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5

The Comparative Method

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Comparison is a fundamental tool of analysis. It sharpens our power of description, and plays a central role in concept-formation by bringing into focus suggestive similarities and contrasts among cases. Comparison is routinely used in testing hypotheses, and it can contribute to the inductive discovery of new hypotheses and to theory-building.

The forms of comparison employed in the discipline of political science vary widely and include those contained in statistical analysis, experimental research, and historical studies. At the same time, the label "comparative method" has a standard meaning within the discipline and in the social sciences more broadly: it refers to the methodological issues that arise in the systematic analysis of a small number of cases, or a "small N."[1] This chapter examines alternative perspectives on the comparative method that have emerged over roughly the past two decades. Although the primary focus is on discussions located in the fields of comparative politics and international studies, the application of the comparative method is by no means restricted to those fields.

The decision to analyze only a few cases is strongly influenced by the types of political phenomena under study and how they are conceptualized. Topics for which it is productive to examine relatively few cases include revolutions, particular types of national political regimes (e.g., post-communist regimes), or particular forms of urban political systems. This focus on a small number of cases is adopted because there exist relatively few instances of the phenomenon under consideration that exhibit the attributes of interest to the analyst. Alternatively, some analysts believe that political phenomena in general are best understood through the careful examination of a small number of cases. In the field of comparative and international studies, the practice of focusing on few cases has achieved greater legitimacy in recent years in conjunction with the rise of the school of "comparative historical analysis," in which small numbers of countries are studied over long periods. This close scrutiny of each country limits the number of national cases a scholar can consider.[2]

Choosing to study few cases routinely poses the problem of having more rival explanations to assess than cases to observe, or the quandary of "many variables, small N" (Lijphart 1971, 686). Elementary statistics teaches us that as the number of explanatory factors approaches the number of cases, the capacity to adjudicate among the explanations through statistical comparison rapidly diminishes. This problem has stimulated much discussion of how most productively to analyze a small N.

The late 1960s and early 1970s saw a boom in writing on comparative method (e.g., Merritt and Rokkan 1966; Kalleberg 1966; Verba 1967; Smelser 1968; Lasswell 1968; Przeworski and Teune 1970; Sartori 1970; Merritt 1970; Etzioni and Dubow 1970; Lijphart 1971; Vallier 1971; Zelditch 1971; Armer and Grimshaw 1973). This literature established a set of norms and practices for small-N research, proposed alternative strategies for conducting such analyses, and created a base line of understanding that has played an important role in the ongoing practice of small-N studies. This chapter assesses the issues of comparative method that have been debated in the intervening years and considers their implications for ongoing research. The point of departure is Arend Lijphart's (1971) article "Comparative Politics and Comparative Method." Among the studies published in that period, Lijphart's piece stands out for its imaginative synthesis of basic issues of comparison and of the relation between comparative method and other branches of methodology.[3] It therefore provides a helpful framework for examining, and building upon, new developments in the field.

A central theme that emerges in the discussion below is that refinements in methods of small-N analysis have substantially broadened the range of techniques available to comparative researchers. The most fruitful approach is eclectic, one in which scholars are willing and able to draw upon these diverse techniques.

Synopsis of Lijphart

Lijphart defines the comparative method as the analysis of a small number of cases, entailing at least two observations, yet too few to permit the application of conventional statistical analysis. A central goal of his article is to assess the comparative method in relation to three other methods--experimental, statistical, and case-study--and to evaluate these different approaches by two criteria: 1) how well they achieve the goal of testing theory through adjudicating among rival explanations, and 2) how difficult it is to acquire the data needed to employ each method (see Figure 1).

The experimental method has the merit of providing strong criteria for eliminating rival explanations through experimental control, but unfortunately it is impossible to generate appropriate experimental data for most topics relevant to political analysis. The statistical method has the merit of assessing rival explanations through the weaker but still valuable procedure of statistical control, but it is often not feasible to collect a sufficiently large set of reliable data to do this form of analysis.

The case-study method has the merit of providing a framework in which a scholar with modest time and resources can generate what may potentially be useful data on a particular case. Unfortunately, opportunities for systematically testing hypotheses are far more limited than with the other methods. Yet Lijphart (pp. 691-93) insists that case studies do make a contribution to testing hypotheses and building theory, and he offers a suggestive typology of case studies based on the nature of this contribution. He distinguishes among *atheoretical* case studies; *interpretative* case studies (that self-consciously use a theory to illuminate a particular case); *hypothesis-generating* case studies; *theory-confirming* case studies; *theory-infirming* case studies (that, although they cannot by themselves disconfirm a theory, can raise doubts about it); and *deviant case* analyses (that seek to elaborate and refine theory through a close examination of a case that departs from the predictions of an established theory). Lijphart emphasizes that "certain types of case studies can even be considered implicit parts of the comparative method" (p. 691), and to the extent that the assessment of hypotheses does occur in some case studies, it is often because the case studies are placed in an implicit or explicit comparative framework. Yet even within this framework, he emphasizes that findings from a single case should not be given much weight in the evaluation of hypotheses and theory (p. 691).

The comparative method, as defined by Lijphart, has an intermediate status in terms of both his criteria. It provides a weaker basis than the experimental or statistical method for evaluating hypotheses, due to the lack of experimental control and the problem of many variables, small N. Yet it does offer a stronger basis for evaluating hypotheses than do case studies. Despite the constraint of addressing more variables than cases, the comparative method allows systematic comparison that, if appropriately utilized, can contribute to adjudicating among rival explanations.

Although the data requirements of the comparative method may be much greater than for case studies, Lijphart argues that they are less demanding than for experimental or statistical research. He therefore views the comparative method as most appropriate in research based on modest resources, and he suggests that studies using the comparative method might often serve as a first step toward statistical analysis.

