Preface and Overview

My interest in developing and formalizing techniques of qualitative, holistic comparison originated in the frustrations I experienced as a comparative sociologist. I was trained, as are most American social scientists today, to use multivariate statistical techniques whenever possible. I often found, however, that these techniques were not well suited for answering some of the questions that interested me. For example, I often found that my theoretical and substantive interests led me to hypothesize relatively complex patterns of statistical interaction. Yet the cross-national data sets I was using were relatively small in size and severely constrained such analyses. A second problem concerned the comparability of different countries. When can two nation-states legitimately be compared? Statistical methods encourage investigators to increase sample size and ignore or at least skirt issues of comparability. I found this bias frustrating because it discourages investigators from asking questions about historically, culturally, or geographically defined social phenomena.

Instead of trying to develop new techniques appropriate for the questions that interested me, I first attempted to use traditional statistical methods whenever possible. Of course, I was not by myself. Today, social scientists routinely apply multivariate statistical techniques to any question with a large enough data base to allow their use. Often, the desire to use these techniques shapes the way social scientists ask their questions. Instead of asking questions about relatively narrow classes of phenomena (about types of national revolts, for instance), they tend to reformulate their questions so that they apply to wider categories (such as questions about cross-national variation in levels of political instability). Instead of trying to determine the different contexts in which a cause influences a certain outcome, they tend to assess a cause's average influence across a variety (preferably a diverse sample) of settings.

There is a long tradition in the social sciences of preferring big questions and comparably broad empirical generalizations. Thus, the reformulation of questions according to the demands of statistical techniques is generally applauded. This book represents an effort to step back from traditional statis-

tical techniques, in comparative social science especially, and to explore alternatives. In doing this, I am bucking the trend in mainstream social science toward the application of ever more sophisticated multivariate techniques to all types of social data. Fortunately, I am not alone in this endeavor, and like others engaged in similar or parallel struggles (see Duncan 1984, Lieberson 1985, Stinchcombe 1978, and Tilly 1984), I remain sympathetic with (and an avid user of) multivariate statistical techniques. The problem is not to show which methodology is best but to explore alternative ways of establishing a meaningful dialogue between ideas and evidence.

Initially, my only goal in this work was to present a preliminary formulation of a technique of data reduction that uses Boolean algebra to simplify complex data structures in a logical and holistic manner. I found, however, that it was very difficult to present the technique I had developed without also presenting a general discussion of strategies of comparative research. Not only is this discussion crucial as background material; it repeats, in a highly simplified form, the intellectual journey that led to the development of an algebraic technique of qualitative comparison. By itself, the technique is only a set of relatively simple algorithms. When considered in the context of problems in comparative research and social science methodology more generally, however, the logic of the qualitative comparative approach becomes clear.

Comparative social science is an ideal setting for addressing basic methodological issues. The essential characteristics of the qualitative/quantitative split in the social sciences are clearly visible in comparative social science. In contrast to other subdisciplines, this field has a long tradition of qualitative work that is stronger and richer than its quantitative counterpart. Not only is this tradition qualitative, but it also tends to be case-oriented (as opposed to variable-oriented) and historical (as opposed to abstractly causal). For these reasons the split between the two major research strategies is more complete and more profound in comparative social science than in most other subdisciplines.

The consequences of this division are unmistakable and unfortunate. Important research questions are often overlooked, or if asked they tend to be distorted. For example, there are several cross-national studies of aggregate social turmoil involving virtually all countries, and there are comparative case studies of the handful of countries that have experienced social revolutions, but the cross-national studies tend to be vague and abstract, and the studies of social revolution tend to treat each revolution separately and draw

only a few general conclusions. The tendency is either to expand research questions so that they are broader and therefore relevant to many countries or to restrict investigation to a few significant cases. Interest in military coups in Africa, for example, might be expanded into a study of regime instability and encompass all Third World countries (or all countries), or it might be confined to an in-depth analysis of a manageably small number of major military coups.

