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The Universe in Zero Words: The Story of Mathematics as Told through Equations

By Dana Mackenzie



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The Universe in Zero Words: The Story of Mathematics as Told through Equations By Dana Mackenzie

Most popular books about science, and even about mathematics, tiptoe around equations as if they were something to be hidden from the reader's tender eyes. Dana Mackenzie starts from the opposite premise: He celebrates equations. No history of art would be complete without pictures. Why, then, should a history of mathematics--the universal language of science--keep the masterpieces of the subject hidden behind a veil?

The Universe in Zero Words tells the history of twenty-four great and beautiful equations that have shaped mathematics, science, and society--from the elementary ($1+1=2$) to the sophisticated (the Black-Scholes formula for financial derivatives), and from the famous ($E=mc^2$) to the arcane (Hamilton's quaternion equations). Mackenzie, who has been called "a popular-science ace" by *Booklist* magazine, lucidly explains what each equation means, who discovered it (and how), and how it has affected our lives.

Illustrated in color throughout, the book tells the human and often-surprising stories behind the invention or discovery of the equations, from how a bad cigar changed the course of quantum mechanics to why whales (if they could communicate with us) would teach us a totally different concept of geometry. At the same time, the book shows why these equations have something timeless to say about the universe, and how they do it with an economy (zero words) that no other form of human expression can match.

The Universe in Zero Words is the ultimate introduction and guide to equations that have changed the world.



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The Universe in Zero Words: The Story of Mathematics as Told through Equations

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Editorial Review

Review

Dana Mackenzie, Winner of the 2012 Joint Policy Board for Mathematics Communications Award

"Quietly learned and beautifully illustrated, Mackenzie's book is a celebration of the succinct and the singular in human expression."--*Nature*

"The equations Mackenzie exhibits in this wonderful book represent 24 of the most profound discoveries in the history of Mathematics. . . . Mackenzie's writing is understated and clear. The complex ideas he explains so lucidly are beautiful in themselves, but this book is physically beautiful too, imaginatively illustrated and stylishly designed to complement its subject."--*Irish Times*

"[M]ackenzie provides interesting insights regarding the equations, such as relating whale communications to a model of a non-Euclidean geometry or the role of cigar smoke in the quantization of angular momentum of quantum particles. . . . The book is an enjoyable read."--*Choice*

"This well-designed and accessible book will delight and inform the student, mathematician or historian in your life and it may also help you rediscover your forbidden love for mathematics."--**Devorah Bennu, GrllScientist**

"With a book that is both short and very easy to read, Mackenzie manages to introduce a very wide scope of ideas, and to produce a condensate of the history of mathematics that is at the same time enlightening and engaging. He succeeds in discussing highly advanced science while remaining very comprehensible, and in popularizing mathematics and physics while also giving food for thought to the specialist. His *Universe in Zero Words* will therefore seduce any scientist, but also anyone with some curiosity and desire to get more familiar with the history of human thinking and knowledge."--**Jean-Baptiste Gramain, London Mathematical Society Newsletter**

"[V]ery absorbing reading. . . . Two hundred pages, twenty-four equations, one endearing and well told story. I wholeheartedly recommend the book."--**Alexander Bogomolny, CTK Insights**

"A fascinating and informative look behind the equations."--**Lucy Sussex, Sydney Morning Herald**

"[The book] reads well and quick: I took it with me in the metro one morning and was half-way through it the same evening, as *The Universe in Zero Words* remains on the light side, especially for readers with a high school training in math. . . . *The Universe in Zero Words* makes for an easy and pleasant read, as well as a wonderful gift for mathematically inclined teenagers."--*Chance Magazine*

"MacKenzie has the knack of getting and keeping your attention, and writes with fluency and wit, and he is a good story-teller."--**Anthony G. O'Farrell, Irish Mathematical Society Bulletin**

"[This] is brilliantly written, and this reviewer who has taught historical aspects of mathematics for a number of years enjoyed the book and learned some details that were unfamiliar. The author possesses a wonderful skill in presenting technical material to those without the facility to understand the mathematics. . . . In summary, a refreshing look at highlights from the History of Mathematics and a welcome addition to the

literature, written in a very accessible style."--**Phil Dyke, *Leonardo Reviews***

"Mackenzie has written an accessible account of mathematical equations through the ages, giving strong insights in a historical context and with a wider interpretation that does justice to the title."--**Wallace A Ferguson, *Mathematics Today***

"The book is written in a very transparent and elegant manner; it is both enjoyable and informative reading. The reader will absolutely love exciting historical facts and excellent illustrations, diagrams, pictures carefully selected by the author. The volume concludes with a useful bibliography and a helpful index. A very entertaining text that appeals not only to mathematics enthusiasts, but also to a wide audience with a quite limited mathematical background."--**Yuri V. Rogovchenko, *Zentralblatt MATH***

From the Back Cover

"Demanding very little prior mathematical knowledge, this is one of the best popular histories of mathematics in recent years. Dana Mackenzie's prose is lively and easy to read, and his mix of historical background and personal biographies of the main characters is engaging."--**Eli Maor, author of *The Pythagorean Theorem: A 4,000-Year History* and *e: The Story of a Number***

"Dana Mackenzie is a very good writer. I was constantly amazed at his ability to describe complicated mathematics in a few sentences in a way that the average reader--not the average mathematician or the average math major, but the average reader--can understand. This is a very entertaining book."--**David S. Richeson, author of *Euler's Gem: The Polyhedron Formula and the Birth of Topology***

"[A] terrific book. . . . [A] brilliant history of mathematics as told through equations."--**Dick Lipton, Professor of Computer Science at Georgia Tech**

About the Author

Dana Mackenzie is a frequent contributor to "Science," "Discover," and "New Scientist," and writes the biennial series "What's Happening in the Mathematical Sciences" for the American Mathematical Society. In 2012, he received the prestigious Communications Award from the Joint Policy Board for Mathematics. He has a PhD in mathematics from Princeton and was a mathematics professor for thirteen years before becoming a full-time writer.

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