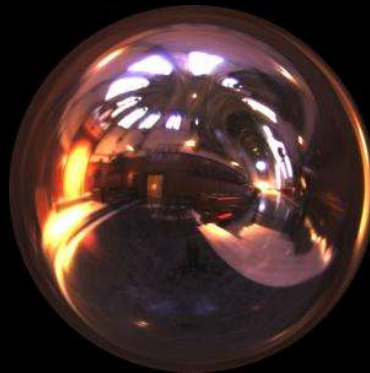


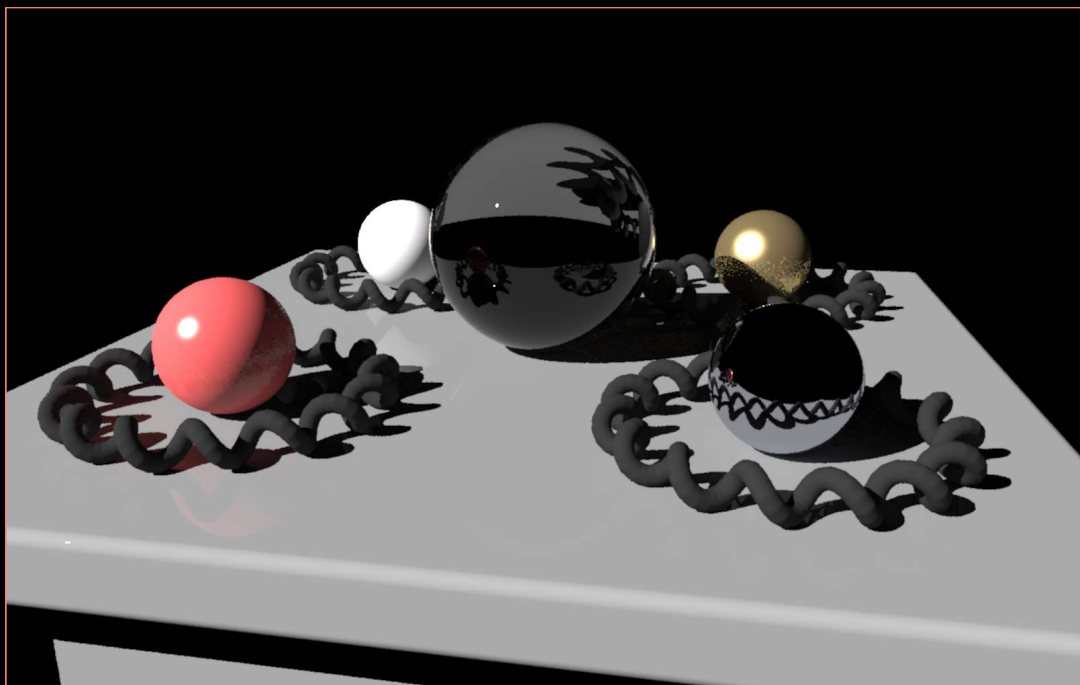
HDR + Image Based Lighting



C0417 – Advanced Computer Graphics: Photographic Image Synthesis

Abhijeet Ghosh

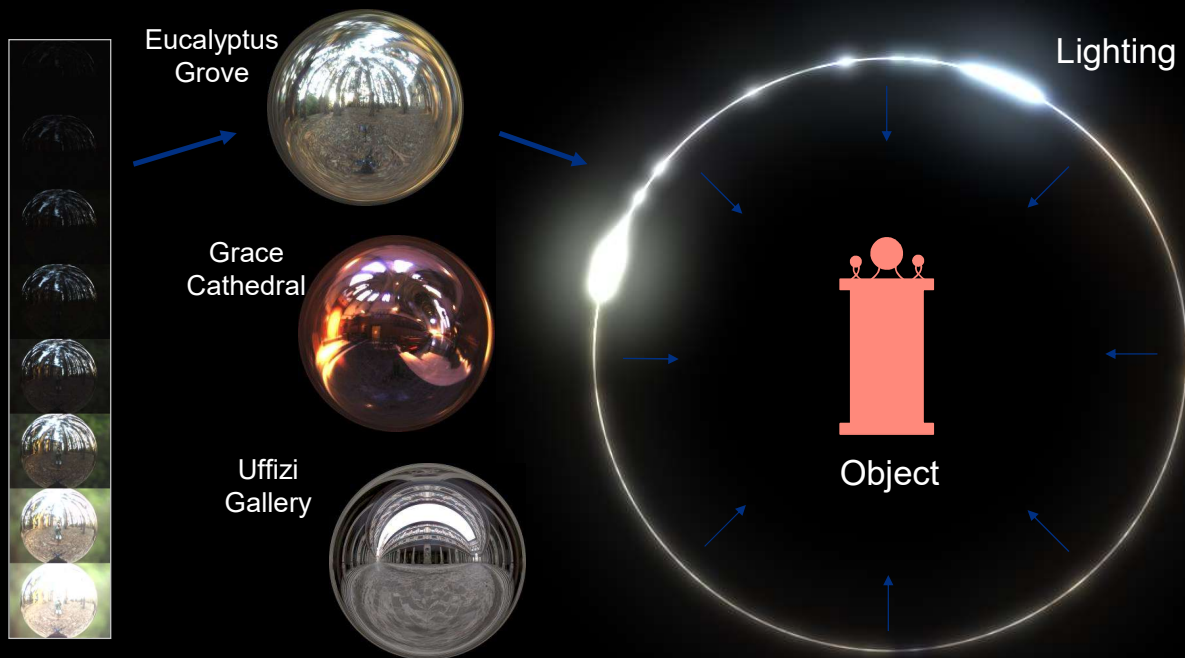
Lecture 04, Jan. 21st 2019



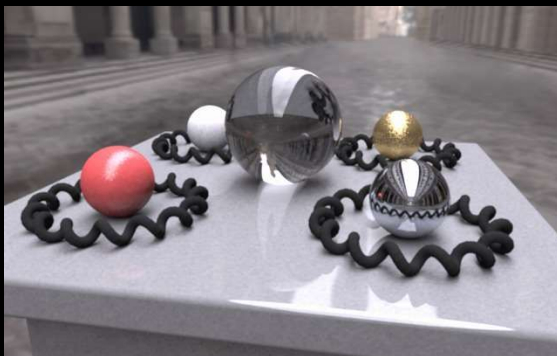
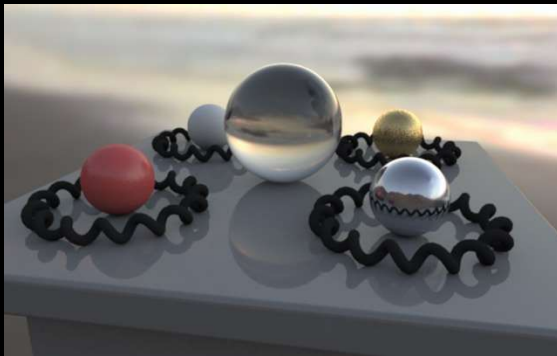
Traditional CG point light source

Image-Based Lighting:

