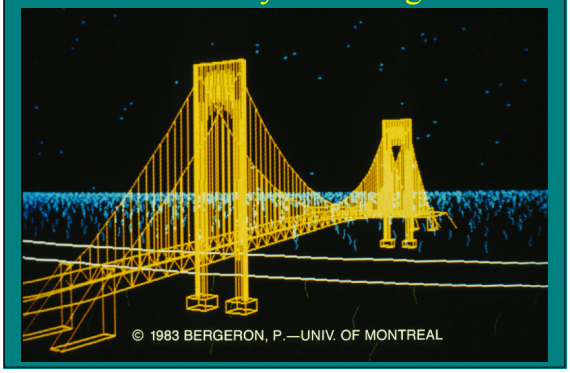
CMSC 435
Introductory Computer Graphics

Penny Rheingans
UMBC

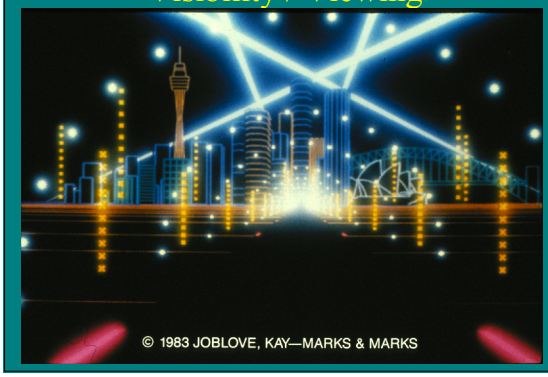
Elements of Realism

- Visibility / Viewing
- Shading
- Global Illumination
- Models
- Accuracy

Visibility / Viewing



Visibility / Viewing



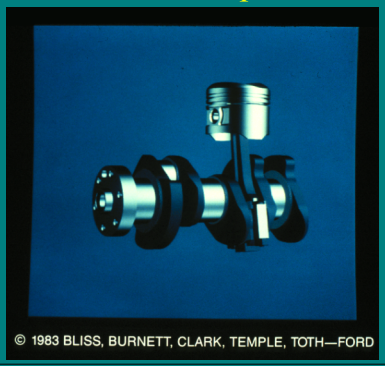
Visibility / Viewing

Shading

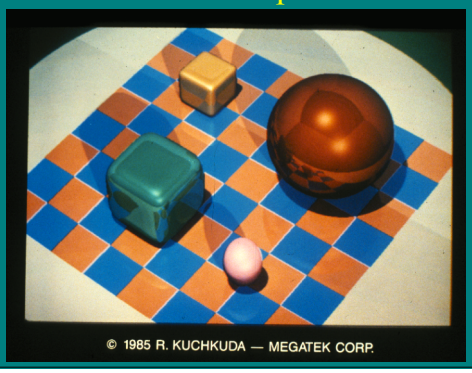
Shading

Shading

Material Properties



Material Properties



Material Properties

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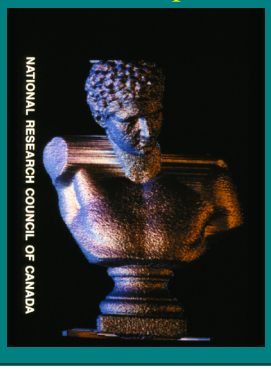
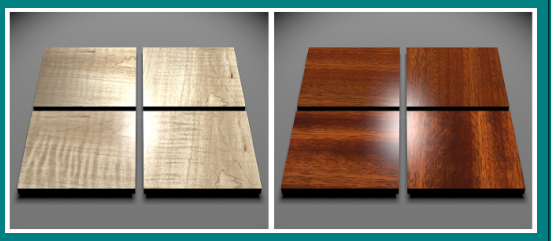


