

A Knowledge Approach for the Library Sciences

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ABSTRACT

Like chemistry's table of elements, the knowledge spectrum organizes a large amount of information about knowledge, dividing intelligent behavior into its essential cognitive elements. This paper describes a way to catalog, measure, and analyze organization knowledge requirements and knowledge resources through inheritance of knowledge spectrum properties. Business process knowledge requirements trees and employee knowledge profiles would be created to permit knowledge requirements fulfillment analyses.

KEYWORDS

Knowledge Management, Knowledge Modeling, Knowledge Requirements, Knowledge Spectrum, Knowledge-Based Mapping Systems, Maps of Scientific Exploration, Pragmatic Rules

INTRODUCTION

An objective of library science is to provide the right information in the right format at the right time (Jain, 2013). This is challenging because librarians often work with many different user groups with diverse needs, and it is difficult for any librarian to remember and quickly point to the best resources for every single need (Ralph & Ellis, 2009). From a knowledge perspective, the authors suggest that library science determine the pragmatic rules and maps that guide these consultations and use them to enable less expert librarians to act like experts.

The notion of pragmatic rules was borrowed from linguistics with Covington (1998) describing pragmatic rules as - the rules that control what is said when. This notion of pragmatics was extended through a study of one hundred video recordings of diagnostic consultations between medical specialists and physicians/patients in distant rural communities (this is called the practice of distance medicine or telemedicine). With respect to the aforementioned study, a four-stage model was developed that linked behavioral, cognitive, and philosophical (epistemological) aspects of the medical diagnostic process. This model rests on the work of the epistemologist Fred Dretske who stated that behavior was a causal chain governed by three knowledge types - each with a different role. The triggering cause signaled the presence of an external event. The role of the structuring cause was to motivate action by explaining the relationship between a signal and an external event. The third type of knowledge was described as a map, attached to a belief that guides one's actions (Dretske, 1988).

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In writing this paper for library science, it was immediately recognized that a researcher's variables for a literature search marked a place in a vast knowledge space. This insight emerged from an understanding of Dretske, and just by asking selected researchers to list the theories (maps) that guide them in their conduct of the literature search, librarians might be able to identify emerging schools of thought and link diverse groups of researchers.

Randles and Fadlalla (2004) introduced the knowledge chemistry approach. In this paper the authors suggest that library science implement this knowledge chemistry approach. Furthermore, it is suggested that library science adopt the tools that have, or are being developed, to support the knowledge chemistry approach. Through implementation of a set of suggested activities, library scientists would gain a deep understanding of knowledge workers' use of knowledge and would be poised to support and manage them.

LITERATURE REVIEW

For over twenty years a handful of knowledge management researchers have focused on the notion of pragmatics. How pragmatics and the internal maps that guide knowledge workers gained their attention is discussed next. This discussion serves as a helpful introduction to pragmatics as well as serving as the introduction for the literature review, and these introductory statements begin with a discussion of a study of distance medicine.

Teleconferencing technologies enable medical specialists to confer with distant physicians and patients to conduct medical diagnoses. To study how teleconferencing impacted medical diagnostic practices, a four-stage model of the medical diagnostic process was developed by Randles and Thachenkary (2002). Discovery of Covington's pragmatic rules – rules which control what is said when – focused the attention of the aforementioned researchers on pragmatics, and a study of the semiotic process contributed to their understanding of this topic.

Semiotics describes several levels of transformation: morphological, syntactic, semantic, and pragmatic. Stimuli at the morphological level are merely a collection of unconnected symbols. By relating these symbols to each other, the stimuli are elevated to the syntactic level to produce data. At the semantic level, meaning is attributed to the data to generate information (Ramaprasad and Rai, 1996). Finally, at the pragmatic level, the meaning of information is interpreted in a particular context, and is related to events and action (Stamper, 1973; and Penzias, 1989). A study of distance medicine and the medical diagnostic process revealed the following. Decision making entails a rapid ascent to the pragmatic level of the semiotic process. The physician readily attributes meaning to the medical data. Within minutes the physician has placed the patient's situation in a particular context, reducing the number of potential illnesses from hundreds to five or six.

Based on an increasing awareness of pragmatics, the four-stage model was generalized for knowledge management, using an engine and vehicle analogy to explain the process of information dissipation (Randles and Fadlalla, 2004). According to these researchers, information dissipation is a two stage process. The first stage requires the transformation of information to attain insight (knowledge combustion) with Dretske's three knowledge types linking meaning, events, and action to support an explanation of what occurs at the pragmatic level of the semiotic process.

However, according to the aforementioned researchers, insight is the prelude to action and does not describe what is required to act. Consequently, Randles and Fadlalla (2004) provided a vehicle analogy to describe how cognition moved from insight to action. The physical model analogy of the aforementioned researchers provided a better understanding of the cognitive functions that are performed at the pragmatic level of the semiotic process - a level which had been ignored by information managers (Nonaka, 1994).

Together, the fuel specifications (representing the pragmatic processes) and the force specifications (representing action) provided rudimentary principles regarding the dissipation of information (Randles and Fadlalla, 2004). A reviewer of the aforementioned paper challenged these

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