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This book develops practical and ready-for-use set-theoretic tools under this constructivist understanding of categories, as well as developing a full-blown set-theoretic approach for scientific constructivist research in the social sciences.

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The pursuit of a set-theoretic social science involves some significant departures from business as usual. Analyzing all categories as sets is a far-reaching transformation for social research. We almost unavoidably view social reality as composed of variables for which individual cases possess particular values. Our language almost forces us to speak as if social categories are natural kind entities existing in external reality, with identities and dispositions. To think about and discuss categories as sets located in the mind that construct heterogeneous natural entities as instances of a given kind requires a deliberate effort, and it takes some practice to do it consistently and do it well. The good news is that many qualitative researchers already think about categories as sets in an informal way (Goertz and Mahoney 2012). These analysts are familiar with the kinds of research questions, theories, and methods that are possible and appropriate within set-theoretic analysis. This book is an invitation for qualitative researchers to embrace the basic premise of scientific constructivism: that social categories do not have a coherent relationship with entities in the natural world or stand in any kind of approximate one-to-one correspondence with natural kinds. It is an invitation for them to conduct constructivist set-theoretic analysis explicitly, rigorously, and imaginatively.

## 8 INTRODUCTION

The idea that a set-theoretic social science is a departure from a variable-oriented social science is not controversial. However, methodologists do debate the extent to which set-theoretic methods have value added when compared to other methods, such as regression analysis (see Thomann and Maggetti 2020 for a literature review). Critics of set-theoretic analysis operate under the essentialist assumption that the purpose of a methodology is to report about the objective features of a mind-independent world. From the perspective of this book, however, the question is not whether set-theoretic analysis is a worthy approach in the pursuit of essentialist social science. Instead of arguing about the value added by set-theoretic analysis under essentialist assumptions, this book proposes that the more important and prior questions are (1) whether we need a non-essentialist methodology that accommodates the mind-dependence of social categories and, if so, (2) whether set-theoretic analysis can be that methodology. I argue that the answer is yes to both of these questions.

The focus of this book concerns how to use set-theoretic analysis in the study of categories that depend on shared human beliefs and understandings for their existence. These mind-dependent categories include most of the important categories in the disciplines of sociology (excluding parts of demography), political science, cultural anthropology, and economics. Scholars in these disciplines work almost exclusively with categories that fall into the mind-dependent camp. A few of the categories that are important in these disciplines—such as age, sex, morbidity, and death—exist in large part independently of human minds (some scholars, though not all, would exclude race and intelligence from this camp). In psychology, researchers in subfields such as neuropsychology and behavioral genetics work with largely mind-independent categories. By contrast, psychologists in subfields such as social psychology and educational psychology work with mostly mind-dependent categories. In still other subfields, such as abnormal psychology and developmental psychology, the mind-independent status of categories may vary or be the topic of debate. Insofar as researchers do study mind-independent categories, I view them as engaging in natural science research, for which essentialism is the appropriate point of departure. By contrast, I view scholars who work with mind-dependent categories as engaging in social science, for which constructivism is the appropriate point of departure. This book is directed at the latter group of scholars.

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The scope of this book is restricted in two important ways. First, it focuses mainly on macroscopic research in the social sciences. The examples tend to be studies of large-scale processes and events, such as revolutions, democratization, development, and war. The main categories and units of analysis

are aggregate groups, such as social movements, organizations, socioeconomic classes, states, and political systems. This macropolitical and macrosocial orientation reflects my own substantive areas of research and expertise. The focus is consequential because it means that the categories analyzed here are clear-cut examples of human-constructed, mind-dependent categories. If this book were more concentrated on the micro level—such as on individuals and their biological and physiological properties—it would need to say much more about the analysis of natural kinds. As it stands, the book offers principles and methods for research that falls squarely into the social sciences, defined as the study of mind-dependent categories.

Second, the book concerns mainly tools for case-study and small-N research—i.e., research that develops and evaluates propositions about a single case or a small number of cases. I do not focus on questions related to the evaluation of propositions concerning trends or tendencies that apply to large samples or large populations of cases. The focus on case-study and small-N research reflects, again, my own areas of interest and expertise. Fortunately, a scientific constructivist approach can be readily developed by starting with small-N research. The individual case is a convenient point of departure, because set-theoretic analysis for the social sciences is fundamentally rooted in a case-based logic. Trends or averages in populations exist only because of the features of the individual cases. A focus on individual cases also permits direct engagement with important philosophical literatures concerned with the mind, logic, cognitive models, categories, causality, normative beliefs, possible worlds, counterfactual analysis, certitude, and scientific truth. Although I do not address medium- and large-N set-theoretic methods in this book, these tools are well developed in the literature (e.g., Ragin 2008; Rihoux and Ragin 2009; Schneider and Wagemann 2012; Oana, Schneider, and Thomann forthcoming) and could be recast for constructivist rather than essentialist research.

This book is divided into three parts. Part I (chapters 1–2) concerns ontology and epistemology, introducing both scientific constructivism and set-theoretic analysis. This part establishes the conceptual foundations for the rest of the book. Part II (chapters 3–7) introduces and discusses specific methodological tools for evaluating propositions in the social sciences. Individual chapters in this part focus on tools for analyzing categories and causality, developing and using set-theoretic tests, carrying out counterfactual analysis, using sequence analysis for causal assessment, and employing Bayesian inference with evidence from case studies. Part III (chapters 8–11) discusses how set-theoretic analysis can be used in conjunction with a range of theoretical tools—what Stinchcombe (1968) calls tools for “inventing explanations.” Individual chapters in this part concern theory frames and normative orientations, theory-building categories, critical event analysis, and path dependence. The book concludes by considering some of the implications of scientific constructivism for what it means to be an individual living in a society.

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The following index arranges categories in a form that is intended to be useful to the main readers of this book—that is, social scientists and other scholars interested in the practice of social science. The index does not list many substantive terms (e.g., names of countries) that may be important outside of this context.

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