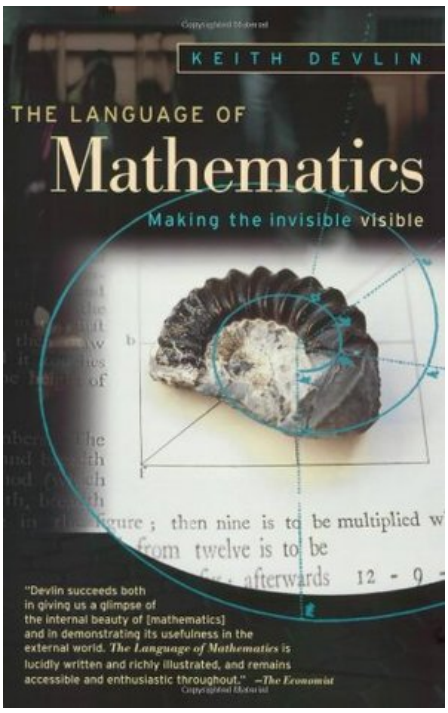

The Language of Mathematics: Making the Invisible Visible

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"The great book of nature," said Galileo, "can be read only by those who know the language in which it was written. And this language is mathematics." In *The Language of Mathematics*, award-winning author Keith Devlin reveals the vital role mathematics plays in our eternal quest to understand who we are and the world we live in. More than just the study of numbers, mathematics provides us with the eyes to recognize and describe the hidden patterns of life—patterns that exist in the physical, biological, and social worlds without, and the realm of ideas and thoughts within.

Taking the reader on a wondrous journey through the invisible universe that surrounds us—a universe made visible by mathematics—Devlin shows us what keeps a jumbo jet in the air, explains how we can see and hear a football game on TV, allows us to predict the weather, the behavior of the stock market, and the outcome of elections. Microwave ovens, telephone cables, children's toys, pacemakers, automobiles, and computers—all operate on mathematical principles. Far from a dry and esoteric subject, mathematics is a rich and living part of our culture. An exploration of an often woefully misunderstood subject, *The Language of Mathematics* celebrates the simplicity, the precision, the purity, and the elegance of mathematics.

The Language of Mathematics: Making the Invisible Visible Details

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From Reader Review The Language of Mathematics: Making the Invisible Visible for online ebook

Bryan says

I liked this book. It was pretty much just what I was looking for when I picked it up. One of the reviews says it's "the perfect book for people who have questions about math they've always wanted to ask but were afraid they wouldn't understand the answers to" and I would definitely agree with this.

One of the things I liked best about this book was how well it showed the relationship between both the different fields of mathematics, and between mathematics and other fields. It seems like these relationships tend to be glossed over during a standard education, which is a shame, since the unity behind the different disciplines is one of the more interesting aspects of mathematics.

So Hakim says

For some reason, mathematics has been thought simply as "science of numbers". Or more generally, "that certain art about dealing with numbers". This book, though, set out to give better definition.

Right off the bat the author says it. What is math? Math is, in a way, "A Science of Pattern".

> *A particular study was classified as mathematics not so much because of what was studied but because of how it was studied—that is, the methodology used. It was only within the last thirty years or so that a definition of mathematics emerged on which most mathematicians now agree: mathematics is the science of patterns. What the mathematician does is examine abstract 'patterns'—numerical patterns, patterns of shape, patterns of motion, patterns of behavior, voting patterns in a population, patterns of repeating chance events, and so on. Those patterns can be either real or imagined, visual or mental, static or dynamic, qualitative or quantitative, purely utilitarian or of little more than recreational interest.*

Indeed, if you have to read only one paragraph of this book, you may well just read that. The following chapters then clarify all kind of patterns described in math. From number theory, statistics, even the more 'everyday' things like Newtonian Physics -- there are patterns in all of them. Therefore, can be described with math.

This is popular book, so pretty much all-prose. Recommended for readers not familiar with math but want to know more.

PS:

The quote above is *really* the essence of the book. The rest is details. I have to add, however, that they are *very* delicious details. :P

Katia N says

It was wonderful probably up to the discussion of Probability Theory. After that the last few chapters felt somehow rushed through. But i enjoyed very much insights into the number theory, topology and the history of Math. Very interesting but i doubt someone totally without mathematical knowledge can fully appreciate it.

