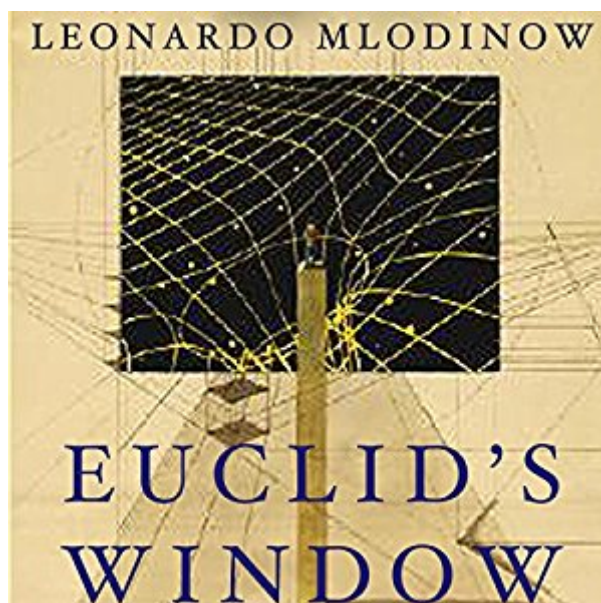# Euclid's Window: The Story Of Geometry From Parallel Lines To Hyperspace

Synopsis

Through Euclid's Window Leonard Mlodinow brilliantly and delightfully leads us on a journey through five revolutions in geometry, from the Greek concept of parallel lines to the latest notions of hyperspace. Here is an altogether new, refreshing, alternative history of math revealing how simple questions anyone might ask about space -- in the living room or in some other galaxy -- have been the hidden engine of the highest achievements in science and technology. Based on Mlodinow's extensive historical research; his studies alongside colleagues such as Richard Feynman and Kip Thorne; and interviews with leading physicists and mathematicians such as Murray Gell-Mann, Edward Witten, and Brian Greene, Euclid's Window is an extraordinary blend of rigorous, authoritative investigation and accessible, good-humored storytelling that makes a stunningly original argument asserting the primacy of geometry. For those who have looked through Euclid's Window, no space, no thing, and no time will ever be quite the same.

Book Information

Customer Reviews

Mlodinow ('M' below) writes entertainingly, as most of the other reviews here testify. It's good that the general public get a taste of the excitement of discovery/invention in these fields. He should just correct, in a subsequent edition, the serious distortions that IAS Professor Langlands (Notices of the American Mathematical Society, vol. 49, number 5, p. 554 - referred to as 'L' below) has pointed out; then the book could be a useful, reliable introduction to whet the appetite of people who might want to study the subjects in more depth. Here are a few of Langlands' criticisms:1. M's portrayals

of Proclus, Kant, Kronecker and Gauss' father are unfair caricatures. L provides evidence in their defense.2. M strives for sensationalism, not fact. E.g., M speculates that Thales traded in leather dildos. Veracity is sacrificed to effect.3. M missed the main point of Riemann's great 1854 habilitation lecture. L wrote: "I could hardly believe my eyes, but it seems [M] is persuaded that the introduction of elliptic geometry was the principal achievement of the lecture."Since M acknowledges on p.205 that Einstein's general theory of relativity was based on Riemann's work, M owes the reader much more explanation of Riemann's new ideas, expanding on his p. 207 discussion, not dismissing Riemann by saying his work "wasn't pretty."4. L criticizes M's account of Einstein's early years, saying: "...to represent Einstein as an academically narrow, misunderstood or mistreated high-school dropout is a cruel disservice to any young reader or to any educator who swallows such falsehoods."5. L concludes that M's book is "thoroughly dishonest ... simply because the author shrinks from nothing in his desperation to be readable and entertaining.

As a teacher of geometry, I always keep an eye out for books that offer coherent explanations of the importance of this most intriguing and ancient branch of mathematics. This books offers that in spades. In fact, it is one of the best basic overviews of the field I have ever come across.Mlodinow divides the history of the development of geometry into five major "revolutions." Starting first with Euclid and his Greek contemporaries, Mlodinow traces the field through Descartes and the development of analytic geometry, Gauss and the development of "non-Euclidean" geometries, Einstein and the physical application of these geometries, to Witten and the development of string theory--the attempt to understand the universe as a consequence of geometry. In high school we teach the basics of plane and analytic geometry but few people are aware of how the field has matured since then. This book takes us on that journey.And it is a wonderful one. Along the way he gives insight not only into the mathematics but also into the personalities that created it. We too often forget that it is people who created this magnificent structure and that it was not just handed down to us perfectly formed. Even more, we need to be reminded that the development continues and people are still contributing to it.The real achievement of this book, however, is its acessiblity. Despite the fact that most people will only have experience with the material from the first two sections of the book (Euclid and Descartes), Mlodinow's writing is understandable by anyone who has successfully navigated a course in high school geometry. In my view, he offers one of the most lucid explanations of Einstein's work and string theory that I have ever read. His style is engaging and very readable.

This is by and large the worst popular science book I've ever come across (and being an astronomer and translator of popular science, I've read quite a number of them). Mlodinow violates almost all rules of scientific method and conduct, and even some of rules governing the plain civility in writing. There are literally hundreds of examples of such violations, so let me mention just a few of them. Mlodinow engages in hero-worship to an unprecedented degree: he does not shy away from pronouncing Witten "the most influential physicist and mathematician in the world" (p.253), as if such a grandeloquent statement can ever be proven or even properly supported. He enjoys judging long-dead people without proper history knowledge: he finds Cantor genius and Kronecker "a crab", he outrageously states that medieval Arabs didn't contribute anything original to mathematics (perhaps he should have taken some *history* courses from Witten, who knows better for certain!) and then, a dozen or so pages later, contradicts himself by citing some important results of two Arab mathematicians; he finds geometry and calculus more cognitively important than algebra (a dubious statement and quite improper for a popular work); he censores ancient Romans for their decadent ways (while simultaneously celebrating Athenian often quite promiscuous "symposia"); he does not know that Sirius is the brightest star which can be seen from Greece; he calls Aristotle just a meteorologist (p. 56). In addition, Mlodinow heavily indulges in what serious historians call "Whiggish interpretation of history", i.e. judging of the past by its present utility.

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