

Part



# **Definition of Information Need**



# The Importance of Information Need

Information need is the motivation people think and feel to seek information, but it is a complex concept that divides researchers. In this chapter, we discuss preliminary definitions of information need derived from a historical and current overview of the concept in computer and information science. We set our discussion of information need firmly inside information search. This is a solitary activity between a human and a machine. The information search is conducted via some sort of device or tool, usually a computer, iPad, or, increasingly, a mobile phone or smartphone. Such devices have the capability of being an extension of not only the human mind but also, via the internet, of all of human memory, all of human knowledge.

This book proposes a theory of information need for information retrieval (IR). Information need traditionally denotes the start state for someone seeking information. This involves all sorts of information seeking (purposive information behavior) and the broader still human information behavior (which also includes non-purposive information behavior) (Wilson, 1999). Here we limit our discussion to information search involving user interaction with an information system, which can be a search engine such as Google, an online public access catalog (OPAC), or any of the scholarly or research-oriented retrieval systems such as PsycINFO, Historical Abstracts, or PubMed.

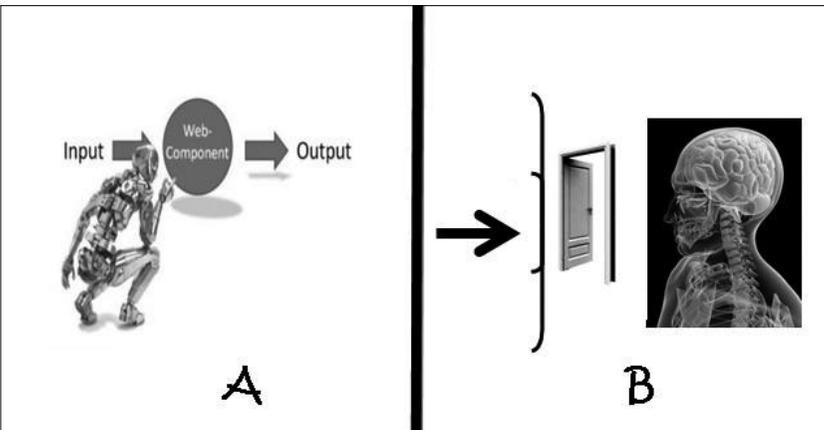
There are two perspectives on information need for information search: a computer science perspective and an information science perspective. Information search system design is dominated by a computer science perspective where the user's information need is to find an answer, the form of which is known by the user beforehand; the query to the information system is not so much a question as a demand to obtain this specific form of answer. The user then takes away the answer, which is the system output. The computer science

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perspective comes, in its most basic form, from an engineering tradition of humans turning on a machine, getting it to work with an appropriate human command input, then taking away the machine output. In this perspective, it is easy for the user to formulate the demand for answer-based information into a query-command to the system (Nicolaisen, 2009).

The information seeking perspective takes the larger and contrary view, that the user often needs information to fill out a conceptualization of a problem or idea. The user very much wants this information. The user from this perspective doesn't know the answer he/she is searching for and therefore finds it difficult to formulate a query to the system. The query, as a formulation of the user's information need, must in a certain sense open the door to information flow, which is controlled by, in general terms, what the user already knows, thinks, and believes, and the neurological architecture of the reasoning part of the brain. The book attempts to understand and explain these two perspectives and develops a theory of information need that is an interplay between these two perspectives.

In Figure 1.1, we diagram the difference between the computer science (left-hand side of the figure) and the information science (right-hand side) perspective on this fundamental purpose of information need. The computer science perspective conceptualizes the user's information need as the input into the information system or "Web-Component" in the figure, which produces the answer output. Far from being critical of the computer science point of view, in



**Figure 1.1** Two conceptions of information need: A) computer science "input-output" and B) information science, where information need opens the door to the user's perceptual and cognitive system

Chapter 8 at the end of Part I, we indicate that it describes information need in a post-focus phase of performing a task or solving a problem.

Information science conceptualizes the user's information need as a gap in understanding that opens the door to let in information from the textual environment—an information system, for example. Between the user's (sensory) perceptual and cognitive system and information flow coming at the user via environmental stimuli from the outside world is a four-pronged symbol representing the interface between the user and the environment. We utilize the four-pronged symbol throughout the book to represent this interface. While in Part I we begin by examining this information flow from environment to person in a general sense, the focus of this book is the information flow from the textual environment of an information system—the text and symbols on the computer screen representing the system's information, particularly the results list—to the user's perceptual-cognitive and knowledge processing systems.