1 Pathway analysis and the elusive search for causal mechanisms

1.1 The allure of mixed-method research in the search for causal mechanisms

Scholars of judicial behavior have found time and time again an association between US Supreme Court justices' political ideologies and their votes (e.g., Pritchett 1948; Rhode and Spaeth 1976; Schubert 1965; Segal and Cover 1989; Segal et al. 1995; Segal and Spaeth 1993, 1999, 2002). Scholars differ sharply, however, over the meaning of this finding. Behavioralists argue that the relationship between ideology and votes suggests that justices largely ignore the law and impose their personal preferences when deciding cases. "Simply put, Rehnquist votes the way he does because he is extremely conservative; Marshall voted the way he did because he is extremely liberal" (Segal and Spaeth 1993: 65). Postbehavioralists envisage a very different decision-making process (Gillman 2001). They argue that justices begin with a good faith understanding of legal rules and principles, and that those general legal principles meaningfully constrain justices' discretion (e.g., Burton 1992; Gillman 1993, 1996; Cushman 1998; see also Dworkin 1978). From this perspective, conservative and liberal judges can end up voting quite differently from one another while still applying the same legal principle, just as two sergeants ordered to choose the "best" five soldiers from a platoon might both follow the order but still select different soldiers (Dworkin 1978).[1]

[1] This is a highly stylized account of what is admittedly a much richer and more nuanced debate (see, e.g., Epstein et al. 2013; Baum 1997, 2006). The goal is not to

In this area, the debate is not about the core findings of the quantitative research, but instead concerns the unobserved processes that link the critical explanatory variable and the outcome. In other words, the question is not *whether* ideology affects judicial votes, but *how* it does so. In the words of Howard Gillman (2001: 487), postbehavioralists

> do not reject behavioralist descriptions of decision-making patterns, but they insist that behavioralists should not infer that these patterns mean an absence of legal motivations unless they have additional independent evidence that judges are basing their decisions on considerations that are not warranted by law.

This debate might seem technical but it is not a dusty, academic quibble, because it goes to the heart of questions about the rule of law in US Supreme Court decision-making. If individual justices start with specific policy outcomes in mind and apply the law instrumentally to fit their ideological preferences, then the ideal of the rule of law seems badly eroded. By contrast, if justices begin with good faith understandings of the law and legal precedents, which are often open-ended (like the order to choose the five "best" soldiers), and apply these principles consistently without regard to outcome but in light of very different (but sincerely held) political values, then the association between political ideology and votes might be less troubling because the law meaningfully guides judicial behavior, even if it fails to mechanically constrain judicial discretion or eliminate ideological splits on the Court. Under these circumstances, understanding the links between justices' ideology and their votes matters, and researchers need a strategy for exploring these unobserved processes.

This challenge is not limited to the judicial behavior literature. As we will see, the question of how an explanatory factor causes an outcome is central to a variety of research agendas. Comparative politics

summarize this vast and contested area. It is merely to give the reader a reference for the type of problem and research we are interested in addressing in this book.

scholars have been investigating the underlying links between natural resource wealth and both internal conflicts and low levels of democracy (discussed in Chapters 4, 6, and 7). International relations scholars are interested in how policies diffuse from one state to another, such as how the adoption of liberal economic policies in one state might affect the adoption of similar policies in other states (discussed in Chapter 5). Health policy scholars have long sought to understand how socio-economic status (SES) influences health outcomes (discussed in Chapter 8). Despite the obvious substantive differences in these fields, they face a similar dilemma: the relevant literature establishes a relationship between an explanatory variable (X1) and some outcome (Y), controlling for other factors (X2), but researchers want to better understand how X1 generates Y. The question of how X1 generates Y is critical because sometimes a broader normative question turns on the nature of the processes linking X1 and Y (as in the case of the judicial behavior literature) or at other times a key policy issue depends on it (as in the case of the literature of SES and health outcomes, which seeks to identify mechanisms that can be manipulated in an effective and politically viable manner).