Illuminating CG Objects using Measurements of Real Light

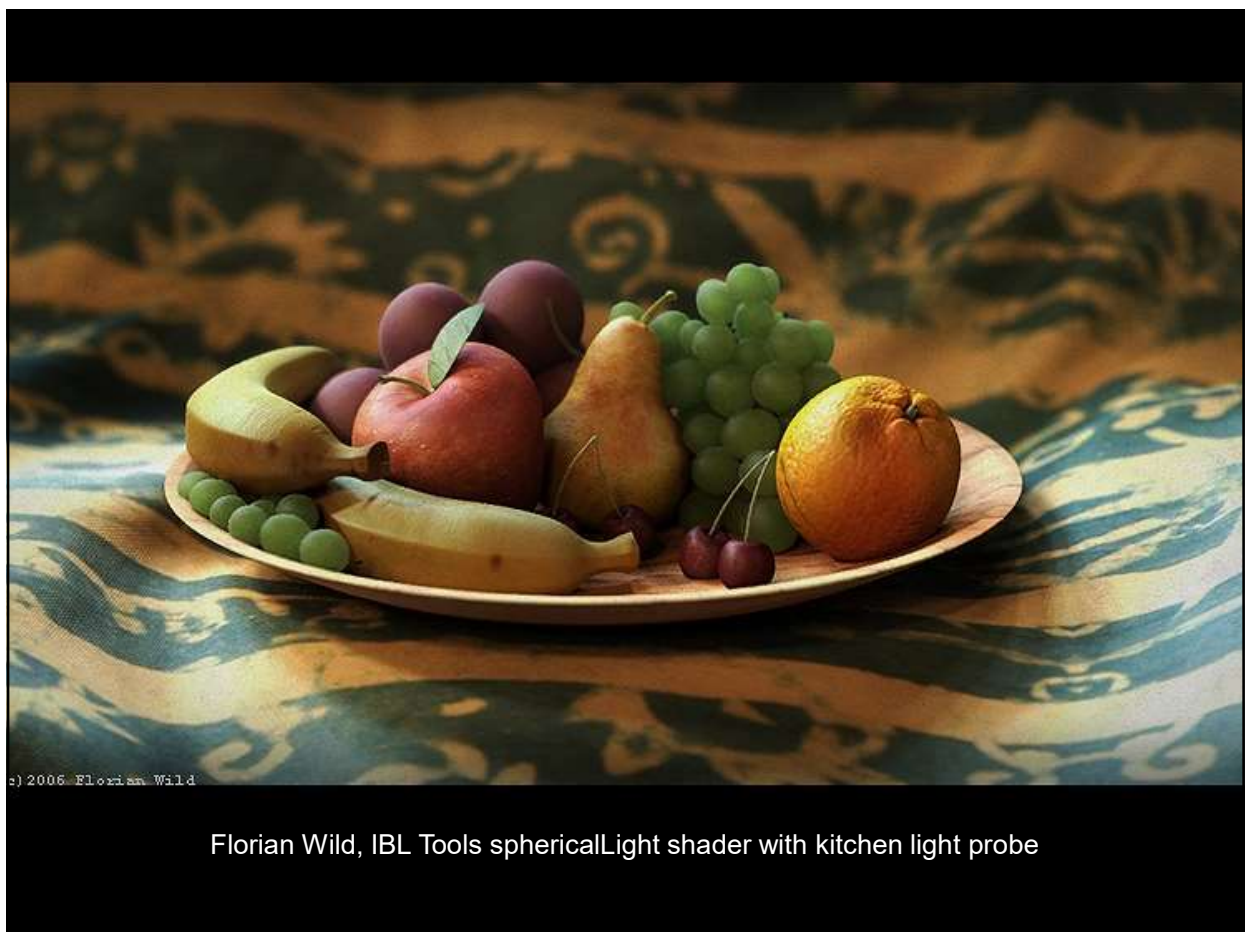


Light Probe Image Gallery: <http://www.debevec.org/Probes/>



Rendered in *RADIANCE*

Rendering Synthetic Objects into Real Scenes, SIGGRAPH 98
A Tutorial on Image-Based Lighting, IEEE CG&A, Jan/Feb 2002.









