1. Record Nr. UNINA9910789932203321

Autore	Thagard Paul
Titolo	The cognitive science of science : explanation, discovery, and conceptual change / / Paul Thagard ; in collaboration with Scott Findlay [and others]
Pubbl/distr/stampa	Cambridge, Mass., : MIT Press, ©2012 ©2012
ISBN	0-262-30097-4 1-280-49923-0 9786613594464 0-262-30172-5
Descrizione fisica	1 online resource (379 p.)
Altri autori (Persone)	FindlayScott
Disciplina	501
Soggetti	Science - Philosophy Cognitive science
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Contents; Preface; Acknowledgments; Part I. Introduction; Chapter 1. What Is the Cognitive Science of Science?; Explaining Science; Approaches to the Cognitive Science of Science; Methodology of Computational Modeling; Unified Cognitive Science Research; Other Approaches to Studying Science; Studies in the Cognitive Science of Science; Part II. Explanation and Justification; Chapter 2. Why Explanation Matters; Chapter 3. Models of Scientific Explanation; Explanation; Deductive Models; Schema and Analogy Models; Probabilistic Models; Neural Network Models; Causality; Conclusion Chapter 4. How Brains Make Mental ModelsIntroduction; Mental Models; Abduction; Neural Representation and Processing; Neural Mental Models; Generating New Ideas and Hypotheses; Embodiment: Moderate and Extreme; Conclusion; Chapter 5. Changing Minds about Climate Change: Belief Revision, Coherence, and Emotion; Scientific Belief Revision; Climate Change; Coherence and Revision; Simulating Belief Revision about Climate Change; Simulating Resistance to Belief Revision; Alternative Theories of Belief Revision; Conclusion; Appendix

Chapter 6. Coherence, Truth, and the Development of Scientific KnowledgeIntroduction; The Relation between Coherence and Truth; Explanatory Coherence; The Pessimistic Induction; Whewell ' s Overoptimistic Induction; Deepening and the Cautiously Optimistic Induction; Mechanisms and Explanation; Approximate Truth; Deepening the Deepening Maxim; Conclusion; Part III. Discovery and Creativity; Chapter 7. Why Discovery Matters; Chapter 8. The Aha! Experience: Creativity through Emergent Binding in Neural Networks; Creative Cognition; Creativity from Combination of Representations Neural Combination and BindingBinding by Convolution; Emotion and Creativity; Simulations; What Convolutions Are Creative?; Limitations; Comparisons with Related Work; Conclusion; Chapter 9. Creative Combination of Representations: Scientific Discovery and Technological Invention; Introduction; Study 1: Scientific Discovery; Study 2: Technological Invention; Objections to Combination; Conclusion; Appendix: Blind Variation; Chapter 10. Creativity in Computer Science; Introduction; Nature and Origins of Problems in Computer Science; Creative Analogies in Computer Science; Everyday Creativity The Casual Mode of CreativityComparison with Natural Science; Conclusion; Chapter 11. Patterns of Medical Discovery; Introduction; Medical Hypotheses; Logical Patterns; Psychological Patterns; Neural Patterns; Technological Patterns; Conclusion; Part IV. Conceptual Change; Chapter 12. Why Conceptual Change Matters; Chapter 13. Conceptual Change in the History of Science: Life, Mind, and Disease; Introduction; History and Philosophy of Science; Life; Disease; Mind; Conceptual Change; Chapter 14. Getting to Darwin: Obstacles to Accepting Evolution by Natural Selection; Introduction Cognitive Obstacles

Sommario/riassunto

A cognitive science perspective on scientific development, drawing on philosophy, psychology, neuroscience, and computational modeling.