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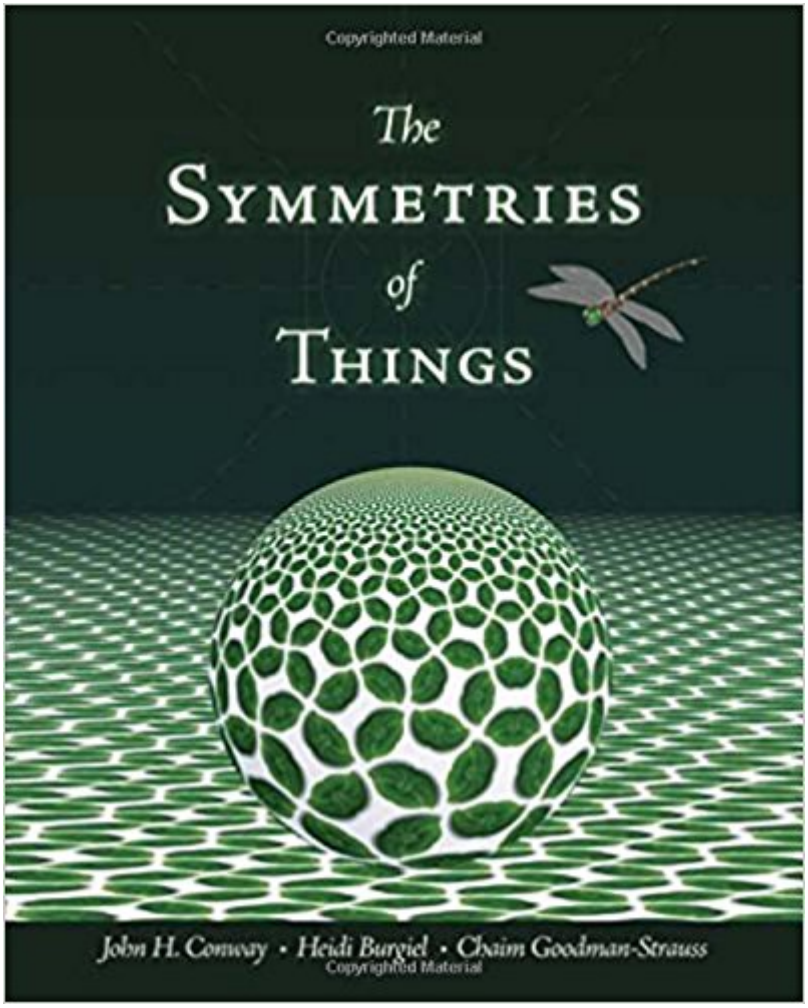
The Symmetries Of Things



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Synopsis

Start with a single shape. Repeat it in some wayâ •translation, reflection over a line, rotation around a pointâ •and you have created symmetry. Symmetry is a fundamental phenomenon in art, science, and nature that has been captured, described, and analyzed using mathematical concepts for a long time. Inspired by the geometric intuition of Bill Thurston and empowered by his own analytical skills, John Conway, with his coauthors, has developed a comprehensive mathematical theory of symmetry that allows the description and classification of symmetries in numerous geometric environments. This richly and compellingly illustrated book addresses the phenomenological, analytical, and mathematical aspects of symmetry on three levels that build on one another and will speak to interested lay people, artists, working mathematicians, and researchers.

Book Information

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Customer Reviews

Fascinating and thrilling take on finite groups, presented by means of planar and higher-dimensional symmetries.Presentation will be clear and interesting to laypersons and to mathematicians. Three features distinguish this book from other discussions of symmetry.First is the inherent interest in the subject. Symmetry is a topic of much greater importance and pervasiveness than most people realize. This book helps us see it in many places we might not think to look, and its classification and analysis is extremely informative and thought-provoking.Second is the beauty of the examples, which deal with elegant and attractive patterns.Third is the extraordinarily high production values of the book. The notation for symmetry utilizes different colors in a way that is clear and helpful. The

pictures are carefully done. Frankly, this is one of the most beautiful books I've ever owned.My one complaint is that the corner of the cover of the copy I got from was a bit bent. It seems like too much trouble to ship it back and get a whole new copy for this, since the text is fine. This is quite unusual for , however.In any case, I highly recommend this book for anyone interested in mathematics or even in art, from curious high school students to professional mathematicians.

This is not an ordinary book. It is really beautiful, really beautiful! And on the other hand it isn't afraid of describing the actual mathematical concepts. This is not an ordinary book, it really shows you have things can be visualized, from depicting how to "zip" the almost ghost-like blobs in Fig.8.2-5, that the order of operators in a group matters with a simple sketch in chapter 9, up to so many different views on the problems, that it would do no justice to the book to just have an enumeration here.This is the type of book I wish my parents had in their library when I was 16. Yes, it has many concepts that you will not be taught at high school, however, the visualisations and the patient tour from the authors, makes this a perfect book for an autodidact. You can do the rotations and mirroring of the beautiful Escher-like patterns in your head and are constantly taken one step further in the book to understand the underlying regularities. I feel this book is much more comparable to learning how to tie complex knots, then to learn, say, linear algebra.The only thing that would have benefited the reader, would be the connection to other scientific disciplines. It would be great to see so now and then what group theory brought to the table in chemistry, physics, cryptography, or machine learning. Especially, because the authors are not afraid to present complex mathematical objects, it might be trivial for them to do this and tell stories that are really hard to tell without such a detailed exposition as in this book.For me this book is like "GÃ¶del, Escher, Bach" to me.

This is the first review of a book I've ever posted on . I just want to say that if you're a non-mathematician this book may still have something to interest and intrigue you. I have taught it to math phobic non-math majors at the collegiate level, and it went over pretty well. If you're thinking it looks interesting but "too mathy" maybe you should take the plunge. There's plenty of math in there, but it's presented very gently. Or at least gently enough that a classroom full of people who have tried to avoid math all their lives found non-intimidating.

This book provides a very detailed overview of two and three dimensional symmetry types, but for the non-mathematician it can be tough going as the book progresses.

i bought the book in order to learn about this fundamental property of things (and processes!)...i enjoy math books when they begin with simple fundamentals and move on to increasingly complicated ideas and applications. but this book seems to start with the complicated and then move in various directions, so i never really got my footing. but if you understand the basic principles of spatial symmetry, you should be able to follow it.i also found the style a bit too chatty - too many exclamation points!the illustrations are lovely and invite the reader to take up a pencil and duplicate the patterns...if the book were cheaper, it would be worthwhile for the pictures alone...

I have learned this directly with Conway and am always surprised by the subtlety and depth contained in Symmetry. It is a foundational book in several respects: the notation is better and clearer than any previous notation (with Thurston’s approval as well), there are many lucid examples that develop key ideas not found elsewhere, it is full of accessible and ingenious proofs (some that are significantly simpler and more beautiful than previous proofs), and, most importantly, Symmetry is a culmination of years and years of new developments in algebra/group theory.There are few mathematicians out there (if any) with Conway’s gift for clarifying and elucidating high level math so well that the average person can understand it. He has a very deep understanding of topics that few can compete with - as such, fancy and scary notation is done away with and the beauty of math shines through!

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