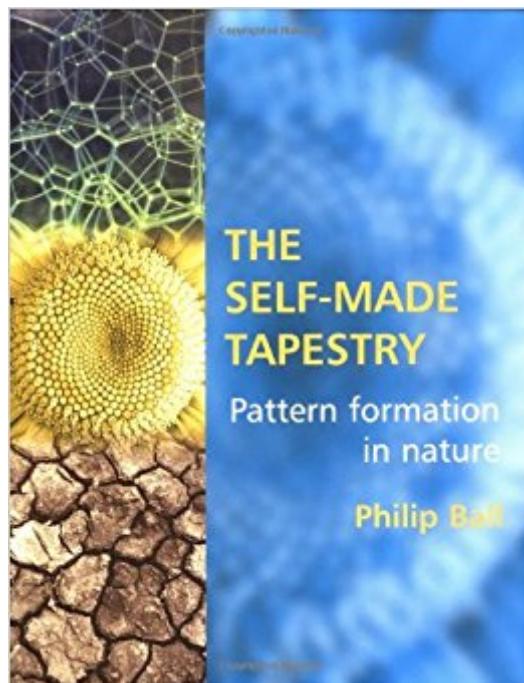


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# The Self-Made Tapestry: Pattern Formation In Nature



## Synopsis

For centuries, scientists have struggled to understand the origins of the patterns and forms found in nature. Now, in this lucid and accessibly written book, Philip Ball applies state-of-the-art scientific understanding from the fields of biology, chemistry, geology, physics, and mathematics to these ancient mysteries, revealing how nature's seemingly complex patterns originate in simple physical laws. Tracing the history of scientific thought about natural patterns, Ball shows how common presumptions--for example, that complex form must be guided by some intelligence or that form always follows function--are erroneous and continue to mislead scientists today. He investigates specific patterns in depth, revealing that these designs are self-organized and that simple, local interactions between component parts produce motifs like spots, stripes, branches, and honeycombs. In the process, he examines the mysterious phenomenon of symmetry and why it appears--and breaks--in similar ways in different systems. Finally, he attempts to answer this profound question: why are some patterns universal? Illustrations throughout the text, many in full color, beautifully illuminate Ball's ideas.

## Book Information

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## Customer Reviews

From the very beginning of rational inquiry, a small number of philosophers and scientific researchers in different fields have asked a rather large question: What are the characteristics of the physical world that drive the creation of complex structures? This is a question that goes beyond simply asking why shells spiral, or why snowflakes have symmetry; it asks instead why do tree branches,

root systems and the dendritic structures of nerve cells all share a common structure? I've been curious about this question since my early grad school days, but for a long time the topic was thought at a minimum to be a rather eccentric one; many thought it simply unproductive, or even unscientific. But the last twenty years has seen an explosion in the areas of complexity, chaos and other studies that go to the heart of asking why the world is structured (on a macroscopic scale) the way it is, and why there are so many parallels of structure between seemingly unrelated entities. While there have been a great many books in recent years looking at that very question, "The Self-Made Tapestry" is this first really complete overview of the field and its history, and it's quite an accomplishment. Profusely illustrated, engagingly written, and marvelously clear, it's not only a wonderful reference book, it's marvelously entertaining to read as well. If you've found yourself in recent times pouring over Gieck's "Chaos", or perhaps Stuart Kauffman's books on self-organization, or Waldrop's "Complexity", you'll delight in this book. It's a good reference for the academic, a fine introduction for the interested layman, and a treat for every interested reader.

I'm a theoretical biologist who has studied (some) of the subjects in this book. Although some of the details may sometimes be wrong, overall this book gives a superb introduction to the field. Pattern formation is one of the hot topics in biology now. This book assumes no previous knowledge, but it does require an intelligent reader who want to know- or someone who just likes to marvel at beatutiful pictures. I gave it to a lot of my friends to introduce them to 'my' subject, and I certainly recommend it over any of the other 'popular' approaches to pattern studies. JJW

The topic of this book is basically why I'm interested in science. Having studied the physics and math related to the phenomena described in the book for quite a while, I must say that this book is a 'must' for anybody who wants to know more about nature. Never mind that on a few occasions some inaccuracies occur; this is a book that will make you wonder, and not many books can say that. The only niggle is that a book this good should not have been written in the overly-casual 'I' form; this is not a narrative, but a great scientific book. The style of writing should reflect that.

I hope some publisher will do the world a favor and keep this book in print. It's a classic that belongs on the shelf right next to D'Arcy Thompson's "On Growth and Form." This might seem strange for me to say, but if I were to design an educational curriculum for people learning my profession (oncology), this book would be mandatory. It is highly recommended for anyone interested in morphogenesis. If anyone knows where I can buy 10 or 20 unused copies, I'd appreciate hearing

from you (wmshea@earthlink.net).

This is a lyrical celebration of natural beauty and underlying complexity. Not only that, the book itself is beautifully typeset, composed and arranged. A real pleasure to read, aesthetically and intellectually. Sheer wonder.

GREAT OVERVIEW OF PATTERN FORMATION.FOR THE LAYMAN.LITTLE MATH.APPENDICES ARE NICE. PERHAPS MORE COULD HAVE BEEN SAID ABOUT SYMMETRY BREAKING.BUT, OVERALL, GREAT BOOK. VERY WELL WRITTEN AND ENGAGING.

The Self-Made Tapestry is a wonderful read both for the expert and simply curious. Explains so much about the construction of our world it should be taught in high school!

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