THE EPISTEMOLOGY OF INDICATIVE CONDITIONALS

Conditionals are sentences of the form "If A, then B," and they play a central role in scientific, logical, and everyday reasoning. They have been in the philosophical limelight for centuries, and more recently, they have also been receiving attention from psychologists, linguists, and computer scientists. In spite of this, many key questions concerning conditionals remain unanswered. While most of the work on conditionals has addressed semantical questions – questions about the truth conditions of conditionals – this book focusses on the main epistemological questions that conditionals give rise to, such as: What are the probabilities of conditionals? When is a conditional acceptable or assertable? What do we learn when we receive new conditional information? In answering these questions, this book combines the formal tools of logic and probability theory with the experimental approach of cognitive psychology. It will be of interest to students and researchers in logic, epistemology, and the psychology of reasoning.

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THE EPISTEMOLOGY OF INDICATIVE CONDITIONALS

Formal and Empirical Approaches

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Preface and Acknowledgments

The importance of the role that conditionals play in both everyday and scientific discourse and reasoning is hard to overestimate. Perhaps it is no surprise then that for quite some time, conditionals have been a central area of investigation not only in philosophy, but also in linguistics and psychology, and to some extent in computer science. What is surprising, however, is that despite the considerable expenditure of time and effort of many researchers from those fields, there is still little that one can say about conditionals that is not highly controversial. Even with regard to the most fundamental questions concerning conditionals, there is very little unanimity to be found. Those who have ever proposed a semantics of conditionals can consider themselves fortunate if the proposal won the approval of at least one colleague.

This book focusses on the distinctively epistemological questions that conditionals raise, such as questions concerning their acceptability conditions and probabilities. There is hardly more consensus on these epistemological questions than there is on the semantics of conditionals. And insofar as there *is* consensus, it is based on questionable assumptions. In this book, I aim to develop at least an outline of the epistemology of conditionals. I do so by relying on the combined use of formal and empirical methods.

While the use of formal and empirical methods in philosophy is viewed much more favorably now than it was when I was a graduate student twenty years ago – formal methods were then associated with logical empiricism, which was generally regarded as a deeply misguided research program, and empirical methods were considered to be perfectly fine, but just not as having a place in philosophy – I have in the course of working on this book met with considerable skepticism from friends and colleagues (some to be named in the following paragraphs) about the methodology of experimental psychology (which basically comprises the empirical methods I have relied on). The main complaint was invariably that this

methodology fails to produce robust results: "Ask people a question in one way, and they'll give you one answer; ask the same question in a slightly different way, and you'll get a different answer."[1]

Probably the only real antidote to such worries is to engage in empirical research with experimental psychologists, who tend to operate in a much more careful and sophisticated manner than my skeptical friends and colleagues seem to suppose. The psychologists I have come to know and have worked with are all keenly aware of the possible sensitivity of their results to the way or ways these results have been elicited. Psychologists have devised refined methods for controlling for such sensitivity and for checking whether there are any artifacts in their data. Perhaps nothing is beyond *skeptical* doubt, but it is my firm conviction that many of the experimental results to be discussed in this book, on which the cogency of the conclusions to be reached will partly depend, are no more susceptible to *empirical* doubt than are the results from any experimental research.

Every day I benefit from what my teachers Jaap van Brakel and Dirk van Dalen taught me when I was a student at Utrecht University, and later at the University of Leuven. Dirk van Dalen introduced me to the use of formal methods, while Jaap van Brakel cautioned me against overenthusiastically using those methods for their own sake. I owe an equally great debt in this respect to Jos Uffink for many tutorials on Bayesian epistemology and probabilistic methods more generally. He was my unofficial teacher when we were both assistant professors at Utrecht University, Jos in the physics department while I was in the philosophy department. In those days, I also learned much from two other friends in the physics department, Henk de Regt and Fred Muller (later my colleague in Rotterdam), to both of whom I am grateful.

David Over and Sara Verbrugge introduced me to empirical approaches to conditionals. I am grateful to both for showing me the necessary ins and outs, and for opening up such a fascinating area of research for me. On various occasions, Shira Elqayam gave excellent advice on matters of experimental design, and I recollect with gratitude some practical SPSS tutorials that she gave. More recently, Henrik Singmann introduced me to R and often helped when I had got stuck. I thank Jean-François Bonnefon for instructing me on how to run online experiments.

[1] A related complaint from a (highly esteemed) colleague–philosopher: "If your participants' responses differ from my linguistic intuitions, there must be a design flaw somewhere in your experiment."

More or less for as long as I have been active in philosophy, I have been discussing philosophy and much else besides with Lieven Decock, Leon Horsten, and Mark van Atten. I have always enjoyed these discussions enormously, and have often been inspired by them. Even more than the discussions, I have enjoyed the friendship.

For the past five years, I have been able to spend most of my time on research, thanks to an Odysseus grant from the Government of the Flemish Community in Belgium, and to an endowment from the Board of Governors from the University of Groningen. The final stages of work on this book were completed after I had already been recruited by the CNRS as a senior research scientist and joined Sciences, Normes, décision at the Paris-Sorbonne University. I am profoundly grateful to all these institutions, and I am particularly grateful to Daniel Andler, the head of SND, and to the other members of the group for making me feel so welcome.

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