Material Properties

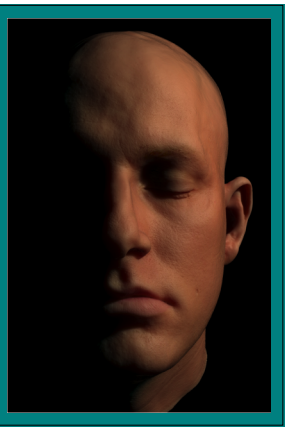


Marschner et al., SIGGRAPH '05

Material Properties

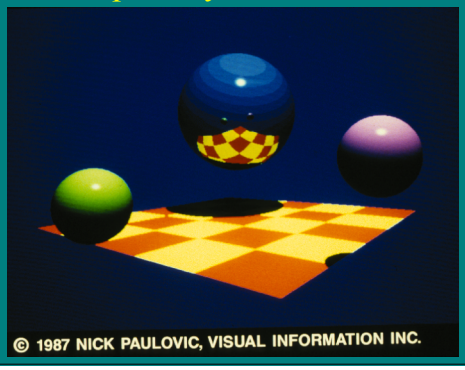
Wang et al., SIGGRAPH '05

Material Properties



Donner et al., SIGGRAPH '05

Transparency and Reflection



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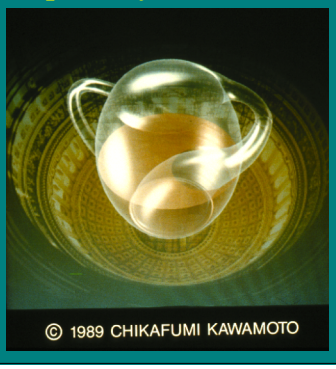

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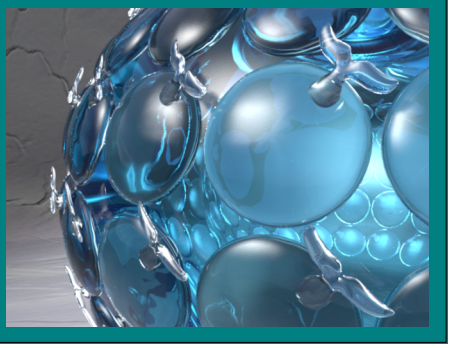
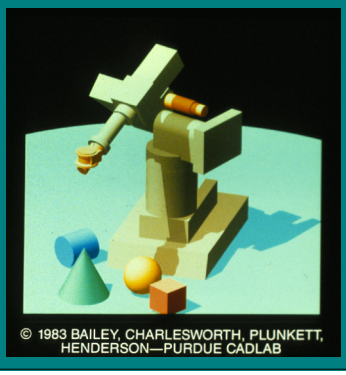
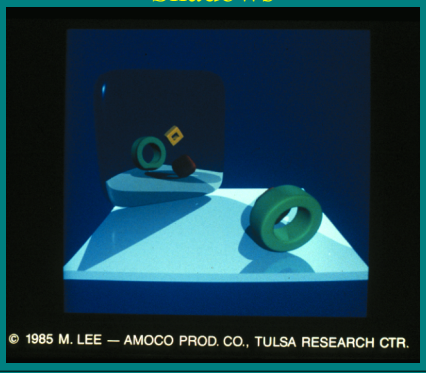


