
Making Sense of Semiotics: Privileging Respondents in Revealing Contextual Geographic Syntactic and Semantic Codes

Myke Gluck

INTRODUCTION

As an epistemology and method for revealing information needs and uses sense-making privileges individual respondents in their situation while making the situation the unit of analysis. As developed during this century, semiotics focuses upon understanding the construction, use and meaning of signs while privileging the expert semiotician. Sense-making and semiotics each constitute a strategy to understand information-in-use phenomena, contributing to our understanding of human behavior and communication. This project explores the feasibility of a collaboration of these two approaches to understand more clearly the active use of information. We proceed in this work with the hope that mutual informing of sense-making respondents, researchers, and semiotic expert analysts will suggest new directions and provide additional meaningful expressions for the ontological, epistemological, and methodological foundations of each approach.

This paper has four goals:

- 1) To review briefly sense-making as a concept and method of investigation,
- 2) To provide a brief overview of semiotics for information studies,
- 3) To begin to explore the theoretical implications of commingling sense-making and semiotic approaches to information-use-phenomena, and
- 4) To suggest an empirical process to instantiate and clarify the theoretical developments.

SIMPLIFICATIONS

We make the following simplifications toward practical ends, for measures of success, and for language to begin this exploration of making sense with semiotics.

This project makes no pretense that many deep philosophical issues are and will remain ambiguous: What is meaning? Where is it to be found? What is

knowable? What is language? Such deep issues may on some levels expose the incommensurable nature of comparing the sense-making and semiotic approaches. However, we approach this commingling from a naive position: We seek the practical consequences of layers of meaning, language, and the nature of humans. We accept that much of this work will raise doubts and have consequences that, perhaps, confuse the very questions we are striving to confront. For example, we use Peirce's semiotics rather than Saussure's structural semiology since Peirce considered real world objects while Saussure was more concerned with generalizable, abstract structures of language.

One measure of success for this project will be the degree to which semiotic analyses can incorporate respondent or information user participation from sense-making, and the degree to which sense-making research can incorporate semiotic analysis. Our major goal for the overall project that includes the execution of the proposed experiment is to seek meaningful frameworks that combine sense-making and semiotics approaches to understanding information-in-use phenomena. This project will initially explore the combining of approaches by pursuing possible correspondences between a sense-making triangle representational device (Dervin's triad) with a semiotic triangle (Peirce triad). We know that these devices are not the real thing. Any meaningful mappings developed by pairing the two triads' vertices are really only motivational or suggestive. However, in our simplistic approach, we will act literally in the comparison of the triads, treating them as if they were more than mere models or representational mechanisms. From the experiment described below we will seek evidence for the value of each of the six mappings to provide support for mutual informing of the approaches.

The language of semiotics is dense and incorporates aspects of many points of view including structuralism, poststructuralism, deconstructionism, literary criticism, critical hermeneutics, and postmodernism. Sense-making also has a special vocabulary (although less dense and with fewer traditions than semiotics) which incorporates situation, gap, molecule and verbings. Toward our practical goal we will limit our use of specialized languages. We explore the relationships between these approaches not for the narrow specialist alone but for anyone with an interest in understanding information-in-use phenomena. We know the potential disservice down playing specialized language may do to the precision and subtlety of our efforts to communicate with experts.

SENSE-MAKING AND THE DERVIN TRIAD

Dervin's sense-making approach explicitly accounts for time and space dependencies of human information needs by metaphorically representing the cognitive states of humans as continual movement along a road in time and space (e.g. Dervin 1992, 1995). The perception of a person's current position along this road depends on where the person has been (past) as well as where the person

is (present) and where the person is going (future). Dervin pictures humans as intelligent, creative creatures capable of making sense by incorporating knowledge from within themselves and from the external world that allows forward movement along their cognitive road. She notes that discontinuities or gaps that represent a need for the individual to make sense of the world often appear along the cognitive road and that humans must make sense before movement may continue along the cognitive road. Gaps are a direct consequence of Dervin's perspective of a human's view of reality as sometimes intersubjective, sometimes recursive, sometimes chaotic but constantly changing. Dervin derives her view of the human becoming in the world from her positing ontological and epistemological incompleteness. Dervin's (1995) assertion that information is designed by humans who make and unmake information has much in common with Giddens' (e.g. 1984) structuration theory. Giddens and Dervin pose an ontological philosophy of social relations in which agency and structure blend in social relations. They agree that humans often embed social relations in routinized activities of individuals who can neither be aware of all preconditions nor able to predict all the unintended consequences of their actions.

