

BEN GOERTZEL

CHAOTIC LOGIC, Language, Thought, and Reality from the Perspective of Complex System ScienceISFR International Series on System Science and Engineering, Volume 9
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The author focuses his attention to the multilateral connection between real human thinking, language and their formal modelling by means of the tools of system science. In fact, such unifying approach bridging the gap between human and computer sciences appears highly desirable, and it can attract readers from both sides.

The book is divided into small units which simplify the orientation into particular ideas. Exactly, the text is structured into 12 chapters (which are further divided into 56 sections, almost 130 subsections, etc.) which can be clustered, besides the *Introduction* into four groups due to their main subject orientation. The first group includes chapters presenting the basic model of thought and language (*Pattern and Prediction, The Structure of Thought, Psychology and Logic, Crucial Connections*). More exact approach to the topic is applied in chapters presenting the system theory view on mind and logic (*Linguistic Systems, Self-Generating Systems, The Cognitive Equation*). The believability of thoughts and expressions viewed rather from formal or also system theoretical point is dealt in the third group of chapters (*Belief Systems, Biological Metaphors of Belief, Mind and Reality*), and the last chapter forming, by itself, the last one-element group is devoted to dissociation in mental and communicative situations (*Dissociative Dynamics*). The book is introduced by *Preface* and concluded by *Afterword, References* (171 items) and *Index*. The choice of references reaches from pure mathematics via computer science, biology, psychology and medicine to philosophy and metamathematics.

The author evidently stresses the typically human features of thinking and communication with its chaos and vagueness. He shows their counterparts in the formal exact models and the endeavour of modern mathematics and theoretical computer science to reflect the entirely human intellectual processes. This helps the reader to understand the heuristics of artificial intelligence with respect to its relation to natural human thinking.

The book is consequently written with minimum of the mathematical formalism which appears in very small minority (evidently less than one tenth) of subsections. Such style opens the fundamental principles of artificial intelligence, non-standard logic, knowledge processing, reasoning, decision-making and other related topics of modern applied mathematics or theoretical cybernetics also for non-mathematical readers.

The referred book may address two sorts of readers. First, people with good background in human sciences who wish to get some non-trivialized information about the mathematical reflection of the real mental and communicative phenomena. Second, mathematically well prepared specialists in artificial intelligence and related branches of modern information sciences who would like to know more about the essential features of those natural intellectual processes which they endeavour to reflect in their exact formal models. Both sorts of readers can be satisfied.

Milan Mareš