> If at all possible one should generally use the statistical (or perhaps even the experimental) method instead of the weaker comparative method. But often, given the inevitable scarcity of time, energy, and financial resources, the intensive comparative analysis of a few cases may be more promising than a more superficial statistical analysis of many cases. In such a situation, the most fruitful approach would be to regard the comparative analysis as the first stage of research, in which hypotheses are carefully formulated, and the statistical analysis as the second stage, in which these hypotheses are tested in as large a sample as possible. (1971, 685)

Lijphart also proposes solutions to both sides of the problem of many variables, small N (1971, 686 ff). With regard to the small number of cases, even if researchers stop short of a statistical study, they can nonetheless try to increase the number of cases used in assessing hypotheses. With regard to the large number of variables, he suggests two approaches. First, analysts can focus on "comparable cases," that is, on cases that a) are matched on many variables that are *not* central to the study, thus in effect "controlling" for these variables; and b) differ in terms of the key variables that *are* the focus of analysis, thereby allowing a more adequate assessment of their influence. Hence, the selection of cases acts as a partial substitute for statistical or experimental control. Second, analysts can reduce the number of variables either by combining variables in a single scale or through theoretical parsimony, that is, through developing a theory that focuses on a smaller number of explanatory factors.

Thus, Lijphart provides a compact formulation of the relationship between the comparative method and

Figure 1. Situating the Comparative Method as of 1971: Lijphart's Scheme

Case Study Method

Merit: Permits intensive examination of cases even with limited resources

Inherent Problem: Contributes less to building theory than studies with more cases

Types of Case Studies:
1. Atheoretical
2. Interpretive
3. Hypothesis-generating
4. Theory-confirming
5. Theory-infirming (i.e., case studies that weaken a theory marginally)
6. Deviant case studies

Comparative Method

Defined as: Systematic analysis of small number of cases ("small-*N*" analysis)

Merit: "Given inevitable scarcity of time, energy, and financial resources, the intensive analysis of a few cases may be more promising than the superficial statistical analysis of many cases" (Lijphart, p. 685)

Inherent Problem: Weak capacity to sort out rival explanations, specifically, the problem of "many variables, few cases"

Potential Solutions:
1. Increase number of cases
2. Focus on comparable cases
3. Reduce number of variables
   a. Combine variables
   b. Employ more parsimonious theory

Experimental Method

Merit: Eliminates rival explanations through experimental control

Inherent Problem: Experimental control is impossible for many or most topics of relevance to field of comparative politics

Statistical Method

Merit: Assesses rival explanations through statistical control

Inherent Problem: Difficult to collect adequate information in a sufficient number of cases, due to limited time and resources

other methodologies, and he offers solutions to the characteristic dilemmas of the comparative method.

Further Perspectives on Small-N Analysis

The two decades following Lijphart's study have seen the emergence of new perspectives on small-N analysis, as well as a renewed focus on methodological alternatives already available before he wrote his article. Though many of these innovations appear in work explicitly concerned with the comparative method, conventionally understood, others appear in writing on the experimental, statistical, and case-study methods. The result has been an intellectual cross-fertilization of great benefit to the comparative method. Figure 2 provides an overview of these innovations.

Innovations in the Comparative Method

Innovations in the comparative method can be discussed in terms of the issues introduced above, encompassing the goals of comparison, the justification for focusing on few cases, and the problem of many variables, small N.

Goals of Comparison

A central and legitimate goal of comparative analysis is assessing rival explanations. However, as Theda Skocpol and Margaret Somers (1980) argue, comparative studies should be understood not merely in terms of this single goal, but in terms of three distinct, yet ultimately connected, goals.[4] The first is that considered above: the systematic examination of covariation among cases for the purpose of *causal analysis*.[5] The second is the examination of a number of cases with the goal of showing that a particular model or set of concepts usefully illuminates these cases. No real test of the theory occurs, but rather the goal is the *parallel demonstration of theory*. This use of comparison plays an important role in the process through which theories are developed. The third type of comparison is the examination of two or more cases in order to highlight how different they are, thus establishing a framework for interpreting how parallel processes of change are played out in different ways within each context. This *contrast of contexts* is central to the more "interpretive" side of the social sciences and reflects yet another way that comparison is frequently used.

In addition to providing a more multifaceted account of the goals of comparison, Skocpol and Somers suggest the intriguing idea of a research "cycle" among these approaches (pp. 196-197). This cycle arises in response to the problems that emerge as scholars push each approach up to -- or beyond -- the limits of its usefulness. For example, a "parallel demonstration" scholar might introduce a new theory and show how it applies to many cases. "Hypothesis-testing" scholars, wanting to specify the conditions under which the theory does not hold, could make further comparisons with the goal of discovering these conditions. Hypothesis-testing studies that too brashly compare cases that are profoundly different might, in turn, stimulate "contrast of contexts" scholars to examine more carefully the meaning of the differences among the cases. It is thus useful to look beyond an exclusive focus on the role of comparison in broad causal analysis, to an understanding that encompasses the different elements in this research cycle.

This is not to say that assessing hypotheses does not remain a paramount goal of comparison, and many scholars insist that it is the paramount goal. Yet this broader perspective offers a valuable account of how comparative work proceeds within a larger research community, pointing usefully to the interaction among different goals of comparison.

