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Descrizione fisica	1 online resource (231 pages)
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Soggetti	Statistical physics Philosophy and science Physics Science—Social aspects Applications of Nonlinear Dynamics and Chaos Theory Philosophy of Science History and Philosophical Foundations of Physics Societal Aspects of Physics, Outreach and Education Statistical Physics and Dynamical Systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	First Encounters -- Physical vantage points -- Here Come the Philosophers -- A brief history -- Venturing into the Microcosm -- Quantum worlds -- Which way did it go? -- Entanglement and Irreducibility -- Quantum emergence -- The Aggregation of Particles -- The arrow of time -- A Taste of Condensed Matter -- Macroscopic Phases -- Helium-3 -- When Matter Reorganizes Itself -- Self-Consistency -- Renormalization -- Phases, protectorates, and emergence -- From crystals to elementary particles -- Beyond the Linear Approximation -- Chaos theory -- Self-organized patterns -- Displays of temporal order -- The Rise of Effective Theories -- A single neuron -- Descending down the rabbit hole -- Re-emerging from the rabbit hole -- Social Emergence -- Social Networks and Norm Circles -- The Wealth of Nations -- Social Beliefs and Downward Causation Science's Organizing Principles -- Science and Religion -- Religion and

Emergence -- Epilogue.

Sommario/riassunto

The main purpose of this book is to introduce a broader audience to emergence by illustrating how discoveries in the physical sciences have informed the ways we think about it. In a nutshell, emergence asserts that non-reductive behavior arises at higher levels of organization and complexity. As physicist Philip Anderson put it, "more is different." Along the text's conversational tour through the terrain of quantum physics, phase transitions, nonlinear and statistical physics, networks and complexity, the author highlights the various philosophical nuances that arise in encounters with emergence. The final part of the book zooms out to reflect on some larger lessons that emergence affords us. One of those larger lessons is the realization that the great diversity of theories and models, and the great variety of independent explanatory frameworks, will always be with us in the sciences and beyond. There is no "Theory of Everything" just around the corner waiting to be discovered. One of the main benefits of this book is that it will make a number of exciting scientific concepts that are not normally covered at this level accessible to a broader audience. The overall presentation, including the use of examples, analogies, metaphors, and biographical interludes, is geared for the educated non-specialist.
