

CHAPTER 7

EXPLANATION IN INFORMATION SEEKING AND RETRIEVAL

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1. INTRODUCTION

Information Retrieval (IR) is a research area both within Computer Science and Information Science. It has by and large two communities: a Computer Science oriented experimental approach and a user-oriented Information Science approach with a Social Science background. The communities hold a critical stance towards each other (e.g., Ingwersen, 1996), the latter suspecting the realism of the former, and the former suspecting the usefulness of the latter. Within Information Science the study of information seeking (IS) also has a Social Science background. There is a lot of research in each of these particular areas of information seeking and retrieval (IS&R). However, the three communities do not really communicate with each other. Why is this, and could the relationships be otherwise? Do the communities in fact belong together? Or perhaps each community is better off forgetting about the existence of the other two?

We feel that the relationships between the research areas have not been properly analyzed. One way to analyze the relationships is to examine what each research area is trying to find out: which phenomena are being explained and how. We believe that IS&R research would benefit from being analytic about its frameworks, models and theories, not just at the level of meta-theories, but also much more concretely at the level of study designs.

Over the years there have been calls for more context in the study of IS&R. Work tasks as well as cultural activities/interests have been proposed as the proper context for information access. For example, Wersig (1973) conceptualized information needs from the tasks perspective. He argued that in order to learn about information needs and seeking, one needs to take into account the whole active professional role of the individuals being investigated. Byström and Järvelin (1995) analysed IS processes in the light of tasks of varying complexity. Ingwersen (1996) discussed the role of tasks and their descriptions and problematic situations from a cognitive perspective on IR. Most recently, Vakkari (2003) reviewed task-based IR and Järvelin and Ingwersen (2004) proposed the extension of IS&R research toward the task context. Therefore there is much support to the task context, but how should it be applied in IS&R?

Aims and Focus. The present chapter therefore focuses on the following two questions:

1. What are the goals of IS&R research, in particular, what does the research want to discover/explain (as it appears on the basis of research done) and how could current research be enriched?
2. Do work tasks play a role in information access and how could their possible role be investigated? How could the task aspect enrich current research?

The goals of IS&R research may be classified as (a) theoretically understanding information seeking and retrieval in the form of models and theories, (b) empirically describing and explaining IS&R in various contexts, and (c) providing support in the design of information systems and information management in various contexts. The whole area is rather pragmatic: many experimental (IR) studies aim at improving IR system effectiveness; many other studies are descriptive regarding the ways people access information (but these studies also have improving people's information access on their agendas).

Science seeks understanding of phenomena. Scientific knowledge grows, among other ways, by experimenting with observed and/or hypothesized relationships under varying experimental conditions, thereby arriving at confirmation, elaboration or refutation of the relationships. Explanation is a requisite for understanding. What kind of relationships are in focus in IS&R sub-areas? Are they closely related or vastly different, giving rise to either a unified Information Science or are they several disciplines with different agendas?

Approach. There is no distinguishing name for the methods employed in this chapter. This chapter first analyzes the frameworks of the three research areas for their research designs, especially the dependent and independent variables. It tries to explicate which kinds of hypotheses and theories are meaningful in each approach, how they relate to each other and how they could be enriched. In addition, this chapter examines work task based study designs giving two examples of IS&R studies which both have a work task context. The contributions of the chapter lie in (1) the analysis of the three areas, their enrichment and relationships, and (2) the examination of the role of work tasks in study designs. We do not suggest any specific studies to be completed nor do we provide any empirical results.

The Organization of the Chapter. In Section 2 we shall discuss an approach to the growth of knowledge in science. In Section 3 we analyze current research in IR, interactive IR and in Information Seeking, and discuss possibilities of enriching these efforts through the incorporation of new variables. In Section 4 we look at work tasks as a possible explanatory factor in IS&R. We consider three possible study designs where either the variation of recall and precision or the information access process is explained under varying conditions. We also discuss two sample studies in IS&R employing work tasks in different ways in their study designs. Finally, we discuss possible outcomes and their consequences of work task based IS&R studies. Summary discussion and conclusions follow in Sections 5 and 6.

2. AN APPROACH TO GROWTH OF KNOWLEDGE

In order to be able to explore the research on information retrieval and seeking, and the possible relations between these fields, conceptual tools are needed. In the following we introduce Wagner and Berger's (1985) theoretical conception, and use it as a framework