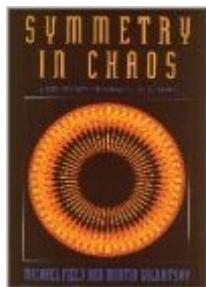


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Symmetry In Chaos: A Search For Pattern In Mathematics, Art, And Nature



Synopsis

Chaotic dynamics (known popularly as chaos theory or, more simply, chaos) is among the most fascinating new fields in modern science, revolutionizing our understanding of order and pattern in nature. Symmetry, a traditional and highly developed area of mathematics, would seem to lie at the opposite end of the spectrum. From the branching of trees to the rose windows of great cathedrals, symmetric patterns seem the antithesis of such chaotic systems as weather patterns. And yet, scientists are now finding connections between these two areas, connections which could have profound consequences for our understanding of the physical world. In *Symmetry in Chaos*, mathematicians Michael Field and Martin Golubitsky offer an engaging look at where these two fields meet. In the process, they have generated mathematically a series of stunning computer images linking symmetry and chaos. Field and Golubitsky describe how a chaotic process eventually can lead to symmetric patterns (in a river, for instance, photographs of the turbulent movement of eddies, taken over time, often reveal patterns on average) and they provide clear explanations of the science that lies behind the generation of these pictures. And the images they generate are spectacular. Because of the symmetry, these full-color and black-and-white images--some chaotic and some fractal--have a surprisingly classical appearance. Indeed, through comparisons with pictures from nature, such as sea shells and flowers, and decorative designs ranging from Islamic motifs to contemporary graphic logos to ceramic tiles, the authors highlight the familiar yet unusual nature of these mysterious pictures. Finally, the book features an appendix containing several BASIC programs, which will enable home computer owners to experiment with similar images. This lavishly illustrated, oversized volume offers both a fascinating glimpse of the frontier of modern science and a stunning collection of remarkable images. *Symmetry in Chaos* will intrigue science buffs as well as anyone interested in decorative art and pattern design.

Book Information

Paperback: 232 pages

Publisher: Oxford University Press (August 8, 1996)

Language: English

ISBN-10: 0198536887

ISBN-13: 978-0198536888

Product Dimensions: 8.6 x 0.5 x 10.9 inches

Shipping Weight: 1.7 pounds

Average Customer Review: 5.0 out of 5 stars [See all reviews](#) (3 customer reviews)

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Customer Reviews

How is this book different from all the other fractal/chaos books on the market? Because of the emphasis on symmetry! Most fractal/chaos books are similar in the sense that they contain the same pictures. But even if you are fed up with Mandelbrot sets, you can safely open this book. You will love the fractal wallpapers. The book is written by mathematicians, too, so it's factually correct, and has some real insight. Just read it!

A great array of chaotic attractors. These illustrations demonstrate that the varied forms in nature originate from mathematical building blocks that are complex and yet have continuity in that geometry. I would like to see more, accessible books on strange/chaotic attractors.

Not only is this book filled with eye-catching colorful pictures, it also does a wonderful job of explaining how they were generated. They also draw many interesting parallels between the computer-generated pictures and the structures that occur in nature or are man-made. Check out their Symmetric Chaos site at [...]

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