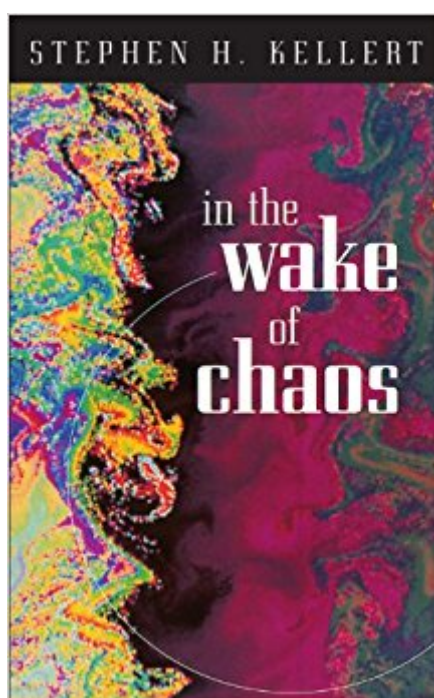


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# In The Wake Of Chaos: Unpredictable Order In Dynamical Systems (Science And Its Conceptual Foundations Series)



## Synopsis

Chaos theory has captured scientific and popular attention. What began as the discovery of randomness in simple physical systems has become a widespread fascination with "chaotic" models of everything from business cycles to brainwaves to heart attacks. But what exactly does this explosion of new research into chaotic phenomena mean for our understanding of the world? In this timely book, Stephen Kellert takes the first sustained look at the broad intellectual and philosophical questions raised by recent advances in chaos theory—its implications for science as a source of knowledge and for the very meaning of that knowledge itself.

## Book Information

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## Customer Reviews

This book takes the first sustained look at the broad intellectual and philosophical questions raised by recent advances in chaos theory- its implications for science as a source of knowledge and how we see our world in general.

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excellent

Among the loads of literature on chaos theory, this one is definitely different and the one to check up on.

Kellert examines the challenges that a deterministic view of the world faces in light of chaos and quantum theory. After a brief overview of chaos theory, he starts to describe its impact upon our ability to predict systems. This leads into the challenges presented to the traditional scientific view of the world as being deterministic--like a movie where if one knows the current state of a system and all the applicable laws of nature then one can know the state of the system at any time in the future or past just by working through the differential equations. He then explores how this lack of determinism leads to a new view of how we identify if we "understand" something. Finally, he examines the biases in science that led us to systematically ignore research into chaotic systems. Despite being a small book, Kellert's writing style is dense and verbose. He approaches the dialog from a very formal thesis statements approach where he introduces each chapter, outlines each section, re-introduces the segment, summarizes the segment, then summarizes the chapter. Not that this is a 'bad' approach, but it can be tedious. Kellert often takes three or four sentences to say what could be put more elegantly into a single one. Overall, I would still recommend this book to anyone who reads about chaos theory and then questions the overall implications. Also, it is perfect ammunition for anyone working with traditional scientists who want everything to be put into a neatly wrapped box with a nice tidy bow.

The author investigates the question: with all the research (and hype) in chaos theory, what has been the actual impact on our understanding of the world? I give the book 5 stars for completing its stated mission, being readable and enjoyable, and for not pandering to a lynch mob. Kellert approaches this question from a philosophical, but down-to-earth, view. From the start, this is certainly not a "gee-whiz" hop-on-the-bandwagon book. In fact, the prologue begins: "Chaos theory is not as interesting as it sounds. How could it be?" Yet, Kellert is not out to dismiss chaos theory, but rather to make sense of what the implications of chaos theory are. Unpredictability and determinism are two such topics potentially affected by chaos theory. Quantum mechanics is another topic influenced by chaos theory. And later in the book he ponders the historical question: why did it take so long for nonlinear dynamics (chaotic systems) to come under study? There is very little math. The intended audience seems to be those who have some notion of chaos theory already, and although an introductory chapter is included, it would be helpful to understand conceptually what a Lyapunov

exponent is and what bifurcation means. The book is footnoted sufficiently but not overdone. It is heavily (but not annoyingly) referenced with everyone from Poincare to Prigogine. Despite the years that have passed since initial publication, I do not think this book has become obsolete. Another way to say this is: chaos theory (and its results) is still not the mind-shattering revolution that some have made it out to be. If you have some science and math background and have been asking yourself "So, just what the heck does all this talk about chaos theory really mean??", then this book is for you.

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