Gaps are respondents' concerns that generate information needs in conjunction with respondents' expectations of how bridging the gap would be useful to continue movement along their cognitive road. Gaps are operationalized in sense-making experiments as questions respondents had as they proceed to resolve their information needs. Dervin acknowledges that these needs are not always well articulated or acknowledged by respondents. Uses are operationalized as the helps or hurts respondents express concerning the utility of the responses they obtained to their questions. Dervin believes that as humans we have a common need to make sense of the world. That need is expressed metaphorically as an innate desire to get back on the cognitive road. Her approach allows each person to represent his or her own reality. However, Nilan (1985, 1991) suggests that this does not lead to unmanageable complexity or variability in analyzing human behavior because humans share socio-cultural experiences. Human need to make sense and the evidence for common experiences among individuals limit the range of human diversity present at a particular point in space and time.

Dervin illustrates the process of sense-making using situation, gap, and use as the three vertices of a triangle. That is, humans find themselves facing gaps they need to bridge mediated by the situation in which they find themselves. Often the actual usefulness of the bridge differs from the expected usefulness. Indeed, our cognitive movement through a situation is the accumulation of a series of steps with each step or micro moment of the situation represented by a triad. The triad consists of an event of the situation, a gap at the event, and the uses obtained from responses to the event's gaps (whether helpful or impeding, actual or expected). Dervin uses a time line method for respondents to map out

the sequence of events of the situation, the questions (gaps) they had during the events, and the responses they obtained in making sense of their situation.

The individual is privileged in Dervin's conceptualization yet sense-making analyses go beyond an individual's view of a situation. An individual may forget an aspect of a situation for a range of reasons, not the least of which is that they did not think a particular issue was important or they easily resolved it. However, what one individual did not recall another may well recall. The sense-making time line method has shown a high degree of overlap of micro moment steps among respondents in the same situation. Further, holistic impressions of time line triads for describing a situation require relatively few respondents (e.g., Nilan et al. 1989, 1991). To go beyond the individual, sense-making seeks out the commonalities as well as the not-so-common aspects among individual time lines by merging individual multi-step time lines. Aligning and overlaying different respondents' sense-making triads from their time lines leads to changing the essence of prediction from IF ... THEN to THEN... THEN while acknowledging the incompleteness of such a construction. Generating a prototypical sequence of gaps and support for resolving the gaps provides a design for information systems (Nilan et al. 1989) yet acknowledges ontological and epistemological incompleteness. To repeat, open systems have unacknowledged preconditions and unintended consequences. The time line method accepts such indeterminacy, producing flexibility and robust information systems that help people in their situation. In summary, the sense-making method is based upon collecting a series of micro moment steps in which users' state their gaps and actual and intended uses within a situation's events: the Dervin Triad.

For example, Nilan et al. (1989) analyzed the situation of users developing a desktop publishing product such as a poster, card, or newsletter. They analyzed the time lines of respondents with a range of experience levels, developed a model for the process of creating desktop publishing projects by overlaying time lines, and then displayed a novel online help system. The novel help system incorporated facts, task analyses, and tutorials on a menubar. The menubar reflected the situation time line rather than the standard categorical menubar items ubiquitous in desktop metaphor graphical user interfaces. In this sense-making application to information-in-use systems the individual was privileged within the collective actions of a small group leading to a meaningful design.

