

**Harold Moellering**, Dept. of Geography, Ohio State University  
Columbus, Ohio. Email: moellering.1@osu.edu

### **Linking Cartography to GIScience Utilizing the Concepts of Analytical Cartography**

In the last decade cartographic colleagues have looked at the Body of Knowledge in GIScience and have seen a need to link that work closer to the field of Cartography. This is because they see a need to link Standard Cartography to spatial theory, and utilize it in the field.

Tobler and many colleagues have since the 1960s worked to develop the various areas of Analytical Cartography, which includes many of these topics in spatial science:

- \* Geographic Map Transformations
- \* Real/Virtual Map Transformations
- \* Deep/Surface Structure
- \* Spatial Primitive Objects
- \* Spatial Data Structures
- \* Spatial Sampling Theory
- \* Map Generalization - 1, 2, 3-D
- \* Spatial Neighborhood Operators
- \* Spatial Frequencies
- \* Spatial Information Theory
- \* Spatial Fractal Operators
- \* Warntz Networks
- \* Irregular Neighborhood Operators
- \* Volumetric Transformations
- \* Shape Analysis
- \* Spatial Semantics and Ontology
- \* Analytical Visualization

Goodchild and colleagues in the 1990s spearheaded an effort to expand the scientific basis of GIS into what is now called GIScience. They have now published a Body of Knowledge for GIScience that includes:

- \* Analytical Methods
- \* Conceptual Foundations
- \* Cartography and Visualization
- \* Design Aspects
- \* Data Mining
- \* Data Manipulation
- \* Geocomputation
- \* Geospatial Data

This presentation will explore these topics and identify commonalities between them. Hence, it can form a basis for a discussion of how Analytical Cartography can serve as a bridge between the fields of Standard Cartography and GIScience. Some in the field will see this as a way of enhancing the field of Cartography and facilitating cooperation between the two fields in the future.

Key Words: Analytical Cartography, Cartography, GIScience, GeoSpatial Theory, Spatial Science, Body of Knowledge, Geomatics