Controllable Lighting Model for Designing Digital Panorama Maps in the Style of Novat

Nolan Mestres¹  Romain Vergne¹  Joëlle Thollot¹  Arthur Novat²

¹Univ. Grenoble Alpes, INRIA, CNRS, Grenoble INP, LJK
²Atelier Novat

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Val d'Isère - Tignes, Pierre Novat (1989)
“[...] unique variety of map that transcends the boundary between cartography and art [...]”

Patterson (2000)
Advantages

+ Effective depiction of relief
+ Aesthetic
+ Standard (Tait 2010)
Drawbacks

- Difficult
- Time-consuming
- Few experts worldwide

Val d'Isère - Tignes, Pierre Novat (1989)
Stylistic study (Mestres 2022)

Appears *realistic*
Atelier Novat

Stylistic study (Mestres 2022)

Appears *realistic*

Tricks to enhance *shape* and *depth depiction*

*Inconsistent* illumination
Key ideas

- *Different light directions* for *shading* and *cast shadows*
- Function of *terrain geometry* (local variations)
Local Light Alignment for Multi-Scale Shape Depiction (Mestres et al. 2021)
Shading

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Maximum contrast, aligned with geometry → shape depiction
Shading

Lambertian shading
Shading

Our enhancement

Jenny et al. (2022)
Shading

Lambertian shading vs. Our enhancement
Ambivalent:

- Adverse impact on vision → *masking*

+ Necessary to *perceive depth*
Cast Shadows

Single light direction?
Cast Shadows

Multiple light directions

Control the length of cast shadows
Shading and shadowing combined
Inspiration (Huez, Novat 89)

Alpe d'Huez, without enhancement
Alpe d'Huez, with our lighting
Missing cartographic elements:

- Roads, trails, ski tracks
- Forests, rocks
- Rivers, lakes
- Buildings

Deform terrain geometry
Thank you!
Local Light Alignment for Multi-Scale Shape Depiction (Mestres et al. 2021)