The Spatial-Semantic Impact of a Collaborative Information Environment on Group Dynamics

Chaomei Chen
College of Information Science and Technology, Drexel University

Abstract

This article describes a quantitative approach to the study of group dynamics in Collaborative Information Visualization Environments (CIVES). This approach characterizes group dynamics in terms of two concepts introduced in this article - spatial proximity and semantic coherence. The concepts are crucial to the understanding of profound interrelationships between spatial, semantic, and social navigation. Furthermore, this article describes three visualization techniques - semantic indentation chat sequence displays, activity maps, and clock-face maps - that permit the identification of important features of group interaction that are related to semantic coherence and spatial proximity. The approach is illustrated by applying it to the analysis of an empirical study in which four groups of subjects performed collaborative search tasks through three-dimensional visualizations of knowledge domains. The major contribution of the work is the conceptualization and quantification of group coherence as a generic methodology for the study of a range of collaborative virtual environments such as collaborative learning, distance learning, social networks, collaborative information visualization, or digital libraries. Further research challenges for the study of group behavior in collaborative information visualization environments are identified.

Katy Börner
School of Library and Information Science, Indiana University

Chen, Chaomei and Börner, Katy (2005). The Spatial-Semantic Impact of a Collaborative Information Virtual Environment on Group Dynamics. PRESENCE, 14(1). For more information, contact Katy Börner at katy@indiana.edu.