

## Preface

I first learned about abduction when, as a graduate student working on the scientific realism debate, I read Bas van Fraassen's *Laws and Symmetry* (van Fraassen, 1989). The thought that explanatory considerations guided our beliefs, in some form and to some extent, immediately seemed natural to me. Once I started paying attention, it occurred to me that I relied on such considerations in my reasoning on a daily basis. Not only that; it also appeared to me that I was right to do so, given how often things I had become convinced of on explanatory grounds turned out to be *true*.

There was a problem, though. Van Fraassen had given some seemingly inescapable arguments to the effect that abductive reasoning was to be avoided, on pain of irrationality. Perhaps I and other people tend to rely on this form of reasoning, but that does not make it right. There is a whole catalog of biases—systematic deviations from normative systems—that experimental studies have shown to be widespread. Letting explanatory considerations impact our beliefs might also belong there.

Van Fraassen's critique of abductive reasoning came as part of a defense of Bayesian epistemology, which at the time of his writing was still an "underground epistemology" (van Fraassen, 1989, p. 151). However, that epistemology was soon to become "all the rage" (Bovens & Hartmann, 2003, p. iii), and it has strongly dominated our thinking about confirmation, rationality, and belief revision for the last two decades. With the increasing popularity of Bayesian epistemology came further arguments purporting to show that any form of reasoning straying from the Bayesian path of wisdom—like abduction—betokened epistemically irresponsible behavior.

Since reading van Fraassen's critique, I have been trying to figure out whether my frequent, often almost automatic, reliance on abduction is something that should concern me and whether I should seek counseling. In this book, I aim to show that I am fine. That is probably good news for you,

too, because, in general, people do tend to rely on abduction to some extent and in some form. This book is meant to help you understand that relying on abduction is nothing to be ashamed of and that, when done judiciously, reasoning abductively is perfectly in order.

You may have heard that abductive reasoning makes one vulnerable to Dutch bookies. Not so. Not only have I never encountered a Dutch bookie (and I am Dutch); even if they existed, it would take little effort to protect yourself against them while you continued to reason abductively. Also, there is no need to be concerned about the accuracy of your beliefs if you reason abductively. Perhaps—perhaps!—your beliefs are in this or that respect less accurate than those of your Bayesian twin (someone who is exactly like you, except that the twin uses Bayes's rule where you rely on some form of abduction), but in other respects your beliefs may well be *more* accurate. Indeed, Bayesians have been so busy pointing out possible downsides of abductive reasoning that they have completely forgotten to examine whether this form of reasoning might bring benefits that their favored machinery fails to offer and that may outweigh whatever costs abduction could be said to incur.

In thinking through the nature and status of abduction, I have been greatly helped by discussions with many people over the years. I would like to thank in particular the late Jonathan Adler, Daniel Andler, Martijn Blaauw, Luc Bovens, Peter Brössel, Filip Buekens, Otávio Bueno, the late Werner Callebaut, Alessandro Capone, Jake Chandler, Rafael De Clercq, Paul Cortois, Lieven Decock, Helen De Cruz, Kevin Demiddele, Ton Derksen, Dennis Dieks, Richard Dietz, Jacques Dubucs, Anna-Maria Eder, Paul Égré, Shira Elqayam, Pascal Engel, David Etlin, Martin Fischer, Branden Fitelson, the late Ronald Giere, Sanford Goldberg, Mario Günther, Stephan Hartmann, Rainer Hegselmann, Jan Heylen, Frank Hindriks, Pieter Hofstra, Leon Horsten, Christoph Kelp, Jakob Koscholke, Karolina Krzyżanowska, Theo Kuipers, James Ladyman, Hannes Leitgeb, Gert-Jan Lokhorst, Uskali Mäki, James McAllister, the late Ernan McMullin, Wouter Meijs, Patricia Mirabile, Fred Muller, Jennifer Nagel, Mike Oaksford, Diederik Olders, Erik Olsson, David Over, Herman Philipse, Hans Plets, Stathis Psillos, Eric Raidl, Henk de Regt, Herman de Regt, Hans Rott, Michael Schippers, Jonah Schupbach, Gerhard Schurz, Sebastian Sequoiah-Grayson, Mark Siebel, Henrik Singmann, Jan Sprenger, Jos Uffink, Mark van Atten, Jaap van Brakel, Bas van Fraassen, René van Woudenberg, Susan Vineberg, Jonathan Vogel, Jack Vromen, Ver-

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Over the last ten years, I have had the good fortune to be involved in various collaborative projects with a number of brilliant cognitive scientists and psychologists. I have learned a tremendous amount from Shira Elqayam, Peter Gärdenfors, Yasmina Jraissati, Mike Oaksford, David Over, Henrik Singmann, and Andrew Stewart. More than anything else, discussions with these friends and colleagues have let me realize that much of my own past research on rationality contributed little to a theory of rationality for real people. They encouraged me to get over my germaphobia, dive into the mud, and get my hands dirty, that is, to run my own experiments and obtain *real* data, which I found to be not nearly as spic and span as the made-up data we philosophers are used to work with. (In philosophy, we fit data to our models.) Furthermore, their lessons have had a profound influence on the present work more generally. In particular, they made me realize that while we will not be able to do completely without idealizations, and from time to time may want to do some house cleaning (what philosophers call “rational reconstruction”), we should resist the temptation to engage in robot epistemology, in which the elegance of our models counts as the main criterion of success, even if that prevents us from doing justice to a sometimes messy human psychology.

The most direct inspiration for the book came from two joint projects, one with Sylvia Wenmackers, the other with Jonah Schupbach. The first, which is described in Chapter 7, brought computational methods to bear on abduction and led to Douven and Wenmackers (2017), the second looked at abduction from an empirical perspective and led to Douven and Schupbach (2015a, 2015b), the main results of which are reported in Chapter 3. I learned as much from the collaboration with these friends as I enjoyed the interactions with them over the years.

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