Research Methods to Support Sensemaking in Information Systems Development: A Conceptual Method for Bridging Thought and Action

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Abstract

Sensemaking is discussed as a conceptual approach to studying the active and intellectual processes that support building clear representations of information stimuli. Of concern is defining research methodologies that are capable of richly capturing the intellectual processes. A quasi-experimental approach is proposed within the context of studying information systems development teams.

Research methodologies which allow the description of how we apply thought processes and knowledge to address information. Sensemaking is posited as an approach for dealing with ambiguity. In this case, it has been applied to ambiguity in information systems development. Focusing on situations which are complex and feature ambiguity permit investigations of the intellectual and active processes that support mental clarity. In discussing sensemaking, what is at issue here is identifying the methodology (ies) that permit and explore the movement from confusion to clarity.

Sensemaking is a method of understanding how developers create meaning and build context for reducing the ambiguity inherent in complex projects. Interpreting sensemaking as a conceptual strategy, meaning creation is driven by active processes and intellectual examinations. In a discussion of the theory in organizational communication, Weick (1987) concisely presents the need for sensemaking, "Knowledge is a collective social product imperfectly represented in any one mind." This line is part of a larger point illustrating that scientific knowledge is dependent on social interaction rather than on individual genius. In defining knowledge as a product of social action, Weick succinctly reveals one difficulty in the area of knowledge development and purports the need for a focus on knowledge development in group work. Building knowledge in information systems development can be similarly defined since like organizational communication it seeks coherence, validity, verification, and power.

Weick (1995) argues that how people organize themselves, how they resolve uncertainty and ambiguity, and discover meaning is controllable. Sensemaking refers to how meaning is constructed at both the individual and the group levels. Through the construction of meaning, clarity increases and confusion decreases. The decrease of confusion leads to higher productivity, better quality, and greater confidence in group processes. These outcomes are applicable to all group processes whether they be in a boardroom or in a classroom.

The application of sensemaking as a research focus is not unprecedented, yet it does present some difficulties. The concept of sensemaking has been described as interpretation coupled with action (Thomas, Clark, & Gioia, 1993; Gioia, Thomas, Clark, & Chittipeddi, 1994; Weick, 1979; 1995) and therefore, reflects the combination of thought processes with execution of that thought. The difficulty in applying sensemaking as a methodology lies in defining an idiosyncratic concept's ability to specify how action and cognition interrelate in a manner that enhance the construction of meaning. Combining mental and active processes to form a conceptual construct require an ability to measure and capture the individual processes, the combined processes, and the movement between the two. Therefore, measurement becomes a key component of both the definitions of sensemaking and the assurance that the concept is testable.

The research literature does offer a limited number of alternative definitions of sensemaking. In common, they feature the assertion that sensemaking represents the union between thought and action. The central
differences in the definitions arise in how the definitions themselves are constructed and the manner by which they constructed. For example, Harris (1994) defines sensemaking in terms of the comparison and relationship of schemas that represent knowledge structures. The schemata provide a structure for processing incoming information and knowledge from previous experience. The work of Gioia and colleagues have placed sensemaking as the interaction of intellectual processes of information seeking like scanning and interpretation and action in the form of performance. Weick's (1979; 1995) contributions in defining sensemaking are the most complete. Sensemaking in Organizations supplies occasions for sensemaking behavior and offers insight into the types of processes that embody the concept. Weick's review of literature offers multiple perspectives from psychology and organizational theory and behavior to bear on intellectual processes of interpretation, decision making, knowledge structures, and the articulation of knowledge into action. Weick offers his reader a set of sensemaking properties to articulate the concept that would be considering an approach to give sense in itself.