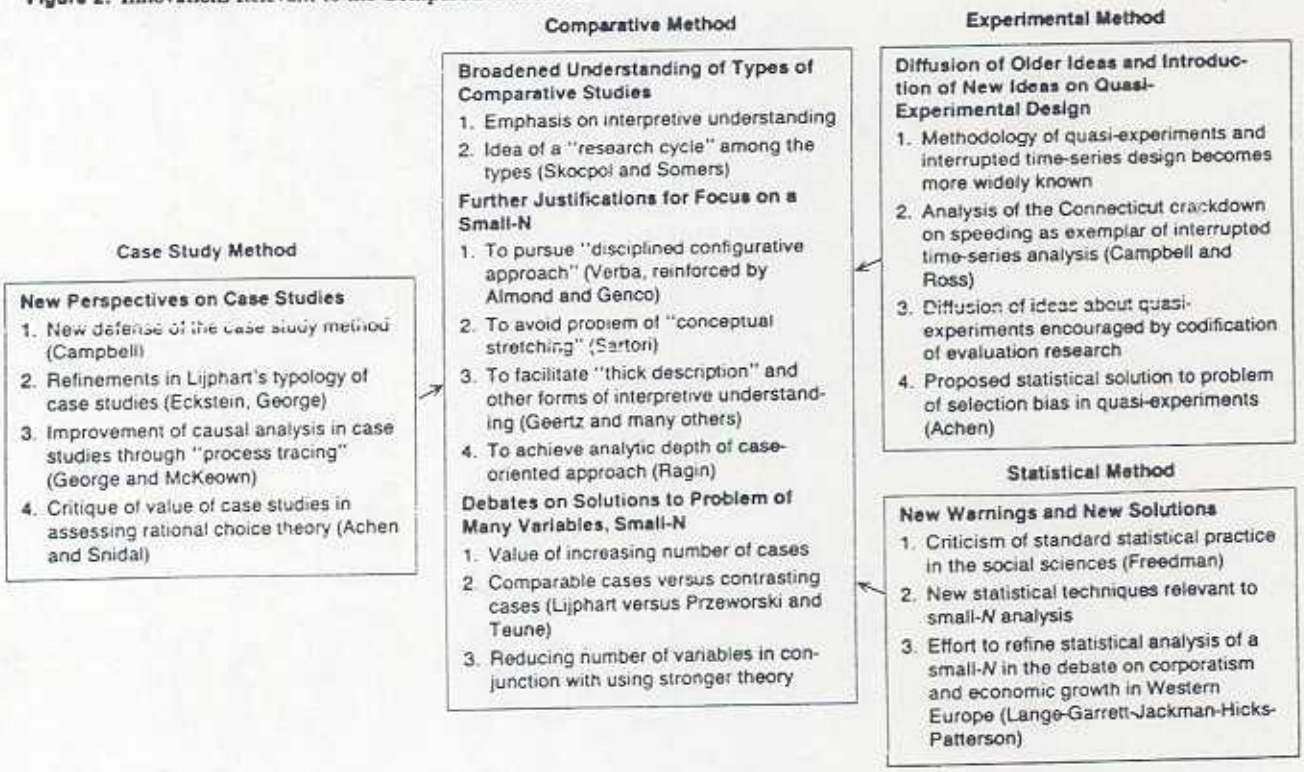
Justification for Small N

A second trend is toward a more elaborate justification of a focus on relatively few cases. Lijphart's rationale seems in retrospect rather modest, in that it emphasizes only the problem of inadequate resources and treats the small-N comparison as a way station on the route to more sophisticated statistical analysis.

A very different defense of working either with a small N or with case studies had previously been available in arguments favoring a "configurative" approach (Heckscher 1957, 46-51, 85-107), and this perspective was elaborated a few years before the publication of Lijphart's analysis in Sidney Verba's (1967) review essay advocating the "disciplined configurative approach." In evaluating Robert A. Dahl's *Political Oppositions in Western Democracies* (1966), Verba points both to the sophistication of the hypotheses entertained in the book and to the difficulty of assessing them adequately, except through a close command of the cases, leading him to advocate this disciplined configurative mode of research. Verba's formulation is appealing because he is concerned with systematic hypothesis testing and theory building. At the same time, he links this priority with a more explicit appreciation of the difficulty of testing hypotheses adequately and the value of properly executed case studies in providing subtle assessments of hypotheses.

It might be claimed that the difficulty of adequately testing hypotheses ultimately derives from the

Figure 2. Innovations Relevant to the Comparative Method



problem of limited resources discussed by Lijphart. If enough talented researchers worked long and hard, they could carry out a *Political Oppositions* study for many dozens of countries. Yet the problem here is somewhat different from that emphasized in Lijphart's initial formulation. It is not so much that resources are limited, but that constructing adequate comparisons has proved more difficult than had often been thought in the 1960s and early 1970s, in the initial days of enthusiasm for comparative statistical research. Among these difficulties, that of the valid application of concepts across diverse contexts has been especially vexing.

Within the literature on comparative method, a key step in elucidating these problems of validity, and thereby strengthening the justification for a small N, is Giovanni Sartori's (1970) classic discussion of "Concept Misformation in Comparative Politics," the basic themes of which are elaborated in his later book *Social Science Concepts* (1984). Sartori suggests that the application of a concept to a broader range of cases can lead to conceptual "stretching," as some of the meanings associated with the concept fail to fit the new cases. The concepts that can most easily be applied to a broad range of cases are often so general that they do not bring into focus the similarities and contrasts among cases that are essential building blocks in worthwhile comparative analysis. Consequently, a study focused on concepts that are carefully adapted to this "finer slicing" of a given set of cases should be extended to other cases only with great caution. From this perspective, it may be argued that the most interesting studies will often be those that focus on a smaller number of cases.

With regard to the problems of increasing the number of cases under study,[6] Adam Przeworski and Henry Teune's *The Logic of Comparative Social Inquiry* (1970) is a major source of insight. Although they argue that achieving a high level of generality should be a basic goal of social science, their framework is centrally concerned with the difficulties that can arise in generalizing beyond an initial set of cases. With regard to problems of validity, they advocate the use, when necessary, of "system-specific" indicators that serve to operationalize the *same* concept in *distinct* ways in different contexts (pp. 124-130). For the scholar seeking to move toward a larger set of cases, the potential need for system-specific indicators necessitates the close examination of every new case.

Przeworski and Teune also address the problem that as the analyst incorporates more cases into a study, distinct causal patterns may appear in the new cases. To deal with this problem, Przeworski and Teune advocate "replacing proper names" of social systems by identifying those systems in terms of the explanatory factors that account for why causal relations take a particular form within each system (pp. 26-30).[7] This approach makes the invaluable contribution of providing a theoretical, rather than an idiosyncratic and case-specific, basis for analyzing differences in causal patterns. However, extending an analysis to additional cases on the basis of this procedure again requires a painstaking assessment of each new context. Thus, Przeworski and Teune provide a valuable tool for adequately analyzing a larger number of cases, but their approach again shows that this must be done with caution.