The first approach, broadening the scope of a study, is attractive because it allows the use of the quantitative tools of mainstream social science. The problem with this practice, which I characterize as a variable-oriented approach, is that in the course of satisfying the demands of statistical techniques, the connection between the research, on the one hand, and the theoretical, substantive, and political concerns that motivate research in the first place, on the other, tends to be strained. Sometimes quantitative cross-national studies have an unreal quality to them—countries become organisms with systemic distress, for example—and the data examined have little meaningful connection to actual empirical processes. More concrete questions—relevant to the social bases and origins of specific phenomena in similarly situated countries and regions—do not receive the attention they deserve.

These questions usually are addressed only by researchers who study a few cases at a time. I refer to this second approach, which tends to be qualitative, as the case-oriented tradition. Case-oriented studies, by their nature, are sensitive to complexity and historical specificity. Thus, they are well suited for addressing empirically defined historical outcomes, and they are often used to generate new conceptual schemes, as well. Researchers who are oriented toward specific cases (area specialists especially) do not find it difficult to maintain a meaningful connection to social and political issues because they are more concerned with actual events, with human agency and process. It is difficult, however, to sustain attention to complexity across a large number of cases. Furthermore, case-oriented researchers are always open to the charge that their findings are specific to the few cases they examine, and when they do make broad comparisons and attempt to generalize, they often are accused of letting their favorite cases shape or at least color their generalizations.

While the case-oriented approach is limited in this way, it has many special features that are well worth preserving, even in studies that span many cases. First, case-oriented methods are holistic—they treat cases as whole

entities and not as collections of parts (or as collections of scores on variables). Thus, the relations between the parts of a whole are understood within the context of the whole, not within the context of general patterns of covariation between variables characterizing the members of a population of comparable units. Second, causation is understood conjuncturally. Outcomes are analyzed in terms of intersections of conditions, and it is usually assumed that any of several combinations of conditions might produce a certain outcome. These and other features of case-oriented methods make it possible for investigators to interpret cases historically and make statements about the origins of important qualitative changes in specific settings.

A primary goal of this book is to identify the unique strengths of case-oriented methods and to formalize them as a general method of qualitative comparison using Boolean algebra. The analytic strategy I present (which I call the qualitative comparative method) can be applied to a few cases or to hundreds. The principle guiding the formulation of this approach was that the essential features of case-oriented methods should be preserved as much as possible in the development of techniques for larger questions. This is important because mainstream statistical methods disaggregate cases into variables and distributions before analyzing them. This practice makes historical interpretive work very difficult, if not impossible. In short, my goal was to formalize qualitative comparative methods without departing from the general logic of case-oriented research. The formalization I present is based on Boolean algebra, the algebra of logic and set theory.

In many respects, the analytic strategy I discuss provides an alternative to multivariate statistical analysis. Unlike multivariate statistical analysis, which tends to be radically analytic (because it breaks cases into parts—variables—that are difficult to reassemble into wholes), qualitative comparison allows examination of constellations, configurations, and conjunctures. It is especially well suited for addressing questions about outcomes resulting from multiple and conjunctural causes—where different conditions combine in different and sometimes contradictory ways to produce the same or similar outcomes. Multivariate statistical techniques start with simplifying assumptions about causes and their interrelation as variables. The method of qualitative comparison, by contrast, starts by assuming maximum causal complexity and then mounts an assault on that complexity.

While the techniques I present could be considered alternatives to multivariate statistical analysis, they do not supersede traditional statistical methods. In fact, experience may show that they can be used to greatest advan-

tage in conjunction with them. An important part of research is the dialogue that develops between the investigator's theory and the data. Generally, the character of this dialogue is shaped by the techniques of data analysis used by the investigator. While this dialogue occurs in all types of social scientific research, in comparative social science, especially in the branch I call case-oriented, it is particularly rich and elaborate. The techniques of qualitative comparison that I introduce bring some of this richness to studies involving more than a handful of cases. In other words, they overcome some of the limitations of multivariate statistical techniques as a basis for carrying on this dialogue. Thus, use of these techniques may be viewed as a possible corrective to the radically analytic tendencies of most statistical techniques.

