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, consistent, communicable
• Examples
  – Linear: centers, scales, 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