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# A Semiotic Interpretation of Sense-making in Information Seeking

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## Abstract:

Sense-making in information seeking process is one of the major information seeking models. Questions have been raised about information seekers' ambiguous needs and focus-shifting tendency relative to sense-making. This paper tackles this problem by reviewing two related approaches and suggesting an alternative interpretation from the semiotic point of view. The author argues that information seeking is often interactive, dynamic, and infinite just as the relationships between sign, object and interpretant posited in Peirce's semiotics. The implication of this paper is to alert information seekers about this potential endless information seeking process and come to terms with their search results which are based on their tasks.

**Keywords:** sense-making, information seeking, semiosis, interpretant

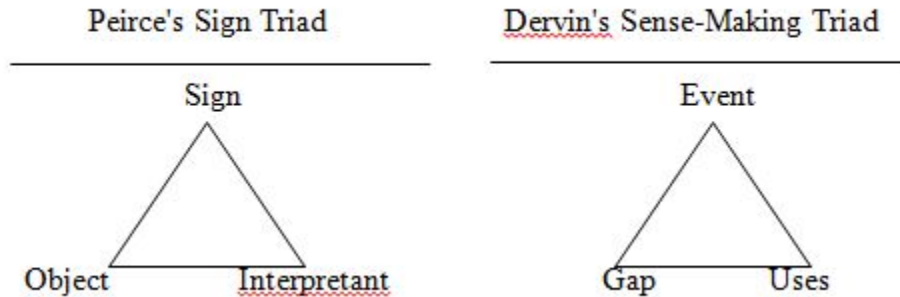
## Introduction

Information seeking is a complex communication process that involves the interaction among the information seeker, the information, and the information provider. Many hold it as a sense-making process in which people negotiate meaning from the situation (Dervin, 1992; Morris, 1994; Solomon, 1997). In her article "Toward a User-Centered Information Service," Ruth Morris has reviewed Brenda Dervin's constructivist model, comparing it with other three models closely related to her approach. As Morris notes, Dervin does not consider information an objective and external entity, but something that involves internal cognitive process. Therefore, in Dervin's theoretical framework, the user becomes the focus in this sense-making model. Dervin's approach also includes a "situation-gap-use" metaphor for studying information needs. The gap in people's knowledge that develops out of a specific situation prompts them to seek information, and this gap is bridged by getting "uses" or "helps" (Morris, 1994).

Morris has applied the enriched sense-making model to several aspects of information service, including reference interview, ambiguous information needs, question negotiation, and users' mindsets. Of special note are her two important findings: (1) users' information needs are often ambiguous; (2) in a literature search they usually change direction based on what they find. However, studies about the relationship between users' focus-shifting tendency and their information needs are rare. This study aims to explore this relationship from a semiotic point of view. It tries to answer such questions as why users' information needs are often ambiguous; why they usually shift focus in the information seeking process. Based on the previous studies and C. S. Peirce's theory on sign, the study presents the following argument: sense-making in information seeking is an unlimited process of semiosis in which meaning is continually being made and remade.

## Background

An examination of previous studies on information-seeking process in terms of sense-making shows different focuses and approaches. For example, Myke Gluck handles this problem from a semiotic standpoint (1997). Gluck explores the feasibility of combining Dervin's sense-making model and Peirce's triad model of sign in the study of information seeking in context. These two models are described in the following diagrams:



In Peirce's semiotic triad, the sign is the form of the sign; the interpretant is the sense made of the sign; and the object is what the sign stands for. Dervin's sense-making model describes a specific event in which users' information needs arise from a gap in their knowledge, and they bridge the gap by obtaining uses or helps. After introducing both approaches, Gluck suggests six mappings, which serve as a theoretical and contextual perspective for users. These mappings are configurations that combine the two triads in various orders, such as event <-> referent, gap <-> sign vehicle, and uses <-> interpretant in mapping #1, and event <-> referent, gap <-> interpretant, and uses <-> sign vehicle in mapping #2. He then proposes an experiment, aiming at finding out how the mapping frameworks for sense-making and semiotics may support mutual informing of the approaches to information-in-use phenomena.

Bonnie Cheuk discusses this problem by modeling users' information seeking process (1998). Cheuk's study is a qualitative study of the information-seeking and use process of eight auditors and eight engineers in their workplace contexts. In her study, Cheuk develops an information seeking and use process model, or ISU process model, which consists of seven critically different situations that participants experienced in their workplace. The seven ISU situations included Task Initiating Situation, Focus Formulating Situation, Ideas Assuming Situation, Ideas Confirming Situation, Ideas Rejecting Situation, Ideas Finalising Situation, and Passing on Ideas Situation. By modeling users' cognitive process of information seeking, Cheuk arrives at several findings on users' information seeking behavior. One of them is that the participants' information seeking process in the workplace does not follow any specified sequential order. Instead, people move between these seven situations in multi-directional paths.

The strengths of these studies are their theoretical frameworks that guide their research. Gluck develops a framework based on his comparative study of Peirce's semiotic triad and Dervin's sense-making model. Cheuk, on the other hand, creates an information seeking and use process model, which is an important framework for identifying information behavior distinctively associated to each of the seven situations she describes. While Gluck's framework seems abstract, Cheuk's model seems more specific and pragmatic. The concepts in both theories are clearly and adequately defined, and the relationships between variables are well interpreted.

Gluck's mapping frameworks are useful in terms of understanding how users' needs to make senses arise in an information seeking process. They may be stimulated by a gap, an event, or uses. Mapping framework #1 is particularly illuminating in explaining why users do not understand something in the initial stage of information seeking process, and how their gap in knowledge is bridged. The other five mappings, as Gluck states, may be meaningful unless they are verified by supporting empirical evidence.