This work addresses specific methodological issues in comparative social science, issues I have worked on over the last several years. However, the methodological problems I address and the tentative solutions I offer are not in any way restricted to the fields of comparative sociology and political science, where I draw most of my examples. I discuss two research traditions in comparative social science. One traditionally has been viewed as qualitative, the other as quantitative. This division occurs again and again in virtually every social scientific field; it is certainly not restricted to comparative work. Essentially, I address metatheoretical differences between approaches generally called qualitative (or case-oriented) and quantitative (or variable-oriented)—primarily in terms of their different orientations toward the analysis and interpretation of data. Less attention is paid in this work to the production of so-called raw data, an integral part of the research process.

AN IMPORTANT CAVEAT

The Boolean approach developed in this work touches the world of statistical analysis of social data in several ways. It examines cases; it uses categorical variables; it looks at different combinations of conditions (that is, cells of a multivariate cross-tabulation); it can be applied to categorical dependent variables; and it involves data reduction. Thus, it should not be surprising that I have encountered strong pressure to build a bridge between the Boolean approach and statistical methods designed for these kinds of data and problems (such as log-linear methods) in order to show how the two approaches can be usefully integrated.

This bridge can be made under certain conditions (for example, availability of a very large number of observations), but this book is not the place

for it. If I were to present that bridge in this work, many readers would conclude that the case-oriented approach is simply a watered-down version of log-linear statistical methodology. It is essential, however, to acknowledge and comprehend the unique features of the case-oriented approach. One of my primary goals is to broaden the boundaries of methodological discussion by formalizing the differences between case-oriented and variable-oriented research in comparative social science and other subdisciplines as well.

Some sections of the work may be read defensively by those who use statistical methods regularly, and technical solutions to some of the problems I discuss will immediately come to mind. My primary point in these discussions is not to argue that these problems cannot be solved by statistical methods but to show that by their nature statistical methods tend to discourage awareness of these problems. I am not concerned that the use of statistical techniques requires assumptions, for example, but I am troubled by the tendency for these assumptions to become hidden from the user's view and to distort the dialogue between ideas and evidence.

WHAT FOLLOWS

Chapter 1 discusses the distinctive features of comparative social science, especially its case-oriented tradition, that make it an ideal setting for examining basic methodological issues. Prominent among these features are its qualitative orientation and its related interest in (and appreciation of) complexity, its emphasis on interpretive questions and specific historical outcomes and processes, its limited data base (many questions are relevant to only a small number of countries or regions), and its special metatheoretical treatment of aggregate units such as nation-states. For these and related reasons, the consequences of methodological decisions are more apparent in comparative research than in other areas.

A hallmark of qualitative approaches is their attention to complexity—the heterogeneity and particularity of individual cases. Chapter 2 addresses the problem of complexity through a discussion of multiple conjunctural causation and the special methodological problems this type of causation presents. When several different combinations of conditions produce the same outcome (a common finding in comparative studies), it is very difficult to unravel the different patterns across a range of cases. Analysis is further complicated by the limited diversity of naturally occurring social phenomena. (In a laboratory it is possible to manufacture all possible combinations

of causes and thereby disentangle the decisive causal conjunctures.) Chapter 2 outlines this basic problem in order to set the stage for discussing the two dominant ways of simplifying complexity—by examining similarities and differences among a limited number of cases (the case-oriented strategy) and by looking at relations between variables (the variable-oriented strategy).

The first major strategy, the case-oriented approach, is the focus of Chapter 3. A common goal in this type of analysis is to interpret a common historical outcome or process across a limited range of cases, usually only a handful. Cases are examined as wholes, which means that the causal significance of an event or structure depends on the context (that is, on other features of the case). This strategy highlights complexity, diversity, and uniqueness, and it provides a powerful basis for interpreting cases historically. However, it is very difficult to use this approach to examine more than a few cases at a time. Faced with a large number of cases, the investigator is forced to make many paired comparisons—too many to grasp all at once—and the analysis may disintegrate into descriptive statements lacking any generality. Thus, while the case-oriented approach avoids many of the simplifying assumptions of the variable-oriented approach, it cannot be used to address similarities and differences among many cases.