OVERVIEW OF SEMIOTICS AND PEIRCE'S TRIAD

Semiotics seeks to understand signs with signs understood as relationships between an expression of a concept and the concept to be represented (MacEachren, 1995). Unfortunately, the terminology of semiotics can be confusing because different fields (e.g., anthropology, psychology, linguistics) using differing jargon have approached the study of signs and their meaning.

Compounding the scientific use of many terms is the common use of terms that predate the developments in semiotics. For example, the term "symbol" has a narrow meaning in semiotics. Thus, a consistent and precise set of definitions and terms must be selected and employed for the present project.

The term "sign" will refer to the overall relationship among the entity encompassing an expression, the concept it stands for, and the real world object represented (if one exists). A sign for our purposes is not used here as a symbol in the everyday sense nor does it represent marks carrying meaning. Rather, the "sign-vehicle" will be the term used to refer to the carrier of meaning. Thus, the common usage of a sign (e.g., a stop sign) is a sign-vehicle; it is the expression of the sign. "Interpretant" will refer to the meaning or concept to which the sign-vehicle refers. "Referent" will refer to the actual, real-world object that the sign links to the sign vehicle (choice of terminology after MacEachren 1995).

The formal study of signs developed along two different paths. In 1916 Saussure, a linguist, described a dyadic relationship between the sign-vehicle and the interpretant initiating one approach to the study of signs called semiology (Innis 1985). (Saussure used the term signifier for the sign-vehicle and signified for the interpretant.) Saussure focused on the relationship of sign-vehicles to their concepts, explicitly omitting the real world referents. He felt that the sign system was totally arbitrary. For example, the word formed by the letters "s-t-o-p" is an arbitrary representation for the concept. Saussure believed that meanings form a network of relations and that semiotics need only concern itself with the differences between the meanings: a structural point of view.

In contrast, Peirce, a philosopher and logician, considered the referent (the real object) of immense concern to the study of signs. Peirce's approach to signs is called semiotics. Peirce described a triad relationship among sign-vehicle, interpretant, and referent (Hervey 1982; MacEachren 1995). Peirce's triad relationship has permeated North American literature on the study of signs with various authors emphasizing different components. For example, Peirce stressed the sign-vehicle as the mediator between the referent (object) and interpretant (meaning), while Ogden and Richards stressed the role of interpretant as mediator between sign-vehicle and referent (cited in MacEachren 1995, p.221).

Semioticians then developed a typology of signs based upon either the dyad or triad model. For example, Peirce developed a three-term typology for the relationship between referent and sign-vehicle from the point of view of the interpretant: icon, index, and symbol. Sebeok (1985) added three more: signal, symptom, and name. Unfortunately, these categories are not mutually exclusive nor exhaustive of sign relationships. For example, a sign can serve as sign-vehicle itself generating a secondary sign called a myth. Also, signs are associated with both literal and cultural messages with the literal image denoted and the cultural image connoted (Barthes 1967). Sless (1986) summarizes

semiotics as the search for understanding and categorization of "stand for" relationships.

SENSE-MAKING AND PEIRCE TRIAD MAPPINGS

Associations or mappings between the vertices of the Peircian semiotic triad and the Dervin sense-making triad provide a theoretical and contextual starting point to explore meaningful mutual informing of semiotician, sense-maker, and sense-making researcher. For example, how is each approach informed when situation and interpretant are paired as mediating vertices?

Six configurations provide unique mappings of the Dervin triad vertices to the Peirce triad vertices. Each pairing of these six vertices links the basic concepts of a Peirce sign triad (sign-vehicle, interpretant, and referent) with a Dervin sense-making triad or a situation's micro moment step (event, gap, and uses); See Figures 1 & 2 below. Recall sense-making situations consist of a time series of events within which gaps or discontinuities occur. To begin this exploration we describe the *referent* as the backdrop of the lifeworld upon which signs occur, the *sign vehicle* as the stimulus for signing, and *interpretant* as the focus of meaning of a sign. We pair vertices to construct six frameworks and briefly comment on the manifest implications of each pairing for exploring mutual informing of sense-making and semiotics.

