

University of Washington
Graduate School

Abstract

**The Research Web:
Asynchronous Collaboration in Social Scientific Research**

Charles Sverre Hendricksen

Chairperson of the Supervisory Committee:

Professor Timothy L. Nyerges

Geography

The dissertation examines the issue of large-scale, long-term social scientific collaboration in a research environment populated with highly specialized and geographically dispersed scholars. The recent expansion of the Internet's communication capacity and diversity in genre categories has fueled an explosion in collaborative capabilities. The World Wide Web is adopted as the vehicle for interactive collaboration.

The nature of scientific collaboration is examined in depth, including barriers to collaboration. The current research environment is explored: how it serves knowledge-building; where it is likely to change as a result of recent social and technical conditions; and what support that new environment requires. Because of the fragmentation of specialist communities, collaboration within interdisciplinary and intercultural teams is emphasized. The limitations of asynchronous methods are discussed, along with the limitations of synchronous methods that are their analogs.

The proposed research environment is based on a realist philosophy that defines theory as being embedded in models. Several types of models and their representation are

explored. Model building is integrated with a research methodology, the Validity Network Schema, that provides a framework for bringing modeling into the research process. The Research Web (RW) is the original concept that supports the modeling of social processes by linking descriptive and process models to the science. The RW supports open scientific dialog through annotation with a critical apparatus called DocReview. The scholarly apparatus of the RW is embodied in a new genre of documentation called the Research Web Essay, a hyperdocument. Several original tools provide support for the scholarly apparatus: bibliographic services, a glossary, annotation and management of content preparation. Topics for the RW Essays are extracted from the models. The essays, through critical refinement, eventually become canonical documents and the basis for research papers. The principal product of the RW is the production of new shared knowledge; the principal reward is authorship of research papers.

The Research Web concept is examined through case studies of three attempts to establish them. Case studies of 100 DocReviews examine not only the efficacy of the programs, but also the social and task-oriented nature of discourse expressed as annotation in the RW.