cube format, intersection lines are always second-degree curves: ellipses, hyperbolas, or parabolas.

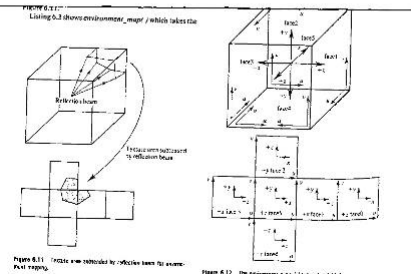
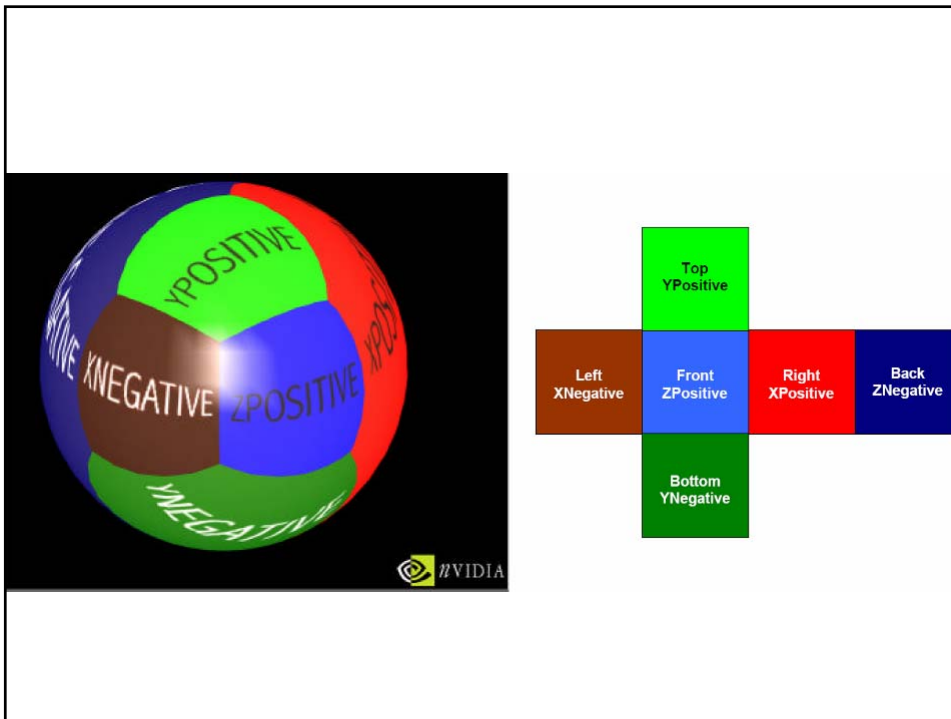
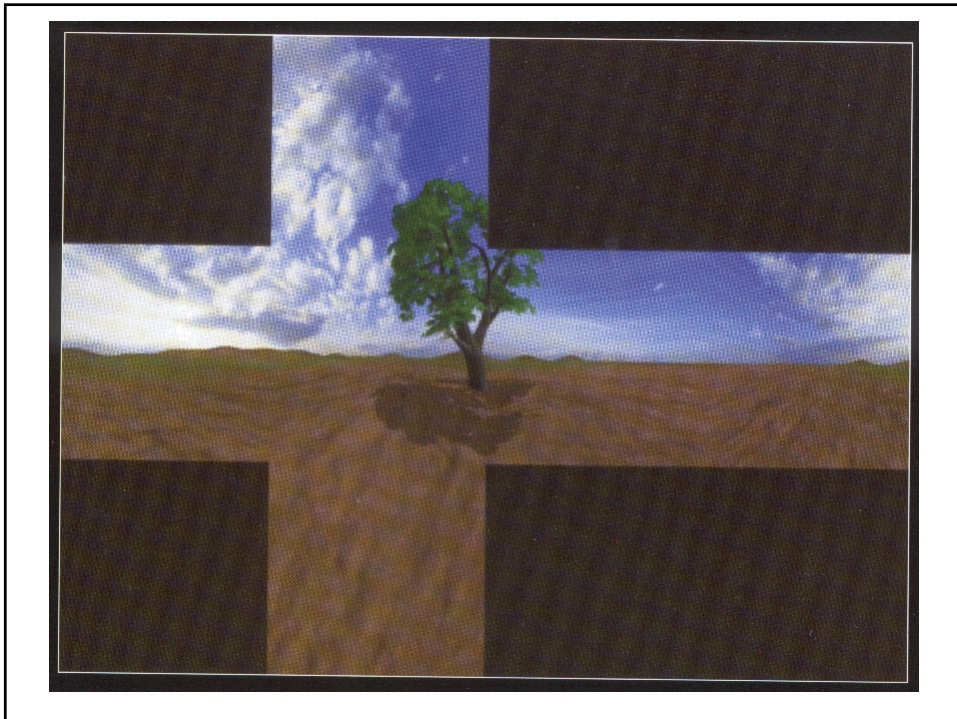