FIGURE 1
Peirce's Sign Triad

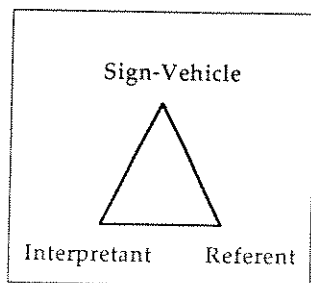
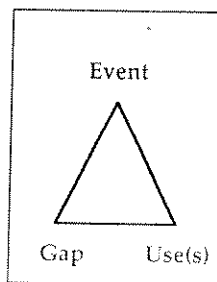


FIGURE 2
Dervin's Situation
Micro Moment Triad



Mapping #1: event <-> referent; gap <-> sign vehicle; uses <-> interpretant

This configuration considers the role of the *event* within the situation as the external realist's datum corresponding to the *referent* of a sign, the *gap* or user concern operationalized as a question the user asks aloud or ponders at the event as the *sign vehicle*, and the *uses* the user elicited or thought in response to the gap operationalized as helps or hurts of the responses as the *interpretant* of the sign.

This mapping posits uses as the arbitrator of meaning (interpretant), downplaying though not ignoring the role of the gap (sign vehicle) and the event (referent) as components of meaning. The gap maps as a direct stimulus or trigger for fostering a need for making sense. Different users in the same event may not perceive the same gap; no deterministic relationship exists. Such indeterminacy of semiotics is within postmodern views that do not insist upon a singular correspondence between sign vehicle and interpretant for all users, times, and places (Gottdenier 1995). This mapping further emphasizes the role of the event as the background or manifest objective, intersubjective, or reflective reality through which the user passes while constructing or constraining his or her lifeworld. The event is the routinized aspect of life that connects users to the whole of the situation and to the parallel yet concurrent situations of their existence at the same or different temporal and spatial scales. The event is not the direct stimulus of the need to make sense but, rather, locates the unacknowledged preconditions for needing to make sense. The event also serves as a stage for playing out the unintended consequences of the uses for a response (the interpretant).

Understanding how users' might articulate sign components in this mapping may inform semioticians. Users create signs as they make sense through the association of a gap as sign vehicle, an event as referent, and uses as interpretant. This mapping also provides an alternative route for semioticians (along side their analytic stand-for relations and sign production necessities) to discover the signs humans contingently create. Similarly, the user may find new frameworks for resolving information needs if the processes of semiosis are more manifest while resolving information needs and preferences. This mapping may be the most straightforward linking of Dervin and Peirce. However, the other five mappings may also be meaningful, provided supporting empirical evidence is found.

Mapping #2: event <-> referent; gap <-> interpretant; uses <-> sign vehicle

This configuration repeats the role of the *event* within the situation as the external realist's datum corresponding to the *referent* of a sign, but reverses mapping #1 by aligning the *gap* or user concern with the *interpretant*, and the *uses* the user elicited or thought in response to the gap with the *sign vehicle*.

This mapping posits the gap as the arbitrator of meaning (interpretant), downplaying though not ignoring the role of the uses (sign vehicle) and event (referent) as components of meaning. That is, in this configuration meaning is more in the concern, the dislocation to ontological security, rather than in the uses as indicated by mapping #1. Such a view indicates uses drive the need to make sense. This mapping seems to suggest that uses or perhaps a decision or selection of a course of action and its consequences fosters sense-making rather

than the discontinuity of the gap. This mapping poses a functionalist construct that reifies result as causation and inverts Dervin's view of the gap as the disruption on the cognitive road generating the need to make sense. Such a reversal makes confirmation of this mapping less likely with respondents but, if it were, semiotics would indeed inform sense-making.

This mapping also emphasizes the role of the event as the backdrop through which the user passes in his or her lifeworld. The event is considered the routinized aspect of life that connects users to the whole of the situation and to the parallel yet concurrent situations of their existence. The event continues to locate the unacknowledged preconditions for needing to make sense. The event also serves as a stage for playing out the unintended consequences of the actions or lack of action in the use of a response (the sign vehicle).