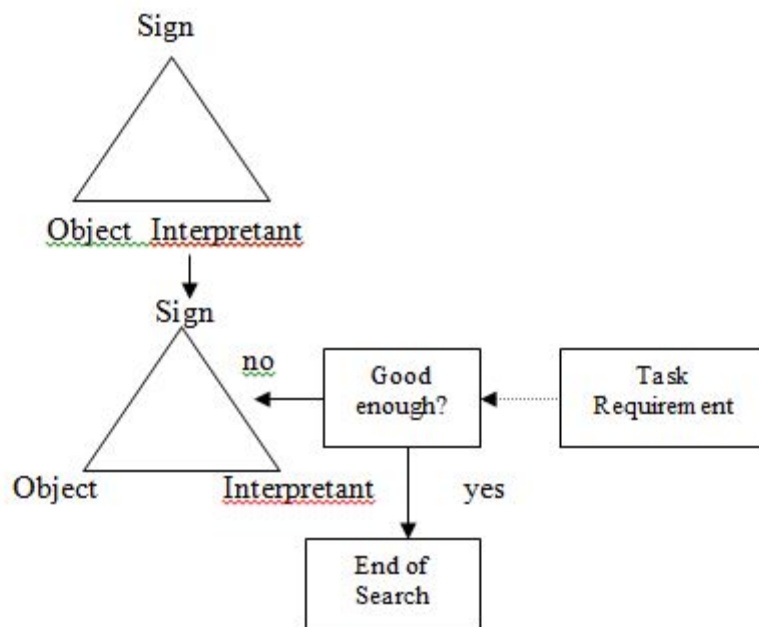
On the other hand, Cheuk's study yields several major findings based on the analysis of the collected data. One of her findings indicates the correlation between situations and information seeking behaviors, such as choice of information sources, information relevance judgment, and information organizing strategies. Another major finding coincides with those in the earlier studies in the literature, which highlight the non-linear process of human information seeking. Overall, Cheuk's findings can be used to address the questions asked here. For example, the finding about choosing and using information sources in the task initiating situation may answer the question of why users' information needs are ambiguous. The finding on selecting and using information sources and information relevance judgment in the earlier situations also reveals why they tend to change the direction in their research process.

### **Semiotic Interpretation**

As already stated, this study attempts to answer the questions of why users shift focus in the information seeking process and what impacts this change has on their information needs. The model offered here provides a possible answer. It is also based on Peirce's notion of semiosis that defines the interpretant itself as a sign in the mind of the interpreter. According to Peirce, a sign addressing somebody creates in the mind of that person an equivalent sign, or perhaps a more developed sign. The sign thus created is called the interpretant of the first sign. Interpretant can take three forms—immediate, dynamic, and final. The immediate interpretant refers to the quality of the impression that a sign is fit to produce, not to any actual reaction. The dynamic interpretant consists in direct effect actually produced by a sign upon an interpreter. It is experienced in each act of interpretation and is different from one act of interpretation from another. The final interpretant is the effect the sign would produce upon any mind upon which the circumstance should permit it to work out as its full effect. It is the one interpretative result to which every interpreter is destined to come if the sign is sufficiently considered (Peirce, 1958). As information seeking is conducted by an individual or a group of individuals, the interpretant is often dynamic. To put it simply, there is a successive, perpetual production of new interpretants--an unlimited semiosis that defines the formal structure of intelligence. This may be illustrated by the following diagram:

## Semiotic Interpretation of Information Seeking

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Since information seeking process can be endless in theory, information seekers need a set of “stop rules” which are based on their task requirements. They should understand that the results of their information seeking may not be perfect or “final”, but they should be good enough to finish the tasks they intent to do.

### Summary and suggestions

This study has compared two theoretical frameworks, methodologies, and findings on information seeking, and suggested an alternative interpretation. Both Gluck and Cheuk’s studies are valid approaches. The validity of their studies lies in the fact that both studies offer true and valid conclusions. Gluck's conclusion, though theoretical, states the causal relationships between different variables. Nevertheless, his theoretical model remains to be tested by the experiment he proposes. In contrast, Cheuk's conclusion is based on the findings from her empirical study of the subjects in their workplace.

Just as human signification is an unlimited semiosis, the research process is cyclic in nature. The tentative empirical generalization is the end of one cycle and the beginning of the next one. New problems that arise from tentative generalizations lead researchers to another process of formulating hypothesis, making research design, designing measurement, collecting and analyzing data, and drawing tentative conclusions. This cyclic process continues indefinitely, reflecting the progress of a scientific discipline.

Therefore, based on the previous studies, the author suggests the following questions for further inquiry:

- (1) Given the unlimited nature of semiosis in the information seeking process, how do users know when they are in their idea finishing situation? Should that be the situation in which users have checked all the sources available or just the authority sources? How refined their information needs should be?
- (2) Knowing that the information seeking process is interactive, dynamic, and infinite in theory, what can the information professionals do to help users meet their information needs? Should they help them clarify the task requirements to reach the goals?

Various stakeholders may find this interpretation helpful. They include information seekers in different settings, information professionals, managers in the information field, and system designers. In a library setting, the stakeholders can be patrons and library staff members. In a corporate setting, they can be employees and managers. System designers are concerned because the knowledge of users' information seeking behavior and information needs may help them come up with better interface designs that address these problems. The best format for presenting these findings to stakeholders is to give them training classes or on-site instructions about information seeking skills. If information users and information providers are informed of this possible endless process, they can make decisions of their own while seeking or providing information.

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