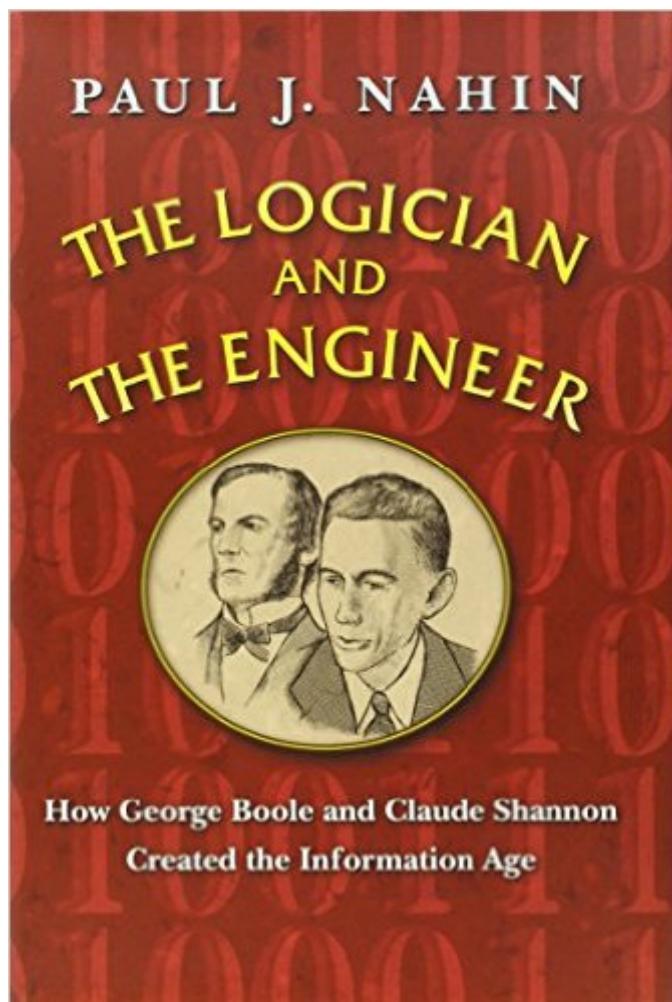


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# The Logician And The Engineer: How George Boole And Claude Shannon Created The Information Age



## Synopsis

Boolean algebra, also called Boolean logic, is at the heart of the electronic circuitry in everything we use--from our computers and cars, to our kitchen gadgets and home appliances. How did a system of mathematics established in the Victorian era become the basis for such incredible technological achievements a century later? In *The Logician and the Engineer*, best-selling popular math writer Paul Nahin combines engaging problems and a colorful historical narrative to tell the remarkable story of how two men in different eras--mathematician and philosopher George Boole (1815-1864) and electrical engineer and pioneering information theorist Claude Shannon (1916-2001)--advanced Boolean logic and became founding fathers of the electronic communications age. Presenting the dual biographies of Boole and Shannon, Nahin examines the history of Boole's innovative ideas, and considers how they led to Shannon's groundbreaking work on electrical relay circuits and information theory. Along the way, Nahin presents logic problems for readers to solve and talks about the contributions of such key players as Georg Cantor, Tibor Rado, and Marvin Minsky--as well as the crucial role of Alan Turing's "Turing machine"--in the development of mathematical logic and data transmission. Nahin takes readers from fundamental concepts to a deeper and more sophisticated understanding of how a modern digital machine such as the computer is constructed. Nahin also delves into the newest ideas in quantum mechanics and thermodynamics in order to explore computing's possible limitations in the twenty-first century and beyond. *The Logician and the Engineer* shows how a form of mathematical logic and the innovations of two men paved the way for the digital technology of the modern world.

## Book Information

Hardcover: 248 pages

Publisher: Princeton University Press (October 28, 2012)

Language: English

ISBN-10: 0691151008

ISBN-13: 978-0691151007

Product Dimensions: 6.4 x 0.9 x 9.3 inches

Shipping Weight: 1.2 pounds (View shipping rates and policies)

Average Customer Review: 3.8 out of 5 starsÂ See all reviewsÂ (15 customer reviews)

Best Sellers Rank: #160,826 in Books (See Top 100 in Books) #38 inÂ Books > Biographies & Memoirs > Professionals & Academics > Computers & Technology #61 inÂ Books > Computers & Technology > History & Culture > History #160 inÂ Books > Science & Math > Mathematics >

## Customer Reviews

I found this book interesting and easy to read. It is written in a sort of drive by, essay style. There are many noteworthy (but sort of random) facts I did not know in this book. I checked it out of my local library, and I enjoyed reading it, but I was not looking for anything other than entertainment (infotainment?). I would not own it, however, because it warrants only one reading. It does not present anything in enough detail to justify buying it. It does not really live up to its title, either, but is more of a smattering of tidbits, facts, and reminiscences than a focused treatise on the 'creation of the information age' as it purports to be. Never mind that it is not a biography by any stretch. Still, I think the book would be fun (if you hang out with mathematicians, engineers, or programmers) as a conversation starter, or a list of topics to discuss. It is definitely entertaining, but probably not so much to non-techies. Should you trust a book about logic when itself contains muddled reasoning? I found one section of this book where the author apparently did not read what he wrote. In section 8.1 p 139 ff the author is explaining 'states' with the classic example problem of the two adults and two children on one side of a river, with a boat that holds only one adult or two children, the problem being how to get everyone over to the other side when anyone can row. Fair enough, he shows 10 'states' where everyone ends up safely on the other side of the river.

Paul Nahin's book, "The Logician and the Engineer," is deficient in several ways. Its first deficiency is that Nahin has relatively little to say about the putative subjects of his book, filling in with a congeries of topics of interest to himself. In spite of the book's sub-title -- "How George Boole and Claude Shannon Created the Information Age" -- Boole and Shannon are minor actors in this book. Of its more than 220 pages, one 24-page chapter provides brief biographies of Boole and Shannon, and another chapter of the same length discusses Boolean algebra. The bulk of the book, however, is given over to digital circuit-design, probability, Turing machines, logic puzzles, and speculations about future computers. The reader gets a warning of strange things to come in Chapter 1, entitled "What You Need to Know to Read This Book." The chapter focuses heavily, and weirdly, on potentiometers, ending with a demonstration of the parabolic shape of the resistance-function of two ganged potentiometers. Oddly for an electrical engineer, Nahin states that the term "rheostat" is "a rather old-fashioned word" for a potentiometer. Potentiometers and rheostats are actually quite different devices. Although both are three-terminal variable resistors, a potentiometer is a voltage-divider that uses all three terminals, whereas a rheostat uses two terminals (the slider and

one other terminal) to control current by connecting a variable resistance in series with the load. A second deficiency of this book is its pervasive carelessness.

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