Mapping #3: event \leftrightarrow sign vehicle; gap \leftrightarrow referent; uses \leftrightarrow interpretant

This configuration establishes the role of the *event* within the situation as the *sign-vehicle* ties the *gap* or user concern to the referent, and the uses (user elicited or thought responses to the gap) to the interpretant.

This mapping emphasizes the role of the gap as the backdrop through which the user passes in his or her lifeworld. The gap is now considered the routinized aspect of life that connects users to the whole of the situation and to the parallel yet concurrent situations of their existence. The gap in this configuration is the reality of the unacknowledged preconditions for needing to make sense. The gap also serves as a stage for the playing out the unintended consequences of the actions or lack of action in use of a response (the interpretant).

This mapping again posits uses as the arbitrator of meaning (interpretant) as in mapping #1, downplaying though not ignoring the role of the event (sign vehicle) and gap (referent) as components of meaning. The event provides a more direct stimulus or trigger for fostering a need to make sense. Different users in the same event may not perceive the same event; no deterministic relationship need exist since postmodern views of semiotics do not insist upon a singular correspondence between sign vehicle and interpretant for all users, times, and places. This mapping further emphasizes the role of the gap as the background or manifest objective, intersubjective, or reflective reality through which the user passes in his or her lifeworld. The gap is the routinized aspect of life that connects users to the whole of the situation and to the parallel yet concurrent situations of their existence at the same or different temporal and spatial scales. Gaps are the commonplace aspect of life in this mapping. The gap is not the direct stimulus of the need to make sense but, rather, locates the unacknowledged preconditions for needing to make sense. Gap also serves as a stage to play out the unintended consequences of the actions or lack of action in use of a response (the interpretant). Although in a different manner than

mapping #2, this mapping would also invert Dervin's view of the ontology of human existence if observed empirically. The event would become the more blatant driver for making sense rather than the gap or discontinuity. It would not omit the gap from participating in the human desire to make sense but event would relegate gap to a more supporting role. This mapping would also inform sense-making if found in respondents' perspective.

Mapping #4: event \leftrightarrow sign vehicle; gap \leftrightarrow interpretant; uses \leftrightarrow referent

This configuration repeats the role of the *event* within the situation as the *sign-vehicle* of mapping #3 but reverses the alignment of the *uses* to the *referent* and establishes the *gap* or user concern as the *interpretant*.

This mapping posits the gap as the arbitrator of meaning (interpretant), downplaying though not ignoring the role of the uses (referent) and event (sign vehicle) as components of meaning. That is, in this configuration meaning is more in the concern, the dislocation to ontological security, rather than in the uses as indicated by mapping #3. Such a view suggests that the event stimulates the need to make sense rather than the discontinuity of the gap.

This mapping emphasizes the role of uses as the backdrop through which the user passes in his or her lifeworld. The uses are considered the routinized aspect of life that connects users to the whole of the situation and to the parallel yet concurrent situations of their existence. The uses locate the unacknowledged preconditions for needing to make sense. Uses also serve as a stage for playing out the unintended consequences of the actions or lack of action of the event (sign vehicle).

Mapping #5: event \leftrightarrow interpretant; gap \leftrightarrow referent; uses \leftrightarrow sign vehicle

This configuration establishes the role of the *event* within the situation as the *interpretant*, aligning the *gap* or user concern with the *referent*, and the uses with the *sign vehicle*.

This mapping posits the event as the arbitrator of meaning (interpretant), downplaying though not ignoring the role of the uses (sign vehicle) and gap (referent) as components of meaning. That is, in this configuration meaning is more in the manifest event rather than being driven by the dislocation to ontological security or the uses. Such a view suggests uses drive the need to make sense as in mapping #2. This mapping suggests that uses or perhaps a decision or selection of a course of action and its consequences fosters sense-making. This mapping also poses a functionalist construct reifying result as causation and inverting Dervin's view of the gap as the disruption on the cognitive road generating the need to make sense. This reversal makes respondent confirmation of this mapping less likely.

