Chapter IX

Information Modeling Based on Semantic and Pragmatic Meaning

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ABSTRACT

In traditional modeling approaches, such as entity-relationship modeling, the predominant information modeling problem is how to represent external reality in the system in a true way. In these approaches, semantic aspects of language are in focus. In contrast to this, the main information modeling problem could be to understand how information systems may support a meaningful use of language and information in a social action context. This chapter presents an information modeling approach based on speech act theory that takes both semantic and pragmatic aspects into consideration. With such an approach, it is possible to reconcile traditional information modeling and the pragmatic aspects of language and information use. Such reconciliation is essential to arrive at information systems that support meaningful communication between different actors within a social action context.

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INTRODUCTION

Information systems are often viewed as more or less accurate images of reality (Lyytinen, 1987). This view has been characterized as a contents view (Goldkuhl, 1995), representing a descriptive perspective (Ågerfalk & Eriksson, 2004; Holm, 1996). From such a perspective, correct mappings from one domain (the universe of discourse) to another (the model) are in focus. Although this semantic aspect is important in making sense of the world, it has been suggested that pragmatics (Levinson, 1983) is even more fundamental.

The term pragmatics was introduced by Morris (1938) to designate the study of the origin, use, and effect of signs, and thus the relationship between signs and those who produce and interpret them, while semantics concerns the relationship between signs and the objects they signify. Pragmatics focuses on language in use and on the relationship between utterance, speaker, and interpreter, while semantics stresses the referring function of language, and the focus is on what could be considered as meaningful sentences and true propositions. This clear-cut division between semantics and pragmatics has shown to be problematic. For example, the difficulties of handling questions, directives, and imperatives in formal semantics (Austin, 1962) are now widely recognized. The question is if such aspects of meaning should be disregarded in the study of semantics and only be considered as something that has to do with pragmatics. To solve these problems, there has been a suggestion to let semantics be concerned with the analysis of the conventional meaning (or conventional content) of sentences, and pragmatics with the actual meaning that speaker and listener attach when a sentence is used in a communication situation. If one chooses this way of distinguishing the study of semantics from that of pragmatics, the problems with questions and imperatives can be solved. This means letting semantic meaning concern the conventional meaning of sentences and pragmatic meaning concern how speakers and hearers relate the sentence to the world and its actual conditions when the sentence is used in an act of communication (Habermas, 1984). Nonetheless, there is still no clear-cut distinction between semantics and pragmatics; we still have to understand how the conventional meaning of sentences relates to truth conditions since this is a fundamental issue in semantic analyses. Arguably, information modeling is concerned with a meaningful use of language and should take both semantics and pragmatics into consideration accordingly (Dietz, 2003).

In this chapter, we show how taking both semantic and pragmatic meaning into consideration gives theoretically justified advice to three problems central to information modeling. First, it can help us to decide what type of identifier to use given a specific entity. We refer to this as the identifier problem. Second, it provides a rationale as to why social obligations (such as assignments) sometimes ought to be modeled as objects (or classes or entities/entity types). We refer to this as the ontological problem since it has to do with whether deontic