

Sense-Making: A Methodological Perspective

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ABSTRACT

Sensemaking has been considered from the perspective of many disciplines including psychology, human-centered computing, naturalistic decision making, audience reception studies, and organizational behavior among others. These approaches share a common interest in focusing on users and audiences in phenomenological/ interpretive ways while simultaneously attending to both issues of agency and structure. Aside from these common foundations, the various approaches differ widely in their disciplinary focus, assumptions and methods, and relative attentions paid to agency versus structure. Further, the terms "sensemaking" and "sense-making" are now being widely used without definition to point to a wide variety of phenomenological, interpretive, and narrative-based approaches for understanding users and audiences. Many of these leave the term "sensemaking" undefined pointing only to the thrust of attention. Others [see, as examples: 1, 2, 3] are approaches with lengthy developmental histories. Of all the approaches with substantial literature presences, Dervin's is the one most closely tied to specific methodological arguments.

Dervin has labeled her implementation of this focus as the "Sense-Making Methodology" developed to study sense-making and sense-unmaking as phenomena. Unique for its focus on sense-making as a research methodology, this approach has been in development over 30 years. The Methodology has been widely applied across multiple disciplines and domains and shows promise toward solving persistent research difficulties associated with multi-disciplinary research and opposing theoretical paradigms. Moreover, the Sense-Making Methodology has been used as the basis for the design of professional practice in several fields, most notably communications, and library and information science, and has been applied toward informing practice areas of information system design and digital reference. The purpose of this paper is to summarize Dervin's Sense-Making Methodology, particularly from the perspective of information scientists, and to highlight its implications for design.

Author Keywords

Sense-Making, sensemaking, information science, communications, library and information science, interviews, timeline, phenomenology, methodology.

ACM Classification Keywords

H.1.1 [Models and Principles]: Systems and Information Theory- Information theory; H.1.2 [Models and Principles]: User/Machine Systems - Human information processing; D.2.1 [Requirements/Specifications] - Elicitation methods

INTRODUCTION

No discussion of sense-making could be complete without consideration of Brenda Dervin's Sense-Making Methodology. In development for over 30 years, Dervin's approach focuses on better understanding the ways people make sense out of information toward the goal of informing the development of better information and communication systems. With its roots in the communications field, Dervin's Sense-Making Methodology has been highly influential in the field of information science (among many others), especially as it relates to the ways people seek, use and benefit from information. Dervin's work has largely focused on developing philosophical guidance for method, including methods of substantive theorizing and conducting research [4]. The purpose of this paper is to provide an overview of the Sense-Making Methodology, particularly from the perspective of information scientists, to aid in workshop discussion of how it differs/complements other forms of research focusing on sense-making. We also share implications of the Sense-Making Methodology for design.

Dervin's approach to studying individuals through Sense-Making is often credited as being one of the key instigators of the shift from system-centered to user-centered research in information science. Similarly, in the field of communication, it is credited with influencing a shift from the transmission model which focuses on messages being sent via channels from senders to receivers to an alternative model which "conceptualizes messages not as things to be gotten, but as constructions that are tied to the specific

times, places, and perspectives of their creators” [5]. Sense-Making focuses on how messages are understood by receivers of information and communicated in their life contexts recognizing that there are differences in people’s understandings, expertise, social positions, situations, and other factors that impact sense-making.

THE SENSE-MAKING METAPHOR

The Sense-Making Methodology is grounded philosophically and theoretically within a phenomenological and interpretive perspective which makes explicit ontological and epistemological assumptions. A highly complex framework, when taught in the classroom or to other audiences, Dervin’s Sense-Making is typically explained using the Sense-Making metaphor. Shown in Figure 1, a person is seen as embedded in a context-laden situation, bounded in time-space. The person pictured as crossing a bridge is used to metaphorically describe the way that humans are mandated by the human condition to bridge gaps in an always evolving and ever-gappy "reality." The person is seen facing a gap (i.e., a sense-making need) that arises out of a situation. Through the process of gap bridging, people seek inputs (sometimes the stuff systems call information) and engage in other activities through the time-space continuum that lead to outcomes. While the Sense-Making metaphor has proven an effective teaching and especially analytic tool, its weakness is that it invites oversimplification and ultimately a lack of appreciation for the breadth and depth of the approach. This difficulty is exasperated by the fact that between 1983 when Dervin presented a very simple "current model" guiding Sense-Making studies and 2006 when Figure 1 was generated, many complexities and additional literature discourses have been incorporated. [5]