Porumbescu et al., SIGGRAPH '05

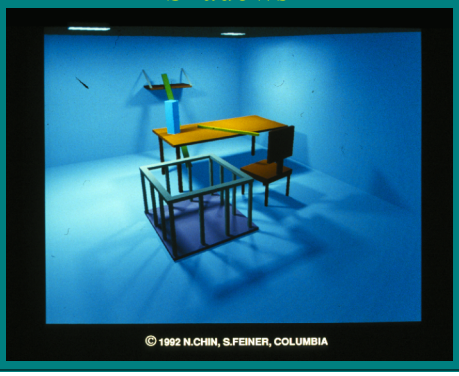
Shadows



Shadows



Shadows



Shadows

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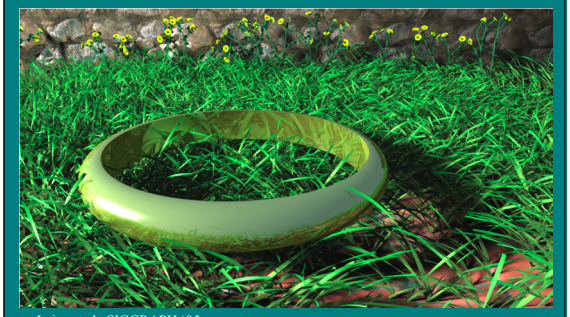
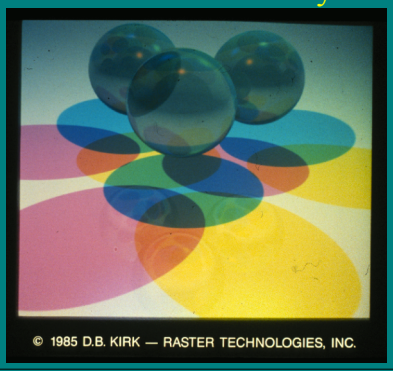


Laine et al., SIGGRAPH '05

Global Illumination: Raytracing

Global Illumination: Raytracing

Global Illumination: Raytracing



Global Illumination: Raytracing

Global Illumination: Raytracing

Clarberg et al., SIGGRAPH '05

Global Illumination: Radiosity

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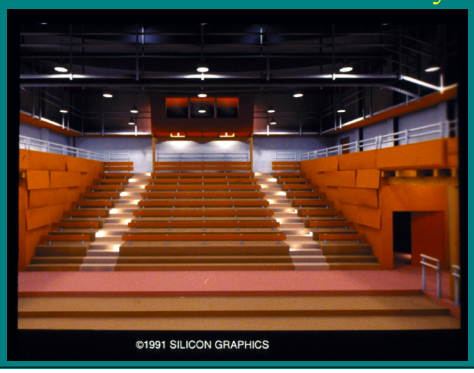

Global Illumination: Radiosity

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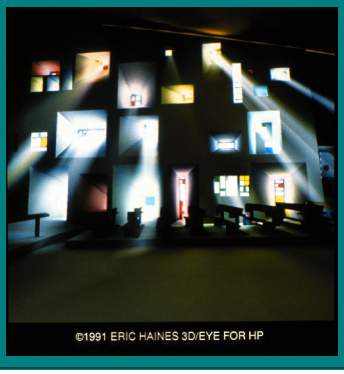

Global Illumination: Radiosity

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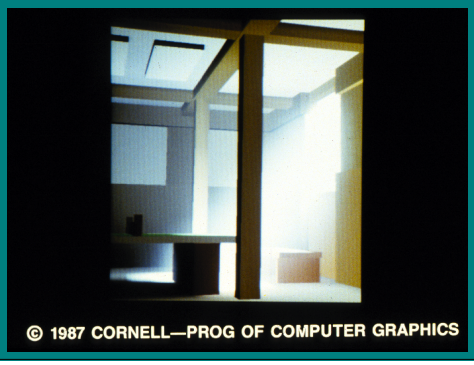
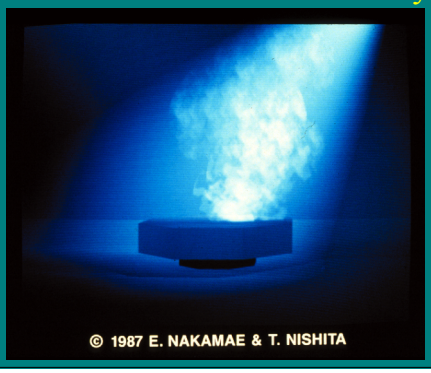


Global Illumination: Radiosity



Global Illumination: Lightcut

Lightcut Image | Reference Image

Walter et al., SIGGRAPH '05

Models: Lots of Pgons

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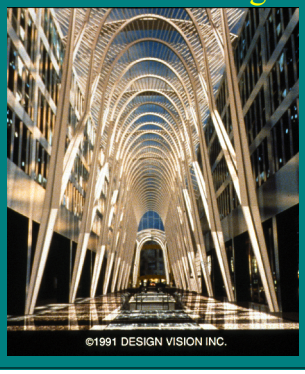