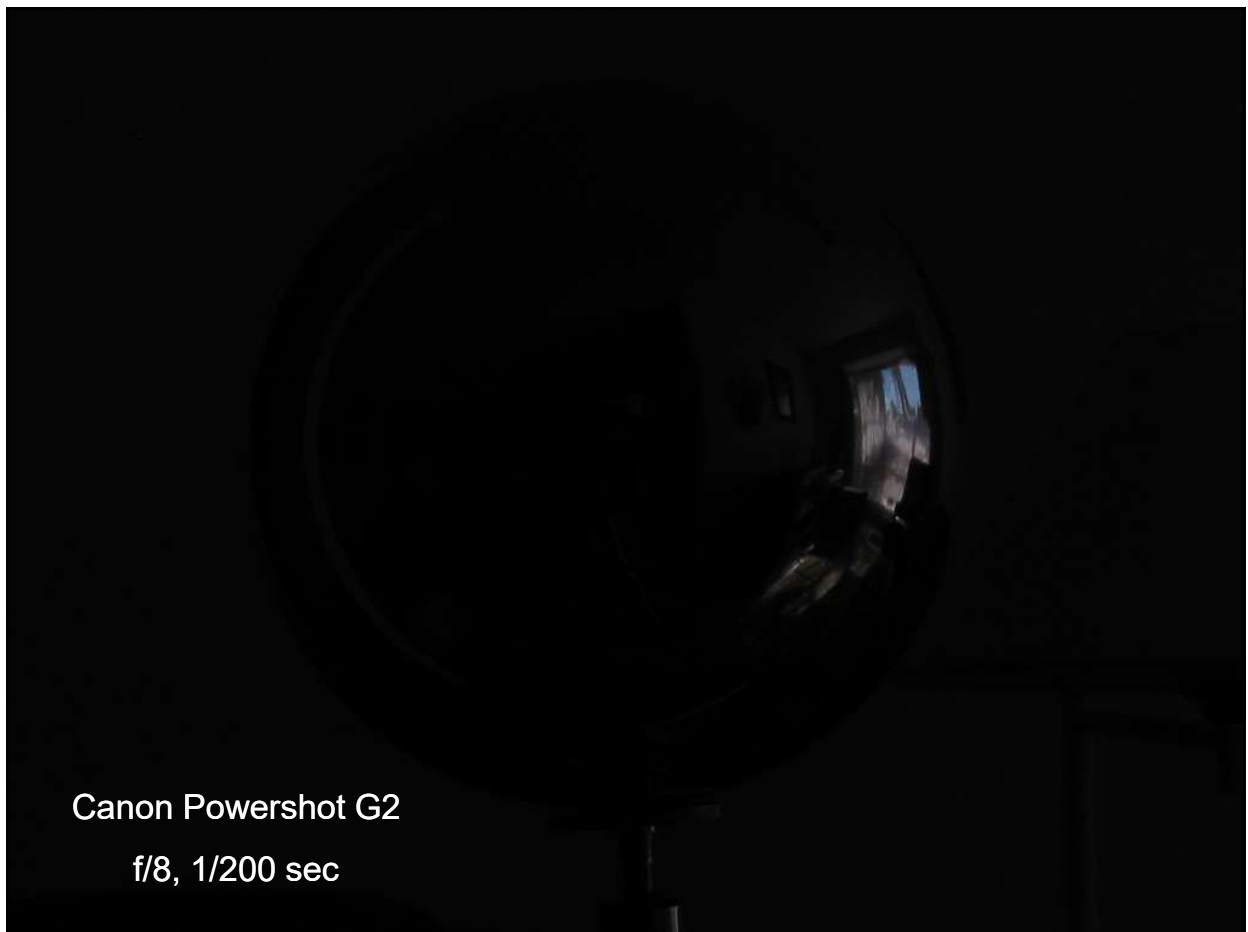
Canon Powershot G2

f/8, 1/5 sec









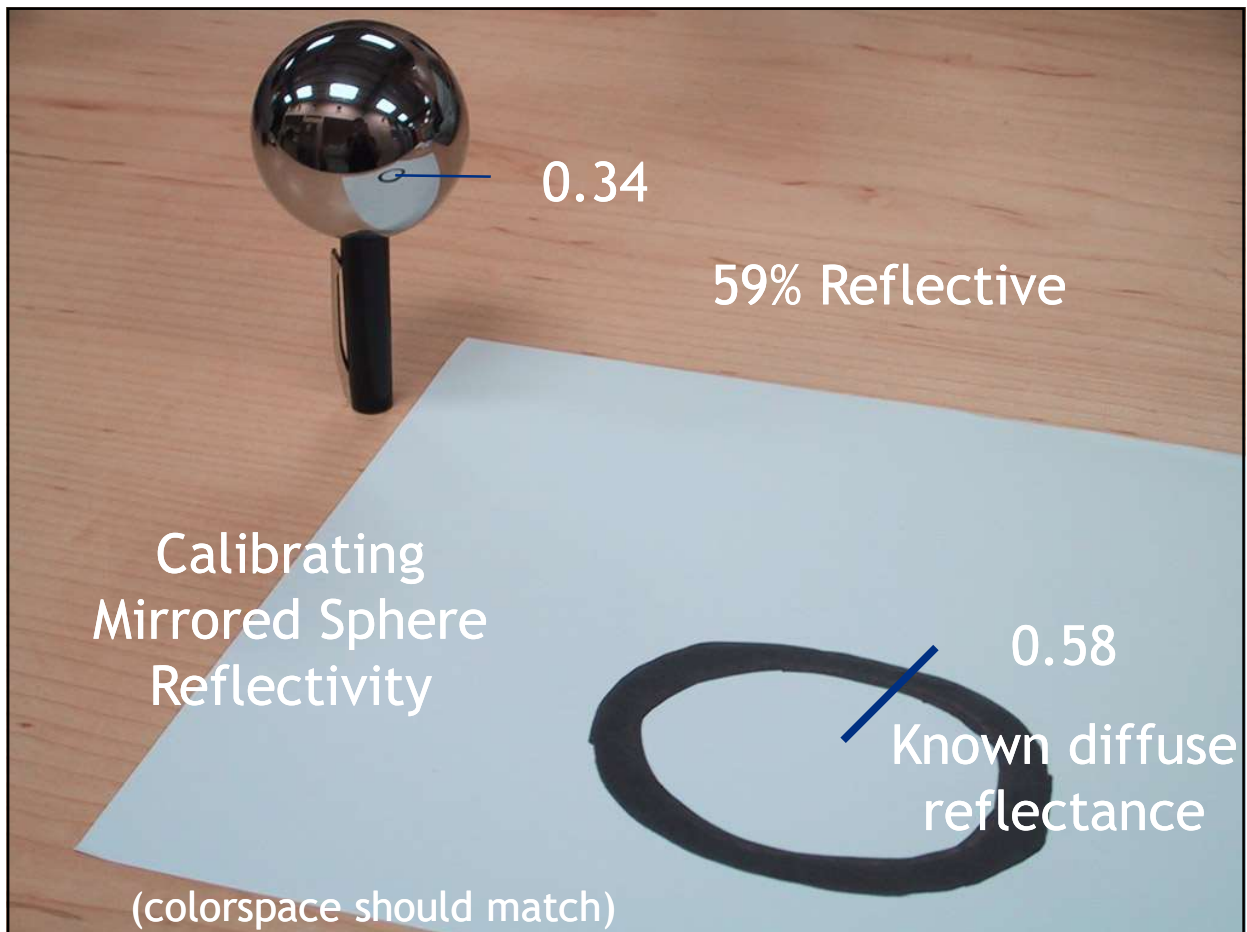


Sources of Mirrored Balls

- Hollow Spheres, 2.5in – 3.25in
 - Juggling Equipment
www.dube.com
- 6-12 inch large gazing balls
 - Lawn Ornaments



