Non-Photorealistic Rendering

Pen-and-Ink Illustration

Stylized Illustrations

As compared to photorealistic images, sometimes:

- **Convey more information**
- **Allow more compact storage**
- **More easily reproduced**
- **More attractive**

Illustration Applications

Architectural design

Medical texts

Industrial repair manuals

Types of Non-Photorealistic Rendering

Pen-and-ink Drawings

Paintings

Rendering enhancements

Other artistic modalities

- **e.g. screening, floral ornamentation, cartoons, etc.**

Pen and Ink Concepts

Strokes

- Curved lines of varying thickness and density of placement

Texture

- Character conveyed by collection of strokes, e.g. crisp and clean vs. rough and sketchy

Tone

- Perceived gray level across the image

Outline

- Boundary lines which disambiguate structure information

Algorithm Goal

Place strokes on surfaces to achieve particular tone functions

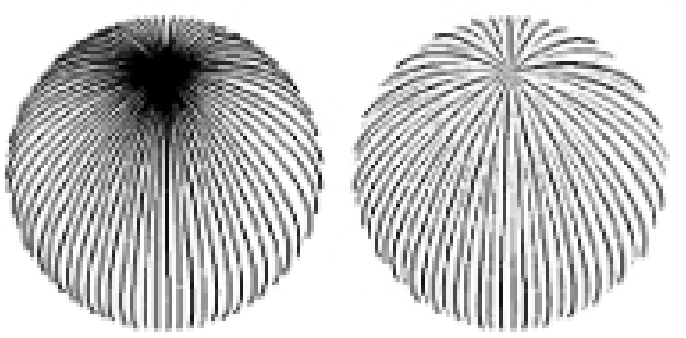

Figure 2 Controlled-density hatching for a perspective view of a sphere. Again, rendering isoparametric curves with constant thickness results in an image with varying tones (left). Using varying stroke thicknesses keeps the "apparent tone" constant (right).

from Winkenbach and Salesin. "Rendering Parametric Surfaces in Pen and Ink." *Proceedings of SIGGRAPH 96*. Page 471.