This mapping, much like mapping #3, emphasizes the role of the gap as the backdrop through which the user passes in his or her lifeworld. The gap is now considered the routinized aspect of life that connects users to the whole of the situation and to the parallel yet concurrent situations of their existence. The gap in this configuration is the reality of the unacknowledged preconditions for needing to make sense. The gap also serves as a stage for playing out the unintended consequences of the actions or lack of action of the meaning derived from the event (the interpretant).

Mapping #6: event \leftrightarrow interpretant; gap \leftrightarrow sign vehicle; uses \leftrightarrow referent

This configuration repeats the role of the *event* within the situation as the *interpretant* but reverses the alignment of the *uses* with the *referent* and ties the gap to the *sign vehicle*.

This mapping posits the event as the arbitrator of meaning (interpretant), downplaying though not ignoring the role of the gap (sign vehicle) and the uses (referent) as components of meaning. The gap, as in mapping #1, is a direct stimulus or trigger for fostering a need for making sense. Different users in the same event may not perceive the same gap; no deterministic relationship need exist. This mapping further emphasizes the role of the uses as the background or manifest objective, intersubjective or reflective reality through which the user passes constructing or constraining his or her lifeworld. The uses are the routinized aspects of life that connects users to the whole of the situation and to the parallel yet concurrent situations of their existence at the same or different temporal and spatial scales. The uses in this mapping locate the unacknowledged preconditions for needing to make sense. Uses also serve as a stage for playing out the unintended consequences of the actions or lack of action of the understanding of the event (the interpretant).

Understanding how users might articulate sign components in this mapping may inform semioticians. Users create signs as they continue to make sense through the association of gap as sign vehicle, uses as referent, and event as interpretant. This mapping may also provide an alternative route for semioticians to discover the signs humans contingently create alongside the analytic stand-for relations and sign production necessities. Similarly, the user may find new frameworks for resolving information needs when the processes of semiosis are more manifest while resolving information needs and preferences.

AN EXPERIMENT TO STUDY THE SIX SENSE-MAKING SEMIOTIC MAPPINGS

Preliminaries

The signs and symbols of a situation or context usually do not present gaps to respondents. We claim sense-making gaps present the opportunity for respondents to articulate these normally assumed meanings for the signs and symbols

of the contextual background. Signs and symbols are the unexamined and hard-to-articulate fabric upon which information needs are expressed (much as a grammar is the unexamined fabric of our natural language). We speak using our language's grammar without consciously analyzing our utterances for their grammatical correctness; similarly, we invoke signs and symbols without analyzing the relations of sign-vehicle, interpretant, and referent. For example, some people assume TIME stands for MONEY. Their behavior often reflects this belief; however, they would have difficulty articulating this relationship of TIME to MONEY when smoothly traveling along an Interstate highway at 70 miles an hour. However, the same traveler can state his or her belief about the relationship between TIME and MONEY when honking at a slow-moving truck on the way home from work or when stuck behind a slow-moving farm vehicle on a winding two lane road already late for a job interview.

When the sign-vehicles and referents are out of context, major breakdowns or gaps may occur. That is, when an expression is out of context respondents will notice the exceptions bringing the offending phrase jarringly into consciousness. For example, if you think I am discussing my financial status and I mention banking you see no gaps; however, if I discuss my financial status and begin discussing the age of my horse, a gap might appear along your cognitive road.

This suggested experiment explores respondents' ability to articulate their understanding of the syntax and semantics of situational signs (relations among referent, sign-vehicles, and interpretants) when focusing on the gaps in their cognitive roads. A time line of respondent perceived events operationalizes the sense-making metaphor focusing on points in time and space when users need information and provide an opportunity for respondents to consider and expose the signs and symbols in their environment. Respondents develop a sequence of events that gives them what information they need when they need it within the context of their situation. We propose to test whether probing such time line sequences with participants gives semioticians meaningful user-based understandings of signs whether symbols, icons, indexes, myths, metaphors, or metonymies.