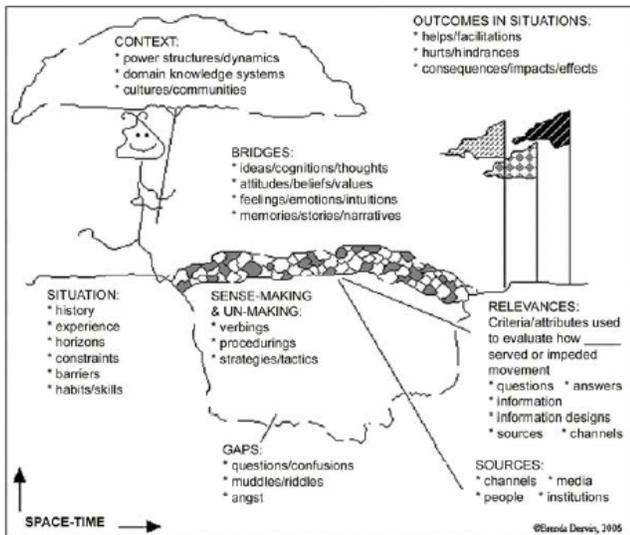


Figure 1. The Sense-Making Metaphor

DEVELOPMENT OF SENSE-MAKING METHODOLOGY

Dervin’s work developed from the phenomenological tradition in which the term sense-making emerged. Over the course of its development Dervin’s Sense-Making Methodology evolved into a generalized communication-based methodology focused on human sense-making (and sense-unmaking) [5]. It finds its roots in the works of Bourdieu, Bruner, Carter, Derrida, Dewey, Foucault, Freire, Gadamer, Habermas, Hall, McGuire, Rorty, and Toulmin, among others. [6].

As depicted in Figure 2, Sense-Making has attempted to be a methodology that operates simultaneously in the four planes of meta-theory, substantive theory, methodology and method such that the methodology-method connection is reflected by and reflects the connection between meta-theory and substantive theory.

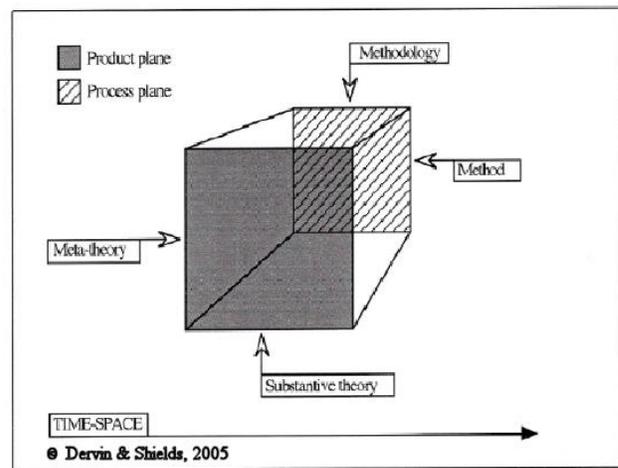


Figure 2: Sense-Making Four Planes of Focus

HALLMARKS OF SENSE-MAKING METHODOLOGY

The following hallmark assumptions (derived from [6] [7]) of the Sense-Making Methodology serve to differentiate it from other methodologies and ways of understanding sense-making.

Communication Praxis – Communication must be studied and practiced communicatively with the realization that research is itself communication practice. Effective communication requires focusing on the 6Hs – head, heart, hand, habit, hegemony, and habitus. Intersecting with others requires dialogic approaches and dialogue requires disciplined communication techniques that are reflected in interview questions and techniques. These techniques require giving participants freedom to define themselves and also license to present themselves as both flexible or inflexible, as both "centered" and "decentered."

Certainty < --- > Uncertainty – Sense-Making assumes people perpetually move between states of certainty and uncertainty and thus uses ontological and epistemological assumptions focusing on both certainty, simple patterns, and order as well as those focusing on uncertainty, complexity, and chaos. The same principles are applied to

conceptualizing humans and their identities mandating a treatment of these as in flux.

“Verbs” instead of “nouns” - The Sense-Making Methodology focuses on process and the ways people communicate internally and externally to make and unmake sense. This approach leads toward studies concerned with how people define situations, how they integrate their contextual understandings into sense-makings, how they define their information needs, how they communicate with others. In exploring these research questions, the Methodology assumes it is important to focus on processes and verbs rather than descriptors and nouns. Central to the approach of identifying processes is the idea that human sense-making is responsive to changing conditions. Habitual patterns and inflexibilities are not eliminated from attention. Rather, they are redefined as repetitive patterns across time-space.

