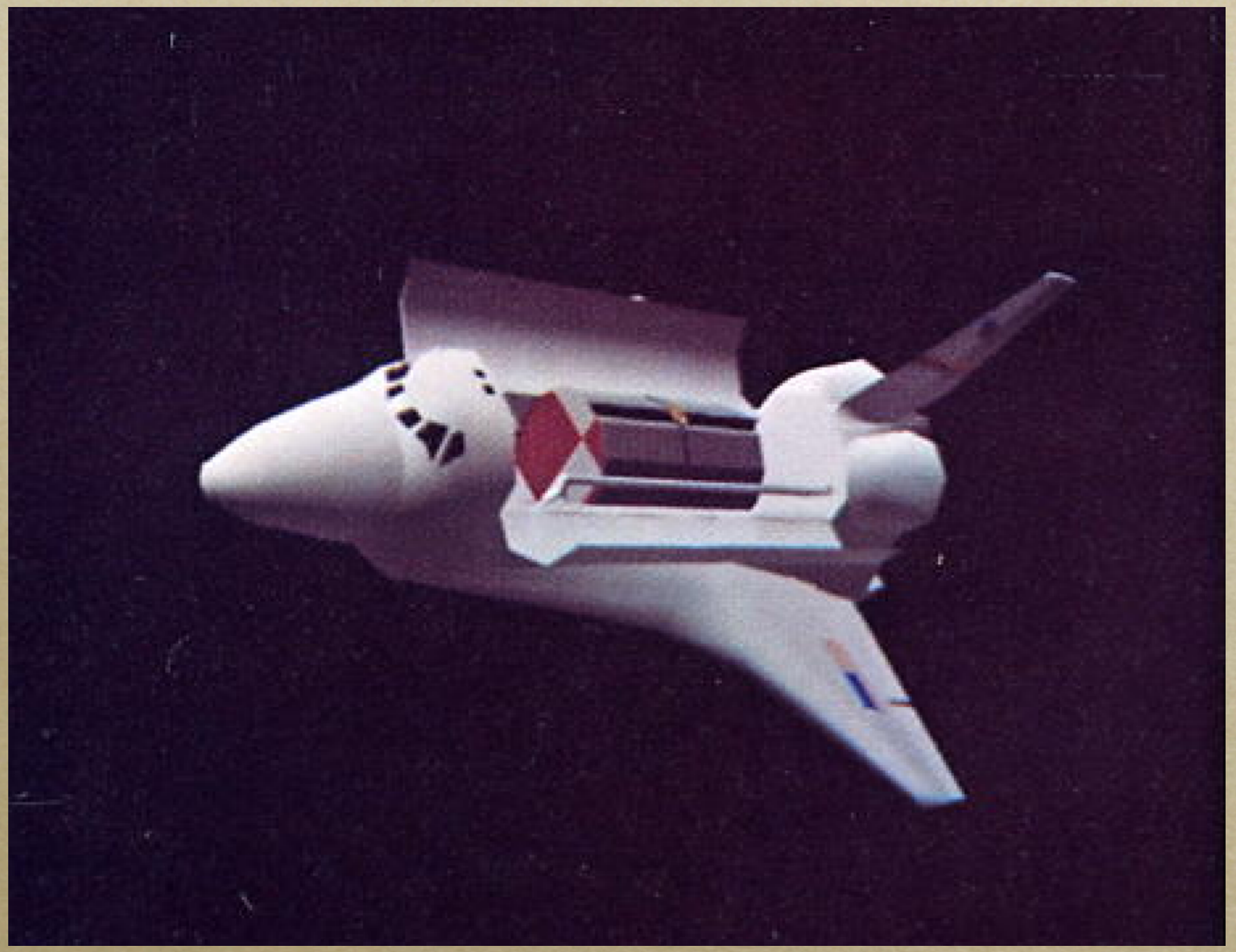
