

Aesthetics in Information Visualization

Hauptseminar "Information Visualization - Wintersemester 2008/2009"



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Overview

☰ Definitions

- ☰ Information Visualization
- ☰ Aesthetics
- ☰ Art

☰ Research Fields

- ☰ Aesthetic Information Visualization
- ☰ Artistic Information Visualization
- ☰ Ambient Information Visualization

☰ Examples

- ☰ Valence
- ☰ Skull with Cigarette

☰ Discussion

- ☰ Benefits of Collaboration between Artists and Scientists
- ☰ Artistic Value of Visualizations

Information Visualization

☰ Comprehension

- ☰ That data are visualized
- ☰ What is being visualized
- ☰ How to read the visualization

☰ Data criteria

- ☰ Abstract
- ☰ External
- ☰ Readable
- ☰ Not an Image

☰ Usage

- ☰ Expository
- ☰ Exploratory

☰ Intention

- ☰ Effective and efficient communication of knowledge

Aesthetics

≡ Highly disputed in philosophy, art theory and perceptual psychology

- ≡ Measurement of Beauty
- ≡ Anything visually beautiful
- ≡ Stirring of the senses
- ≡ Combination of cognitive and sensory modes of experience

≡ Perception of beauty

- ≡ Function of how fluently a viewer can process an object, depending on his cognitive abilities and the properties of the object.

≡ Object properties

- ≡ Symmetry
- ≡ Graph design: minimal number of bends and edge-crossings
- ≡ Minimal complexity

≡ Subjective nature

- ≡ Discussed from the creator's perspective rather than the viewer's

Aesthetics and Art

☰ Contrasting views

- ☰ Aesthetics = philosophy or theory of art
- ☰ „Aesthetics is concerned with the theory of sensual perception, while art is a social practice involved in certain forms of research and investigation processes and in the construction of particular types of artifacts.”

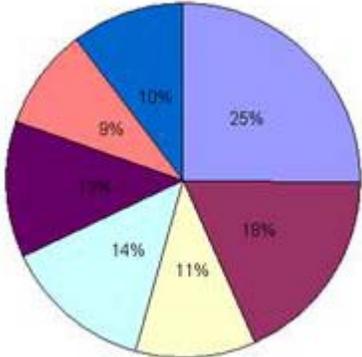
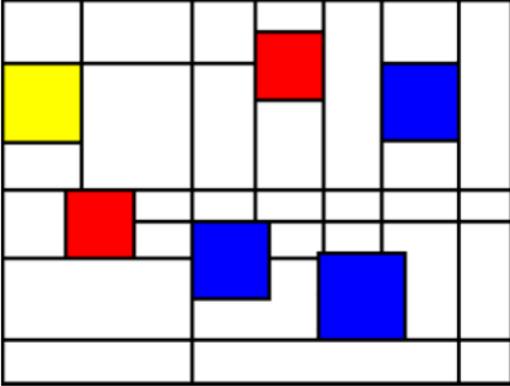
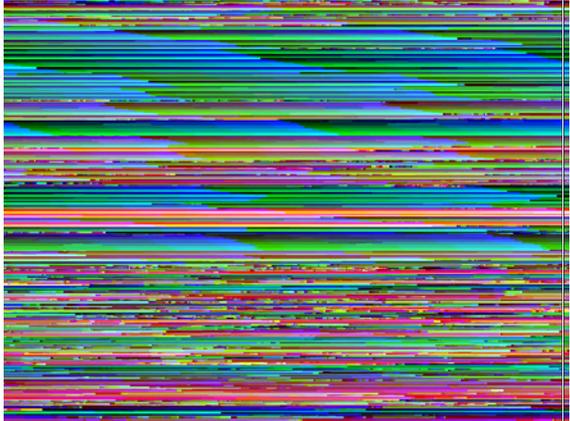
Aesthetic InfoVis

☰ Towards Aesthetics in Information Visualization

- ☰ Proliferation of Displays
- ☰ User-friendly, design-oriented development tools: Flash/ Processing
- ☰ Benefits of the Internet
 - ☰ Communities
 - ☰ Free software
 - ☰ Access to data
- ☰ Influence of artistic practices on computer science