The resulting search for pathways often leads researchers into areas where they are uncertain about what mechanisms might be in play, whether and how they interact, and how they might be measured. In such situations, an increasingly common approach is to use mixed-method research that seeks to combine the existing quantitative large-*N* studies with process-tracing case studies. The instinct underlying mixed-method research is that quantitative and qualitative studies have complementary strengths. In the literature on judicial behavior, quantitative analysis of judicial voting allows a researcher to identify broad patterns across a large number of cases and to estimate the relationship between ideology and votes in specific cases, controlling for other factors. However, as every graduate student knows, "correlation is not causation," and for a variety of reasons social scientists have become increasingly skeptical of over-reliance on standard regression techniques applied to

non-experimental, observational data (see, e.g., Achen 1986; Chatfield 1995; Freedman 1991; Kittel and Winner 2005; Winship and Sobel 2004; Gerber et al. 2004).

Case studies – intensive analyses of single units observed at a specific time or over a specific period of time, with the goal of offering insights into a population of cases (Gerring 2007) – promise a partial remedy to some these concerns. While it is difficult to eliminate the possibility of missing variables in explaining complex phenomena, case studies can often account for a wider range of factors than standard regression analyses, because they are not limited to the variables or measures of complex concepts that appear in preexisting datasets. By carefully plotting events and processes over time, case researchers can weave many observations from different levels of analysis into explanations, while gaining insights into the measure of the variables, their sequence, the direction of causality, and interactions among them. Case researchers are also not reliant on statistical tests of significance. They can triangulate among various types of data to gain confidence in their explanations as their findings converge on a single narrative. In addition, they can go back to the data as needed, consider the observable implications of alternative explanations that might arise as more is learned, and "stretch" their *N* by expanding the analysis over time or dividing cases into subunits to increase possible comparisons.

Given these strengths, case studies are a particularly promising means to explore the as-yet unobserved pathways between variables. Studying a small number of judicial decisions, for instance, would allow for the exploration of underlying decision-making processes by engaging in a detailed content analysis of a justice's reasoning of an opinion, how a justice uses existing precedents in that opinion, and whether the justice used the same precedents consistently over time. A case study could combine this type of content analysis with a review of justices' papers to search for clues about their motivations in deciding cases and with interviews of justices, law clerks, lawyers, and legal experts about the decision-making process. Questions might include: When did the

justice indicate how she or he would vote on a case? Was it before oral arguments? Before reading the briefs? Was the justice interested in looking for a case to address this issue before the writ of certiorari was granted? Had the justice worked on similar cases before joining the Court? Which arguments seemed most persuasive to the justice: policy-oriented or rule-oriented ones? What is the justice's reputation among peers and the legal community? Is the justice known as a rule-oriented jurist or an "activist" one? While triangulating among diverse types of materials cannot reveal the "truth" about a justice's decision-making process – given our current technology, we cannot directly observe the ideological nature of the decision-making process as it unfolds inside a justice's brain – piecing together a number of causal process observations (CPOs) can get a researcher closer to understanding the underlying judicial decision-making process (Collier et al. 2004; Brady 2004; Bennett and George 2005). This can add valuable insight into the broader debate over the role of law versus ideology in Supreme Court decision-making (e.g., Gillman 1993, 2001).

Although case studies can be essential in tracing unmeasured processes linking variables, there is a trade-off of depth for breadth (Gerring 2004), making it difficult to assess the extent to which lessons learned from a single case (or a small number of cases) apply to the unobserved population of cases that feature the relationship of interest. Given this limitation, it is crucial to gain perspective on cases vis-à-vis the broader population. To do so, it seems wise to combine existing theoretical and empirical knowledge with information from quantitative literature to facilitate case selection and/or interpretation. In studying judicial decision-making, it would be useful if the existing quantitative data targeted cases where a justice's ideology seems to play different roles in different votes, and to assess how the key attributes of the cases selected compare to other cases within the broader population. As case studies accumulate, it is possible to begin to map the pathways between political ideology and votes, and to assess whether recent estimation techniques that seek to build knowledge on causal pathways can be used. This would

improve confidence in the causal nature of the relationship and/or estimate the average effects of specific mechanisms.

