

▼ Introduction to Supporting Distributed Cognition in Knowledge Management Systems Minitrack

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The concept of distributed cognition indicates that knowledge is stretched across organizational actors, rather than possessed by a single individual or shared by members of a community of practice. Organizations must grapple with issues such as how partial knowledge is shared across functional and task-related application domains, how knowledge-work practices are defined and coordinated across multiple knowledge domains, and how knowledge is mediated by various forms of information technology. The papers in this minitrack explore issues of organizational knowledge, viewed through the lens of distributed cognition.

The first paper in our minitrack, by Jo-Anne Kelder, presents a study of a healthcare organization in Tasmania. By analyzing the system of knowledge-sharing as an information ecology, the author surfaces tensions between data work, centered on the maintenance of patient records, and clinical work, centered on the patient. She presents an analysis of boundary-maintenance activities and boundary objects, to demonstrate a disconnect between institutional, professional group, and individual interpretations of performance. The paper demonstrates how data and system integration based on institutional measures of performance fails to support individual and professional group knowledge that affects choices in healthcare delivery to an individual client.

The second paper, by Sabrina Bresciani, Alan Blackwell, and Martin Eppler, presents a framework that allows us to understand the mediating role of conceptual visualizations in collaborative knowledge work. Following Green's proposal that general design principles for a mediating information system may be explored through the cognitive dimensions of artifact use, the authors derive a framework for understanding how diagrams can support collaborative knowledge-work. They discuss properties relating to each dimension of the framework and apply it to common visualizations used in organizations. In this way, they demonstrate how the

dimensions of their framework describe the core properties of visualization artifacts.

The third paper, by Sheng_cheng Lin, Yu-Min Wang, and Daniel Y. Shee, presents a conceptual framework of transactive network systems. The authors identify the need for systems to match knowledge contributors with those who need their help. Arguing that transactive memory is key to organizational learning, they define five core software components of knowledge management systems to support learning organizations. These components are a matchmaking manager, skills-based manager, contribution manager, context manager, and social network manager. The authors delineate key properties of each component and discuss how such systems could be implemented by means of a multiagent-based system.

The final paper in our minitrack, by Jim Waters, will be presented in a separate session. The author analyzes student role-behaviors in online discussions, to identify a core set of student "thought-leaders," who engage in distributed facilitation of group learning. Thought-leaders demonstrate qualitatively different learning and debate strategies to other students. Through social network analyses, the author demonstrates that student thought-leaders are central to peer learning in online environments. They are more attended to than other students, complicating and redirecting group discussions, while appearing to learn from each other. The findings challenge the assumption that a participatory democracy is an effective model for online learning environments. They suggest that gentle encouragement of a "benevolent oligarchy" of thought-leaders is key to constructivist knowledge construction in online learning.

Taken together, these papers present four diverse but related studies of how distributed knowledge may be coordinated and mobilized across IT-mediated communities of practice.