This paper considers the role of map-based display in facilitating collaboration in the context of geospatial knowledge construction and decision-making activities. Most geovisualization tools, GIS-based mapping environments, and other geoinformation technologies have been designed for use by individuals. The resulting tools and environments do not meet knowledge construction and decision-making needs well, because teams usually carry out work on geographic problems collaboratively. Rapid advances in electronic communication technologies that make collaboration at a distance both practical and expected will exacerbate the single-user limitations of existing tools and approaches.

Extending geovisualization tools and approaches to meet the needs of collaborative work is a substantial challenge. It is a challenge that will require new perspectives on old problems of geospatial information representation and manipulation as well as attention to new problems related to how groups work. The approach to collaborative geovisualization taken by our research group integrates perspectives from cartography (and geographic information science more broadly), cognitive science, computer-supported cooperative work, and semiotics.

Here, we focus specifically on the design of representations that facilitate different-place collaboration. Particular attention will be given to the ways in which dynamic visual (and auditory) representations can be used to facilitate shared understanding. Two separate but related problems are considered. First, we describe and compare ways in which participants with different domain expertise can share ideas with one another. Among the issues to address with this problem are ways to depict the relationships among differing semantic frameworks that reflect different perspectives on the same or related geospatial information. Second, we describe and compare ways in which the participants in the collaboration and their interaction with the system can be represented. These representations are designed to facilitate coordinated work among groups of users and to facilitate our own subsequent visual analysis of that work as we conduct experiments designed to refine the tools.

The collaborative geovisualization environment being built is an extension to a Java-based visual programming environment for geovisualization and geocomputation (GeoVISTA Studio). In this presentation, we will outline the characteristics of this environment briefly and discuss how it is being extended to support collaboration in decision-making and knowledge construction tasks. Attention will be given to coordination among components on each users display as well as to how that within-display coordination relates to coordination among users’ displays. We will illustrate tools that we are building and outline a plan for assessing the usability of these tools in different geocollaboration contexts.