

Taming Uncertainty

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Preface

Almost every decision you make represents a leap into the unknown. You do not know with certainty what the consequences of your actions will be, nor do you know how likely the consequences are or when they will materialize—not to mention whether you and others will like the repercussions of your decisions. Faced with these myriad uncertainties, you may be tempted to throw in the towel. But that is not what people do. In fact, most of the time people are pretty good at navigating the unknown. The mind seems to be equipped with cognitive tools that empower people not only to reduce uncertainties where possible, but also to proceed in light of uncertainties that defy reduction.

In *Taming Uncertainty*, we aim to shed light on the cognitive tools in the mind's adaptive toolbox that help people make the leap into the unknown. For many decades, scholarly work in psychology and economics has understood the human response to uncertainty in terms of an attempt to uncover objective probabilities or, when this proves impossible, to conjure up subjective probabilities. Working with the currency of probabilities, this research has explored how extravagant Bayesian brains might update their estimates. In this book, by contrast, we take a different perspective—one that is rooted in what is known about what real, humble minds can do and resists whittling the human response to uncertainty down to an act of juggling probability quantities. In our view, adaptive intelligence in an uncertain world arises from a variety of simple tools. We focus on three types: first, decision strategies that efficiently permit people to infer and decide based on limited information by cleverly making use of key regularities in the environment; second, flexible search processes that guide where to look for further information and, importantly, when to stop searching and to act; and, third, cognitive tools that help people respond to the opportunities

and challenges presented by others. We also trace changes in these cognitive tools brought about by the development of the human mind, both within and across generations. We argue that these tools empower the human mind with what the poet John Keats (1891) called “negative capability”—the ability to survive and thrive in uncertainty.

Ideas and arguments expressed on paper cannot fully replace experience. We have therefore created interactive elements to accompany many chapters. These online companions provide dynamic, hands-on encounters with some of the experimental paradigms, formal theories, and data featured throughout the book. We invite you to explore these elements—which are also referenced individually in the respective chapters—at <https://taming-uncertainty.mpib-berlin.mpg.de/>.

Taming Uncertainty is not an edited book; it is a joint product of the members of the Center for Adaptive Rationality (ARC), a multidisciplinary team of psychologists, economists, biologists, philosophers, computer scientists, and physicists, that was founded in 2012 at the Max Planck Institute for Human Development in Berlin. We worked on this book as a group in order to reflect and tap into our complementary disciplinary interests, skills, and knowledge; it summarizes our progress so far on our journey to unravel the nature of adaptive rationality in an uncertain world. *Taming Uncertainty* would have been impossible without the generous funding of the Max Planck Society, which has helped create this interdisciplinary group of researchers who are profoundly curious, challenging each other's viewpoints and exploring the mind's toolbox together.

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This book marks the first step in our exploration of the murky waters of uncertainty. We are looking forward to our future discoveries of the mind's tools and feats. If you want to check on our progress, please visit the ARC website at www.mpib-berlin.mpg.de/en/research/adaptive-rationality.

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