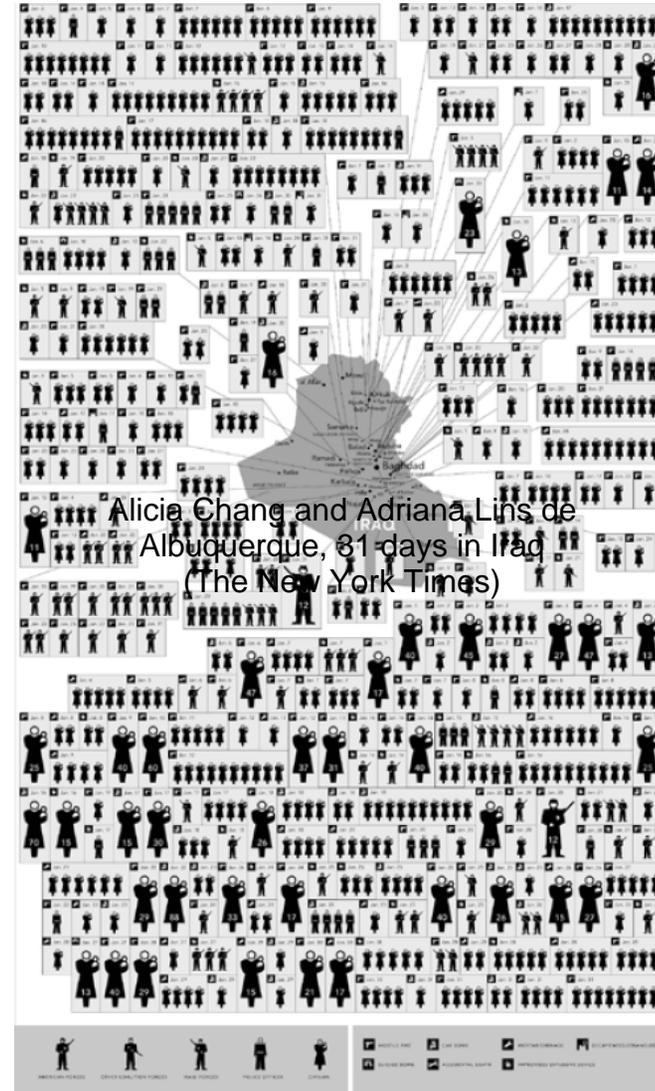
☰ Why Aesthetics?

- More effective visual analysis
- Viewer's Engagement

Recognizable/ readable	Not recognizable/ readable	Not recognizable/ not readable																																																																	
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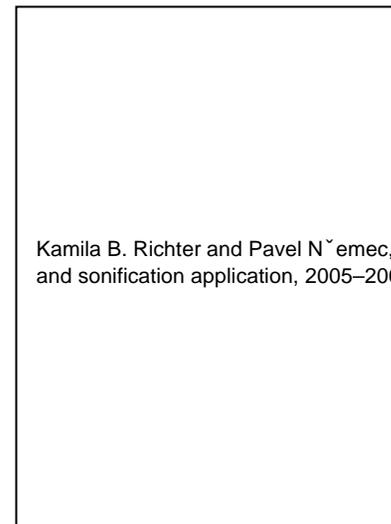
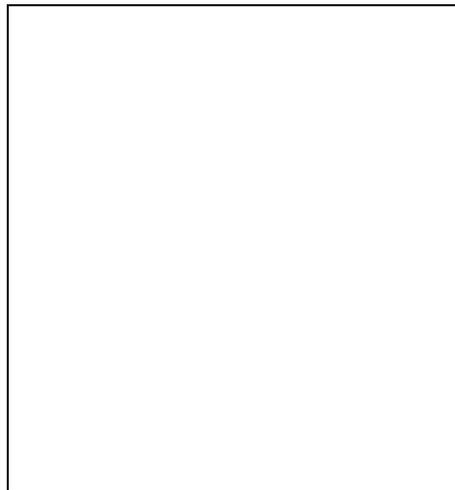
Artistic InfoVis

- ≡ Conveying Information beyond the data
- ≡ Communicating cultural and social issues
- ≡ Not necessarily “aesthetic“



Alicia Chang and Adriana Lins de Albuquerque, 31 days in Iraq (The New York Times)

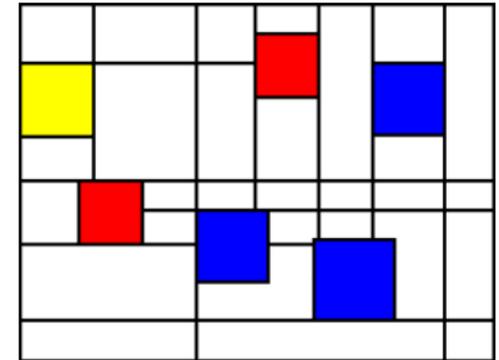
objective	subjective
revealing Information	obscuring Information
Analysis	Emotion
distinct	ambiguous
high degree of interaction	low degree of interaction



