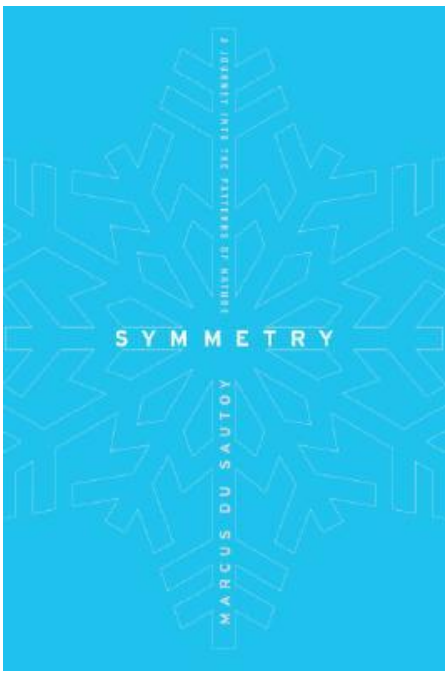

Symmetry: A Journey into the Patterns of Nature

Marcus du Sautoy

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Symmetry is all around us. Our eyes and minds are drawn to symmetrical objects, from the pyramid to the pentagon. Of fundamental significance to the way we interpret the world, this unique, pervasive phenomenon indicates a dynamic relationship between objects. In chemistry and physics, the concept of symmetry explains the structure of crystals or the theory of fundamental particles; in evolutionary biology, the natural world exploits symmetry in the fight for survival; and symmetry—and the breaking of it—is central to ideas in art, architecture, and music.

Combining a rich historical narrative with his own personal journey as a mathematician, Marcus du Sautoy takes a unique look into the mathematical mind as he explores deep conjectures about symmetry and brings us face-to-face with the oddball mathematicians, both past and present, who have battled to understand symmetry's elusive qualities. He explores what is perhaps the most exciting discovery to date—the summit of mathematicians' mastery in the field—the Monster, a huge snowflake that exists in 196,883-dimensional space with more symmetries than there are atoms in the sun.

What is it like to solve an ancient mathematical problem in a flash of inspiration? What is it like to be shown, ten minutes later, that you've made a mistake? What is it like to see the world in mathematical terms, and what can that tell us about life itself? In *Symmetry*, Marcus du Sautoy investigates these questions and shows mathematical novices what it feels like to grapple with some of the most complex ideas the human mind can comprehend.

Symmetry: A Journey into the Patterns of Nature Details

Date	:	Published March 11th 2008 by Harper (first published 2007)
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Author	:	Marcus du Sautoy
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Genre	:	Science, Mathematics, Nonfiction, Popular Science

From Reader Review Symmetry: A Journey into the Patterns of Nature for online ebook

Nadiya says

I first gave this book a 4-star rating. But as I've been lingering about the ideas from this book over the week, I realized that it's not a fair rating. It is really worth 5 stars.
I initially discounted one star for the fact that the author was sometimes lingering too much around his own research and work routine, which was distracting me from other more interesting topics of symmetry that he describes in the book. But probably it was just the minimum that the author could include to keep the book coherent and somehow connected. And even these small "distractions" are rather minor inconveniences compared to all the wealth and depth of knowledge about symmetry in nature and development of mathematical knowledge and symmetry over 2000 years that I could get from this book. What's very valuable is that this material is written in a simple easily comprehensible language for a lay audience (which is in itself quite an achievement taking into account how complex that information actually is!).
Great work, dear Marcus du Sautoy! I already feel I will want to re-read this book once again.

Gabigabigabi says

In October 2008, Marcus du Sautoy was appointed to the Simonyi Professorship for the Public Understanding of Science, succeeding the inaugural holder Richard Dawkins.

Enrique says

If you're obsessed with symmetry, read this. If not, it might be a bit too much (I dont know since I am obsessed with symmetry myself).

Francesco Ranieri says

L'autore ha perso del tutto la capacità di divulgare i concetti matematici e renderli ad appannaggio di tutti, cade nella lunga linea grigia di matematici saccenti e convinti di appartenere ad una sfera semi divina. Divulgazione scientifica 'sti cazzi

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Andrea says

I liked this book but it was a little hard to get into. The story about MC Escher's childhood was fascinating. I looked up more information on the 17 wallpaper groups after reading about the Alhambra. I watched a movie where du Sautoy talked about symmetry which is obviously one of his favorite subjects. I would recommend this book to someone who has an interest in the subject but not to someone looking for a easy read.

