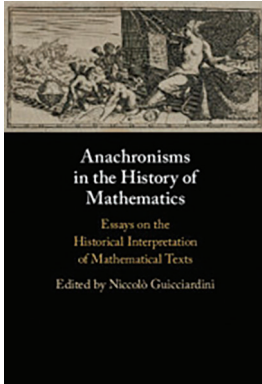




BOOKSHELF

New and Noteworthy Titles on our Bookshelf
November 2022

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Anachronisms in the History of Mathematics: *Essays on the Historical Interpretations of Mathematical Texts*
Edited by Niccolò Guicciardini

We're likely all familiar with the word "anachronism" referring to something that is not in its correct historical period. From a historical standpoint, "anachronism" can also refer to instances in which work has been mistranslated or incorrectly evaluated.

One such instance occurred in 1906 when Roberto Bonola wrote a book which characterized Nikolai Lobachevskii's and János Bolyai's work as traditional elementary geometry. Bonola failed to recognize that their work was revolutionary in its time and overlooked Lobachevskii's discovery of formulae associated with hyperbolic trigonometry. Bonola's book devalued the work of Lobachevskii and Bolyai, along with that of other early contributors to non-Euclidean geometry, such as Gauss. Consequently, from Bonola's perspective, Riemann's contributions to the field appeared even more revolutionary than they were. *Anachronisms in the History of Mathematics* is a collection of case studies like this one, each of which discusses an instance where historical mathematics has been misrepresented.

Another type of anachronism can occur when concepts in modern mathematics are incorrectly attributed to historical figures. This idea is explored with respect to Euler's work on infinite series, particularly the series $1 - 1 + 1 - 1 + \dots$ which Euler thought of as $\frac{1}{(1-x)} = 1 + x + x^2 + x^3 + \dots$ where $x = -1$. This representation led him to conclude that $1 - 1 + 1 - 1 + \dots$ was equal to $\frac{1}{2}$. Using the rigorous methods developed by Cauchy, a Calculus II student would be able to explain why this series is divergent. However, in the late nineteenth century, as Cesàro (and later Hardy) developed summability theory to provide methods for finding the sum of divergent series, Euler's work on divergent series would

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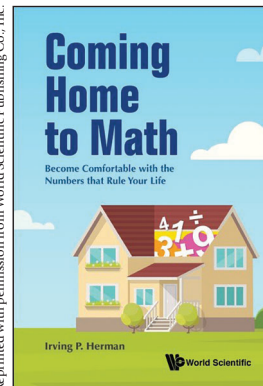
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be recalled. According to Hardy, Euler was a mathematician ahead of his time and his work was the inspiration behind some techniques in summability theory. The author of this chapter cautions this line of thought, arguing that it is an anachronism to say that Euler laid the groundwork for summability theory, since this ascribes insights and beliefs to Euler that he did not actually hold.

These and other anachronisms, both within and outside of Europe, are considered in this collection. Mathematicians without historical training may find this a challenging read that is well worth the effort! Historians (and certainly historian of mathematics) will find this an interesting and thought-provoking book.

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Coming Home to Math: *Become Comfortable with the Numbers that Rule Your Life*

by Irving P. Herman

A concern (and, if I'm being honest, frustration) of mine is how many people openly admit to hating or being terrible at math and how socially acceptable it is to proclaim those feelings. My guess is that many of us share that concern and, like me, are trying to find ways to combat these feelings

and the culture they promote. *Coming Home to Math* is written for just this purpose and would make a great gift for any math-phobic people in your life who want to overcome their fears of math.

The book starts with a description of arithmetic operations and builds up from there. It has chapters dedicated to exponential growth and decay, probability, statistics, and optimization. Within these chapters topics such as compound interest, mortgages and annuities, the normal distribution, ranking and voting systems, and financial investments are discussed. An interested reader can skip around the book and focus on the topics that interest them most or read it from cover-to-cover. This is a friendly and unthreatening book that works to empower individuals to feel comfortable working with numbers, thinking about what they mean, and hopefully, remove the phrase "I'm not good at math" from their lives.