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8 Are There Statistically Irreproducible Events? 9 Hadamard's Principle of Scientific Determinism; 10 Experimental Science Requires Freedom of Action; 11 Quantum Randomness; 12 Quantum Mechanics Cannot Explain Free Will; 13 Why Does Time's Arrow Always Point in the Same Direction?; 14 Hadamard Determinism Cannot Be Globally Valid; Acknowledgements; References; Time-Space Dilations and Stochastic-Deterministic Dynamics; 1 Introduction; 2 Dilations of Stochastic Descriptions to Deterministic Dynamics; 3 Mathematical Dilation Theories; 4 Physical Interpretations of Dilations; 5 Time and Space 6 Knowing the Present 7 Financial Option Theory; 8 Changeux and Connes, and Chaitin; 9 Digression on Determinism; 10 Final Thoughts; References; Transitions from Deterministic Evolution to Irreversible Probabilistic Processes and the Quantum Measurement Problem; 1 Introduction; 2 Deterministic Dynamics and Probabilistic Markov Processes; 3 Instability of Motion and the Transition from Deterministic Dynamical Evolution to Probabilistic Processes; 4 The Quantum Measurement Problem; Acknowledgments; References; Probabilistic Causality and Irreversibility: Heraclitus and Prigogine; 1 Introduction  
2 A Dialogue between Heraclitus and Prigogine

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#### Sommario/riassunto

Are choice and free will possible in a world governed by deterministic fundamental equations? What sense would determinism make if many events and processes in the world seemed to be governed by chance? These and many other questions emphasize the fact that chance and choice are two leading actors on stage whenever issues of determinism are under discussion. This volume collects essays by accomplished scientists and philosophers, addressing numerous facets of the concept of determinism. The ...

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