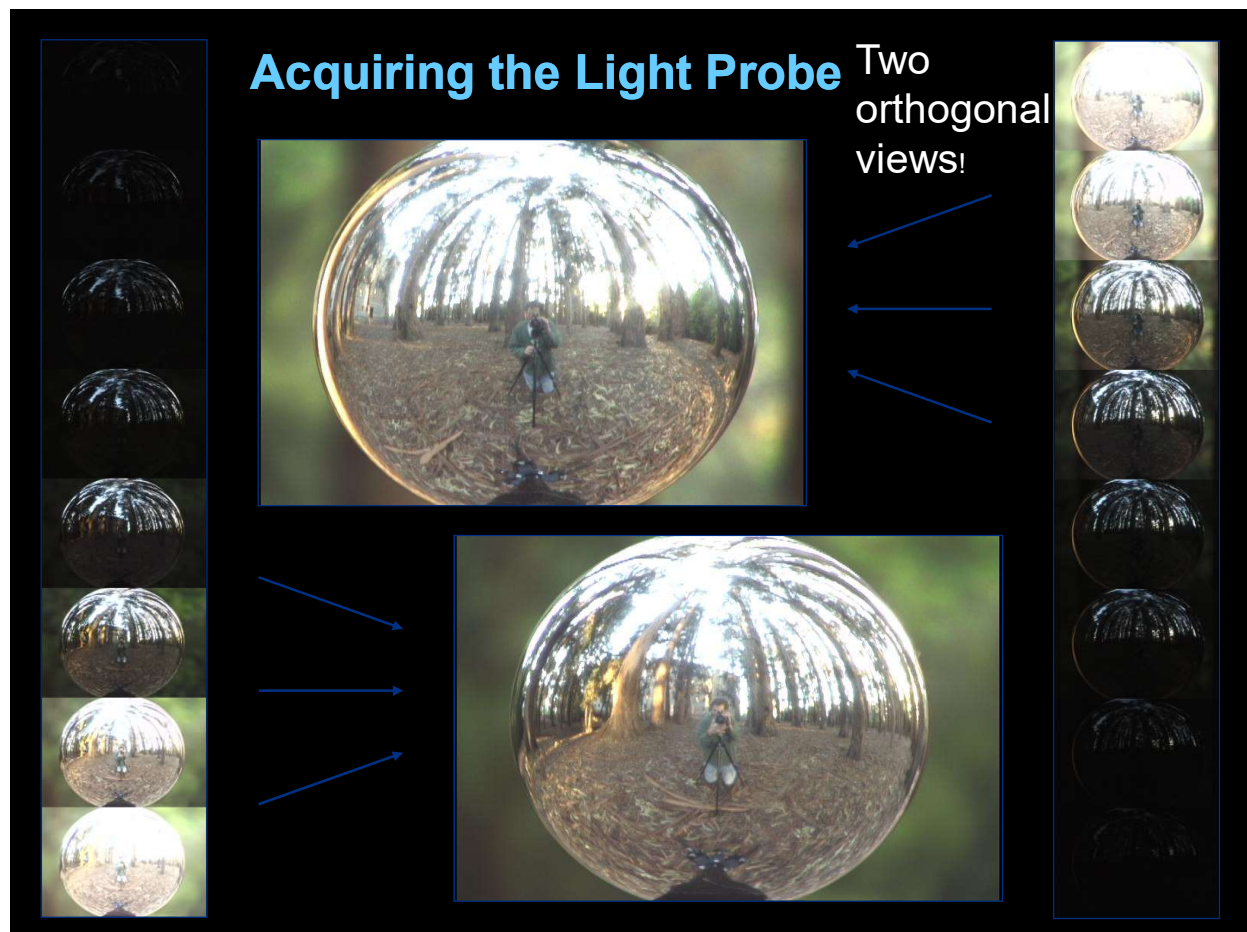
FAQ on www.hdrshop.com



Rendering with Natural Light



Paul Debevec SIGGRAPH 98 Electronic Theater



