Reflection Line in 3 minutes

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2009-05-07
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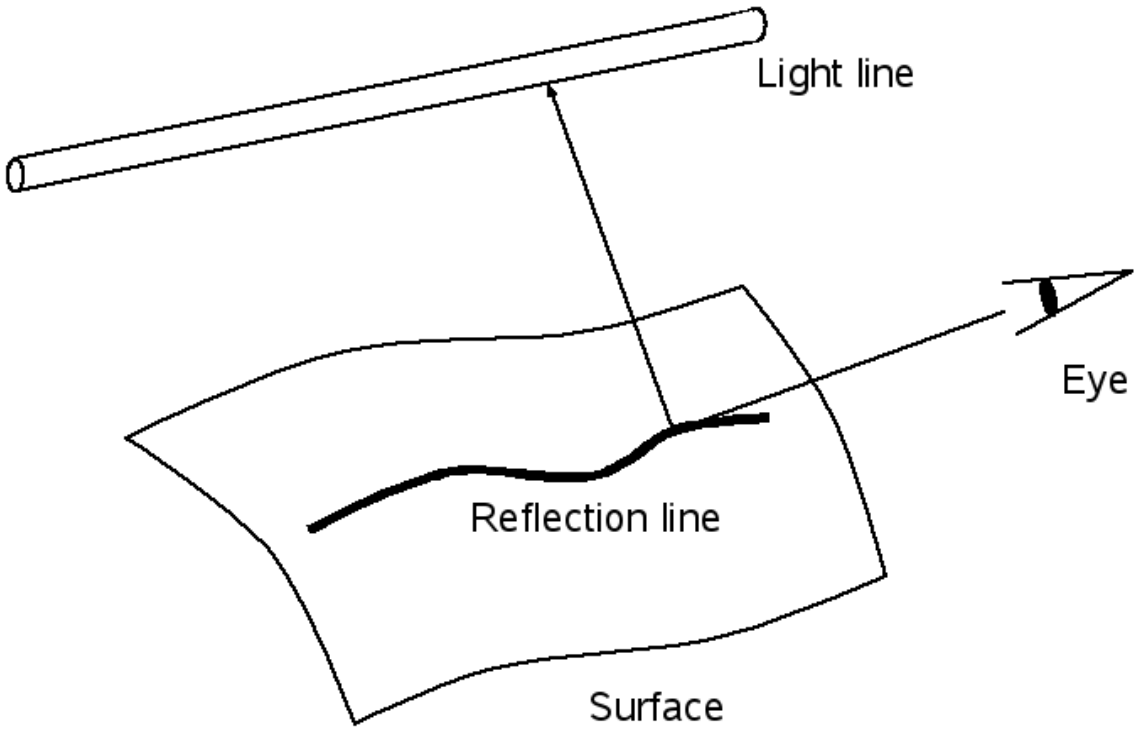
Reflection Line

- Lines observed on a surface from tube lights
- Car designers employed to see the surface quality
- Parallel fluorescent tubes are placed above the car model



Reflection Line in Berlin Hauptbahnhof

- See the frames as light lines

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- See the reflection line in the train windows

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Reflection line and mesh quality

- Eurographics cource note Figure 6.3
  - Geometric Modeling Based on Polygonal Meshes
- Reflection line shows the C^{k-1} property

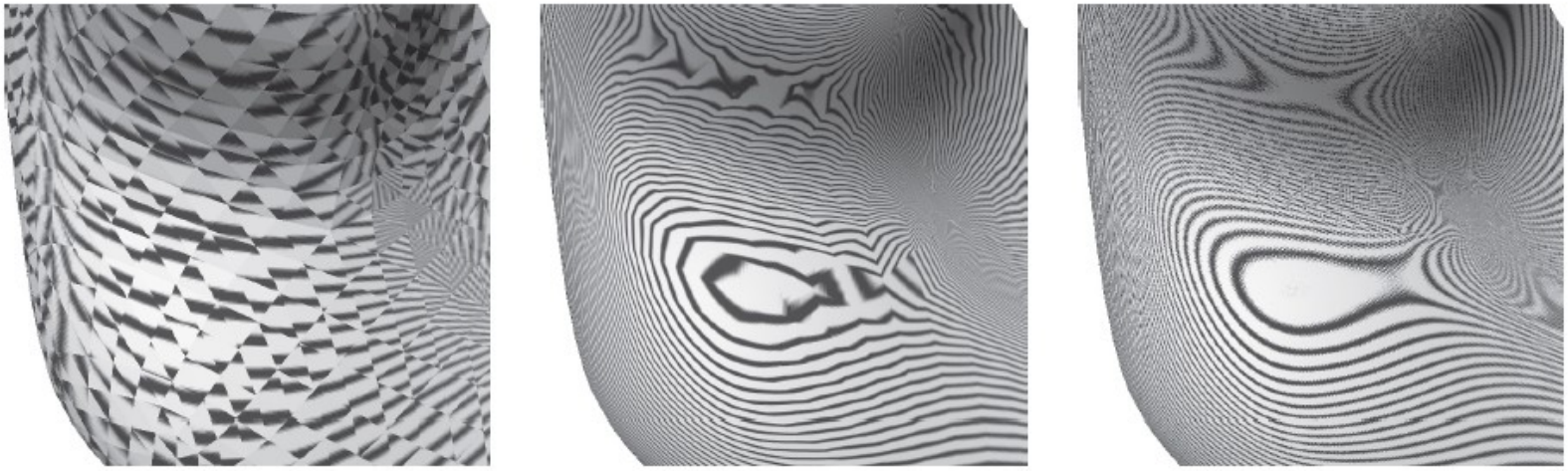

Figure 6.3: Reflection lines on C^0, C^1 and C^2 surfaces. One clearly sees that the differentiability of the reflection lines is one order lower, i.e., C^{-1}, C^0 and C^1 respectively.

Tips

- Someone (K.P.) said reflection line shows 3rd order quality of the surface. Why 3rd order?
  - Tangent is the first derivative, then normal is also.
  - Curvature is differential of curvature, means 2nd order
  - If you see C^2 with reflection line, it is derivative of the curvature .... 3rd order!

References

- Geometric Modeling based on Polygonal Meshes
  - Mario Botsch, Mark Pauly, Leif Kobbelt, Pierre Alliez, Bruno Levy, Stephan Bischo, Christian Roeossl, EG2008 Tutorial, 2008
- High-quality Display of Subdivision Surfaces on GPU(Computer Graphics) [in Japanese]
  - Takashi Kanai, Yusuke Yasui, IPSJ 47(2), pp.647-655, 2006