Texture mapping: a general technique for storing and evaluating functions.

- They're not just for shading parameters any more!

Texture mapping from 0 to infinity

- When you go close...

When viewed from a distance

- Aliasing!

What is going on?

- Image-based texture mapping is resolution dependent

Point Sampling

- From far away
- Scintillating artifacts over multiple frames
When viewed closer...

- Nearby pixels all lie in same texel
- Blocky artifacts

What is really the issue?

- A pixel is not a point
  - It is an area!
- Each pixel maps to some region of texture space
- Ideally, we want to integrate over mapped area

How does area map over distance?

- At optimal viewing distance:
  - One-to-one mapping between pixel area and texel area
- When closer
  - Each pixel is a small part of the texel
- When farther
  - Each pixel could include many texels

Minification: Theoretical Solution

- Find the area of pixel in texture space
- Filter the area to compute “average” texture color
  - Filtering eliminates high frequency artifacts
  - How to filter?
    - Analytically compute area
    - Super-sample
    - But too expensive