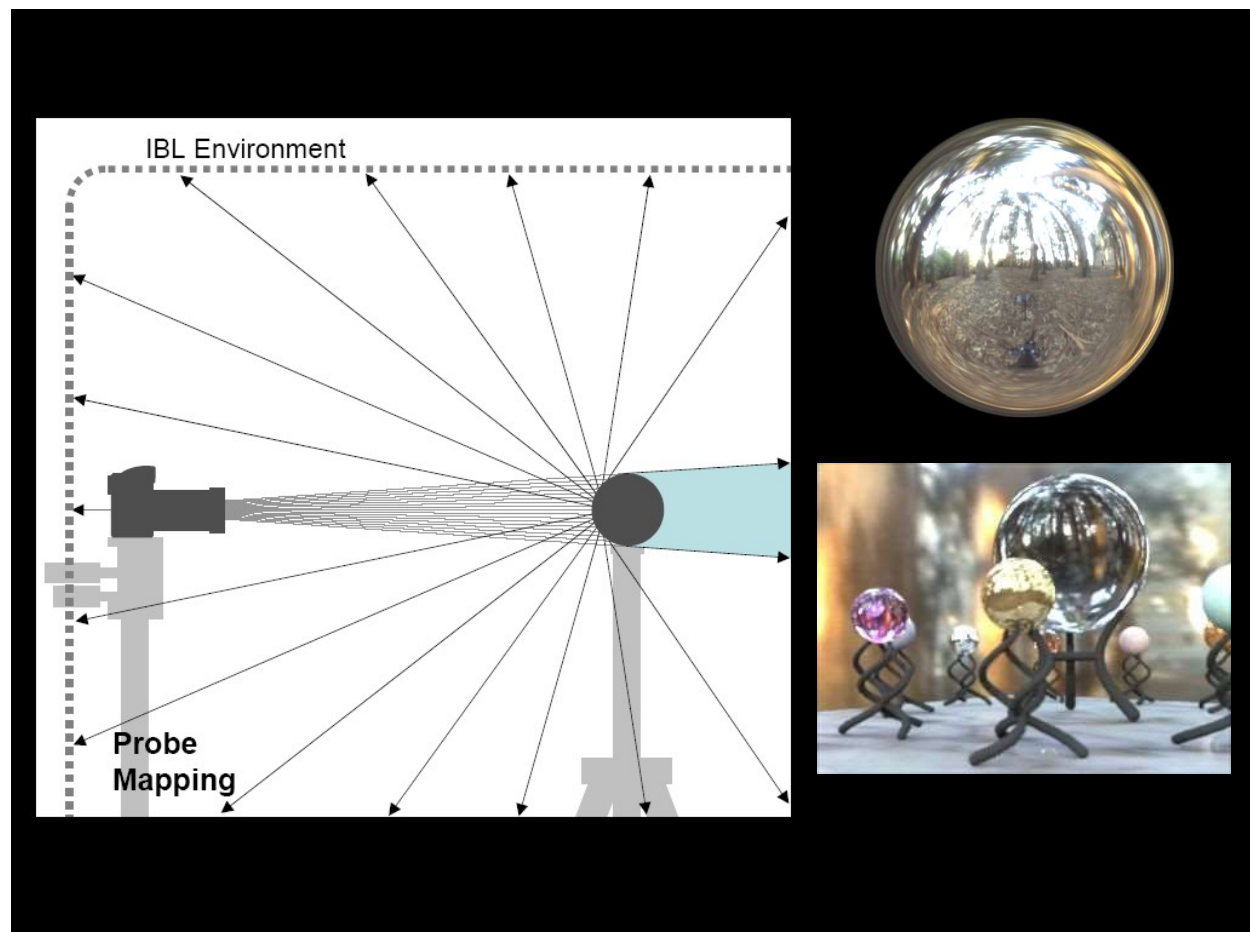
Assembling the Light Probe



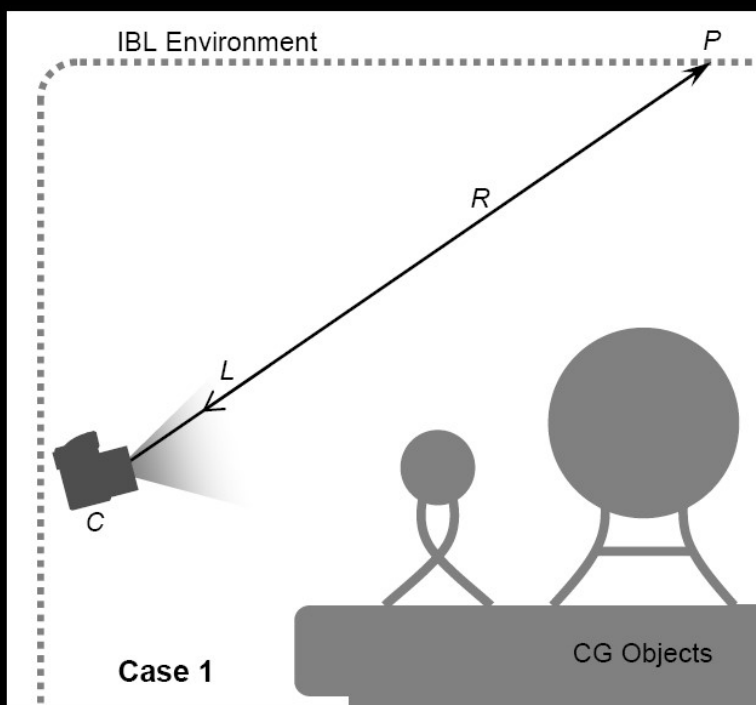
Removes photographer and good sampling in all directions