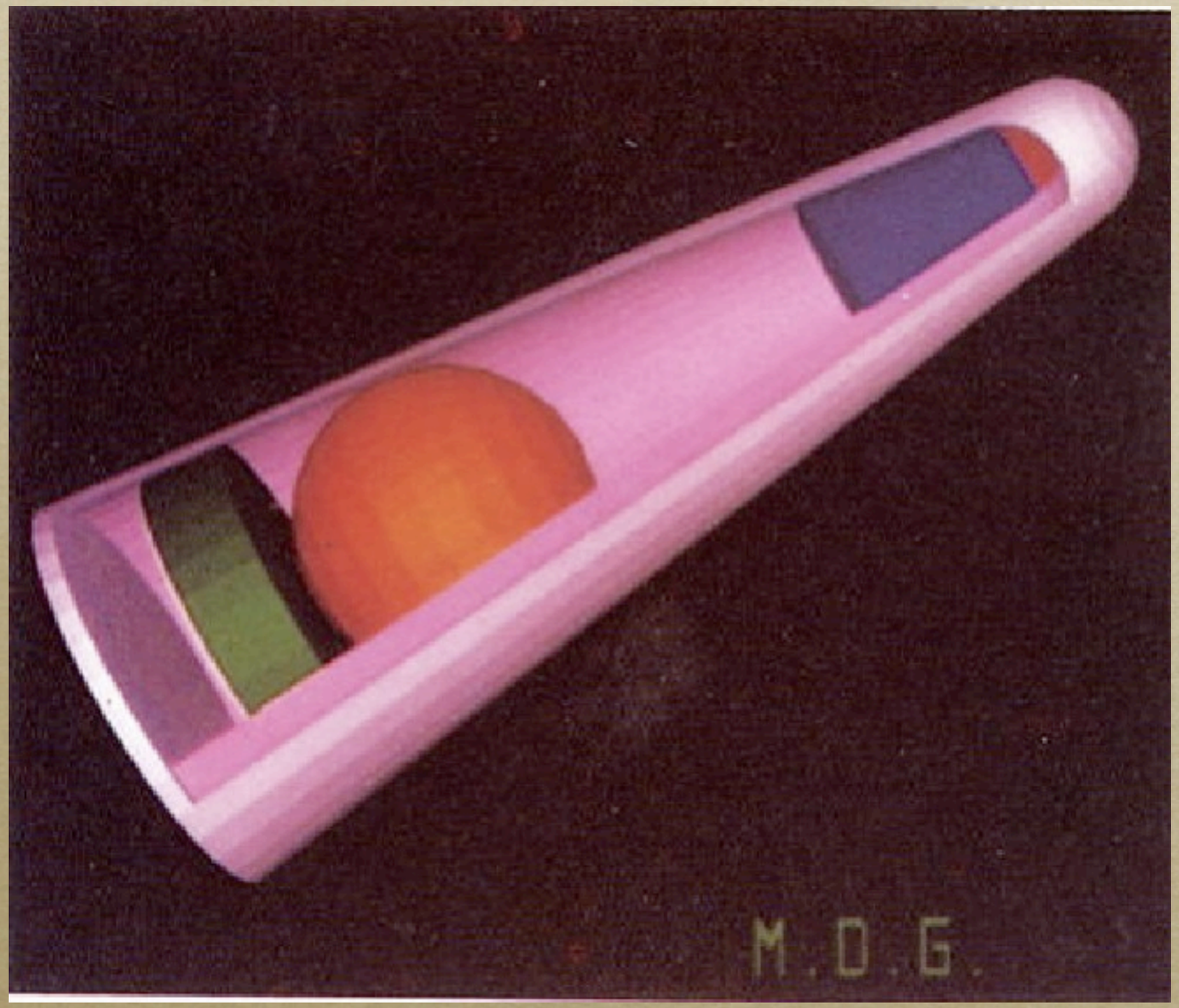