Since 1970, the renewal of a Weberian concern with interpretive understanding, i.e., with deciphering the meaning of behavior and institutions to the actors involved, has also strengthened the justification for advancing cautiously with one or very few cases. Clifford Geertz's (1973) label "thick description" is commonly evoked to refer to this concern,[8] and this focus has appeared in many guises relevant to political research, including Gabriel Almond and Stephen J. Genco's analysis of "Clouds and Clocks" (1977) and Skocpol and Somers' "contrast of contexts" approach, which encompasses studies that use comparison to richly contextualize research findings. Charles C. Ragin's *The Comparative Method* (1987) explores another facet of this concern in his analysis of the "holistic" orientation of what he calls "case-oriented" research and the complex problems of "conjunctural causation" – that is, causal patterns that vary according to the context – to which configurative scholars are typically far more sensitive.

Finally, the intellectual success in recent years of the school of comparative historical analysis has played an important role in legitimating a focus on a small N. This approach was pioneered in works such as Reinhard Bendix (1964), Barrington Moore (1966), and Lipset and Rokkan (1967), and more recent works include Rokkan (1970), Tilly (1975), Paige (1975), Bendix (1978), Trimberger (1978), Skocpol (1979), Bergquist (1986), Luebbert (1991), Goldstone (1991), Collier and Collier (1991), and Rueschemeyer, Stephens, and Stephens (1992). Methodological statements focused on this tradition include Skocpol and Somers (1980), Skocpol (1984), Tilly (1984), and Ragin (1987).

The particular form of analysis in these studies varies considerably, as suggested by Skocpol and Somers' typology noted above. In varying combinations, these studies employ both rigorous qualitative comparisons that extend across a number of nations, and also historical analysis that often evaluates each national case over a number of time periods.[9] This tradition of research thus combines well-thought-out comparison with an appreciation of historical context, thereby contributing to an effort to "historicize" the social sciences.

Although the uses of comparison in this literature are diverse, as Skocpol and Somers emphasized, it may

be argued that a major consequence of the growing importance of comparative historical studies is to further legitimate the approach that was Lijphart's original concern: the assessment of rival explanations, based on systematic, qualitative comparison of a small number of cases. In light of a spectrum of studies from Barrington Moore's (1966) pioneering analysis of the emergence of alternative forms of modern regimes, to Skocpol's (1979) study of revolution, to Luebbert's (1991) analysis of the emergence of liberalism, fascism, and social democracy in interwar Europe, it is evident that this literature has given new legitimacy to the use of broad historical comparison for systematic causal analysis. Efforts to codify procedures for assessing hypotheses in this type of analysis, such as that in Ragin's *Comparative Method* (1987), further reinforce the plausibility of insisting on the viability of small-N analysis as a middle ground between case studies and statistical studies.

Solutions to the Problem of Many Variables, Small N

The evolving debates on comparative method have suggested further refinements in Lijphart's original three solutions for the problem of many variables, small N, i.e.: 1) increasing the number of cases, 2) focusing on matched cases, and 3) reducing the number of variables.

1. *Increase the Number of Cases* At the time Lijphart wrote, it was believed in some circles that comparative social science would increasingly be oriented toward large-N comparative studies, based on extensive quantitative data sets and rigorous statistical analysis. Today there can be no question that, for better or worse, quantitative cross-national research in the subfield of comparative politics, and quantitative international politics in the subfield of international relations, have not come to occupy as dominant a position as many had expected. Within these two subfields, they hold the status of one approach among many.

Various factors have placed limits on the success of large-N research based on quantitative data sets, among which is certainly the renewed concern with closely contextualized analysis and interpretive studies. Broad quantitative comparison may have been set back as many scholars discovered how extraordinarily time-consuming it is to construct appropriate data sets, often out of proportion to the professional rewards that seem to be forthcoming. This is particularly a problem when the focus of analysis extends beyond the advanced industrial countries to regions for which it is often extremely difficult to develop reliable data. In addition, the quantitative-comparative approach has probably been hurt by the publication of too many studies in which concepts are operationalized with dubious validity and which employ causal tests that are weak, unconvincing, or inappropriate (Ragin 1987, chap. 4).

Yet the fact that broad quantitative comparison has not become a predominant approach should not lead scholars to overlook what has been accomplished. Robert Jackman (1985) insists that comparative statistical research has had more success than is recognized, and Lijphart's own recent work moves in this direction (1990). The failure to seize good opportunities to do quantitative research could certainly be viewed as being as much of a mistake as premature quantification, and the fruitful debate on corporatism and economic growth in Western Europe discussed below is one of many examples of how statistical methods can effectively address interesting analytic issues. Further, the availability of new statistical techniques (also discussed below) has made it far more productive to do quantitative analyses with as few as ten to fifteen cases. Consequently, the option of increasing the "N" at least to that level is still worth pursuing, and it should probably be pursued more often.

2. *Focus on Comparable Cases* The recommendation that analysts focus on carefully matched cases has been both reinforced and challenged. In a discussion published in the mid-1970s, Lijphart (1975) explores further the trade-off he noted in 1971 between the goal of increasing the number of cases and the goal of matching cases as a substitute for statistical control. Obviously, if a researcher is to select cases that are really similar, however that similarity is defined, the number of appropriate cases is likely to become limited. In the face of this trade-off, Lijphart opts in favor of the more careful matching of fewer cases, and he goes so far as to restrict the application of the term "comparative method" to analyses that focus on a small number of carefully matched cases. This emphasis parallels a much earlier perspective on the comparative method referred to as the method of "controlled comparison" (Eggan 1954). Arthur Stinchcombe's (1978) advocacy of the methodology of "deep analogy," i.e., the comparative analysis of very few, extremely closely matched, cases pushes this approach even further.

