

BOOK REVIEW

Willful Ignorance: The Mismeasure of Uncertainty

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ABSTRACT

Willful Ignorance constitutes an easy to read book about the problem of uncertainty and the mathematical probabilities, its measure. The author chooses a historical approach as a mean of illustrating the challenges that scientists face when dealing with uncertainty. Situations like context dependent information, generalization or substitution of qualitative information with quantitative information in fields like social sciences and biomedical sciences are just some of the problems that may not be so well quantified by mathematical probabilities. The book is a welcomed reiteration of the challenges posed by uncertainty, which also proposes a solution for reconciling them.

Keywords: *Chance, Mathematical Probability, Probability, Qualitative Research, Quantitative Research, Statistics, Uncertainty*

Willfull Ignorance: The Mismeasure of Uncertainty

Herbert I. Weisberg

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About the author: Herbert Weisberg is a Columbia University graduate with a PhD in Statistics from Harvard. He made his career as a statistical consultant. He is also the author of the 2010 PROSE Award from the American Publishers Association for the best book related to mathematics, for his book "Bias and Causation: Models and Judgment for Valid Comparisons".

"Willful Ignorance" is published in a period of great distress in the science world. Every day we are faced with the problem of unreliable research. The most troubling aspect

from our daily research is the replication matter. Replication is, as we know it, one of the cornerstones of science, and it is here where the mathematical tools of probability are mostly used. The most affected areas by these somewhat untrustworthy studies are those of biomedical and social sciences. Economics is among them, and it is here where a large body of specialists tries to find a better way of understanding and managing uncertainty. In the last two centuries we have witnessed the birth of new economics schools of thought starting from the idea that we deal with imperfect knowledge, a large amount of complex and interconnected factors, that contribute to economic decision, and not so rational behaviors. Therefore a reiteration of the notion of uncertainty and its means of measure is a welcomed step in order to improve the tools economists' use.

The book is divided into twelve chapters. The first two chapters cover the dilemmas on which the author stumbled during his career as a statistical consultant. Questions like: “what is the true meaning of probability”, “should probability be construed as essentially subjective or objective”, “what does uncertainty really encompass”, “what exactly are we measuring when we measure probability” are the focus of these two chapters. In order to find a better answer to these challenging inquiries Herbert Weisberg embarks on a journey back in history to unveil the deeper meaning of probability.

In chapters three to seven the author goes through a timeline historical events, on which he pinned every important contributor to the evolution of modern probability. From the correspondence on problem of the points between Blaise Pascal and Pierre de Fermat to “The Propensity Interpretation of Probability” by Karl Popper, the author tells the story of probability and what were the problem’s dimensions during every period.

The focus changes in the following three chapters which cover how probability was interpreted over time, the author’s suggestion of how can we have a clearer view of the probability, how modern statistical methodology has evolved and what it does for research, and how, sometimes, the mathematical probability limits our way of thinking about uncertainty.

Lastly, chapter twelve comes with a solution proposed by the author on how to reconcile the statistical methodology with the challenges of the new data rich environment. The solution constitutes an element of novelty in the field by the type of equilibrium implied between quantitative and qualitative approaches.

Although this is a book about probability, the readers will find the information easy to digest, the non-technical manner of presentation contributing to a very welcomed increase in the level of popular conversation in this area. The author creates a nice graphical timeline, in which every important progressing step in the development of the theory of probability that we have today is well described and makes a memorable impression. The information

is speckled with inspiring quotes of reputed mathematicians, philosophers, and the book has a large bibliographical reference for those interested in getting a more profound knowledge on the subject.

The problem of uncertainty and its mathematical measure, probability, is one of great importance for many domains. The term used by the author, willful ignorance, captures a variety of aspects encoded in the historical issues of probability analyses. Willful ignorance is used by the author to capture the generalization that probabilities impose. In domains like medicine and social sciences, treating the individual as an indistinguishable object, in order to reach generalization, can raise a big problem if you come to think about how much of the relevant differences among individuals each of us are ignoring. Also the substitution of qualitative information with quantitative information is another aspect that the author wants to underline by willful ignorance. Not taking into consideration the context of an observed phenomena or considering it only mildly important can also be attributed to willful ignorance. In this respect, behavioral economics has a better grasp on the matter of context with the help of specialists from psychology, neuroscience and sociology enhancing the classical economic view. Throughout the book, the phrase willful ignorance is explained with the help of many examples in order to help the reader understand the many facets of probability analyses.

By being a historical approach on uncertainty, the book lacks the novelty, but it makes up for it by emphasizing on the less known or maybe entirely forgotten implications of the atemporal conundrum called uncertainty.

Given the fact that our society benefits today from advanced technologies and a large amount of data available, we have to better calibrate our tools for assessing probabilities. In order to do that, the first step is to try to get to the root of the problem that lays in uncertainty. In my personal opinion, the first thing to do when you embark on a research journey is to correctly identify the right question that will drive your research. In this respect, “Willful

Ignorance” comes to help those who are faced with the problem of measuring uncertainty by reminding them the important questions that the scientists have already confronted on this topic during the analyzed period (from 1654 until 1959).

Throughout the book, the author succeeds in underlining the importance of understanding ambiguity and doubtfulness, parts that are contained under the general term of uncertainty. He also successfully puts an emphasis on the fact that people should be using not only statistical tools, but also logical reasoning and intuition in their analysis of probabilities.

A better comprehension of the two systems of the brain, the first one being fast, automatic, subconscious, based on intuition, and the second one logical, calculating, conscious, is needed in order to find new and improved ways of using the modern statistical tools. On the whole the book offers a broader view of the problems entailed by probabilities. It also places intuition on the same level with the mathematical skills, emphasizing on the need to thoroughly train the researchers not only on the mathematics but also on using insight and creativity.

Catalina-Matilda Baboschi is MA student in Behavioral Economics at the University of Bucharest. She received her B.S from Bucharest University of Economic Studies. After a short career in the banking sector, she returned to school in order to improve her knowledge in the economic field.