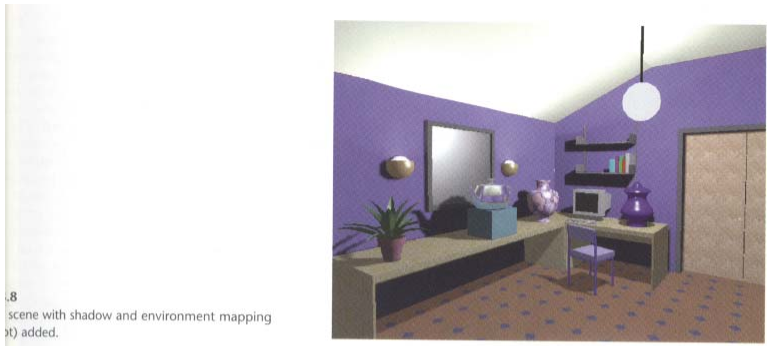
Figure 6.11. Project a new method for collecting data for sphere-to-cube mapping.

Figure 6.12. The environment cube sides and axes.

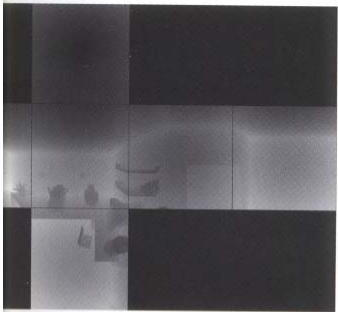
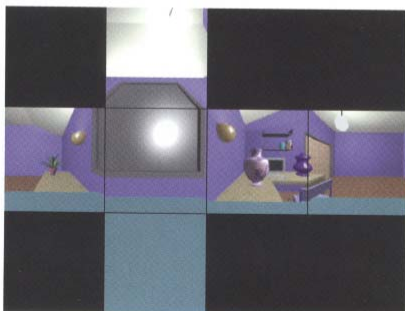
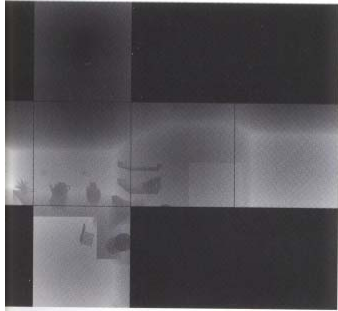


Nvidia Cube Mapping

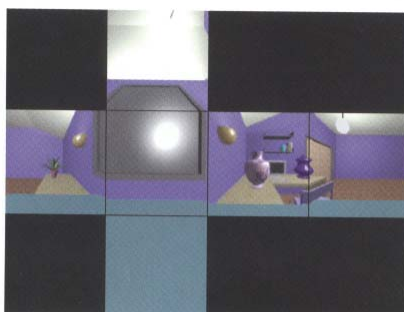




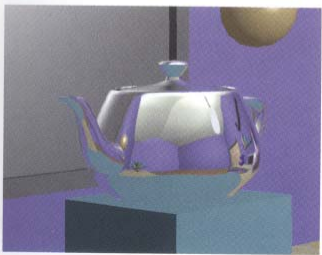
.8
scene with shadow and environment mapping
added.



map



Environment map



Paul Debevec

- St. Cross
- Panorama stitching
- Cube projection

