T-61.5010 Information visualization

Exercise 2. Wed Feb. 14, 2006, 16-18 T1

- Basic visual percption
- Color perception and visualization

1. Present an example and discuss the properties of a good color scale for representing:

   a) Land use (residential, industrial, recreational, agricultural, etc.) on a map.

   b) The level of elevation on a map.

   Explain why the CIElab and CIEluv color spaces might be relevant when designing good color scales.

2. Compare the color of the snow outside with the color of a piece of white paper, while

   a) standing inside with the paper illuminated by incandescent lights and looking at the snow through the window, and

   b) standing outside with both the paper and snow illuminated by daylight.

   The test might work better on a cloudy day in the afternoon. What is the phenomenon telling about the perception of colors? (Feel free to replicate the results with a digital camera if you have one!)

3. Typical computer systems use 8-bits per channel (R, G and B) to describe colors. A 24-bit number can represent roughly 16.7 million different values. Still it was claimed in the lectures that the RGB-system is incapable of representing all possible colors. Explain this. Would it help to increase the number of bits/channel to 16?

4. Design a glyph that enables the preattentive perception of as many variables (discrete or continuous) as possible. How many variables can you represent with the glyph and how accurate can the values be perceived? What should be taken into account when designing the glyph?