Models: Lots of Pgons

Models: Curves

Models: Curves

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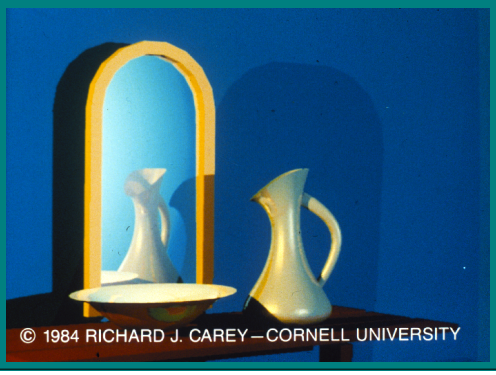
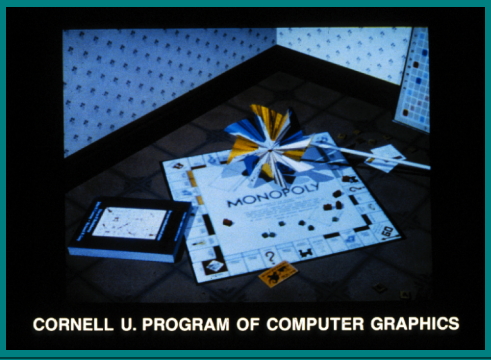


Models: Curves

Models: Texture



Models: Texture

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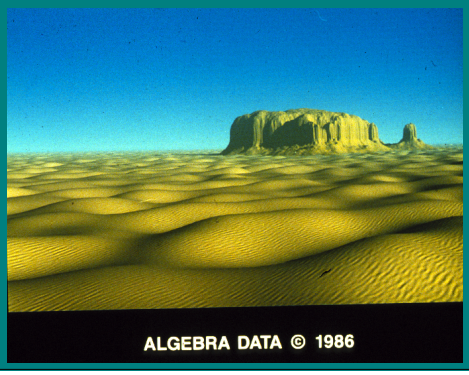
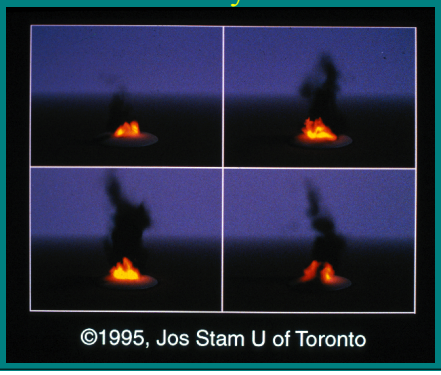