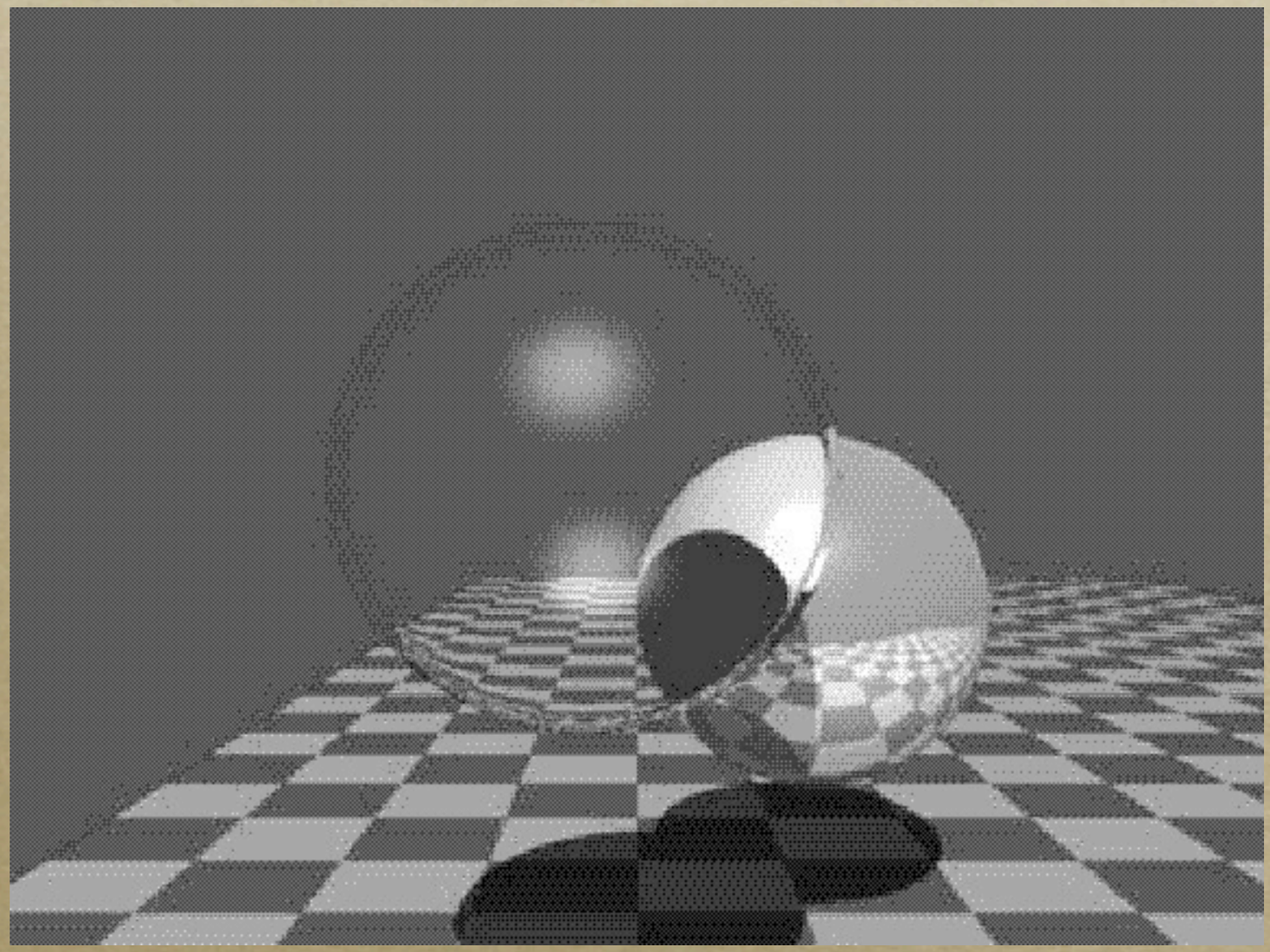
Ray Tracing