Bob Young says

I thought this was a good book but it was rather 'hit and miss' with me...probably more of issue with me than the book. The author does a fairly good job of sticking to concepts (I found his supposition that math is the study of patterns to be interesting) and shying away from equations. However, as a book on mathematics equations tend to be unavoidable and it is during the 'equation parts' of the book that I think it comes up short. With a background in engineering, I didn't have much trouble following the explanations but I'm not sure those without a reasonable math background would find it as accessible. Additionally, some of the subjects covered in the book were more interesting to me than others... but again, that's just me.

Tomi J says

The book takes the reader into a brief journey through the history of mathematics and goes through many of the important matematical methods and theories and their practical applications. Reader also gets to know a bit also about the renowned mathematicians behind them. Easily accessible low-overhead content fits perfectly just for casual reading especially if you're into mathematics but want to take a break from calculus, but still want to read something inspiring on mathematics.

Ricardo Guerreiro says

For the curious on how the world "works" but not inclined to study Physical sciences, this is a great and enjoyable read. Full of light and simplified explanations of deep and purely scientific subjects as well as daily life "for granted" themes that most of us don't even think of for a second to see what's behind, conceptually.

Rene Stein says

Kniha, jejímž hlavním rysem "nevyrovnanost". Nevyrovnanost ve zpracování témat, v obtížnosti kapitol a ve zp?sobu vedení výkladu.
Po?áte?ní kapitoly jsou napsány pom?rn? slušn?, i když výklad výrokové a predikátové logiky mi p?išel dost odfláknutý a pro nezasv?cené nep?ístupný. Problémem dalších kapitol je, že nechápu, kdo by m?l být jejich ?tená?. Pokud o problematice n?co málo víte, nedovíte se nic nového, pokud nic nevíte, pochybuju, že vám

n?kdy zbyte?n? komprimovaný výklad n?co dá. Poslední dv? kapitoly knihy jsou spíš do po?tu, aby autor mohl v rychlém sledu enumerovat odborné oblasti, kde matematika skute?n? "z neviditelného ?iní viditelné" a dostál tak na poslední chvíli podtitulu knihy.

Venkatesh-Prasad says

The book is an amazing journey through the history of mathematics that touches upon and connects discoveries and inventions in number theory, reasoning (logic), calculus, shape (geometries), position (topology), symmetry (groups), probability, and (finally) universe (atomic particles, quantum theory, etc.)

The historical view provides enough details of folks (quite of few of them we studied in school) and how they went about the inventions. The narrative connects various dots (folks and theories) across the space-time continuum.

Besides the great historical perspective and narrative, the exposition about the math is what makes the book special. If you have some training in math (say, calculus, groups, geometry, probability, and such as covered until 12th grade or Freshman year in college), then the exposition of advanced topics/concepts in focused areas is instantaneously accessible. Further, it is described in a way that one can connect the concepts to real world occurrences. In addition, the simplicity of exposition breaks down the concepts that I was constantly having "aha" moments (because either I remembered something I had learnt in 12th grade or I realized the essence of what I had learnt in 12th grade.)

IIRC, this is a book I bought 6 years ago and only got to reading it now. And, I'm glad that I read it :)

Arun Mahendrakar says

Yes, I did feel real sad after reading this book. Reason: Why weren't we taught Mathematics the way the author teaches in this book?

Author's work on making users understand Calculus is simply amazing in this book. Highly recommended for anyone who wants to be in touch with and for those who're 'afraid' of Math.

Maurizio Codogno says

Divulgare la matematica non è affatto semplice. Il problema è trovare il giusto equilibrio tra la complessità intrinseca dei temi trattati, che richiedono tutto un armamentario di notazioni e tecnicalità anche solo per essere comprese, e la famosa massima "ogni formula matematica in un libro ne dimezza le vendite". Devlin c'è riuscito in questo libro? Non troppo, direi. Non so se il guaio sia dovuto al fatto che il libro è la revisione "per non scientificamente alfabetizzati" di un volume uscito per la collana legata a Scientific American; sicuramente il problema non è nella traduzione che è buona, anche se nelle bozze sono sfuggiti un paio di errori. Però mentre ci sono capitoli oggettivamente venuti fuori molto bene, quello sulla logica e soprattutto quello sulla probabilità, la parte sui gruppi e sulla topologia sono poco comprensibili se non si sa già di che si parla... il che è ancora peggio, perché la posizione filosofica di Devlin è che la matematica è lo studio delle

