

Hair tape from Siggraph '95

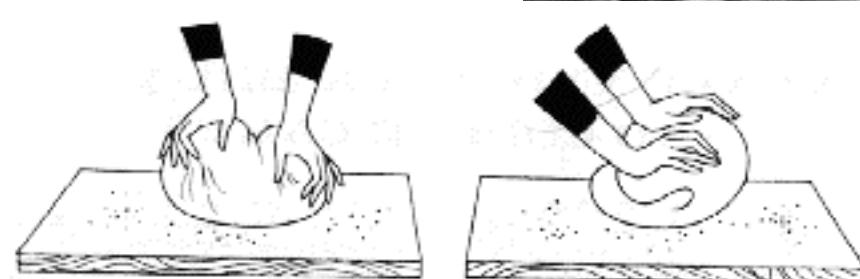
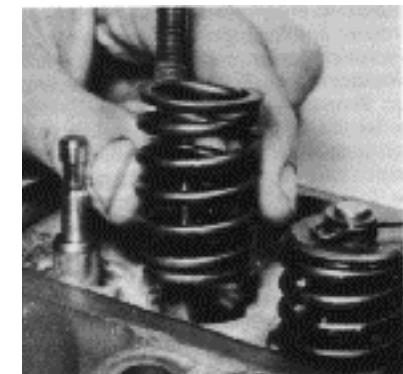
“Dragonman”, by Kelvin Lee,
Segment #17 from Issue 110 of the
ACM Siggraph Video Review,
The Siggraph '95 Computer Graphics
Showcase

Non-Photorealistic Rendering

- What's the purpose of computer graphics?
 - Photorealism?
 - Virtual Reality?
 - Simulation/Visualization?
 - Artistic expression?
 - Explanation?
- Realism not always what is desired
 - Informative Graphics
 - Painterly Graphics

Informative Graphics

- Realistic images not always best
 - Understandability over accuracy
 - Reality can be confusing
 - Simpler images can be cheaper too
 - News media, looking for better ways to present complex info

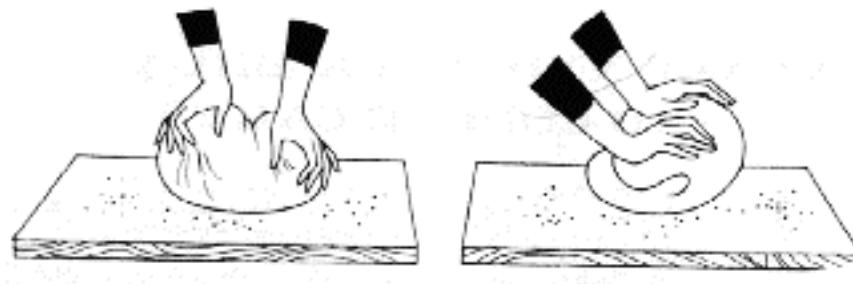


Goals of Informative Graphics

- Communication of shape information, geometry
- Examples from Tufte - “Envisioning Information”
 - Manhattan detail
 - Exploded Copier parts
- Repair manual illustrations

Line Drawing

- Hidden lines
 - Completely hidden- outlined white polygons
 - Dashed where hidden - harder
 - Haloed - also tricky (Appel et al ‘79)
- When should we draw the visible lines?
 - Faceted objects
 - Curved objects
- Drawing only the silhouette edges?



Perceptual Issues?

- Lateral inhibition in the eye
- Mach bands - contrast enhancement
- Edge enhancement an evolutionary plus?

Finding Silhouettes

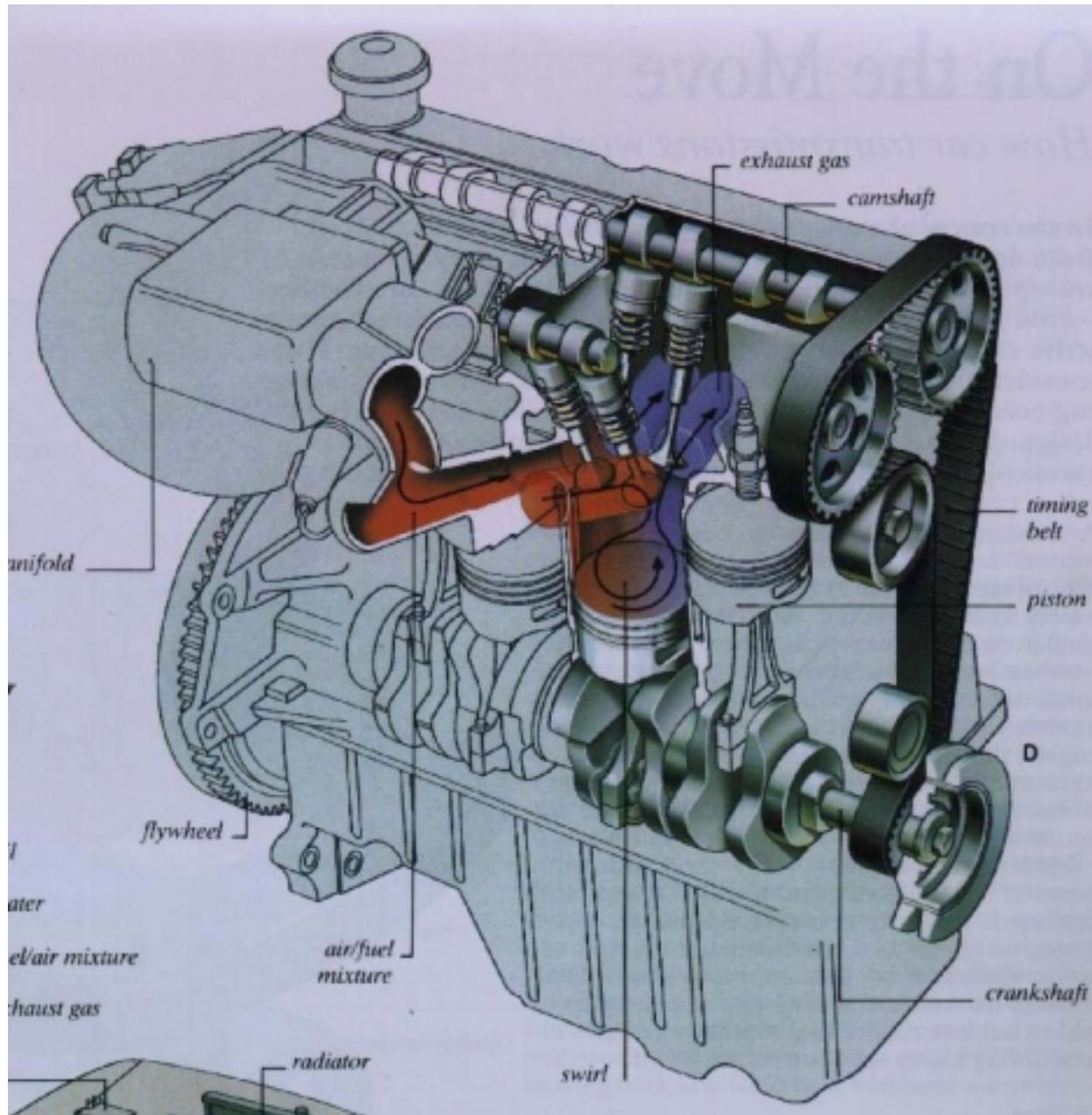
- Markosian et al '97 (tape later)
 - probabilistic silhouette edges
 - interframe coherence
 - updates on Appel's hidden line algorithm

