Chapter II
The Social Context
of Knowledge

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ABSTRACT

Information and knowledge have become a crucial resource in our knowledge-based, computer-mediated economy. But knowledge is primarily a social phenomenon, on which computer processing has had only a limited impact so far, in spite of impressive advances. In this context have recently appeared various collaborative systems that promise to give access to socially situated information. We argue that a prior analysis of the social context is necessary for a better understanding of the whole domain of collaborative software. We will examine the variety and functions of information in modern society, where collaborative information management is now the dominant type of occupation. In fact, real information is much more complex than its usual technical sense: one should distinguish between information and knowledge, as well as between explicit and tacit knowledge. Because of the notable importance of tacit knowledge, social networks are indispensable in practice for locating relevant information. We then propose a typology of collaborative software, distinguishing between explicit communities supported by groupware systems, task-oriented communities organized around a common data structure, and implicit links exploited by collaborative filtering and social information retrieval. The latter approach is usually implemented by virtually grouping similar users, but there exist many possible variants. Yet much remains to be done by extracting, formalizing, and exploiting implicit social links.

INTRODUCTION

The development of computers and electronic networks has considerably advanced our society's capacity for information processing, and the very scale of this global phenomenon raises quite a few questions. Yet electronic data processing is by now so pervasive in advanced societies that it is easy to forget how recent it all is: computer science started about the time of World War II,

but personal computers, the Internet, and the Web only go back a couple of decades in spite of their explosive progress.

As a matter of fact, information processing (i.e., the collection, creation, elaboration, and transmission of useful knowledge) has been around for as long as human history, and has become more and more important with the advent of modern bureaucratic industrial states two centuries ago. Recent technological developments take place within this social framework, which determines their shape, usage, and direction. The interaction between pre-existing social practices and new technologies is then an obvious issue to consider.

So how do human beings and organizations process information in today's technological, computer-mediated environment? How do they interact with each other through electronic networks? How can they put recent technical advances to the best possible use? And what future directions can be foreseen? To try and answer such questions, it would be useful to first analyze human information processing in more detail.

The classical approach, prevalent notably in cognitive psychology, has been to focus on individual information processing capabilities (Neisser, 1967; Mandler, 1985). A body of studies on perception, learning, recall, association and inference, and so forth has been performed on individual subjects in laboratory conditions. Much has been learned in this way on human information processing: for example our limited short-term memory, perceptual schemas, associative recall, probabilistic learning, and inference mechanisms are by now fairly well-established findings.

These studies have however been increasingly criticized for dealing mostly with isolated subjects performing artificial tasks in unrealistic ("non-ecological") environments. One has seen in the past 20 years a gradual shift to the study of situated and collective cognition. There has been more emphasis so far on physically situated rather than socially situated behavior, but the general trend is clear (Clark, 1998; Harnad & Dror, 2006).

Researchers in this growing movement try to understand how human beings perform tasks and solve problems in real physical and social situations. What they may lose in precision and experimental control, they hope to gain in scope and realism. Such an approach seems more relevant to the complex socio-technical environment in which human information processing must take place today.

The recent emergence of virtual communities which has been made possible by the Internet and other electronic networks is also a phenomenon worth investigating. These communities constitute a novel, computer-mediated form of social grouping, combining in variable proportion traditional social relations with more functional, goal-oriented features. Virtual communities should be studied as a collective entity rather than a mere collection of individual participants (Kollock & Smith, 1999; Rheingold, 2000; Memmi, 2006).

Understanding the social and technical context of individual information processing is important for several reasons. Beside the inherent interest of this subject, studying the way human beings use their social skills and social networks to acquire relevant information would help develop better information retrieval systems. As a matter of fact, there has recently appeared a variety of collaborative software systems inspired by human task-oriented social interactions.

Even if socially situated knowledge management cannot be totally reproduced with computers, software systems can be designed to borrow from the most pertinent aspects of human collective processing. Such distributed systems will also fit better the manner in which human beings naturally operate and solve tasks within society, and should thus prove easier to use. More generally, we will see how studying the role and use of knowledge in our society may prove useful to software designers and developers.

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