- *History*
- *Examples*
- *What are we trying to do?*
- *How do we see the world?*
- *Where does light come from?*
- *The basic process*

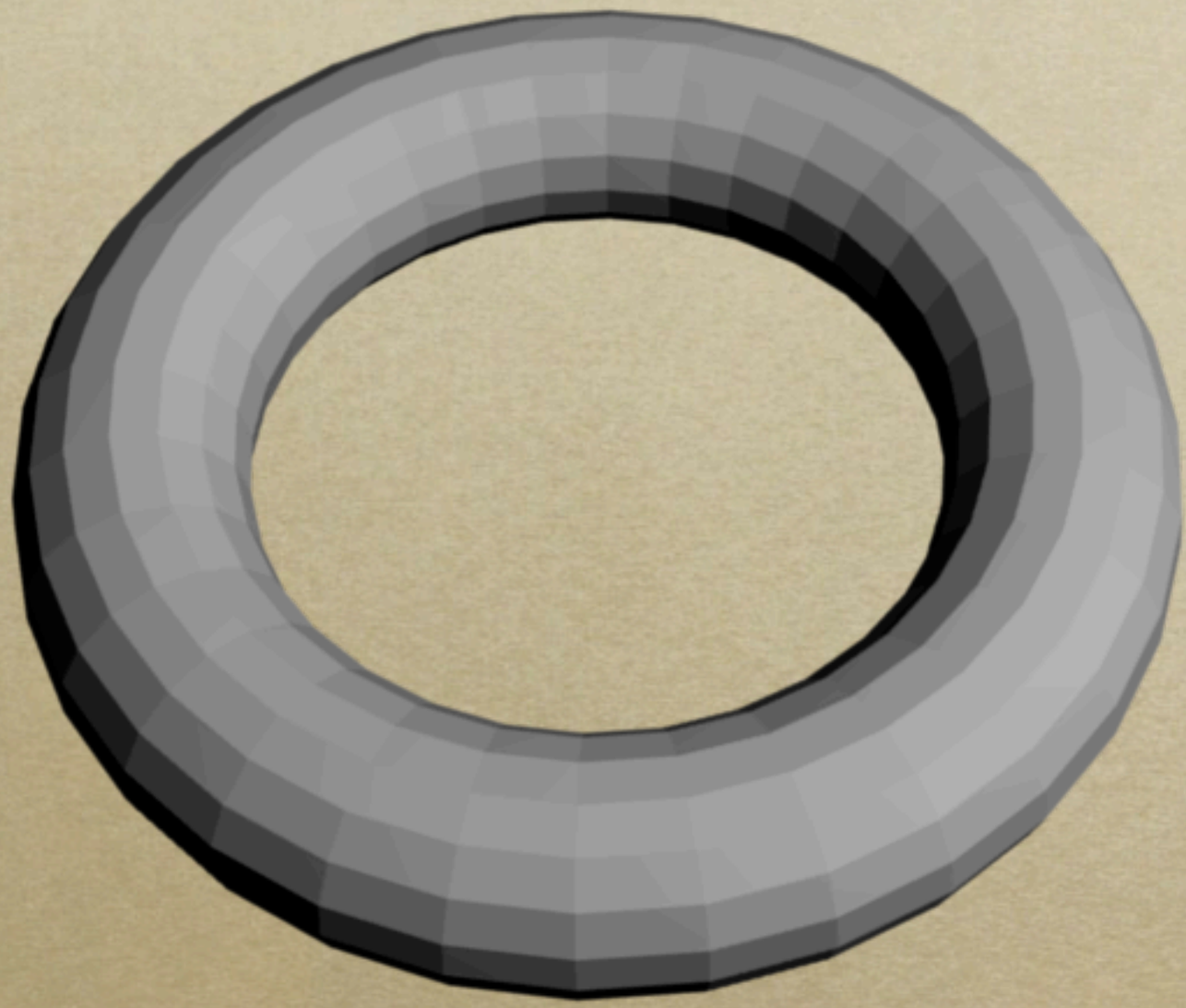



M.O.G.

