Illumination models

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Outline

- WARN model
- Shadows
- Basic types of lights and shadows

Warn model

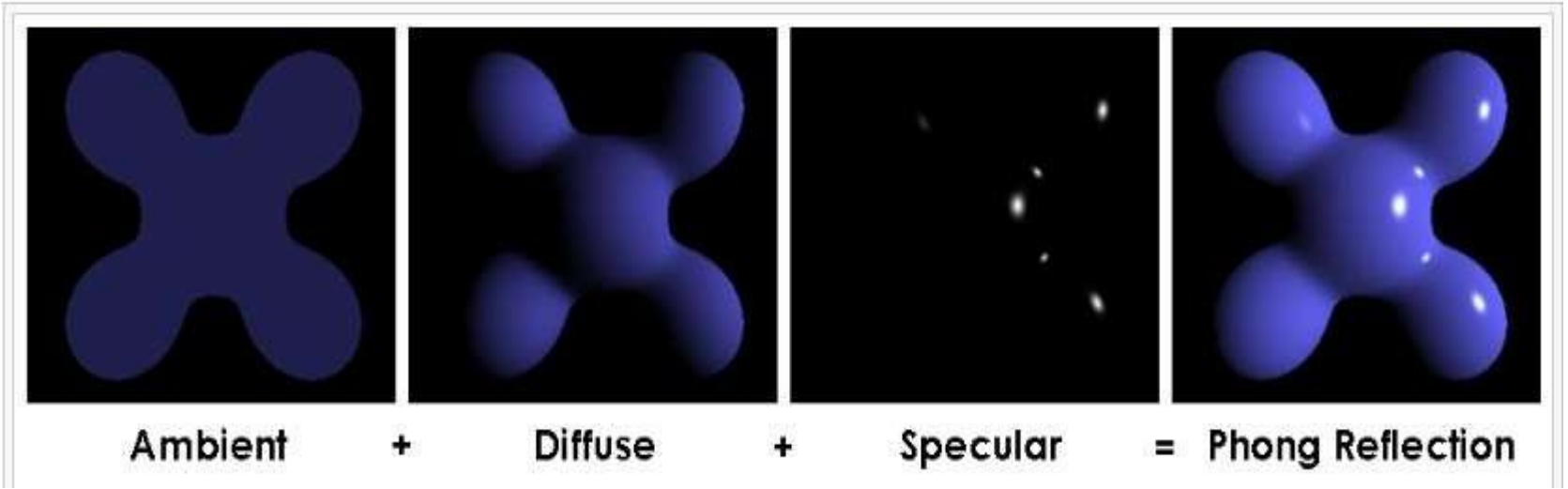
- Light sources are modeled as points on the reflecting surface, using the Phong model for surface points.
- The intensity in different directions is controlled by selecting values for the Phong component.
- Light controls such as “barn doors” and spotlighting used by studio photographers can be simulated in Warn model.
- Flaps are used to control the amount of light emitted by a source in various directions.
- Spotlights are used to control the amount of light emitted within a cone with apex at a point-source position.

Warn model

- Diffuse reflection: Reflected rays go in different directions; happens in rough textured or uneven surfaces.

- Regular/Specular reflection: Reflected rays go in one direction; happens in smooth and shiny surfaces; image can be seen.

Warn Model



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In the above diagram the light is white, the ambient and diffuse colors are both blue, and the specular color is white, reflecting a small part of the light hitting the surface.

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The intensity of the diffuse component varies with the direction of the surface, and the ambient component is uniform (independent of direction).

Shadows

- Hidden-surface methods can be used to locate areas where light sources produce shadows.
- Applying a hidden surface method with a light source at the view position, we can determine which surface sections cannot be “seen” from the light source.
- The shadows areas can be determined for all the light sources, the shadows could be treated as surface patterns and stored in pattern arrays.

Shadows

- Partial darkness or obscurity within a part of space from which rays from a source of light are cutoff by an interposed opaque body.
- Regions not completely visible from a light source.
- Assumptions:

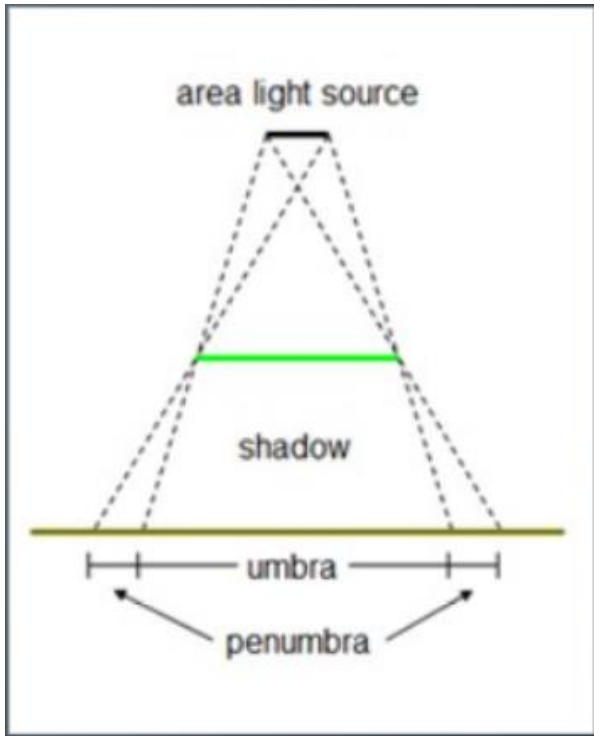
  -Single light source

  -Finite area light sources

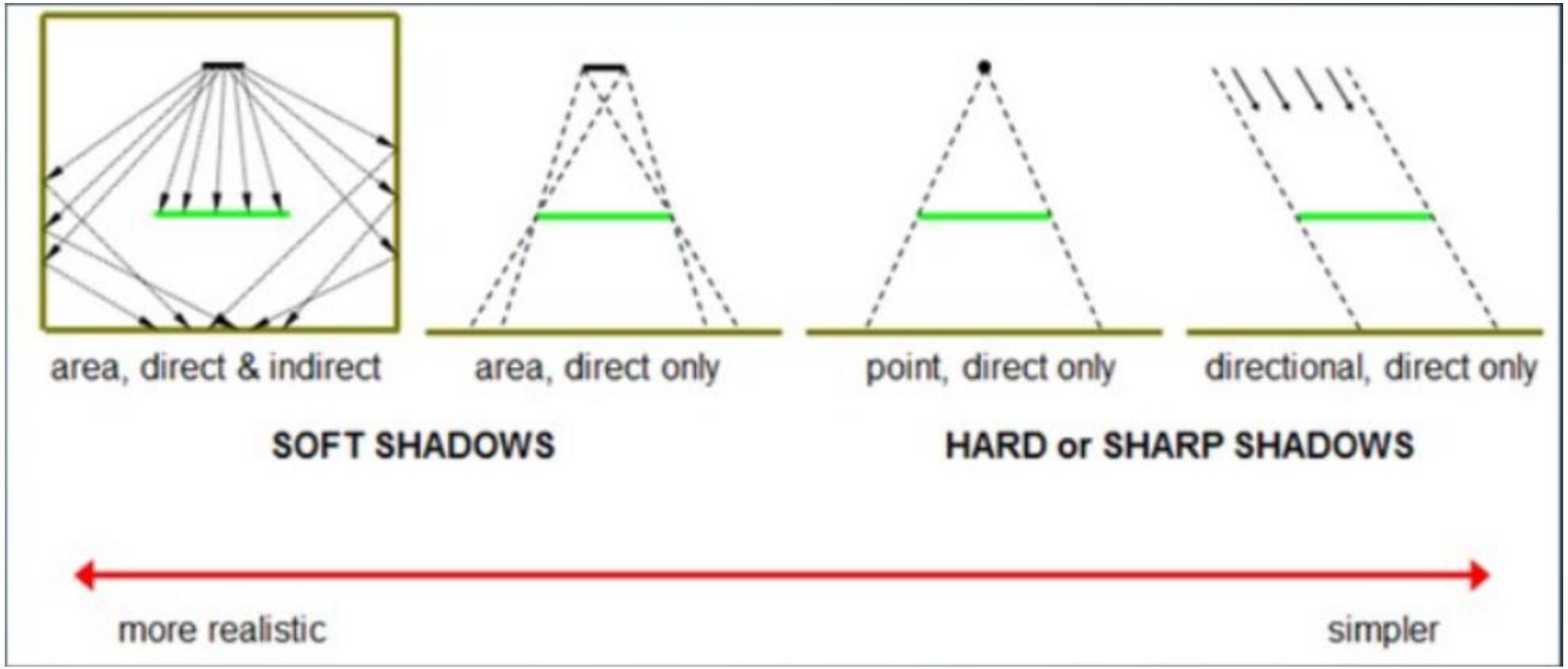
  -Opaque objects
- Two parts:

  -Umbra: totally blocked from light

  -Penumbra: partially obscured



Basic types of lights and shadows



THANKING YOU