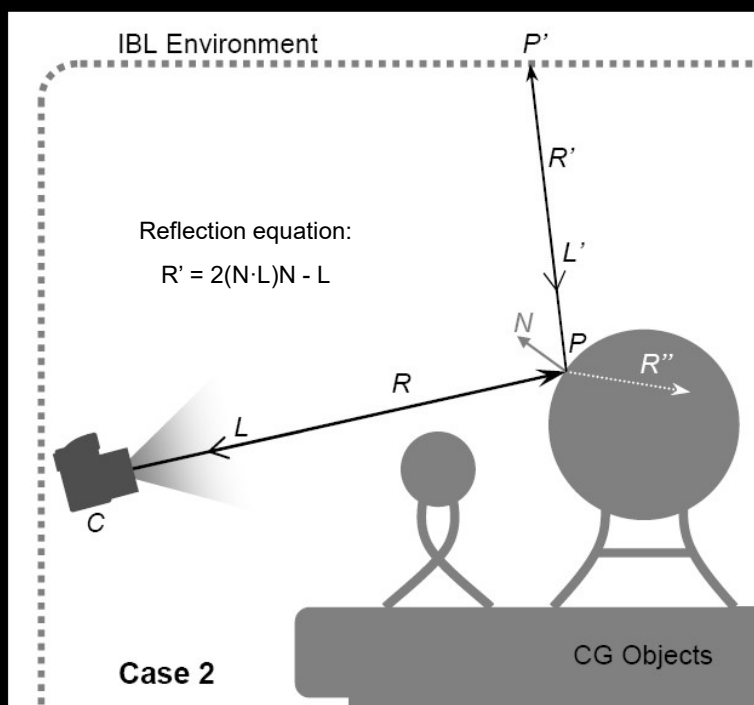


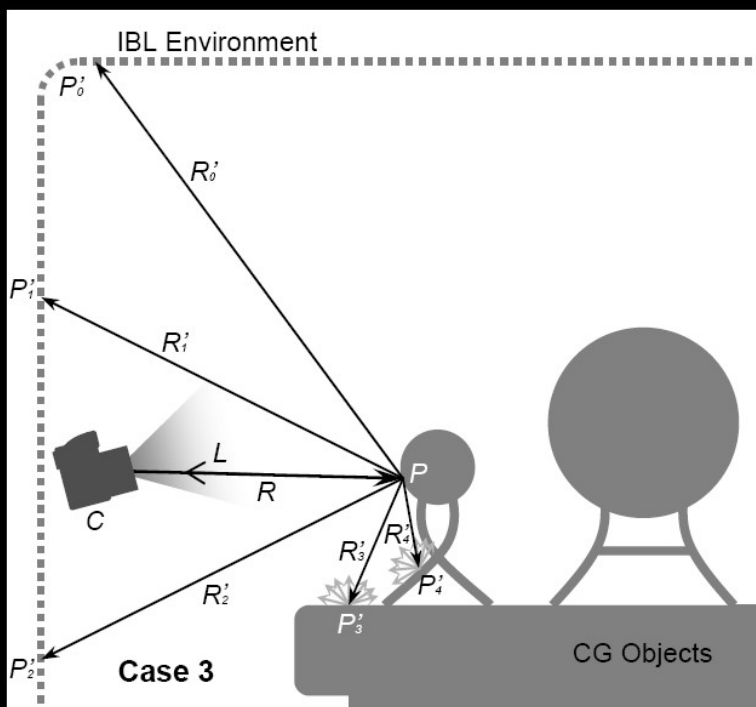
See HDRShop Tutorial #5, www.hdrshop.com

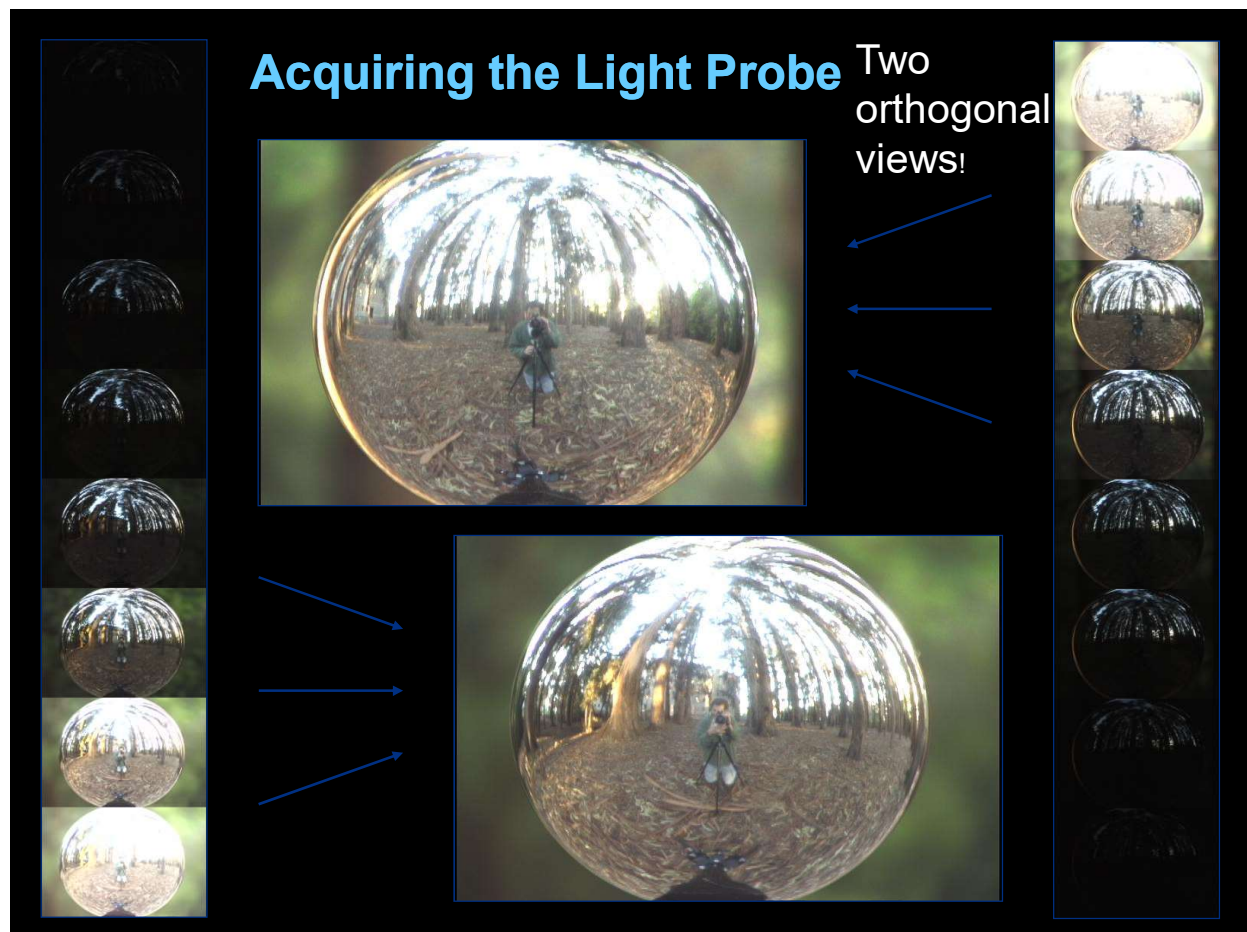












Mind the gamma!