A contrasting strategy is advocated by Przeworski and Teune (1970, 32-39) and Przeworski (1987, 38-41). They suggest that even with careful matching of cases in what they label a "most similar" systems design, there remains a problem of "overdetermination," in that this design fails to eliminate many rival explanations, leaving the researcher with no criteria for choosing among them. They prefer instead a "most different" systems design, based on a set of cases which are highly diverse and among which the analyst traces similar processes of change.[10] Przeworski suggests that the strength of this design is in part

responsible for important advances in the literature on democratization, such as the work of O'Donnell, Schmitter, and Whitehead (1986). Przeworski maintains that this literature addresses such a broad range of cases that analysts are forced to distill out of that diversity a set of common elements that prove to have great explanatory power.[11]

This discussion can be placed in perspective by recognizing that cases that are closely matched from one point of view may contrast sharply from another. My own recent work (Collier and Collier 1991) combines the two strategies by starting with a set of eight Latin American countries that are roughly matched on a number of broad dimensions. Among the eight countries, the analysis focuses on pairs of countries that are nonetheless markedly different. The overall matching assures that the contexts of analysis are analytically equivalent, at least to a significant degree, and the paired comparison places parallel processes of change in sharp relief because they are operating in settings that are very different in many respects.

In conjunction with the debate over the merits of most similar and most different systems designs, it is important to recognize that in many studies, the conclusions reached in the overall comparison of cases are also assessed -- implicitly and sometimes explicitly -- through within-case analysis. In the section on case studies below, the discussion of "pattern matching" and "process tracing" suggests some of the forms this takes. It is no coincidence that within the school of comparative historical analysis, findings are often reported in books, rather than articles. Part of the reason is that the presentation of detailed information on each case serves to further validate the conclusions drawn from comparisons across cases.

These within-case comparisons are critical to the viability of small-N analysis. As Stanley Lieberson (1991, 312-315) has correctly insisted, taken by themselves, comparisons across a small number of cases, using either a most similar or a most different systems design, provide a weak basis for causal inference. However, if one considers the role of these internal comparisons, the "N" is substantially increased, thereby strengthening causal analysis.[12]

This use of within-case comparison can also help protect the analyst from a problem that arises in the most different systems design, in which countries are matched on the dependent variable and differ in terms of a series of background variables. Barbara Geddes (1990) has shown that if cases are selected on the basis of scores on the dependent variable, which is how most different systems designs are often carried out, the lack of variance on the outcome to be explained introduces a "selection bias" that can greatly weaken causal inference. One way of mitigating this problem is to introduce greater variability through internal comparison.

The ongoing debate on most similar versus most different systems designs has implications for the status of area studies. Dankwart Rustow (1968) argued some time ago in favor of moving beyond an area studies approach, and many scholars agree that cases should be selected in response to the analytic requirements of particular research projects, rather than on the basis of a geographic proximity that at best is often a poor substitute for the analytic matching of cases. Recent "cross-area" studies on successful export-led growth and on democracy suggest that this alternative perspective is gaining ground.[13]

However, the area studies approach is a booming business today for a variety of reasons, including the impressive funding of area studies by U.S. foundations in recent decades, as well as institutional momentum. In fact, from the point of view of the theoretically oriented small-N comparativist, this is not a bad outcome. The country case studies produced by area specialists are crucial building blocks in most comparative work, and without them cross-area studies would be on far weaker ground. It is essential to recognize that these case studies benefit greatly from the intellectual leverage gained when individual scholars develop, over many years, a cumulative and well-contextualized understanding of a particular region. Particularly in light of current concerns that broad comparative studies should be attentive to the context of analysis, the contribution of area specialists is essential.

3. *Reduce the Number of Variables*: The third solution to the small-N problem is to reduce the number of explanatory factors, either through combining variables, sometimes referred to as "data reduction," or through employing a theoretical perspective that focuses on a smaller set of explanatory factors. One of the promising sources of parsimonious explanatory theory is the "rational choice" approach that has gained increasing attention among political scientists. Rational choice modeling offers a productive means of simplifying arguments that contain a multitude of interesting variables, but that may fail to specify the most critical ones. Within the field of comparative analysis, Geddes's (1991) study of administrative reform in Latin America, which models the impact of different electoral and party systems on the incentives of legislators to adopt reform, provides an excellent example of a productive simplification of a complex topic. As such models gain increasing acceptance in the comparative field, analysts will acquire a useful tool for addressing the small-N problem.[14]

More work on concept formation is also needed, notwithstanding the sustained contribution of Sartori

(1970, 1984, 1991, 1993, and Sartori, Riggs, and Teune 1975); the work of authors such as McKinney (1966), Kalleberg (1966), and DeFelice (1980); and also Burger's (1976) invaluable synthesis of the Weberian approach to concept formation. Comparativists do not devote enough attention to thinking through how well or poorly concepts are serving them and therefore may have insufficient ground for knowing whether they are making appropriate choices in the effort to achieve theoretical parsimony.

The field of cognitive science has recently provided insights into categorization that may be useful in refining the concepts employed in comparative studies. The application of these insights is illustrated by George Lakoff's (1987) challenge to frameworks, such as that of Sartori, that employ what Lakoff calls "classical categorization," in which the meaning of concepts is understood in terms of defining characteristics that are seen as giving the concepts well-defined boundaries. This understanding is crucial to Sartori's framework, in that the problem of conceptual stretching which he analyzes hinges on these boundaries. Cognitive scientists argue that in ordinary language, the meaning of concepts derives not from defining characteristics, but from an implicit "cognitive model" that underlies the concept and from "exemplar" cases that serve to anchor the concept's meaning and provide a point of reference for identifying better and worse cases. This perspective provides a different view of the question of boundaries, and hence of conceptual stretching. More work is needed to discover the degree to which these patterns in ordinary language are also present in social science usage, and if so, the implications for the use of concepts in comparative analysis (see Collier and Mahon 1993).

Innovations Suggested by Work on Other Methods

Experimental Method

Although the experimental method itself may be of little relevance to the topics addressed in most comparative research, ideas derived from the experimental method can improve small-N studies. Donald Campbell and Julian Stanley's classic *Experimental and Quasi-Experimental Designs for Research* (1963) shows how the logic of experimental design can be applied to "quasi-experiments," that is, to "observational" studies that include some event or innovation that has a form analogous to an experimental intervention, but that occurs in a "natural" setting. An example would be the initiation of a new public policy whose impact one wishes to assess.

