## Lecture 3 (see also Lecture 2) More on imaging

- An aside – coordinate systems 101
- Finish up L2 topics
  - What is sampling, quantization, dynamics range
  - Raster Algorithms
- Dithering and color display
- Start on Sampling

## An Aside (topic for Future) Coordinate Systems

- What is (x,y)?
  - Matters since we need to be consistent
- Coordinate system
  - Tells us how to interpret positions (coordinates)
  - maps coordinates to places
  - Maps coordinates to "canonical coordinates"
  - Describe coordinate systems as mappings
- Desires
  - Convenient, concise, conistent, communicable
- Examples
  - Linear: centers, sclales, directions
  - Non-Linear: polar, log, …
- Practical – a few common ones, GL mechanisms

## Back to L2 Notes

- Eye Sensitivity / Dynamic Range
- Gamma
- Geometry vs. sampled
  - Line drawing
  - Triangle drawing
  - Aliasing

## Two Kinds of Discretization

- Continuous Values are Quantized
- Continuous Positions are Quantized
  - Continuous fields must be sampled
- Quantization is the easier part
  - Or more obvious what you can/can't do

## Dealing with Quantization

- Goal: Fake more colors than you have
- Concepts:
  - Halftoning (converting to B/W or limited set)
  - Thresholding (hard cutoff – what happens @49%)
  - Dithering (adding noise)
  - Patterns & Screens (3x3 pixels = 10 levels)
  - Error Diffusion