Cartographic Design Issues Utilizing Google Earth for Spatial Communication

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Cartography

- “A picture [map] is worth a thousand words”
- Cartography is like music (E. Imhof)
  - Single notes with specific attributes connected to them.
  - These resemble the fundamentals of cartographic depiction – the graphic variables.
  - Each note is aligned and combined in such a way that the arrangement can harmonize to produce pleasing music or disharmony.
Cognitive (over)load in Cartography
Map

... can be seen as a metaphor for all products that are produced within cartography.

... is a structured model of spatial relationships that has the goal to transport information to the user in order to gain extensive insight.
Scientific Foundation of Cartography

Cartographic Representation as

Concrete Product

- Natural Science and Mathematics
  - Geo-Science, Physics, Chemistry, Informatics
- Engineering
  - Surveying, Graphical Techniques
- Methods and Tools, Capturing, Manipulation, Depiction, Storage, Management

Abstract Sign Language

- Humanities
- Sign Structure, Sign Interpretation, Modeling, Generalization

Cognition-Perception-Analysis
Cartographic Communication
Cognitive (over)load

- Cognitive Load
  - refers to the load on working memory during problem solving, thinking and reasoning
- Magical Number Seven plus or minus Two
  - Retention of discrete units of information before information loss occurs
- Chunks and Chunking
  - Structures that can be used as units of perception and meaning
  - Strategy for efficient use of Chunks
Topographic Orientation
- Every map has at least one layer that contains information for orientation.
- This topographic-orientation layer serves as a base for locating the thematic information in a spatial context.

Thematic Information
- It can vary from a very simple depiction all the way to a multi-dimensional complex base map.
- Objects can be grouped together to create “chunks” that help structure and organize the overall cartographic representation.
Google Earth Projects UNI-Vienna

- Global Awareness in School
  - “Understanding the World with Maps”
- Decision Support System Tool
  - “Avalanche Information System in Tyrol”
- Optimizing Topographic Maps
  - “Skitour Information System”
Small Scale Geo-Communication

- Global Awareness in School
  - “Understanding the World with Maps”

- Educational goals
  - **Affirmative Domain:** assist topographic navigational knowledge
  - **Cognitive Domain:** spatial navigational perception, combine knowledge with content
  - **Instrumental Domain:** topographic capabilities and skills for independent action
Global Land Cover 2000

GLC 2000 is a global vegetation and land cover map based on Envisat satellite data by ESA. More information on ongoing Envisat world mapping projects can be found [here](#).

This overlay provides 20 km resolution, but the full map has 1 km resolution. An interactive applet is available [here](#).
Intermediate Scale Geo-Communication

- Decision Support System Tool
  - “Avalanche Information System in Tyrol”

- Project Goals
  - Prevention of avalanche accidents by informing the public about the current snow and avalanche situation
  - Administration and management of data
  - Cartographic visualization
LWD Interaktiv - Stationenübersicht

Anzahl der Stationen = 209

Markierte Stationen werden als aktiv in die Datenbank geschrieben - rot = nicht aktiv - grau = kein Sensor vorhanden

Alle Wetterstation (KML)

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Large Scale Geo-Communication

- Optimizing Topographic Maps
  - “Skitour Information System”

- Project Goals
  - Focused information retrieval
  - Optimization of large-scale topographic maps for integration in GE
  - Automatic derivation and design processing
**Skitouren Wiener Hausberge**

Um mit google earth Dateien zu arbeiten, ist das Programm [google earth](#) am Rechner zu installieren.

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[Disclaimer](#)

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**Fotoalbum Krummbachstein**

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Goals and Outlook

- Enhancing methods of spatial information by means of cartographic communication
- Know-how transfer and collaboration with neighboring disciplines
- Application development and implementation
- Sustainable scientific progress within cartographic visualization and geo-communication
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