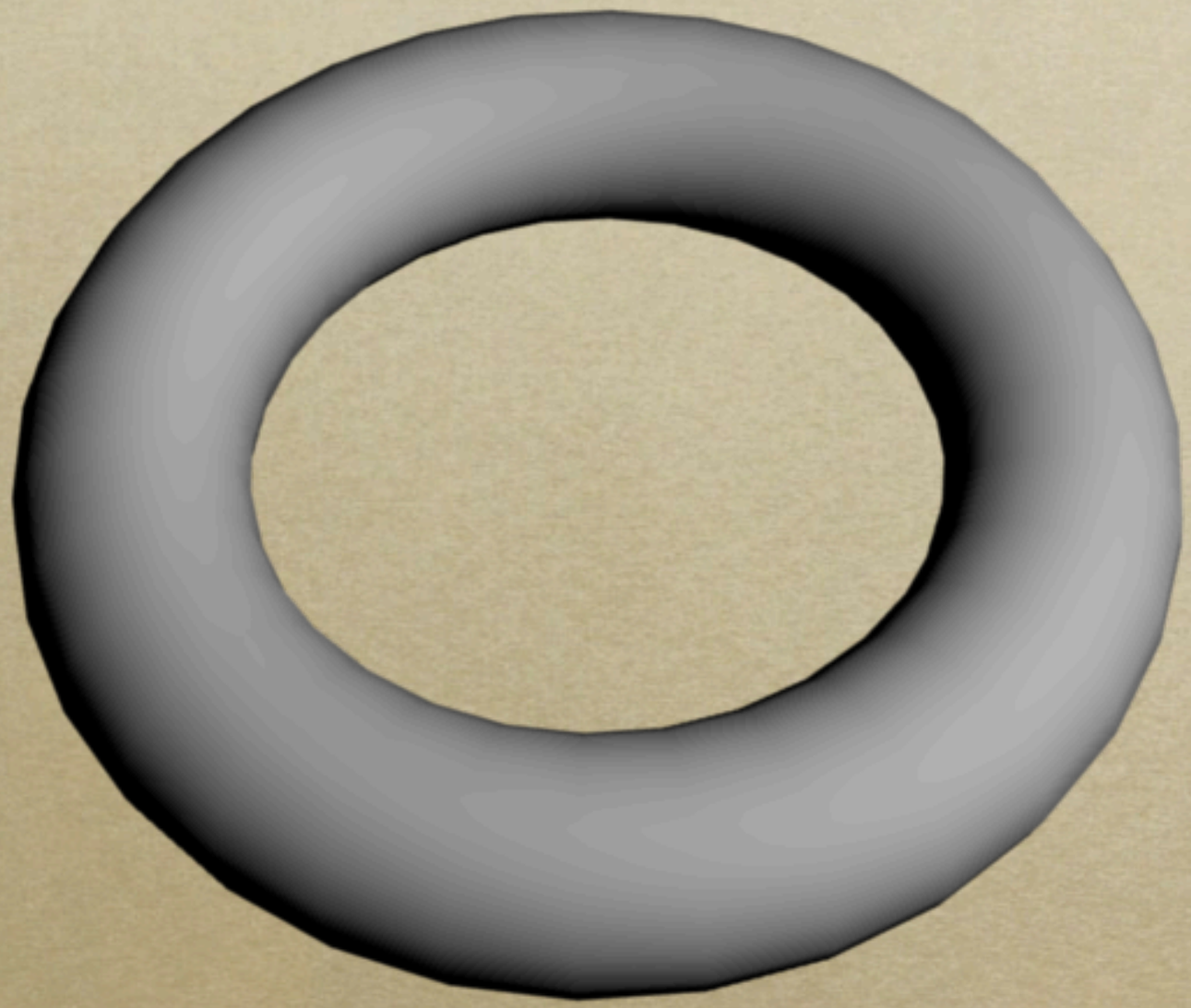
Turner Whitted 1979



Flat Shading



Smooth Shading



Some Ray Tracing Examples

by Mike Miller (POV)

"Never on a Sundae"

Robert A. Mickelsen 1993

by Robert A. Mickelsen (POV)

by Steve Anger (POV)

by Mike Miller (POV)


Hamilton
by Kevin Odhner (POV)