Gerard Brown says

[(especially when, in chapter 10 he writes, of his students who become frustrated

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Karel Baloun says

A long hard read, explaining for people with minimal understanding of advanced group theory, the full atlas of the 26 types of symmetrical objects.

Asani says

Crazy men doing symmetry

Explains the mathematical notion of symmetry and the crazy cast of men who work in this area. Mixed in with the author's own story. Highly entertaining at times. Always educational.

Blair says

Lets follow myself around for a year, and write a chapter about what I am up to every month. So if I get stoned on a beach in the Sinai, well, whatever, write that down too.

OK, that is a little unfair. I quite enjoyed the book, but it did rather lack focus. Besides the author’s personal adventures, we get the life history of the mathematicians who developed the mathematics of symmetry (they had hard and often short lives), and an up-close look at the modern mathematicians working on it. I guess you need to be a whack job to do the job well, like the guy who never changes his clothes and carries around a plastic bag full of railway timetables.

I was hoping to learn more about how group theory helps us understand symmetry, but instead of learning to play the game I got to be a spectator watching the pros do their stuff. And it is a bit out of my league. The star of the show is the “Monster”, a group that exists in a 196,883 dimensional space. I am still struggling with four dimensional space-time. This group has, oh the number is wider than the page, symmetries. What is the point? Well, for us grubby materialists, it turns out there is a connection to string theory. This does not help my impression that string theory is out of this world.

It was a fun ride, and a surprisingly easy read, in a very esoteric space. Enjoy it on the beach.

Ray Savarda says

Nice read on Mathematical Symmetry.

At some points I wanted more detail, then when late rin the book I got some it was quickly getting beyond my level, so maybe not so bad.
Some human stories, som eof the characteristics of the guys with PHD's in group theory - an odd group of folks.

Tracey says

Symmmetry: A Journey Into the Patterns of Nature shows a lot of potential. There simply aren't many books targeted to a lay audience exploring the complex concept of symmetry. But does Sautoy deliver a successful and accessible tome outlining symmetry and the nature of mathematical patterns?

Pros: Well designed cover; Interesting topic; Fusion of math & memoir

Cons: Condescending tone; Frequent redundancies; Lack of preface

Like most recent science and math books, *Symmetry* is divided into chapters with accurate and descriptive subheadings within each chapter. There are twelve chapters in all, each titled with a different month, representing the author's personal journey to turning 40 and beyond.

While this is a somewhat novel arrangement for a math book, what *Symmetry* lacks is a preface. A preface is much appreciated at the outset of a work of non-fiction. The preface typically serves to introduce the topic at hand, as well as to provide a helpful lesson to the reader regarding any technical terms and jargon necessary to the understand the remainder of the book.

Despite the lack of a preface, Sautoy does briefly define, or provide an illustration for, each of the higher level mathematical terms as they are discussed. However, even with this assistance from the author some concepts are just too advanced for a general popular readership.

One such concept is the idea of greater than three-dimensional objects and space. While this concept may indeed be too difficult for all of Symmetry's readers to grasp, Sautoy's condescending tone when discussing multi-dimensional objects is wholly unnecessary and made me want to put the book down and not pick it up again.

Another flaw impairing the overall readability is the repetitiveness of certain observations from Sautoy's mentors. While these observations are undoubtably important to Sautoy and to the concept at hand, Symmetry's audience should be given some credit. It is a rare reader that forgets what occured in Chapter 1 before completing Chapter 2, and likewise for Chapters 2 and 3.

Symmetry is also nearly entirely lacking in footnotes but it does have an endnotes and a futher reading section at its conclusion which could be helpful for higher-level math students doing research projects.

This book is only recommended for those with an advanced understanding of higher level mathematics and readers with a high degree of patience who can overlook a condescending tone and dull repetition.

Ben says

In my ongoing exploration of math history for the sake of my practice as a math teacher, I bought this book because it seemed to have a lot of information on the history of group theory which is one of my favorite topics. Basically, the book is a sort of theme-and-variations on the topic of symmetry, which is one way to look at what group theory is all about. (You could also say that group theory is one way to look at what symmetry is all about.) The chapters weave together three things: the history of the field, riffs on its connection to other areas of human endeavor (music, cryptography, biology...), and first-person narratives about the author's own experience as a mathematician/person who likes to talk about math.

Basically, I enjoyed reading the book, and it is a handy reference for me in terms of the broad outlines of the history of group theory. As somebody thinking about delving more deeply into the world of academic mathematics, it was also sort of edifying for me to read the author's discussions of his own experience in that world.