Methodologically, respondents will examine responses they obtained to their questions. We hypothesize that respondents' examination of expected and actual uses (help or hurt of responses) will permit them to express the meaning of the signs that they usually take for granted and normally have difficulty articulating. We claim we are not asking them to create new meaning when we ask them to describe their situation and its signs. Rather, they are exposing their current understanding of the meanings of signs or the associations among sign-vehicles, referents, and interpretants as they see them. We believe this information-in-use will give semioticians new codes for signs and sense-making an approach to addressing meaning.

Semioticians study 'stand-for' relations (i.e., a sign-vehicle X stands for referent Y such as TIME standing for MONEY). However, in their analyses semioticians either assume a monolithic meaning (one meaning fits all; Saussure 1966) or everyone creates their own readings and relationships (Baudrillard 1993). Either position (one for all or each their own) is in contrast to epistemological and empirical work of sense-making. Several semioticians express the need to investigate signs with users; especially in a postmodern world with multiple meanings and deconstructions for all signs (e.g. Sless 1986; Gottdenier 1995). However, they do not present practical methods for capturing user-based contributions. We propose sense-making as a tool for providing such input to semioticians. Sense-making has exhibited manageable numbers of current information needs for individuals in several contexts and especially in geographic contexts (e.g. Schamber 1991; Gluck 1993, 1996a, b). We will investigate users' sense-making transcripts seeking stand-for relations, their instantiations in a geographic context, and the processes of semiosis. We expect the analyses of the experiment's various phases to

- 1) inform semioticians by developing richer views of semiotic concepts and processes through incorporating users' understandings of semiosis as revealed in the common act of making sense, and
- 2) inform sense-making researchers and sense-makers by revealing contributions of semiotic processes to the activities of sense-making.

Proposed Experiment

The following exploratory experiment is designed to probe the six mappings of the Peirce and Dervin triads. The experiment seeks the roles each mapping plays in the mutual informing of semiotician, sense-making researcher, and sense-maker. The experiment has three phases:

- 1) A semiotician will perform an analysis of materials from a domain extracting the structure of signs with their mechanisms of chaining (similar to the use of words to form a sentence) and for the semantic or meaning patterns present. (Such analysis, independent of its correlation with sense-making, may assist information system builders to construct information systems better able to support the resolution of information needs of real users.)
- 2) Respondents will participate in sense-making interviews with the same materials. Sense-making analysis will give semioticians respondent or user-based input that is not normally available to them to form their understanding of semiosis (process of making signs) within the context of a situation.
- 3) The six mappings of the Peirce and Dervin triads will be considered with the data of the first two phases with the goal of exposing mutually informing frameworks for the development of meanings and shared understandings.

More specifically, stock brokers, stock purchasers, and consumers of specific Fortune 100 company products or services will serve as participants for this experiment. Respondents will then describe the events in their decision to purchase the stock or product from a Fortune 100 company in a sense-making time line. Respondents will also provide questions they had while investigating the purchase of the stock or product. The respondents will then discuss the expected and actual helps of the responses to their questions while buying the product or stock. Respondents will then review the annual reports from the Fortune 100 company producing the product or issuing the stock they had recently purchased. They will examine these documents indicating any geographic images (text, photos, maps, etc.) they find as they continue through the document. They will then state whether and how such images might affect either their holding, selling or buying more stock from the company or their satisfaction with the product and their willingness to purchase the product again. These sense-making interviews define a user-based syntax for the geographic information in the situations of buying a company's stock or product. Participants will also discuss their understanding of the relationship of the geospatial images seen or read in the annual reports to the questions they had at events in their stock or product purchase situation. In addition, respondents will indicate ideal geospatial images that might have been more useful to them in their use of specific responses to their questions and how these ideals might have been useful when they had their questions. This discussion of relations of the geographic imagery in text and pictures to their information needs presents a semantic analysis of geographic imagery.