Campbell and Stanley underline the great value in quasi-experiments of the "interrupted time series" design. In this design the analyst looks at a long series of observations over time, so that the values of the observed variable are examined not only at two points immediately before and after the policy change or other innovation (which "interrupts" the series), but also well before and well after. To illustrate the risk of restricting the analysis to these two observations, the authors present several hypothetical configurations of data in which restricting the analysis to two observations leads to a finding of sharp discontinuity, whereas the full time series reveals continuity. Causal inferences about the impact of discrete events can be risky without an extended series of observations. Comparativists employing small-N analysis must heed this warning, since they routinely analyze the impact of discrete events, ranging from wars, revolutions, and military coups to specific public policies.

Donald Campbell and Laurence Ross's (1968) subsequent analysis of the impact on traffic fatalities of the Connecticut crackdown on speeding in the 1950s provides a stunning "exemplar" of the imaginative application of a quasi-experimental design to public policy analysis. Indeed, Przeworski (1987, 31) has argued that methodology is influenced far more by exemplars than by formal attempts to "legislate" correct methods, and the Connecticut crackdown article has certainly played that role.[15]

The case appears to be a simple one. When the State of Connecticut initiated strict enforcement of the vehicular speed limit in the 1950s and traffic deaths dropped sharply, the cause and effect relationship seemed obvious. Yet in evaluating this causal link, Campbell and Ross do an impressive analysis of potential threats to its "internal validity" (was that really the cause in Connecticut?) and its "external validity" (can the finding be generalized?). No sensitive analyst can read this article without acquiring a more sober view of the problems of evaluating policy impacts.

Ideas about quasi-experimental and interrupted time series design have also been disseminated through the large body of writing on evaluation research. This includes studies that apply these ideas to the analysis of political development (Hoole 1978), as well as excellent treatments of experimental design and evaluation research in introductory textbooks on social science methodology, such as Babbie (1992).

Although much writing on quasi-experiments appears to offer helpful guidance and practical advice to small-N analysts, Christopher H. Achen's *The Statistical Analysis of Quasi-Experiments* (1986) may leave them feeling that the methodological challenges posed by this type of design are overwhelming. In studies of the impact of public policy, the core problem is the lack of "randomization" in the application of the policy, which

may result in selection bias. For example, the benefits of a policy are commonly received by some groups and not by others, on the basis of certain attributes possessed by the groups, and it is possible that these prior attributes will themselves reinforce the outcomes that the policy seeks to promote. In the absence of true experimental data, this poses the challenge of disentangling the impact of the policy from the impact of these prior attributes. This causal riddle can be addressed by constructing a model of how citizens are selected to be recipients of the policy. This model then becomes a building block in the analysis of the policy's impact, in that these prior considerations can be "factored out" in assessing the policy. Achen shows that solving the riddle requires a complex form of "two-stage" statistical analysis.

The implications of Achen's book may be discouraging for analysts working with a small number of cases. An adequate solution to the lack of randomization requires a form of statistical analysis which can be applied to an elaborate quantitative data set, but this technique would be hard to apply in a small-N study. A more hopeful view might be that the literature on experiments and quasi-experiments at least provides useful warnings about the perils of analyzing discrete events as if they were true experimental interventions. In the absence of appropriate data sets, the researcher must exercise caution in making causal claims.

Innovations in Statistics

Recent work on statistical analysis has provided both new warnings about the risks of statistical studies and new opportunities for doing meaningful statistical work with relatively modest case bases. The statistician David Freedman has launched a major assault on the use of multivariate quantitative analysis in the social sciences (1987, 1991), which he claims fails because the underlying research design is generally inadequate and because the data employed fail to meet the assumptions of the statistical techniques. His criticism may bring considerable satisfaction to those who have been skeptical about statistics all along and who take comfort in the greater "control" of the material they feel derives from analyzing relatively few cases through more qualitative techniques. It is realistic to expect that we may go through a period of greater questioning of the use of statistics in the social sciences. However, as with the rejection of quantitative cross-national research discussed above, it would be unfortunate if a reaction against quantitative studies went too far.

The emergence of new statistical techniques that are helpful in the analysis of relatively few cases makes such a blanket rejection unwarranted. One example is the development of "resampling strategies" such as the "bootstrap" and "jackknife" (Diaconis and Efron 1983, Mooney and Duval 1992). These techniques use computer simulation to create, from an initial set of real data, a large number of hypothetical replications of the study, which can then be used in statistical tests that are not as vulnerable to violations of distributional assumptions as are more conventional tests. These techniques may be especially useful when there is great heterogeneity among units, as may readily occur in cross-national comparisons.

The development of "robust" and "resistant" statistical measures (Hampel et al. 1987; Hartwig 1979; Mosteller and Tukey 1977) is promising in much the same way. These measures are relatively unaffected by extreme or deviant values and can therefore help overcome the problem in small-N analysis that findings may be seriously distorted by a single observation that is greatly in error.

Another set of techniques concerned with this same problem is "regression diagnostics" (Bollen and Jackman 1985; Jackman 1987). These are tests used in conjunction with conventional regression analysis to assess whether unusual values on particular observations, called influential cases, have distorted the findings. The advantage of regression diagnostics in comparison with robust and resistant statistics is that one can employ them with the more familiar coefficients associated with regression analysis.

The use of regression diagnostics is nicely illustrated in the recent debate on the relationship between corporatism and economic growth in 15 Western European countries (Lange and Garrett 1985, 1987; Jackman 1987, 1989; Hicks 1988; Hicks and Patterson 1989; Garrett and Lange 1989). The starting point of this debate is Peter Lange and Geoffrey Garrett's 1985 article, which presents an interesting and complex idea in a simple form. They argue that the organizational strength of unions in the labor market and the political strength of the left in the electoral and governmental arenas both have an impact on economic growth, but that this impact is shaped by a complex interplay between these two factors, which they represent through an "interaction" term in their regression analysis of the 15 cases.