The variable-oriented approach, the focus of Chapter 4, is the dominant research strategy of mainstream social science. In this approach cases are disaggregated into variables and distributions. Examination of patterns of covariation among variables is used as a basis for making general statements about relations between aspects of cases considered collectively as populations of comparable observations. These general statements typically are linked to abstract theoretical ideas about generic properties of macrosocial units (such as societies). Because this strategy starts with simplifying assumptions, it is a powerful data reducer. Thus, it is an ideal instrument for producing broad statements pertaining to relatively large bodies of data encompassing diverse cases. However, the simplifying assumptions that make this approach possible often violate commonsense notions of causation and sometimes pose serious obstacles to making interpretive statements about specific cases or even about categories of cases.

A conceivable resolution of the gulf between case-oriented and variable-oriented research is to combine the two strategies in some way. In fact, many investigators have attempted to do this with moderate success. Chapter 5 analyzes three such attempts: Jeffrey Paige's *Agrarian Revolution*, John Stephens's *The Transition from Capitalism to Socialism*, and Edward Shorter

and Charles Tilly's *Strikes in France*. These three studies have many laudable features, but their respective research strategies do not fully transcend the quantitative/qualitative split in comparative social science. Even though all three combine variable-oriented and case-oriented methods, each tends to be dominated by one strategy. Paige's study and Stephens's study are primarily variable-oriented approaches buttressed with independent case studies, while Shorter and Tilly's work is primarily a case study that uses quantitative analysis to support their broad historical interpretation of that case.

The discussion of combined strategies provides a basis for outlining the essential features of a more synthetic approach to comparative research. Basically, a synthetic strategy must be able to address more than a handful of cases and, at the same time, avoid making the simplifying assumptions about cause which are characteristic of the variable-oriented approach. It is essential to avoid certain simplifying assumptions because they interfere with the goal of historical interpretation. It is difficult to make statements about the origins of important historical outcomes, for example, if the model of causation implicit in the analytic technique contradicts theoretical and substantive understanding of the phenomenon in question. A synthetic, broadly comparative strategy must be both holistic—so that the cases themselves are not lost in the research process—and analytic—so that more than a few cases can be comprehended and modest generalization is possible.

An algebraic basis for a synthetic approach exists in Boolean algebra, the algebra of sets and logic. Chapter 6 presents the basic features of Boolean algebra (the Boolean number system, Boolean addition and multiplication, and set theory) and then introduces rudimentary principles of Boolean algebra used to logically minimize (reduce the complexity of) truth tables. The process of minimizing truth tables has a direct link to the problem of data reduction in variable-oriented research (a truth table bears some similarity to a data matrix), but the mechanics are entirely different. Chapter 6 details these differences. No background in Boolean algebra is assumed, and the notational system is simple.

The material presented in Chapter 7 builds on the previous chapter to introduce advanced methods of Boolean analysis. Two in particular are emphasized. The first addresses the limited diversity of social phenomena (that is, the fact that macrosocial phenomena cannot be manipulated experimentally). With Boolean techniques it is possible to construct a model of the diversity that exists among comparable outcomes and then to study the causes of these outcomes within the context of the "available" diversity. In

other words, an integral part of the research process itself can involve direct attention to, and consideration of, the limitations of naturally occurring social phenomena. A second procedure concerns the use of set theory to contrast empirical configurations with theoretically constructed models. Essentially, this method makes it possible both to evaluate theories and to use them as a basis for historical interpretation. The major objective here is to show that Boolean methods are not mechanical techniques but can be integrated into the dialogue of ideas and evidence in social research.

Chapter 8 presents a variety of examples of Boolean-based qualitative analysis. The major example is an analysis of ethnic political mobilization among territorially based linguistic minorities in Western Europe. Others include an analysis of characteristics of juvenile courts and a reanalysis of data used by Stein Rokkan in presenting his configurational approach in comparative political sociology. Chapter 8 offers a range of examples to demonstrate the general utility of Boolean techniques of qualitative comparison. The examples are only preliminary because the larger argument emphasizes the role of qualitative comparative methods in the dialogue of ideas and evidence in social research, especially in comparative work that is both historically interpretive and causal-analytic. While it is impossible to reproduce an entire research dialogue in a brief illustration of method, I hope to convey the general flavor of this dialogue in the variety of examples presented.

Chapter 9 concludes the book by summarizing the major arguments and then emphasizing the strengths of Boolean techniques of qualitative comparison. It also discusses the impact of the application of Boolean techniques on the entire research process.

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