Models: Texture

Accuracy: Form



Accuracy: Form

Accuracy: Form

Feldman et al.,
SIGGRAPH '05

Accuracy: Form

Accuracy: Form

Accuracy: Form

Accuracy: Form

Runions et al, SIGGRAPH '05

Accuracy: Form

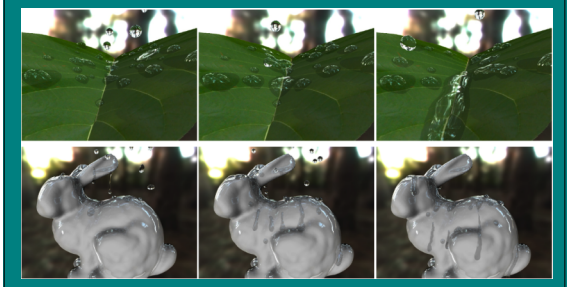
Accuracy: Form

Accuracy: Form

Accuracy: Dynamics

Accuracy: Dynamics

Accuracy: Dynamics



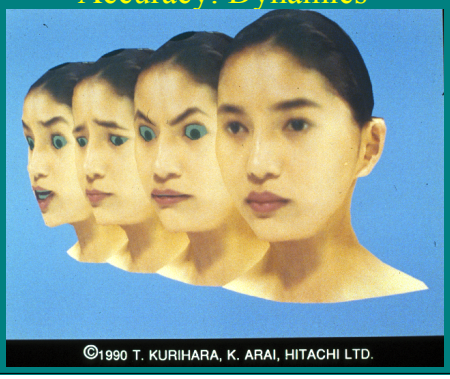
Wang et al., SIGGRAPH '04

Accuracy: Dynamics

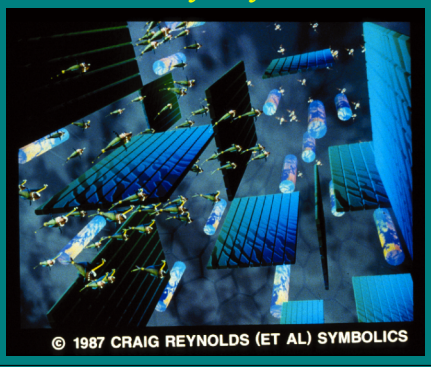
Accuracy: Dynamics

Accuracy: Dynamics

Accuracy: Dynamics



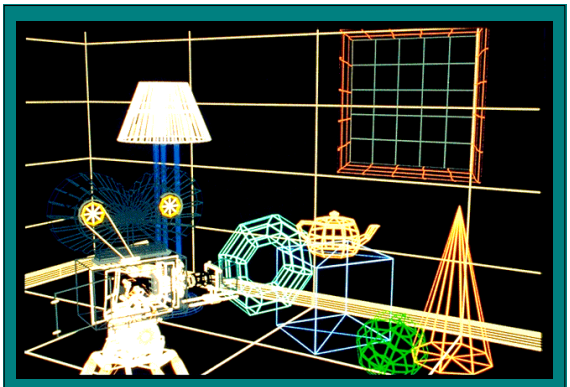
Accuracy: Dynamics



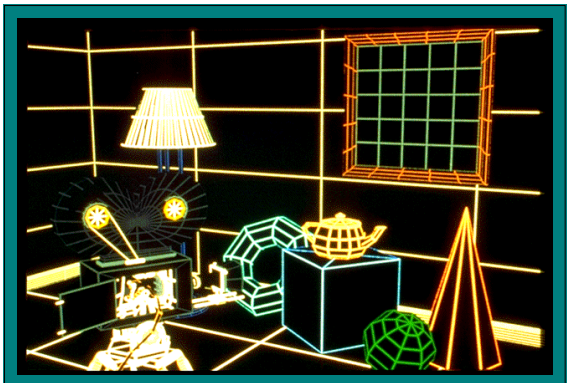
Accuracy: Dynamics

Accuracy: Camera