Pen and Ink Illustration

- Winkenbach and Salesin '94
- Siggraph '97 tape
 - Pen and Ink Illustration - Salisbury et al
 - Real-time Non-Photo-Realistic rendering - Markosian et al

Engine Cutaway

- Stolen
from Peter
Shirley



Technical Illustration

- Dooley and Cohen - I3DG '90
- Saito and Takahashi - Siggraph '90
- Gooch, Gooch, Shirley, Cohen - Siggraph '98.
- I3DG '99 Tape
 - Image Precision Silhouette Edges - Raskar and Cohen
 - Interactive Technical Illustration - Gooch et al

Painterly Effects

- Martell Ad - Siggraph '95 Tape
- Litwinowicz - '97

References

- [Tufte90] Edward R. Tufte, "Envisioning Information", Graphics Press, P.O. Box 430, Cheshire, CT 06410, 1990.
- [Appel89] Arthur Appel, F. James Rohlf and Arthur J. Stein, "The Haloed Line Effect for Hidden Line Elimination", Proc. Siggraph '79, Computer Graphics, 13(2), August 1979, pp 151-157.
- [Dooley90] Debra Dooley and Michael F. Cohen, "Automatic Illustration of 3D Geometric Models: Lines", Proceedings of the 1990 Symposium on Interactive 3D Graphics, Snowbird, Utah, March 1990, pp 77-82.
- [Saito90] Takafumi Saito and Tokiichiro Takahashi, "Comprehensible Rendering of 3-D Shapes", Proc. Siggraph '90, Computer Graphics, 24(4), August 1990, pp. 197-206.
- [Markosian97] Lee Markosian, Micahel Kowalski, Samual Trychin, Lubomir Bourdev, Daniel Goldstein and John F. Hughes, "Real-Time Nonphotorealistic Rendering", Proc. Siggraph '97, August 1997, pp. 415-420

More References

- [Gooch98] Amy Gooch, Bruce Gooch, Peter Shirley and Elaine Cohen, "A Non-Photorealistic Lighting Model for Automatic Technical Illustration", Proc. Siggraph '98, July 1998, pp. 447-452.
- [Gooch99] Bruce Gooch, P-P Sloan, Amy Gooch, Peter Shirley and Rich Riesenfeld, "Interactive Technical Illustration", Proceedings of the 1999 Symposium on Interactive 3D Graphics, Atlanta, Georgia, April 1999, pp 31-38.
- [Raskar99] Ramesh Raskar and Michael F. Cohen, "Image Precision Silhouette Edges", Proceedings of the 1999 Symposium on Interactive 3D Graphics, Atlanta, Georgia, April 1999, pp 135-140.
- [Winkenbach94] Georges Winkenbach and David Salesin, "Computer-Generated Pen and Ink Illustration", Proc. Siggraph '94, July 1994, pp. 91-100.
- [Salisbury94] Michael P. Salisbury, Sean E Andeson, Ronen Barzel, and David Salesin, "Interactive Pen and Ink Illustration", Proc. Siggraph '94, July 1994, pp. 101-108.

Even More References

- [Salisbury96] Michael P. Salisbury, Corin Anderson, Dani Lischinski, and David H., Salesin, "Scale-Dependent Reproduction of Pen-and-Ink Illustrations", Proc. Siggraph '96, August 1996, pp. 461-468.
- [Winkenbach96] Georges Winkenbach and David Salesin, "Rendering Parametric Surfaces in Pen and Ink", Proc. Siggraph '96, August 1996, pp. 469-476.
- [Salisbury97] Michael P. Salisbury, Michael T. Wong, John F. Hughes, and David H., Salesin, "Orientable Textures for Image-Based Pen and Ink Illustration", Proc. Siggraph '97, August 1997, pp. 401-406.