In a reanalysis of their article, Robert W. Jackman (1987) employs regression diagnostics to examine certain influential cases that he believes distort their findings. In the ensuing discussions among these five authors, an expanded model with further control variables is proposed, this expanded model is both challenged and defended, and Lange and Garrett subsequently defend their original model and call for new data and further tests.

This scholarly debate brings together an important substantive problem, a high level of area expertise and knowledge of specific cases, the inventive

use of a relatively straightforward statistical model, a constructive critique based on regression diagnostics, and a sustained process of cumulative knowledge generation based on the scrutiny of a shared data set. Just as the Campbell and Ross article on the Connecticut speeding crackdown is an exemplar of a quasi-experimental design, this debate should stand as an exemplar of a methodologically sophisticated effort by several scholars to solve an important problem within the framework of small-N quantitative analysis. This debate also shows that although an "N" of 15 might often be approached through qualitative small-N comparison, it can likewise be subjected to statistical analysis, with interesting results.

Another area in which potential problems of statistical analysis are amenable to solution concerns the issue of "average effects" in regression studies. The results of the simpler forms of regression analysis are based on an average of the strength of causal relations across the cases being studied. For the coefficients produced by regression analysis to be meaningful, it is necessary that these causal relations be homogeneous across the cases. Yet Ragin (1987, chap. 4), among others, has forcefully argued that this assumption commonly does not hold, given the complex forms of "multiple conjunctural causation" often encountered in comparative studies. In different contexts of analysis, the interaction among causal factors may vary.

However, solutions to this problem are available. John E. Jackson (1992) shows how it can be addressed with advanced statistical techniques, and the interaction term in the Lange-Garrett regression analysis, discussed above, deals with precisely this problem: that the effect of one explanatory factor varies depending on the value of another explanatory factor. Finally, Przeworski and Teune's procedure of "replacing proper names," also discussed above, takes this problem of causal complexity and turns it into an opportunity to deal more theoretically with the diversity of causal patterns.

Innovations in the Case-Study Method

When Lijphart wrote his 1971 article, he apparently felt some hesitation about including a discussion of case studies in an assessment of the comparative method.[16] Yet the two topics are closely linked, and his helpful typology of the uses of case studies in hypothesis testing and theory building set the stage for refinements in case study analysis later introduced by other scholars.

One of the most suggestive discussions of the case-study method is that of Campbell (1975). He dramatically recants the bold assertion he made in his earlier book with Stanley that "one-shot" case studies are "of almost no scientific value" (1963, 7). He shows instead that case studies are the basis of most comparative research, that they offer many more opportunities than is often recognized for falsifying the researcher's main hypotheses, and that much can be learned from making explicit the comparisons that are often implicitly built into case studies. For example, any given hypothesis about a case has implications for many facets of the case. Campbell uses the label "pattern matching" to refer to the process of discovering whether these implications are realized. The analyst can thereby increase the "N" by multiplying the opportunities to test hypotheses within what may initially have been viewed as a "single" case.

This procedure of pattern matching is helpful in addressing the long-standing concern that case studies are useful for generating hypotheses, but that the same case cannot then be used to test the hypothesis because it offers no possibility of disconfirmation. This is sometimes referred to as the problem of ex post facto hypotheses.[17] The procedure of pattern matching opens the possibility that an hypothesis initially generated by a particular case could subsequently fail to be supported by the same case. Thus, the problem of ex post facto hypotheses can be partially overcome.[18]

Harry Eckstein (1975, 113-123) is likewise concerned with testing, as opposed to generating, hypotheses in case-study analysis, and he argues forcefully that many analysts have greatly underestimated the value of case studies for hypothesis testing. In particular, the carefully constructed analysis of a "critical case" -- for example, one about which the analyst has particularly strong expectations that it will fit the hypothesized causal pattern -- can provide an invaluable opportunity to falsify the relevant hypothesis.

Alexander George and Timothy McKeown (1985), building on George (1979), present a helpful synthesis of two key building blocks in the process through which hypotheses are tested in case studies. The first corresponds to the conventional approach to placing a case in comparative perspective, which they call the "congruence procedure." The scholar examines the values of an hypothesized independent and dependent variable for a given case and determines, in light of explicit or implicit comparison with other cases, whether these values are consistent with the predictions of the hypothesis under consideration (pp. 29-30). The second is "process-tracing," through which the researcher engages in a close processual analysis of the unfolding of events over time within the case (pp. 34-41). The goal is to assesses whether the dynamics of change within each case plausibly reflect the same causal pattern suggested by the comparative appraisal of the case in relation to other cases. Process tracing may be seen as a specific instance of Campbell's pattern matching, and as with

pattern matching the analyst makes a series of within-case observations against which the hypothesis can be further assessed.

Overall, these articles, along with works such as Robert K. Yin's *Case Study Research* (1984), offer a systematization of case-study procedures that provide a valuable point of reference for scholars concerned with small-N analysis. At the same time, the debate continues on the proper role of case studies in assessing and building theory. An interesting part of this debate, published as a special issue of the journal *World Politics* (1989) focuses on the contribution of case studies to evaluating one application of rational choice analysis, i.e., rational deterrence theory in international relations. The opening article by Achen and Snidal (1989) argues that the case studies employed by many international relations specialists do not adequately address the central ideas of this body of theory, thereby raising an issue perhaps not often enough considered in discussions of the comparative method: How can the *methodological* concern with executing good comparisons be linked to the key analytic issues posed by the particular *theories* that are to be evaluated? Achen and Snidal also note the problem of selection bias in case studies of deterrence theory, that is, the problem that case studies usually focus on deterrence failure, whereas much or most of the time deterrence works. The issue of the journal includes a series of articles by scholars close to the case-study tradition who debate the issues raised by Achen and Snidal. These articles constitute a valuable effort to think through how case studies have functioned in relation to the assessment of a particular body of theory, a line of inquiry that should be taken up more often.