This book is about how to do this. Specifically, it explains how to construct a pathway analysis: case studies aimed at (a) exploring the unobserved links in specific cases, and (b) using those insights to generate hypotheses about mechanisms in the unstudied population of cases featuring the X1/Y relationship. In addressing this topic, we explain how to prepare for pathway analysis by reading the relevant literature in light of different types of X1/Y relationships, how to select cases for pathway analysis, how to use the existing quantitative data to gain perspective on cases that have already been selected for practical or theoretical reasons, and how to use the results of pathway analysis to inform future studies of mechanisms. The central argument is that pathway analysis requires comparison and that researchers must choose cases in light of two criteria. The first is the *expected relationship between X1 and Y*, which is the degree to which cases are expected to feature the relationship of interest between X1 and Y in light of existing theory, empirical studies, and large-*N* data. The second is *variation in case characteristics*, or the extent to which the cases are likely to feature differences in criteria that can facilitate general knowledge. Our comparative approach stands in contrast to the standard advice in the field, which stresses the selection of single cases.

The book is intended for two audiences that share a considerable stake in the use of mixed-method research: quantitative scholars and qualitative scholars. We expect that it will be useful to quantitative scholars who want to use case studies to enrich their findings and assess whether they can take advantage of the latest estimation techniques that use mechanism knowledge to probe internal validity or to estimate the average marginal effects of specific mechanisms. Second, we expect that this work will be useful for qualitative scholars who want to use existing quantitative studies to select cases for exploring the unobserved links or processes between an explanatory variable and outcome. This group includes those who select cases at the initial stage of their research, as

well as those who have completed an in-depth study of a single case (or small number of cases) and seek to gain perspective on the meaning of these cases or select additional cases for analysis.

1.2 Pathway analysis and the search for causal mechanisms

Political scientists, sociologists, and economists who agree on little else have embraced the search for causal mechanisms (Gerring 2010; Heckman and Smith 1995; Hedstrom and Ylikoski 2010; Imai et al. 2011; Mahlotra and Krosnick 2007; Mayntz 2004; Waldner 2007, 2012). A content analysis of top-ranked political science journals, many of which are predominantly quantitative, confirms the importance of mechanism-centered research in the discipline. In reviewing more than 1,400 articles published between 2005 and 2012, we found that more than 400 – about 30 percent – explicitly mentioned the importance of identifying mechanisms or causal processes.[2]

Pathway analysis offers a critical but imperfectly understood tool in the search for causal mechanisms, because it can provide a means to build a bridge from what is known about an association between variables to a better understanding of the unobserved links between variables and the feasibility of future mechanism-centered quantitative work. We believe that pathway analysis has not been utilized to its fullest potential in part because relatively little has been written about how researchers should select cases when the goal is to build knowledge of causal mechanisms that relates not just to the case at hand but also to unstudied cases, and in part because little has been written about how qualitative work relates to large-*N* studies of mechanisms. Moreover, what has been written does not address case selection when the underlying relationship between the explanatory variable and outcome is non-linear, there are

[2] Journals that were examined were: *Political Analysis*, *Annual Review of Political Science*, *American Journal of Political Science*, and *Comparative Political Studies*.

multiple causal pathways, or researchers desire to use an alternative to regression-based case selection.[3] As we will see in later chapters, under these circumstances, the existing guidelines may result in poor case selection that can produce false negatives, as it is possible to pick a case where the effect of the explanatory variable on the outcome is small and therefore hard to detect. This can lead researchers to miss important causal mechanisms or wrongly question the underlying relationship. Conversely, applying existing guidelines may produce false positives, as researchers may pick a case that involves a large, though atypical, effect or anomalous mechanism. Mistakes in the case selection process can imperil the research by leading to inaccurate conclusions and erroneous theoretical claims.