Methodology between the cracks - One of the strengths of the Sense-Making Methodology may be its ability to bridge research traditions and paradigms. “Sense-Making has been defined as a 'methodology between the cracks' because it is informed by numerous research traditions, some of which are considered oppositional to each other -- e.g. qualitative and quantitative, critical and administrative, American and European” [6]. This description is especially apt in dealing with the agency-structure divide, chaos-order dichotomy and the concept of information in context. Sense-Making Methodology assumes that a person is a carrier of both structure and agency and that there is a perpetual and dynamic interaction between the two. The approach further assumes that even though there are homogenized and hegemonic collective forces, there are no collective minds. Structures must also be examined not as nouns but rather as "structurings." It is this focus on verbings between structure and agency that implements the Methodology's aim to bridge gaps between disciplines and between researchers and practitioners. The approach has aimed to develop theory and methods for communication practice in order to facilitate and encourage meaningful dialogue across all manner of personal and institutional gaps.

Power as core concept – Power is assumed to be ontologically "real", as a force acting on -- constraining and/or facilitating sense-making and sense-unmaking processes. The "real" is treated in Sense-Making as always something that must be examined interpretively and phenomenologically. It has been in this way, for example, that the approach has been able to successfully examine human struggles to make sense of medical "information" as science advances and as different interests ebb and flow in power. The application of this premise is embedded in Sense-Making's aim to design responsive systems and practices based on frameworks that are meaningful to everyday actors rather than by using only frameworks rooted in an expertise imposed on users.

Humans as theorists – Sense-Making positions human beings as theorists engaged in identifying the nouns of their world and the linkages between them. Although, it recognizes that much of human understanding is tacit and unarticulated, it also assumes that there are multiple ways in which people engage in making sense and that research should seek to reveal these. Further, it assumes that effective communicating practices can assist in bringing some of what is unarticulated into articulation. Sense-Making interviewing methods have been designed explicitly for this purpose.

RESEARCH METHODS

Based on this foundation, multiple methods have been developed to guide Sense-Making studies. While the methodology is derived from a foundational premise of the mandate for humans to make sense as they move through a "reality" that is inherently gappy, in research practice these methods focus on understanding the moment or moments when people experience disambiguity in their understanding. These sense-making moments are depicted as the intersection of all parts of the Situation-Gap-Outcome triangle as shown in Figure 3, a simplification of the complex metaphor shown in Figure 1.

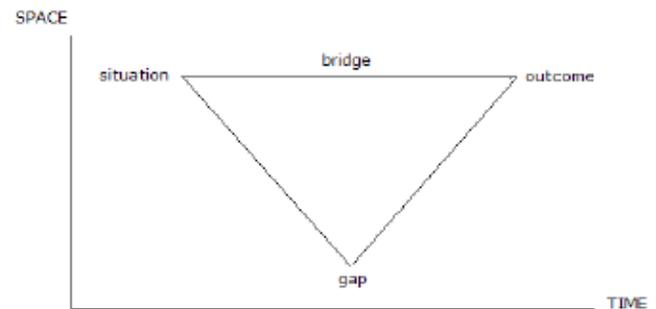


Figure 3: The Situation-Gap-Outcome Triangle

The sense-making moment is the point in time-space when a person experiences a gap while moving through time-space. The situation and outcome, as experienced, are informed by the nature of the situation, its history, its constraints, its relevant external power structures and other situational, contextual, and personal factors. The person bridges this gap by experiencing questions and muddles that lead them to construct bridges consisting of ideas, thoughts, emotions, feelings, hunches, and memories. Sometimes these "bridges" are repetitions from the past; sometimes they are entirely new; sometimes they are deliberate and planned; sometimes capricious; sometimes unconscious at the time of action but brought to consciousness in interviewing talk; sometimes tacit and unarticulated but alluded to in examples and stories. [6].

