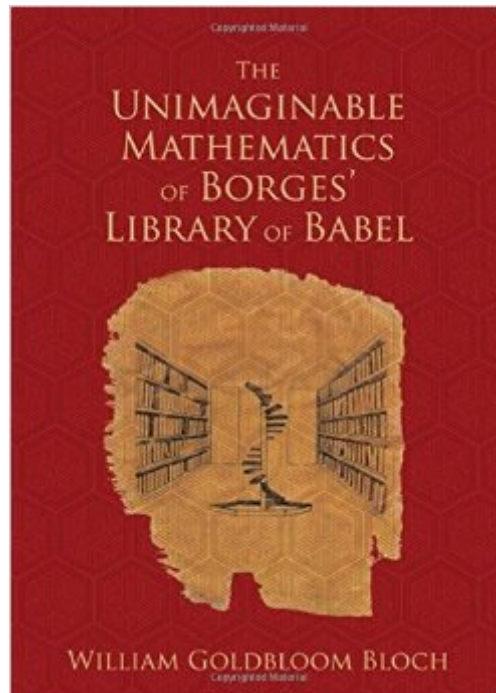# The Unimaginable Mathematics Of Borges' Library Of Babel

Synopsis

"The Library of Babel" is arguably Jorge Luis Borges' best known story--memorialized along with Borges on an Argentine postage stamp. Now, in The Unimaginable Mathematics of Borges' Library of Babel, William Goldbloom Bloch takes readers on a fascinating tour of the mathematical ideas hidden within one of the classic works of modern literature. Written in the vein of Douglas R. Hofstadter's Pulitzer Prize-winning GÃ¶del, Escher, Bach, this original and imaginative book sheds light on one of Borges' most complex, richly layered works. Bloch begins each chapter with a mathematical idea--combinatorics, topology, geometry, information theory--followed by examples and illustrations that put flesh on the theoretical bones. In this way, he provides many fascinating insights into Borges' Library. He explains, for instance, a straightforward way to calculate how many books are in the Library--an easily notated but literally unimaginable number--and also shows that, if each book were the size of a grain of sand, the entire universe could only hold a fraction of the books in the Library. Indeed, if each book were the size of a proton, our universe would still not be big enough to hold anywhere near all the books. Given Borges' well-known affection for mathematics, this exploration of the story through the eyes of a humanistic mathematician makes a unique and important contribution to the body of Borgesian criticism. Bloch not only illuminates one of the great short stories of modern literature but also exposes the reader--including those more inclined to the literary world--to many intriguing and entrancing mathematical ideas.

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Customer Reviews

Of all the short stories in Argentinian writer Jorge Luis Borges' masterpiece collection FICCIONES, "The Library of Babel" is one of the most peculiar. This weary narration by an aged caretaker of a library of seemingly infinite expanse involves several exotic mathematical principles, yet ones fairly easily graspable by the layman. The mathematician Bloch has written a fine book about all the thought-provoking concepts in Borges' story.The complete text of "The Library of Babel" is included here, so if you like the intersection of maths and literature, you have all you need here to explore Borges' vision. Still, I'd recommend neophytes read this story first in FICCIONES, as there you'll also find some other enjoyable and influential short stories.Each chapter discusses the relevant concepts in accessible prose, followed by a "Math Aftermath" for those who want to see rigorous figures and calculations. First we have combinatorics, namely how to calculate the number of possible books in the library. Bloch A remarkable conclusion is drawn, perhaps unrealized by Borges himself. If the library contained every possible book, even if only a single copy of each, then its contents would still be exponentially too large to fit in our universe. The second chapter concerns information theory, namely the (im)possibility of creating a catalogue for the Library.In Chapter 3, Bloch discusses real analysis, with the springboard being Borges' footnote that instead of an infinite library, one could conceive of a single book of infinitely thin pages. A trip through non-standard analysis reveals a complication that Borges evidently didn't realize.The fourth chapter discusses topology.

While Galilo may well have been right when he said that "the book of nature is written in mathematics" author/mathematician William Goldbloom Bloch has added an important caveat:"(T)he more precise the transmission of an idea, the more opaque the language." from page 105 of the Unimaginable Mathematics of Borges' Library of Babel.For those unfamiliar with either Jorge Luis Borges' 1941 story Library of Babel or mathematics the language of this book can be very opaque indeed.Probably the best way to begin is with the short story itself. In 1941 Jorge Luis Borges wrote a story called Library of Babel. This story was later republished in both his 1944 Ficciones and also in an English language translation from 1964 called Labyrinths. The story is also reprinted in this book. In the main the story talks of the librarians who work a great library of babel which spans the entire universe and is made up hexagonal rooms wherein all possible books (according to Borges) are stored. These books feature all possible letter combinations including books consisting of every possible letter combination from a...a to z...z. In a concluding footnote Borges imagines that a book of infinitely thin pages could also accomodate the storage of the same information.For someone who wasn't a mathematician the story certainly raised a lot mathemtical

issues, albeit perhaps inadvertantly. It's Bloch's obvious function in writing this book to follow those main implications from the Borges story which most fascinate Bloch and in so doing provides Bloch's best estimate as to what mathematics would say as to the resolution of any issues raised by the nonmathematician Borges.

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