SUMMARY

This paper presented overviews of sense-making and semiotics, described possible mappings between the vertices of the semiotic and sense-making triads, and suggested an experiment. The goal of the experiment is to discover how the mapping frameworks for sense-making and semiotics may support mutual informing of the approaches to information-in-use phenomena. The experiment proposes to correlate data from semiotic analysis of the annual reports of Fortune 100 corporations and respondents' sense-making interviews regarding these reports. We expect the semantic and syntactic descriptions from users' sense-making interviews to provide important contextual and contingent informing of semioticians as well as clarifying users' views of semiotic processes. We also expect that sense-makers (all of us) will gain insight into the meaning of the situations, gaps, and uses from the semiotic analysis.

REFERENCES

- Barthes, Roland. (1967), *Elements of Semiology*. New York: Hill & Wang. (English translation)
- Baudrillard, (1993), *Symbolic Exchange and Death*. London: Sage.
- Dervin, B. (1995), Chaos, Order, and Sense-making: A Proposed Theory for Information Design. In *Information Design*. Edited by Robert Jacobson. MIT Press. In Press. (Draft from <http://edfu.lis.uiuc.edu/allerton/95/s5/dervin.draft.html>).
- Dervin, Brenda. (1992), From the Mind's Eye of the User: The Sense-making Qualitative Quantitative Methodology. In *Qualitative Research in Information Management*. Glazier, J. & Powell, R., eds. Englewood, Colorado: Libraries Unlimited, 61-84.
- Giddens, Anthony. (1984), *The Constitution of Society*. Berkeley, CA: Univ. of CA Press.
- Gluck, M. (1993), Understanding Performance in Information Systems: An Investigation of System and User Views of Geographic Information. Unpublished doctoral dissertation, Syracuse University, Syracuse, NY.
- Gluck, M. (1996a), Spatial Information Needs of the General Public: Texts, Maps, and Users' Tasks. *GIS and Libraries: Patrons, Maps, and Spatial Information*. 32nd Annual Clinic on Library Applications of Data Processing. Univ. of Illinois, Champaign-Urbana, IL.
- Gluck, M. (1996b), Public Librarians' Views of the Public's Geospatial Information Needs. (With Liz Danley and JoAnn Lahmon.) *Library Quarterly*. In Press.
- Gottdenier, M. (1995), *Postmodern Semiotics: Material Culture and the Forms of Postmodern Life*. Cambridge, MA: Blackwell.
- Hervey, S. (1982), *Semiotic Perspectives*. London: Allen & Unwin.
- Innis, R.E. (Ed.) (1985), *Semiotics: An Introductory Anthology*. Bloomington: Indiana University Press.
- MacEachren, Alan. (1995), *How Maps Work*. New York: Guilford Press.
- Nilan, M. (1985), Structural Constraints and Situational Information Seeking: A Test of Two Predictors in a Sense-Making Context. Unpublished Doctoral Dissertation. University of Washington, Seattle, WA.
- Nilan, M. et al. (1989), User-Oriented Interfaces for Computer Systems. *Proceedings 52nd Annual Meeting of the ASIS*. v26. Medford, NJ: Learned Information, 166-171.
- Nilan, M., Newby, G., & Duvall, L. (1991), Toward a Reassessment of Individual Differences for Information Systems: The Power of User-Based Situational Predictors. In *Proceedings of 54th Annual Meeting of ASIS*. Medford, NJ: Learned Information, 73-79.
- Ogden, C. & Richards, I. (1923), *The Meaning of Meaning*. New York: Harcourt, Brace & Co.
- Saussure, F. (1966), *Course in General Linguistics*. C. Bally and A. Sechechaye, eds. trans. by W. Basking. New York: McGraw-Hill.
- Schamber, L. (1991), User's Criteria for Evaluation in Multimedia Information Seeking and Use Situations. Unpublished doctoral dissertation, Syracuse University, Syracuse, NY.
- Sebeok, (1985), *Contributions to the Doctrine of Signs*. Lanham, MD: Univ. Press of America.
- Sless, David. (1986), *In Search of Semiotics*. Kent, England: Croom Helm, Ltd.