Sense-Making studies focus on understanding the dynamics of these phenomena by constructing interview questions that identify a person's perceived situation, gaps, bridges, and outcomes. For example, questions that elicit data on a person's experiencing of the situation include: “what issue

were you dealing with?" "what led you to confront this issue?" and "what did you hope to achieve?" Questions designed to elicit information on gaps include "what was confusing about the situation?" and "what prevented you from better understanding the situation?" Questions constructed to elicit bridges include "what answers helped you better understand the issue?" and "what ideas or conclusions came to your mind?" Research foci intended to examine such system oriented phenomena as source and channel uses or attributes/relevances used for evaluating sources and inputs are always anchored in methods in the context of these examinations of the situation-gap-bridge-outcome convergence. What experts call "information needs" are conceptualized as occurring at these convergences. In all cases, intent is to elicit from users and audiences how they navigated between the nouns of their worlds by focusing on sense-making and sense-unmaking processes.

RESEARCH APPLICATIONS

The Sense-Making Methodology has been applied in myriad substantive contexts such as studies of communication practice, dialogue and participation, electronic communication, health communication, information seeking & use, pedagogy, public communication campaigns, audience studies, and telecommunication policy among others [6, 9]. The first application of the Methodology was in a study conducted in the mid 1970's of the information needs of urban residents [10]. Also of notable and early significance was the development of Dervin and Dewdney's "neutral" question asking method for the reference interview. [11]. Now called Sense-Making questioning, "neutral" questions are used by librarians and health care practitioners to assess a person's information needs by understanding the person's experiencing of their situation, gap, bridge, and desired outcome without making assumptions based on imposed expertise. The development of this question asking approach has had a significant impact on reference interview techniques among practitioners.

A major recent research project of particular interest to the CHI community is the large scale application of Sense-Making Methodology in a project entitled "Sense-Making the Information Confluence: The Whys and Hows of College and University User Satisficing of Information Needs" This project's purposes were: (1) to provide useful findings about why and how people use electronic information and how well systems meet the needs of users, and (2) apply diverse user-research interpretations to the inquiry in order to identify commonalities and diversities as well as develop boundary-bridging concepts that enable more effective application and collaboration in both system design and user [7, 8]. The project was funded primarily by the Institute of Museum and Library Services with in-kind contributions from Ohio State University and OCLC.

Of particular pertinence here are the accomplishments of Phases I and II of the project as they were reported after initial activities were completed in 2006. Phase I focused on applying a Sense-Making based dialogic approach to understanding how academics and professionals in HCI, library and information science, and communications view users and each other. A Phase I literature review identified the growing plethora of user studies, the gaps between researchers and practitioners regarding these studies, and the lack of collaboration between the disciplines of human computer interaction (HCI), library and information science (LIS), and communication and media studies (COMM) on user studies [12].

Based on the literature review, the project sought to build dialogue across fields and across research-practice by employing the dialogic mandates of Sense-Making Methodology. The research effort entailed interviewing 83 international experts and 31 local experts in HCI, LIS or COMM on what they saw as big unanswered questions in user studies and what they saw as convergences and divergences across disciplinary and practice-research divides. Results were unfolded in a series of "dialogic rounds" that deliberately interrupted pervasive and habitual attempts to reach agreement. Sense-Making posits that the goal of reaching agreement is necessary for only a sub-set of situations. The explicit and implicit pervasiveness of the goal is seen as impeding attempts of humans to construct value from involvements with others, groups, institutions, and from information and communication systems. [7, 12]

Phase II of the project involved a large-scale application of the Methodology to a study of how 409 faculty, graduate student, and undergraduate members of central Ohio higher education communities made sense of five situations in their academic and personal lives. The aim was to advance the address in Sense-Making studies of alternative ways of studying users that can yield results directly useful in system practice and design. Outcomes to date have focused on comparing alternative ways of looking at users -- for example: as carriers of encountering moments with sources; as persons-facing-situations; and as persons characterized by their places in institutional hierarchies. The study has pitted noun portraits of users against verbing portraits of usings with the verbing portraits conceptualized as alternative ways of mapping system practices and designs so they better serve human needs. [8]

IMPLICATIONS FOR DESIGN

We conclude that the Sense-Making Methodological perspective holds many lessons for information system designers. Most importantly, perhaps, we believe that the Sense-Making Methodology and its philosophical grounding continue to challenge existing system design paradigms that view information as a thing to be dispensed, transmitted, or disseminated as have others in the COMM, LIS, and HCI communities [13] [14] [15] [16]. The Sense-Making Methodology advances the view that information

itself is created and designed, and challenges us to examine our use of terms such as fact, knowledge, data and the concept of information itself. From the Sense-Making perspective, “information is a human tool designed by human beings to make sense of a reality assumed to be both chaotic and orderly” [17]. We suggest that this perspective and the Sense-Making Methodology yield the following implications:

- Reconceptualizes people as information designers struggling to make sense out of an incomplete reality rather than as information seekers attempting to gather information that describes an objective “reality”.
- Reframes information design as a meta activity focused on designing systems that assist people to make and unmake their own sense.
- Provides information system designers with grounded methods to better understand their users and develop systems responsive to users’ sense-making needs.
- Provides information system designers with ways to understand and begin to bridge the gaps between chaos and order encouraging information system designers to focus on the processes people use to bridge these gaps.
- Provides information system designers with analytic tools such as the gap bridging metaphor, situation-gap-outcome triangle and a roster of research tested potential “verbs” or processes to guide system development approaches.

