PROJECT SUMMARY

Research Activities: In the knowledge economy, successful knowledge management practices provide the basis for building and sustaining an organization’s competitive edge. This project investigates how groups and organizations can effectively retain and share organizational knowledge via the development of transactive memory (TM), a knowledge retention system that is made up of a network of individual memory systems, both human and electronic. In our earlier NSF-funded research, we developed and tested a multilevel, network model of the development and usage of TM systems to retain and retrieve expertise in organizational work groups. We found that (a) social capital embedded in rational resource exchange networks influenced access to expert knowledge, and (b) people gained access to expertise through both one-to-one connective TM systems supported by social relations and one-to-many communal TM systems supported by information technologies. The current research offers additional theoretical extensions to our earlier model by (a) conducting a more comprehensive study on the interplay of connective and communal transactive memory, (b) incorporating the impact of affect, and (c) assessing the impact of culture on the development and usage of connective and communal TM systems in both culturally homogeneous and heterogeneous teams. Field research is conducted on both student and real organizational teams in both China and the U.S. to address these initiatives.

Intellectual Merit: The research makes three original contributions to TM theory and research. First, building on the findings from our earlier NSF-funded research, we investigate the complex interplay between connective and communal TM systems. Existing studies of TM systems either focus on connective human interactions, primarily in the organizational behavior literature or communal information systems, primarily in the information systems literature. A promising avenue of investigation is to simultaneously study both systems to facilitate the development of an interdisciplinary model. Second, we examine how affect influences the development and functioning of TM systems from both a multi-level and a network perspective. This integrative effort has the potential to make substantive theoretical contributions to the study of TM systems, in specific, as well as collective cognition, in general, both of which have focused largely on rational cognitive processes. Third, we investigate the development and usage of connective and communal TM systems under the influence of different environmental contingencies associated with different national cultures, by (a) testing the theory in homogenous Chinese culture teams in China, an increasingly important but understudied context in the globalizing world, and (b) studying how heterogeneous cultural backgrounds of participants in a TM system in intact teams affect knowledge acquisition, distribution, and processing through both connective and communal TM systems.

Broader Impacts: More than at any other time in human history, advances in the 21st century will be based on systems and networks of human knowledge. What it is, how it is represented, how it is distributed and to whom, and with what success are all critical questions. Effective knowledge retention and sharing systems are crucial to for-profit firms seeking competitive advantage, but also to law enforcement and criminal prosecution, hospital processes and patient safety, emergency crews and first responders to crises and disasters, governmental and intergovernmental organizations, and virtually every possible type of organization in every part of the globe. There is much to be gained from a better understanding of what knowledge systems work effectively in different contexts. The results of this research will enable teams, their managers, their organizations, and their partners to better manage crucial knowledge resources. The results can serve as a basis for educating the future workforce of engineers and managers to better prepare them in securing the advantages and avoiding the pitfalls of cultural differences in a globalizing economy. These results will be widely shared with management practitioners through practitioner-oriented journals and websites. Study results will be extensively disseminated within the academic community through journal articles and conference presentations. The project offers Master’s students training through participation in the research; the data will be available to them for further analyses and projects, including their own MA theses. Several PhD dissertations will also result from the research.