These seven sensemaking properties include: being grounded in identity construction, retrospect, enactive of sensible environments, social, ongoing, focused on extracted cues, and driven by plausibility rather than accuracy (Weick, 1995). The measurement of the junction between intellect and activity represents a complicated approach. If sensemaking is the level of ambiguity and understanding present in individual and group interactions, extractions of such understanding, ambiguity levels, knowledge, and actions must be made from the subjects. Extraction of this data must not predispose the subjects to reframe their knowledge. Therefore, the gathering of data through questionnaires is not a sufficient measurement technique. The subjects need to construct the meaning of their interactions and not have the reality of the researcher imposes on their ideas (Gioia et al, 1994).

Interpretative research needs to be employed to allow the subjects to represent their experience, knowledge, and action in a manner that is appropriate for their unique understanding. Gioia, Thomas, Clark, and Chittipeddi (1994) provide a method for employing a grounded theory approach to provide a theoretical account with a narrative told by the actors in the study. Their method uses the "actor-observer" to tell the story of their direct interaction and experience. The limit of the "actor-observer's" ability to provide analysis is their limited perspective on the subject and their own knowledge of the areas under study. Therefore, it is necessary to be able to paint a broader picture of the area, in this case information systems development team work, through incorporating multiple views and narratives.

Grounded Theory (Glaser and Strauss, 1967; Strauss and Corbin, 1990) provides a methodology for ascribing the "actor-observer's" story into a theoretical set of data. Using a qualitative technique allows the subject to tell the story of the phenomena rather than attempting to fit their story into a predefined framework. The approach involves various stages of coding and categorization through organizations of the data.

Joseph Porac, Howard Thomas, and colleagues (1994; 1995) have employed narrative techniques to build an actor centered approach to data collection in the area of industry competition. The actor centered approach is most appropriate to allow the subjects to define the reality of their environment. In both studies, data was gathered from field interviews involving subjects who were actors in the study environments (the Scottish knitwear industry and the retailers in a small city). The interviews focused on two parts -- description of their business area and a category generation portion. A questionnaire was then mailed to a broader sample of the study's identified subjects. This questionnaire asked the subjects to describe their company in terms of the categories generated in the interviews.

Greenberg (1995) argues that the study of sensemaking is most suited to a case study approach. She states, "Case study methodology is appropriate for the exploration of sensemaking during the change process because it allows the researcher to extract organizational members perspectives and to explore the richness of data (p. 187).” Greenberg's assessment agrees with Weick's description of the need for intensive research (1995).

A movement in the IS research community is embracing the combination of qualitative and quantitative methods of analysis (Lee, 1991). Lee argues that intensive research is necessary to understand the
complexity of impacts technology has on organizations. Qualitative research methods are designed to help researchers understand people and the social and cultural contexts within which they live. Kaplan and Maxwell (1994) argue that the goal of understanding a phenomenon from the point of view of the participants and its particular social and institutional context is largely lost when textual data are quantified.

The process of combining methods is termed triangulation (Myers, Lee, and Markus, 1995). Combining methods allows enriching research perspectives through blending the immersion in context (qualitative) with statistical reliability (quantitative). Context is necessary in social research to understand the relationships between actors and their environment, yet stripping out context allows for objectivity and testability (Kaplan and Duchon, 1998). Thus, integrating the two methods promotes the capture of contextual information in a manner that provides control of objectivity and standardization.

Myers, Markus and Lee (1995) report that there has been growing interest in interpretive research methods and their application to information systems in recent years. Interpretive studies generally attempt to describe phenomena through the meanings that people assign to them rather than what researchers assign to them and interpretive methods of research in IS are "aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context" (Walsham, 1993). Interpretative research permits the interaction of actor and situation to develop (Kaplan and Maxwell, 1994). This characterization of the qualitative approach describes the research interest of this study and matches the language of Weick.

The current research describes an application of sensemaking to examine ambiguity in information systems development teams. How the teams learn how to work together over time, to build a team language is of primary concern. A quasi-experimental approach of blending methodologies is applied to the teams to identify how the mental processes necessary to develop clear representations of the ambiguity inherent in group work relations and the task of information systems development. Sensemaking concerns how actors build context and develop meanings in their environments. Thus, a research methodology that captures individual and group representations of meaning and context is required.

References


