Information, knowledge, logic

S u m m a r y

The book presents the most important formal theories of information and information flow, which could be described as classic theories. These theories provide a framework for discussion of syntactic, semantic and epistomological aspects of the term ‘information’. Chapter One presents trends in understanding the term ‘information’ and selected attempts to systematize theories of information. Chapter Two is devoted to a discussion of syntactic information theories: Shannon’s mathematical theory of communication and algorithmic information theory. While the former uses the concept of probability and a given set of possibilities to calculate the amount of information in a particular message, the latter refers to the structure of a message through defining its algorithmic complexity. In Chapter Three two semantic information theories are discussed – Rudolf Carnap and Yehoshuy Bar-Hillel’s, and Luciano Floridi’s theory of strongly semantic information that grew out of critique of the former. Chapter Four analyses Fred Dretske’s theory, which developed Shannon’s by adding a semantic aspect. This theory not only defines the concept of information content, but also formulates certain principles describing the flow of information. It is used for solving certain epistomological problems. Chapter Five features a discussion of Marian Mazur’s qualitative theory of information, which belongs to the cybernetic-functional paradigm. Mazur’s intention was for this theory to answer the question ‘What in essence is information?’ as well as to distinguish kinds of information and determine the basis of information-providing processes. Chapter Six examines epistemic and doxastic logic, as well as single-agent, multi-agent, static and dynamic logic. Many authors suggest using the term ‘information logic’ to define particular systems of these kinds of logic. The information status of entities are identified with the range of possible worlds (situations). In the dynamic version these describe information processes that lead to updating these ranges: observation, conversation, public announcements, etc. On this basis, it is possible to create formal models of communication. The classic AGM model of belief revision is presented, along with the logic of conditional beliefs and the logic of public announcements. Chapter Seven contains a theoretical-situational approach to information. Following a presentation of the conceptual apparatus of situational theory, David Israel and John Perry’s model of information flow is shown, Jon Barwise’s early theory of information channels and the expanded theory of information channels put forward by Jon Barwise and Jerry Seligman (known as ‘the logic of distributed systems’). A theory-situational approach to information is also applied to interpret the semantics of relevance logic. At the end, Mark Burgin’s general (or parametric) theory of information is presented. This can be seen as a response to the challenge of finding a perspective that brings together different approaches to information, which encompasses diverse information- and communication-related phenomena and processes.

Translated by Rob Pagett