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Some remarks on my two books "Statistics in the research process" (*Statistik im Forschungsprozess*, 2011) and "The power of data" (*Die Macht der Daten*, 2013)

The main topic of the first book is the elaboration of the basic "circle of research" and the role of statistics in it. In this book, I conceive scientific work as moving from theory to practice and back again. In other words, on the one hand, there are general ideas, concepts, rules, patterns, laws of nature etc., while, on the other hand, there are experiments, observations, applications, facts, or, quite simply, data. Since the latter reflect reality, they are crucial and the whole endeavour is based on them. Thus, in the circle of research, I placed them at the bottom, and put theory at the top.

These two tiers are connected in two ways: One may proceed "top down", i.e., from the general to the specific, which is typically called the method of deduction. Conversely, there is the "bottom up" way, i.e., induction. Although, ever since Hume, philosophy has had a hard time with inductive methods, I concur with Broad's famous words that induction is the glory of science and the scandal of philosophy. In particular, I spent much time explaining why statistics and contemporary information science has much to say about generalizing data. It turns out that the conundrum of induction lies at the heart of statistics, and the concepts of information and invariance seem to be crucial contributions towards a solution. As a matter of fact, "induction, information and invariance" was the original title of this work, accepted as my *Habilitation* dissertation at the University of Trier in 2009. (A *Habilitation* is similar to a Ph.D., for details see https://en.m.wikipedia.org/wiki/Habilitation.)

The second book is a sequel, written for the general public. Its emphasis is on substantiated knowledge, i.e., the results of the research process. So, in a sense, the first book is on the dynamics of systematic knowledge acquisition (scientific research), and the second on the body of knowledge thus created and accrued. I chose the "pyramid of knowledge" as this book's core concept, since there is an obvious hierarchy: The foundation of the pyramid is data, also being the main topic of information technology / computer science. The next logical tier is formed by statistics, the art and science of gathering and analyzing data. Then come the sciences with their theories – combining abstract ideas and concrete empirical facts in an elegant way. Finally one reaches the uppermost tier – the philosophy of science - summarizing all lines of investigation into a comprehensive modern worldview.

Consistently, this book consists of four chapters: The chapter on statistics mainly deals with intelligent data analysis, and criticizes "mindless statistics" as well as the abuse of statistics. The chapter on the information sciences focuses on a reasonable flow of information in science but also in society. Written before Mr. Snowden's disclosures, I updated my thoughts in the file "on spies and privacy" to be found on this website. What is needed is a Magna Carta, a bill of rights for the web (Tim Berners-Lee). The third chapter is about the theoretical side of knowledge. Written towards the end of the Global Economic Crisis of 2010, I focused on economics and slipped in an original essay on shrinking economies and unscrupulous monetary policy. The last chapter on philosophy pleads for an overall enlightened worldview, i.e., a philosophy thoroughly based on the results of science and indebted to rational thinking.

I think it is an irony turning into tragedy that, although we owe much of our lives (and life expectancies) to the sciences and the powerful technologies accompanying them, it seems to be a major part of the Zeitgeist to ridicule them and to honour outdated traditions instead. To counter this general tendency, I defended the down-to-earth ideas of the Vienna Circle and included a section on "empirical ethics", treating this field in a rather unconventional "bottom up" way. In order to (finally) "cross the river of myths" I would also like to recommend Hans Rosling's excellent website (www.gapminder.org).

All in all, I think that we should not take modern achievements for granted. There is no law of nature preventing retrograde steps. I am deeply concerned that, at the very least, ideologies in all their various guises are on the rise. Without proper education and sufficient support, the sciences will fade, rational thinking will be endangered and institutions will fall apart.