Du Sautoy is a working mathematician, so another reason I was initially attracted to the book was that I was curious to see how somebody who is deep in all the technical details of his subject but committed to rendering it for a popular audience would go about explaining things. The book is a very curious mix of fairly detailed conceptual discussion (considering its intended audience) and a fairly stringent refusal to use technical language. I am all for this in principal but it led to a certain awkwardness in the expository style. Du Sautoy must have repeated the phrase "groups of symmetries build from the rotations of prime-sided shapes" at least 4 or 5 times. As a reader with a background in group theory, the first time he said it (and there was a fairly cool explanation of what he was talking about) I thought to myself, "he means p-groups!" and then every subsequent use just rung out awkwardly from the page. This was the most extreme example, but actually a good deal of the math discussions had this quality for me: the stuff he actually took the trouble to explain was often a recognizeable fundamental concept in group theory, but he steadfastly refused to use its name. In fact, he (virtually?) never said "group" without also saying "of symmetries." Maybe this would not have struck a reader who didn't already have a relationship to group theory.

Retrospectively, the book wasn't quite what I was looking for in it. I don't have a summary judgement on it - it might be just the thing for the right reader. But I wasn't that interested in the riffs on related topics - I sort of felt I (as a member of the popular audience) was being pandered to by Du Sautoy's publisher: "Come on, you have to show them how it relates to real life!" - and while some of the personal stuff was very compelling for me, some of it felt sort of random. And as regards the history, my primary motivation for reading, I really should have got myself a book with more technical detail. I am waiting for a group theory equivalent to William Dunham's wonderful _The Calculus Gallery_: a book that's equally concerned with telling me about the meat of a mathematical result and the mathematical and human story of its birth.

Mark says

First off - be patient with me, still getting the hang of reviews on Goodreads...

I finished this book a while ago and mulled it for awhile, and just read through some of the other reviews and comments, which confirmed some of my delights and my frustrations.

Marcus du Sautoy is very good at explaining the historical and biographical background of the mathematical

field. For about the first half of this book, he managed to do this in a really compelling way by showing the gradual development of the concept of symmetry. Perhaps my favorite spot was when he talked about the 17 distinct types of tiling symmetry and went hunting for them with his son at the Alhambra.

As the timeline moved into more recent abstract approaches, the material obviously became less directly accessible to non-mathematical audiences (I am at best a punter in that realm). You can't really fault the author for that, or for starting to include less direct math once we are talking about constructions like the Monster.

I'm afraid the real irritation for me was the lackadaisical way that the author's personal story was woven into the book. It purports to be, not just his own autobiographical thread (which would be an interesting read as a memoir), but also a more focused "year in the life of" where we see him tackling a very abstruse contemporary problem in symmetry.

Presumably the structure might have been something like this: a historical view of the thread of symmetry through the larger field of mathematics, gradually converging with the story of his own research. By the end of the book, we would have been given the historical background to understand, at least in layman's terms, the nature of the problem he is working on; his own personal arc, so we see what it means to him to work on it - and there would be some sort of narrative integration of these threads at the end. But the author clearly ran out of steam, or hit a deadline, or seemingly just didn't know how to finish it. At the end I felt like I'd read a historical mystery with no denouement, where you say: "Well, at least I learned something about 18th century table manners..."

Maybe that's a bit harsh, because what I learned along the way here was really intriguing in parts. I picked the book up because I wanted a deeper look at symmetry - in my case to see ways to apply it in other fields, like music. So I did appreciate the detail. I just wish it had been tied together more effectively as an actual work of literature - which non-fiction books still must be, in my opinion.

Jose Moa says

This book explains the mathematical concept of group by means of patterns of symetry in nature,is a book about groups;the bulk of the book is the history of the theorem about the classification of simple groups, a very long theorem demosstrated by the work of docens of group specialists ,the theorem is 10000 pages long and no single person has read it fully

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Ami Iida says

Symmetry is all around us. Our eyes and minds are drawn to symmetrical objects, from the pyramid to the pentagon. Of fundamental significance to the way we interpret the world, this unique, pervasive phenomenon indicates a dynamic relationship between objects. In chemistry and physics, the concept of symmetry explains the structure of crystals or the theory of fundamental particles; in evolutionary biology, the natural world exploits symmetry in the fight for survival; and symmetry—and the breaking of it—is central to ideas in art, architecture, and music.

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