Good 2.2



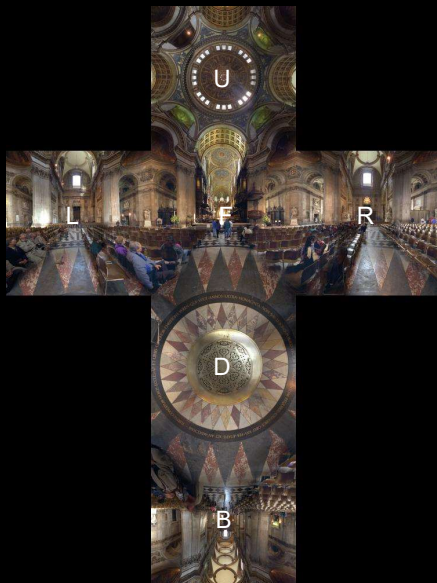
Bad 1.0

Single view for light probe

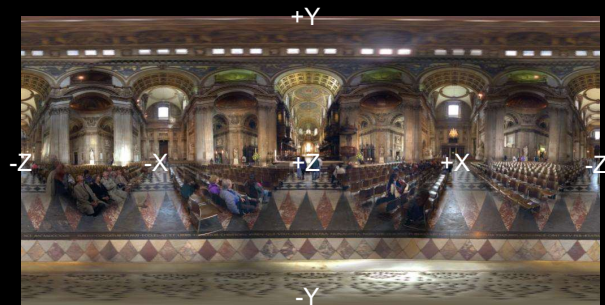
Squished back hemisphere



Types of Omnidirectional Images

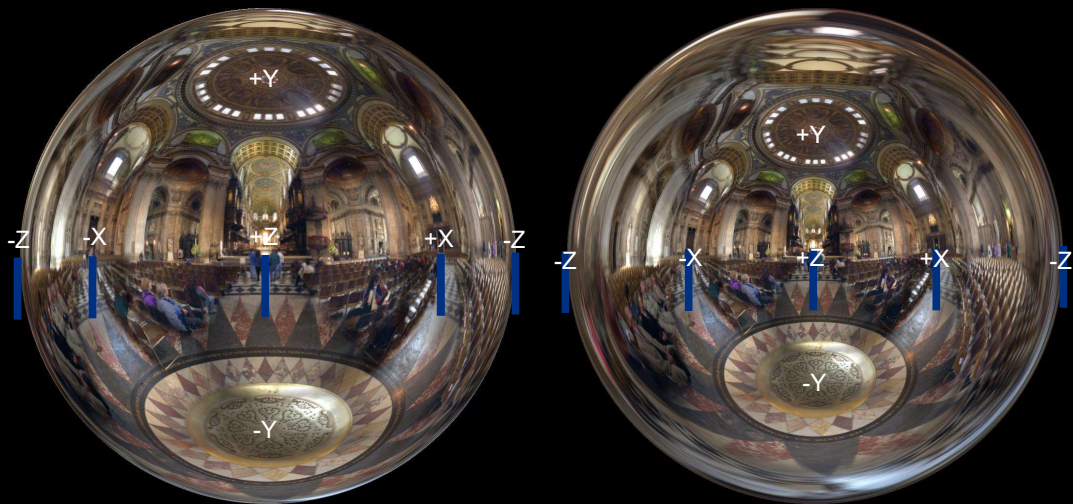


Cube Map



Latitude/Longitude

Types of Omnidirectional Images



Mirrored Ball

Angular Map

Light Probes Gallery

<http://www.pauldebevec.com/Probes/>



Grace Cathedral, San Francisco
1000 × 1000
Dynamic range: 200,000:1

Angular map: [.hdr](#) | [.float.gz](#) | [.pfm](#)

Used as the illumination environment for Figure 6 of the SIGGRAPH 98 paper. Assembled from two radiance images of a mirrored sphere taken with a Sony VAX1000 digital video camera (approx. ten image per sample.)



Eucalyptus Grove, UC Berkeley
900 × 900
Dynamic range: 5000:1

Angular map: [.hdr](#) | [.float.gz](#) | [.pfm](#)

Used as the illumination environment for Rendering with Natural Light; acquired similarly to the Grace Cathedral image...



St. Peter's Basilica, Rome
1500 × 1500
Dynamic range: 200,000:1



Kitchen at 2213 Vine St
640 × 640
Dynamic range: 2000:1

Angular map: [.hdr](#) | [.float.gz](#) | [.pfm](#)

Used as the illumination environment for Figures 2, 3, 4(a), 5, and 8 of the SIGGRAPH 98 paper.



Overcast Breezeway, Soda Hall
640 × 640
Dynamic range: 1000:1

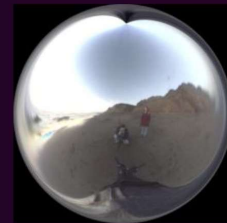
Angular map: [.hdr](#) | [.float.gz](#) | [.pfm](#)

Used as the illumination environment for Figure 4(b) of the SIGGRAPH 98 paper.



Campus at Sunset
640 × 640
Dynamic range: 2000:1

Angular map: [.hdr](#) | [.float.gz](#) | [.pfm](#)



Funston Beach at Sunset
640 × 640
Dynamic range: 800:1

Angular map: [.hdr](#) | [.float.gz](#) | [.pfm](#)