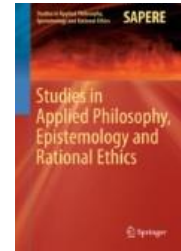


Representation and Reality in Humans, Other Living Organisms and Intelligent Machines



Eds.:

Gordana Dodig-Crnkovic

[Chalmers University of Technology
University of Gothenburg
Mälardalen University]

Raffaella Giovagnoli

[Pontifical Lateran University]

Ca. 300 pp., ISBN [978-3-319-43782-8](https://doi.org/10.1007/978-3-319-43782-8), publication planned 2017

Series: Studies in Applied Philosophy, Epistemology and Rational Ethics ([SAPERE](https://www.springer.com/series/11711))

Overview

This book enriches our views on representation and deepens our understanding of its different aspects. It arises out of several years of dialog between the editors and the authors, an interdisciplinary team of highly experienced researchers, and it reflects the best contemporary view of representation and reality in humans, other living beings, and intelligent machines.

Structured into parts on the cognitive, computational, natural sciences, philosophical, logical, and machine perspectives, a theme of the field and the book is building and presenting networks, and the editors hope that the contributed chapters will spur understanding and collaboration between researchers in domains such as computer science, philosophy, logic, systems theory, engineering, psychology, sociology, anthropology, neuroscience, linguistics, and synthetic biology.

Features

- Reflects received view in empirical science that there is something we can call 'reality' for an agent, and that agents use 'representations' in their interactions with the environment
- Examines what capacities can be plausibly computed and discusses the most promising approaches
- Looks for a common link between reality-constructing agents, such as humans, and other living organisms

Table of Contents

Part I – Cognitive Perspectives

Information and Reference

[Terrence W. Deacon]

Modelling Empty Representations: The Case of Computational Models of Hallucination

[Marcin Miłkowski]

Life Is Precious Because It Is Precarious: Individuality, Mortality, and the Problem of Meaning

[Tom Froese]

Language Processing, Computational Representational Theory of Mind and Embodiment: Inferences on Verbs

[Jesus Ezquerro, Mauricio Iza]

Part II – Computational Perspectives

Knowledge, Representation, and the Dynamics of Computation

[Jan van Leeuwen, Jiří Wiedermann]

Abstraction and Representation in Living Organisms: When Does a Biological System Compute?

[Dominic Horsman, Viv Kendon, Susan Stepney, J. Peter W. Young]

The Information-Theoretic and Algorithmic Approach to Human, Animal, and Artificial Cognition

[Nicolas Gauvrit, Hector Zenil, Jesper Tegnér]

Using Computational Models of Object Recognition to Investigate Representational Change Through Development

[Dean Petters, John Hummel, Martin Jüttner, Ellie Wakui, Jules Davidoff]

Part III – Natural Sciences Perspectives

The Quantum Field Theory (QFT) Dual Paradigm in Fundamental Physics and the Semantic Information Content and Measure in Cognitive Sciences

[Gianfranco Basti]

Reality Construction in Cognitive Agents Through the Process of Info-computation

[Gordana Dodig-Crnkovic, Rickard von Haugwitz]

Part IV – Philosophical Perspectives

The Relevance of Language for the Problem of Representation

[Raffaella Giovagnoli]

Consciousness and Hyletics in Humans, Animals and Machines

[Angela Ales Bello]

Matter, Representation, and Motion in the Phenomenology of the Mind

[Roberta Lanfredini]

Part V – Logical Perspectives

From the Structures of Opposition Between Similarity and Dissimilarity Indicators to Logical Proportions: A General Representation Setting for Capturing Homogeneity and Heterogeneity

[Henri Prade, Gilles Richard]

A “Distinctive” Logic for Ontologies and Semantic Search Engines

[Ferdinando Cavaliere]

Being Aware of Rational Animals

[Jean-Yves Béziau]

Part VI – Machine Perspectives

Simple or Complex Bodies? Trade-offs in Exploiting Body Morphology for Control

[Matej Hoffmann, Vincent C. Müller]

On the Realism of Human and Machine Representational Constraints: A Functionalist Account on Cognitive Ontologies

[David Zarebski]

Would Super-human Machine Intelligence Really Be Super-human?

[Philip Larrey]

Representation and Reality in Humans, Other Living
Organisms and Intelligent Machines

Dodig-Crnkovic, G.; Giovagnoli, R. (Eds.)

2017, XVI, 378 p. 48 illus., 28 illus. in color., Hardcover

ISBN: 978-3-319-43782-8