Kamila B. Richter and Pavel Němec, Deal Solution, 3D visualization and sonification application, 2005–2006

Ambient InfoVis

- ≡ Abstract representation similar to paintings or sculptures, often based on existing pieces of art or art styles
- ≡ Integration in public/personal daily life, away from the desktop
- ≡ Information „at a glance“
- ≡ non-obtrusive presence
- ≡ => Aesthetics: criterion of acceptance



- ≡ Design implications:
 - ≡ Few data dimensions/values
 - ≡ Often not exact numbers, but rather overview or trends
 - ≡ Self-updatable
 - ≡ Slow Changes



Research Fields: Summary

≡ Casual Information Visualization

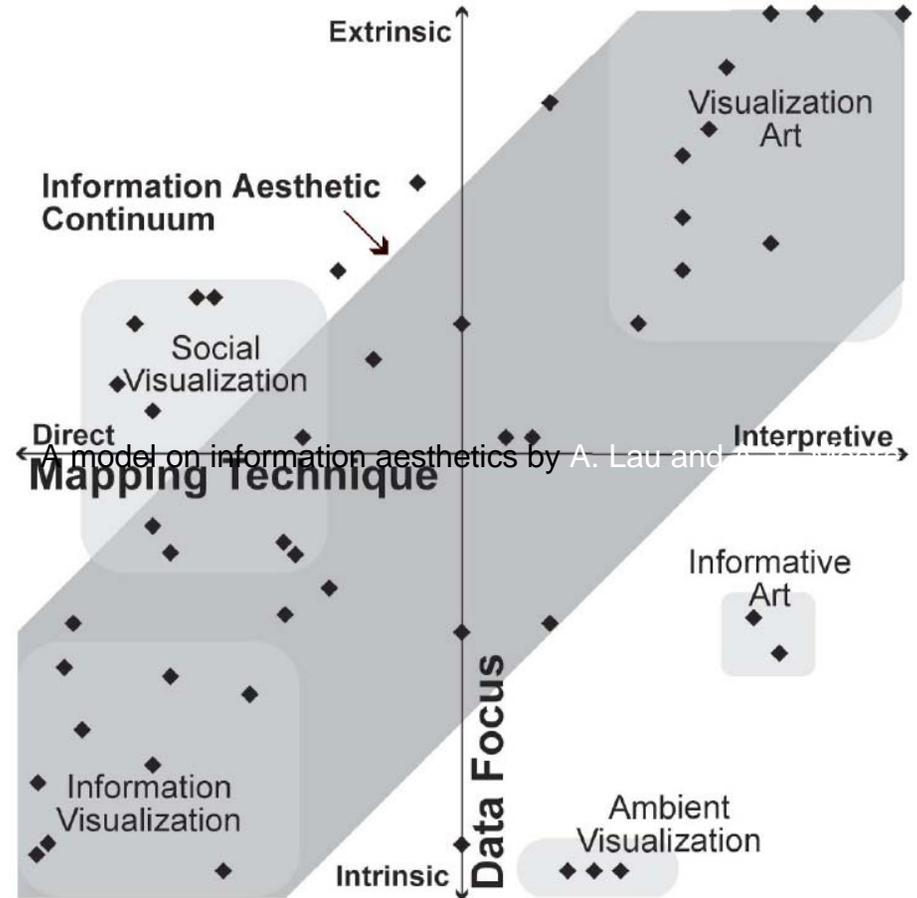
- ≡ personally relevant, less work-centered

≡ Mapping Technique

- ≡ Are the data readable?
- ≡ Can the viewer infer the underlying data?

≡ Data Focus

- ≡ Communicating the data (task-oriented)
- ≡ Communicating meaning beyond the data



Examples

☰ [Skull With Cigarette by Chris Jordan](#)

☰ [Valence by Ben Fry](#)

Is it art?

- ≡ Artistic visualization: defined by the creator's intention to create a work of art
- ≡ Aesthetic value \neq aesthetic pleasure
- ≡ Visualization can be regarded as
 - ≡ Technology
 - ≡ Art
 - ≡ Science

Questions