by Stephen M. Farrell

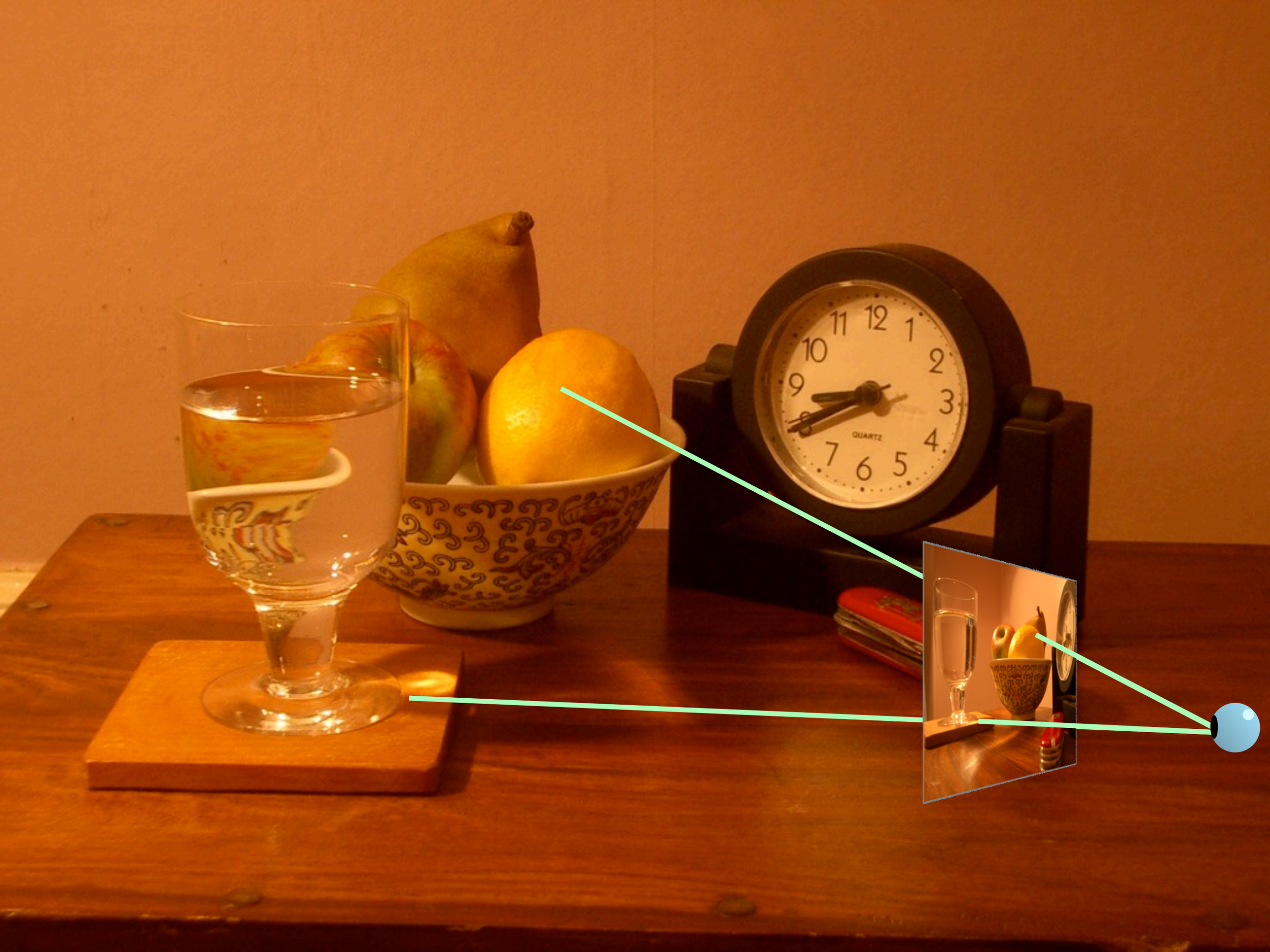
by Martin Moeck (Radiance)

By Gilles Tran using POV-Ray
Link from Wikipedia includes source code

How do we see the world?

- *What is it that our eyes are sensitive to?*
- *Where does light come from?*
- *What is a light source?*
- *What can I tell about what's behind me?*
- *What are shadows?*


QUARTZ


QUARTZ

The Basic Process

- *Create an image plane and viewpoint.*
- *For each pixel trace a 'ray' from the eye through a corresponding point in the image plane.*
- *For each ray, return the colour of the object at the hit point.*

The colour?

- *To find the colour, trace rays from the hit point to determine where the illumination comes from.*

Trace more rays?

- *A recursive process*
- *How many rays to make a good picture?*
- *When do we stop recursion?*
- *Does this answer all the questions?*

To be continued...