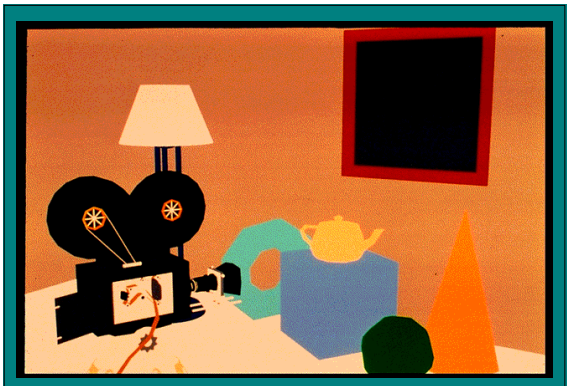
Accuracy: Camera



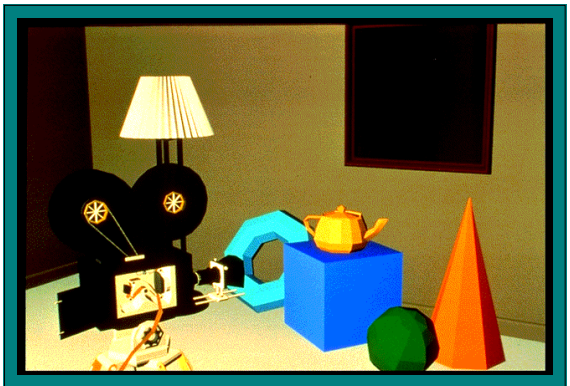
- Colored wireframe



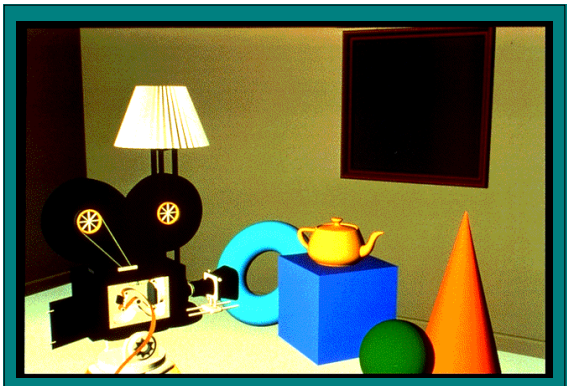
- Add hidden-surface elimination



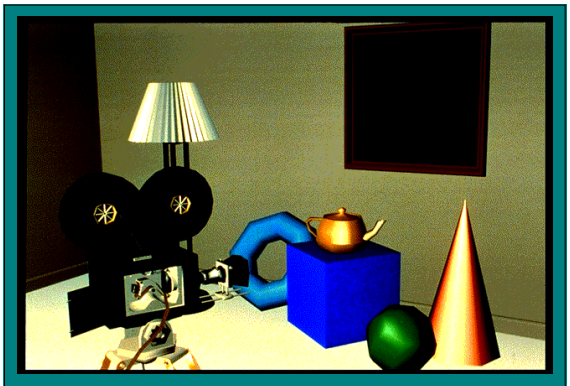
- Add filled polygons



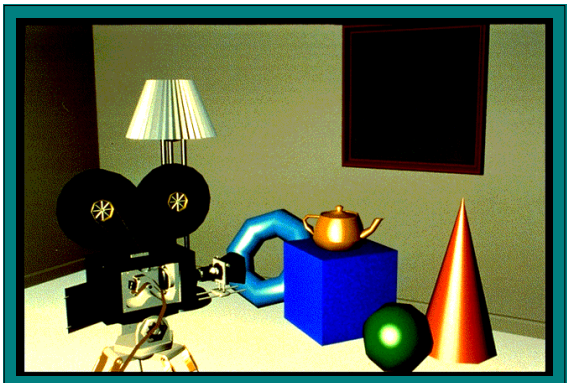
- Add light direction specific shading (at infinity)



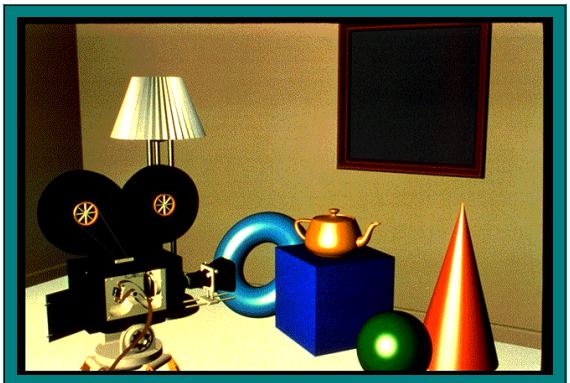
- Add curved surface primitives



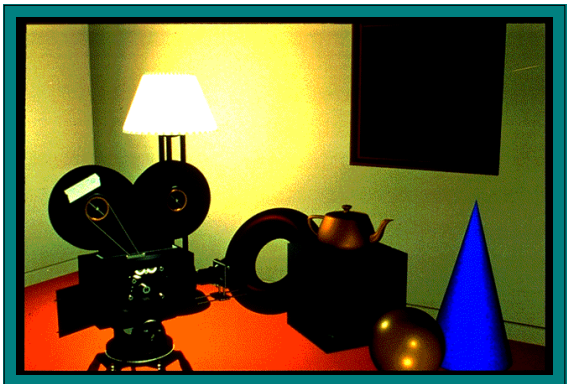
- Add specular shading (back to pgons)



- Add normal interpolation (Phong)



- Specular shading on curved models



- Add metallic surfs, improved light model (nearby)

- Add textures

- Add bump mapping

- Add reflections