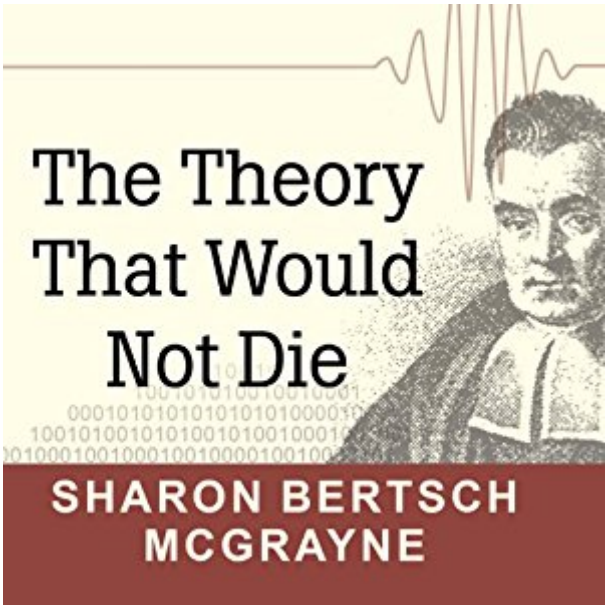
The Theory That Would Not Die: How Bayes' Rule Cracked The Enigma Code, Hunted Down Russian Submarines, And Emerged Triumphant From Two Centuries Of Controversy



Synopsis

Bayes' rule appears to be a straightforward, one-line theorem: by updating our initial beliefs with objective new information, we get a new and improved belief. To its adherents, it is an elegant statement about learning from experience. To its opponents, it is subjectivity run amok. In the first-ever account of Bayes' rule for general readers and listeners, Sharon Bertsch McGrayne explores this controversial theorem and the human obsessions surrounding it. She traces its discovery by an amateur mathematician in the 1740s through its development into roughly its modern form by French scientist Pierre Simon Laplace. She reveals why respected statisticians rendered it professionally taboo for 150 years - at the same time that practitioners relied on it to solve crises involving great uncertainty and scanty information, even breaking Germany's Enigma code during World War II, and explains how the advent of off-the-shelf computer technology in the 1980s proved to be a game-changer. Today, Bayes' rule is used everywhere from DNA decoding to Homeland Security. Drawing on primary source material and interviews with statisticians and other scientists, The Theory That Would Not Die is the riveting account of how a seemingly simple theorem ignited one of the greatest controversies of all time.

Book Information

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Customer Reviews

"The Theory That Would Not Die" is an enjoyable account of the history of Bayesian statistics from Thomas Bayes's first idea to the ultimate (near-)triumph of Bayesian methods in modern statistics. As a statistically-oriented researcher and avowed Bayesian myself, I found that the book fills in

details about the personalities, battles, and tempestuous history of the concepts.If you are generally familiar with the concept of Bayes' rule and the fundamental technical debate with frequentist theory, then I can wholeheartedly recommend the book because it will deepen your understanding of the history. The main limitation occurs if you are *not* familiar with the statistical side of the debate but are a general popular science reader: the book refers obliquely to the fundamental problems but does not delve into enough technical depth to communicate the central elements of the debate.I think McGrayne should have used a chapter very early in the book to illustrate the technical difference between the two theories -- not in terms of mathematics or detailed equations, but in terms of a practical question that would show how the Bayesian approach can answer questions that traditional statistics cannot. In many cases in McGrayne's book, we find assertions that the Bayesian methods yielded better answers in one situation or another, but the underlying intuition about *why* or *how* is missing. The Bayesian literature is full of such examples that could be easily explained.A good example occurs on p. 1 of ET Jaynes's Probability Theory: I observe someone climbing out a window in the middle of the night carrying a bag over the shoulder and running away. Question: is it likely that this person is a burgler? A traditional statistical analysis can give no answer, because no hypothesis can be rejected with observation of only one case. A Bayesian analysis, however, can use prior information (e.g., the prior knowledge that people rarely climb out wndows in the middle of the night) to yield both a technically correct answer and one that obviously is in better, common-sense alignment with the kinds of judgments we all make.If the present book included a bit more detail to show exactly how this occurs and why the difference arises, I think it would be substantially more powerful for a general audience.In conclusion: a good and entertaining book, although if you know nothing about the underlying debate, it may leave you wishing for more detail and concrete examples. If you already understand the technical side in some depth and can fill in the missing detail, then it will be purely enjoyable and you will learn much about the back history of the competing approaches to statistics.

Frustrating in its lack of depth. I understand that the author of a popular science book will tend to avoid formulas and mathematical detail. But good books manage to enlighten the issue at hand. This one does not. All we read are biographies and discussions of a situation where "Bayesian" math was used, but we never get much insight into the math itself. The technical appendix that was added in response to the criticisms is very good at explaining the intuition of the applciations. One wishes there had been much more of this in the text.

I am, or was before I retired, a Bayesian doing risk analysis in an business setting. I knew something of the history of the conflict between frequentists and Bayesians--and had papers rejected by the former, for no other reason than that conflict. So, I came to this book hoping to find an underlying reason for the conflict, something with some degree of profoundness. I found none.The book bounces between a 20,000' wordy view of statistics and probability and a description of the irrelevant personal quirks of the protagonists. If I didn't know what tools a Bayesian used, and how, before reading this book, I'd certainly not know after reading it. Sure, there are episode after episode relating Bayesian successes, but little insight on how they came about. And sometimes one wonders if it's a Bayesian story at all. Take, for instance a nuclear weapon lost off the coast of Spain. The Bayesian on the job decided to look where a fisherman said he saw it land--viola! I guess if you ask a stocker in the market which row the canned peas are on, and you look there and find them, then you're a successful Bayesian!I wish I could recommend an alternative, but I'm at a loss. Sorry.

This was the first non-fictional book that really made me want to cry.I started reading a book about the history of Statistical Science, but I ended up with an impression that I just read an epic war and its heroes. People that, against all odds, stood for what they believe, because they saw further than their peers, that were still groping in the darkness of uncertainty. People with human aspirations and dilemas, like Alan Turing, who was murdered by British government and only recently has been acknowledged by his paramount deeds. ([...])The author lays out an interesting narrative around the development and acceptance of Bayes' theorem, since its conception by Bayes and the contributions brought by Price, and later by Laplace (who was really endowed with a Da Vinci intellect). The theory dies and then revives several times and then, suddenly, a war breaks out inside Statistical Science: Fischer against Pearson and Neyman and everybody against Bayes: a 3-party war that, to my knowledge, has not ended until today.([...])Against all odds, Bayes theorem emerges as valid tool for modern applications. The author mention many ground breaking innovations sponsored by Bayes, and cites many important current contributors to the widespread use of Bayes (Dennis Lindley, HERO!; Amos Tversky & Daniel Kanehman, Nobel in Economics in 2002; Judea Pearl, ACM Alan Turing Prize in 2012; and many others).Perk: if you are willing to spend 30 minutes to see a very funny comparison between Bayesian vs Frequentist approach, check out this class in Coursera (created by Dr. Mine ÃƒÂ‡etinkaya-Rundel for Data Analysis and Statistical Inference open course). You might be required to create a login: [...].

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