



Image Texture Fundamentals

Johns Hopkins Department of Computer Science
Course 600.456: Rendering Techniques, Professor: Jonathan Cohen



Texturing

Allows higher-frequency color variation

- **Not just interpolated from vertex colors**

May be 2D (surface-based) or 3D (volume-based)

May be strictly image-based or procedural

- **Today we'll talk about simple image-based**

Johns Hopkins Department of Computer Science
Course 600.456: Rendering Techniques, Professor: Jonathan Cohen



2D Texture Mapping

Requires surface parameterization

- Mapping from 3D surface to 2D parametric domain

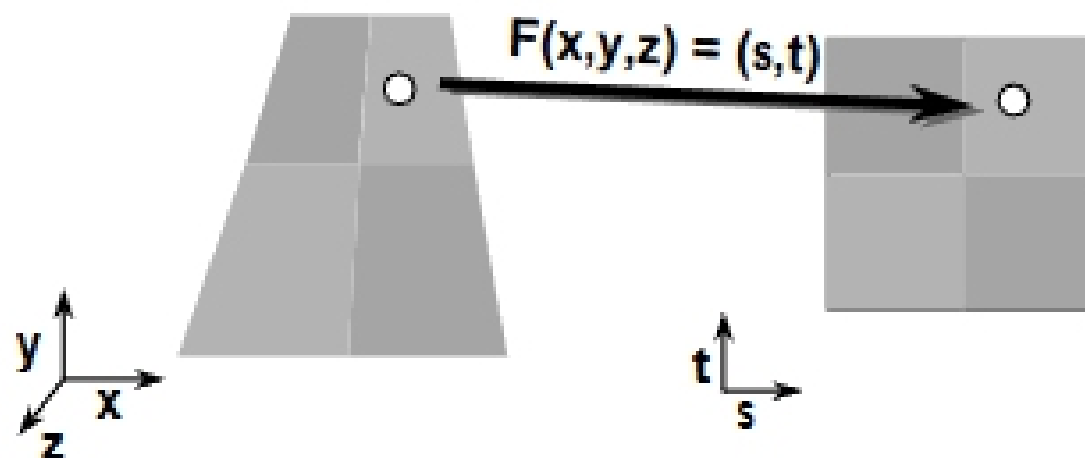
Colors defined in 2D parameter space

Parameterization (texture coordinates)
used to determine material color at point
on surface

Johns Hopkins Department of Computer Science
Course 600.456: Rendering Techniques, Professor: Jonathan Cohen



2D Texture Diagram



Johns Hopkins Department of Computer Science
Course 600.456: Rendering Techniques, Professor: Jonathan Cohen



2D Texture Applications

Most useful for colors that are sitting on the surface, rather than running through the material

- **Pictures on the wall**
- **Printed/painted logos, text, etc.**
- **Fake wood grain**

Johns Hopkins Department of Computer Science
Course 600.456: Rendering Techniques, Professor: Jonathan Cohen



Other Types of 2D Maps

Bump/normal maps

- **Modify or define surface normals**

Displacement maps

- **Modify surface itself**

Environment/reflection maps

- **Define environment seen in specular reflections**

Johns Hopkins Department of Computer Science
Course 600.456: Rendering Techniques, Professor: Jonathan Cohen