REFERENCES

1. Klein, G., B. Moon, and R. Hoffman, *Making sense of sensemaking I: alternative perspectives*. IEEE Intelligent Systems, 2006. 21(4): p. 70-73.
2. Snowden, D.J., *Multi-ontology sense making: A new simplicity in decision making*. Informatics in Primary Care, 2005, 13 (1, February): pp. 45-54.
3. Weick, K.E., *Sensemaking in Organizations*. Thousand Oaks: Sage, 1995.
4. Dervin, B., L. Foreman-Wernet, and E. Lauterbach, *Sense-making methodology reader : selected writings of Brenda Dervin*. 2003, Cresskill, N.J.: Hampton Press. xv, pp. 397 p.138
5. Foreman-Wernet, L., *Rethinking Communication: Introducing the Sense-Making Methodology*, in *Sense making methodology reader : selected writings of Brenda Dervin*, B. Dervin, L. Foreman-Wernet, and E. Lauterbach, Editors. 2003, Hampton Press: Cresskill, N.J. p. xv, 397 p.139
6. Dervin, B., *Focus Groups for Participatory Research: Design using Systematic Dialogic Principles Drawn from Sense-Making Methodology*, in *Participatory Communication Research Section International Association for Media and Communication Research (IAMCR)*. 2007: Paris, France.
7. Dervin, B., *Project overview: Sense-Making Methodology as dialogic approach to communicating to Research and practice*, in *Sense-making the information confluence: The whys and hows of college and university satisficing of information needs: Phase I: Project overview, the Three-Field Dialogue Project, and state-of-the-art reviews*, B. Dervin, et al., Editors, Report to the Institute of Museum and Library Services, 2006, School of Communication, Ohio State University, Columbus, Ohio.
8. Dervin, B. et al., Editors, *Sense-making the information confluence: The whys and hows of college and university user satisficing of information needs. Phase II: Sense-making online survey and phone interview study*. Report to Institute of Museum and Library Services, Washington, D.C., 2006, Columbus, Ohio: School of Communication, Ohio State University.
9. Dervin, B., *Sense-Making Methodology Site*. Ohio State University. October 20, 2007 <<http://communication.sbs.ohio-state.edu/sense-making/>>.
10. Dervin, B., et al., *The development of strategies for dealing with the information needs of urban residents, Phase I: Citizen study final report*. 1976, U.S. Department of Health, Education and Welfare, Office of Education: Washington, DC.
11. Dervin, B. and P. Dewdney, *Neutral Questioning - a New Approach to the Reference Interview*. RQ, 1986. 25(4): p. 506-513.
12. Dervin, B. and C.D. Reinhard, *Researchers and practitioners talk about users and each other. Making user and audience studies matter—paper 1*. Information Research, 2006. 12(1).
13. L. A. Suchman, *Plans and situated actions : the problem of human-machine communication*. Cambridge [Cambridgeshire]; New York: Cambridge University Press, 1987.
14. T. Winograd, *Understanding computers and cognition : a new foundation for design / Terry Winograd, Fernando Flores*. Norwood, N.J.: Ablex Pub. Corp., 1986.
15. R. Taylor, "Question-Negotiation and Information Seeking in Libraries," *College and Research Libraries*, vol. 29, pp. 178-194, 1968.
16. T. D. Wilson, "Information needs and uses: fifty years of progress," in *Fifty years of information progress: A Journal of Documentation review*, B. C. Vickery, Ed. London: ASLIB, 1994, pp. 15-51.
17. B. Dervin, "Chaos, order, and Sense-Making: A proposed theory for information design.," in *Sense-making methodology reader : selected writings of Brenda Dervin*, Dervin, L. Foreman-Wernet, and E. Lauterbach, Eds. Cresskill, N.J.: Hampton Press, 2003, pp. 397 p. 328