In this debate on deterrence theory, an intellectual tension emerges that has been a recurring theme in this chapter: between analyses that seek to achieve a generic understanding, based on relatively few variables and encompassing many cases, as opposed to analyses that seek to draw out the complexities of particular cases.

Conclusion

Among the diverse approaches discussed in this chapter, three major analytic alternatives stand out. First, new perspectives on the case-study method have strengthened the viability of that approach. Discussions of opportunities for within-case comparisons have in fact begun to blur the distinction between case studies and the comparative method, although the case-study approach does remain a distinct tradition. Interest in case studies has been reinforced by several factors, including the renewed concern with interpretive social science, the continuing intellectual and institutional strength of area studies, and deep skepticism in some circles about the validity of broad comparison.

Second, it is evident that quantitative techniques employing a relatively small number of cases can successfully address important substantive questions. This approach merits attention in light of the new statistical tests suitable for small-N analysis. The opportunity for cumulative scholarly learning provided by statistical studies is nicely illustrated by the Lange-Garrett-Jackman-Hicks-Patterson debate. This debate is also relevant to the issue of linking rival research traditions, because it shows that insights derived from case studies and from more qualitative comparative work can, after all, serve as stepping-stones on the path toward statistical analysis.

The third alternative has been reinforced as well: the systematic comparison of a small number of cases, with the goal of causal analysis, which is the approach that Lijphart originally advocated. In this perspective, broad qualitative comparison is seen as both possible and productive. The growing influence of the school of comparative historical analysis has substantially enhanced the credibility of this approach, and it plays an important role as an analytic middle ground between the case-study tradition and small-N statistical analysis.

All three of these approaches will persist, and a key question is how well they can be linked. The tradition of research on Western Europe provides an encouraging model, in that the findings of quantitative comparative scholars play an important role in general debates in that field.[19] In research on Latin America, by contrast, quantitative comparative work receives considerably less attention from mainstream scholars. Yet the kind of cross-fertilization found in the West European field can make an important contribution to strengthening research. With good communication, country specialists and experts in qualitative small-N comparison can push the comparative quantifiers toward more carefully contextualized analysis. Likewise, the comparative quantifiers can push the country specialists and experts in qualitative comparison toward more systematic measurement and hypothesis testing. A central goal must be to sustain such communication.

The implications for graduate training are clear. If Ph.D. candidates are to be prepared to address these issues of comparison, they should have enough training in statistical methods to evaluate quantitative studies that employ old, and new, methods of statistical analysis and to use such methods when appropriate. Those more oriented toward statistical analysis should have enough background in qualitative small-N comparison and case study analysis to be able to build on the analytic contribution of those approaches. Both groups should have substantial exposure to basic writings on the

philosophy of science and logic of inquiry that can provide the framework for more informed choices about these methodological alternatives.

In this way, the foundation can be laid for an eclectic practice of small-N analysis that takes advantage of opportunities that present themselves on both sides of what could otherwise be a major intellectual divide.

Notes

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1. "N" is used to refer to the number of cases analyzed in any given study.

2. References to representative works of comparative historical analysis are presented below.

3. In his comparison of these methods, Lijphart acknowledges his debt to Smelser's (1968) excellent analysis that employed a parallel framework. See also Smelser (1976).

4. This perspective has been elaborated by Skocpol (1984, chap. 11), and a parallel formulation is found in Charles Tilly (1984, chap. 4).

5. Skocpol and Somers (1980, 181-87) refer to this as "macro-causal" analysis. Yet small-N studies that generate and test hypotheses can have both a macro and a micro focus, and it does not seem productive to exclude from this category those with a micro focus. Hence, this alternative label is used.

6. Although Przeworski and Teune are centrally concerned with issues that arise when additional cases are added to an analysis, the problems they discuss are also more likely to occur if one is dealing with a larger N to begin with.

7. For example, instead of referring to "Venezuela," one would refer to a country in which, due to the impact of massive oil revenues, a particular causal relationship assumes a distinct form.

8. "Thick description" is sometimes mistakenly understood to refer simply to "detailed description," which is not what Geertz intends.

9. Given that these studies often focus on long periods of time within each case, it might be argued that the number of cases could be greatly increased through comparison over time, thereby making them something other than small-N studies. However, since the goal of many studies in this tradition is to explain overall configurations of national outcomes as they are manifested over long periods, these outcomes often cannot be disaggregated into a series of longitudinal observations. Hence, the number of cases cannot realistically be increased through the use of comparison over time.

10. The most similar and most different systems designs correspond, respectively, to John Stuart Mill's (1974) method of difference and method of agreement. Whereas Przeworski and Teune's labels of "similar" and "different" refer to whether the cases are matched, as opposed to contrasting, on a series of *background* variables, Mill's labels of "difference" and "agreement" refer to whether the cases are contrasting, as opposed to matched, on the *dependent* variable.

11. Personal communication from Adam Przeworski.

12. Christopher Achen, personal communication, has long insisted on this point.

13. For example, Gereffi and Wyman (1990), Haggard (1990), Przeworski (1991), and Rueschemeyer, Stephens, and Stephens (1992).

14. For a discussion of strategic choice models (a closely related type of model) that have been applied to the analysis of political reform, democratization, and democratic consolidation in Latin America, and that likewise offer fruitful simplifications of complex phenomena, see Collier and Norden (1992).

15. The reprinting of this article in a reader on social science methodology (Tufte 1970) made it widely available to political scientists, and its influence has been substantial.

16. Personal communication from Arend Lijphart.

17. This problem is routinely discussed in introductory methodology texts, e.g., Babbie (1992, 24-25, 427).

18. Although pattern matching within the same case introduces the possibility of falsifying the hypothesis, it does not overcome all of the problems of ex post facto hypotheses. Thus, pattern matching will probably not overcome a problem of unrepresentativeness which may arise due to selection bias or to the chance selection of an atypical case.

19. See, for example, the debate on interest mediation and corporatism in Western Europe, including Wilensky (1976), Hibbs (1978), Schmitter (1981), and Cameron (1984). The debate started by Lange and Garrett (1985) is a continuation of this line of analysis.

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