strutture, e quei due capitoli dovrebbero esserne la quintessenza. Diciamo ad esempio che io avrei evitato di "spiegare" la dimostrazione dell'ultimo teorema di Fermat, perché tanto non aggiunge nulla a quella che oggi definiscono pomposamente "l'esperienza matematica"... E comunque alla fine, con la metrica di Minkovskij, le formule le ha messe :-)

Mobill76 says

Not bad - sort of an introduction to the major themes of mathematics. It has some history but it doesn't get bogged down by trying to stay chronological or include every historical detail. It sort of "whets the appetite" for studying math beyond the textbook.

It's good. It was fun. It just didn't grab me. I think I wanted more detail. I felt like it was little too popularized or "dumbed down". And yet, I didn't feel it was "sparkly" enough to appeal to students.

Entertaining but not practical for classroom use.

Alex Lee says

This is a fairly concise book. Devlin attempts to show us the construction of mathematics by its application and by demonstrating its conceptual genealogy. Of course, history of how a field grows is going to reveal its construction to us, although the language itself is at the highest level, hopelessly erudite.

Devlin's prose is concise, easy to read and yet sacrifices very little complexity for its clarity. The task he has undertaken however is a difficult one. In striving to show us applicability, Delvin allows us glimpses of what math can do for us in the daily routines of the world in which we live. Delvin doesn't strive to make a philosophical statement about math, yet it seems that he wants to posit mathematic's reality as being on par with the one in which we live. To do this would require a more concise approach, directed by principles. The chapters in this book suggest that Devlin wishes to pursue such an endeavor and yet at times, he seems unable to present us little more than examples and applications. In fact, his last chapter, about the 'Hidden Patterns of the Universe' seems to attempt to encapsulate an argument that Mathematics is as real as the universe is; although Delvin never makes this remark.

I don't have a problem with his content, or how he talks about it. I do have an issue with his organization. If anything, he seems to want to make his argument without making it; to throw at us a barrage of ideas so that we submit. Unfortunately, in his presentation of this massive amount of data, he lacks any kind of metaphysical or over arching ideal by which we can grasp that mathematics is real. Isn't it his point that inductive examples, examples by experience there may be plenty of, but a real proof is one that rationally equates two values so that their identity of relation is assured?

If we were to take mathematics as being as real as the universe, we would have to see a mathematical proof of it somehow. And so to that end, Devlin does not make this statement, although he seems to suggest it with many vague chapter titles and ruminations on how various patterns in the universe are at least explainable in mathematics. Devlin does not, however, explore that all patterns are explainable in mathematics, just that math is so applicable. Such an undertaking would be, in a sense, near impossible without a cogent understanding of exactly what a pattern is in the first place.

Still, I did enjoy reading this book, and learned a few things in the process. If you think this is an interesting topic, you may also enjoy reading this book.

Eric says

I really enjoyed this book. As a mathematician I was fairly familiar with many of the problems posed as classic milestones in mathematics achievement. It was cool to see that my undergraduate education was on the mark. He didn't over do the diagrams and they certainly added to the text.

After reading the prologue and first chapter of the book, I felt that Devlin was able to put into words many of the feeling I had about mathematics, why I found it intrinsically beautiful, and why I enjoyed doing it.

Mohammad says

A good introduction to mathematics in general, gives the big picture and explains what is mathematics all about, it's not just about numbers. It gives a good explanation to all branches of mathematics, telling its history and explaining the main theorems in every branch and how it was developed. Not a deep book but not superficial too. it's good to give the big picture to the non-Mathematicians.

Vilém Zouhar says

Probably the best book about mathematics I've read so far. I wouldn't recommend it to people advanced in maths, but rather to beginners. It covers the evolution of mathematics throughout the ages in a beautiful abstract way. Definietly a must read for someone interested in anything even remotely related to mathematics.
Some parts were incomprehensible or even tedious for me (I'm looking at you, geometry), but overall it's an amazing book.