In this book we present a new approach for selecting cases for pathway analysis, which will help researchers effectively read the relevant literature on the underlying X1/Y relationship in preparation for their analysis; choose cases more systematically; better understand when and how to generalize from a single case or small number of cases to the unobserved population of cases; and assess the feasibility of future studies of mechanisms. An ancillary benefit of using our approach is improvement in both the transparency and reliability of the case selection process; this will facilitate assessment and aggregation of the findings of pathway analysis as mechanism-centered research agendas are pursued. Along the way, we will touch on broader issues such as the role of case studies in multi-method work and, equally important, how to assess their contributions in ways that fully acknowledge their importance while recognizing their inherent limits.

[3] The argument is *not* that scholars have failed to consider how to select cases for other types of research given causal complexity. There is a vast and useful literature on these topics (e.g., Brady and Collier 2004; George and Bennett 2005; Gerring 2007; King et al. 1994; Ragin 2000). The argument is that these issues remain undertheorized in the context of pathway analysis, which has very distinct analytic goals and thus requires distinct approaches to case selection.

1.3 Scope of the book

Before addressing our terminology and outlining the chapters that follow, a few points of clarification about the scope of our arguments are in order. First, our argument is not a philosophical inquiry into the nature of causal mechanisms (Elster 2007; Gerring 2010, 2008; Hedstrom 2005; Waldner 2012). Our approach is more pragmatic. We are interested in showing how to conduct pathway analysis, especially developing case selection techniques for researchers who want to use case studies to gain insights into how an explanatory variable (X1) generates an outcome (Y) and use those insights to generate hypotheses about the broader population of cases involving the X1/Y relationship. As discussed below, this analytic focus implies that causal mechanisms should be treated as unobserved links between two variables that are analogous to mediating or intervening variables in standard regression analyses (Imai et al. 2010; cf. Waldner 2012). Using this definition of mechanisms will enable qualitative researchers to take advantage of quantitative studies that establish associations among variables, as well as allow the case studies to be understood and used by quantitative researchers.

Second, our book does not address how researchers should *proceed* in the field, although we do address what types of questions ought to be *asked* in the field and, having already selected cases, how existing large-*N* data can be used to gain perspective on the cases. As such, our work is distinct from, yet also complementary to, the growing number of texts that describe process-tracing methods. In our view, it is telling that these works often analogize social science researchers to detectives trying to solve a particular crime (as opposed to investigating a pattern of criminal activity). Although this analogy may be useful for thinking about how researchers can reach causal inferences (the whodunit) from a small *N*, it can be misleading for our purposes. A hypothetical detective typically does not have to select which case to investigate, so there is no case *selection* problem. Equally important, a detective usually

does not have to consider how findings from one investigation generalize to other crimes that have not been examined. In conducting pathway analysis, however, researchers have to make a choice about which cases to investigate and attempt to infer something about other, unobserved, unstudied cases that feature the relationship of interest. This detective analogy also implies that case studies will "solve" the crime. In pathway analysis, case studies help map mechanisms in a particular case and also serve as a bridge toward future studies, helping fill in the gaps between what is known and what needs to be known about mechanisms in a variety of settings. The knowledge gleaned from one crime case can stand alone. In research, knowledge from one case study is indispensable to the broader research agenda, but it must be kept in proper context given the state of the existing literature, the trade-offs associated with particular case selection strategies, and the need to test whatever hypotheses are drawn from the cases.

Third, our approach is distinct from other work on mixed-method research. It is true that, like others, we seek to help researchers make qualitative and quantitative studies work better together, so that they can take advantage of what are often complementary strengths and weaknesses of different types of studies. Yet our approach is far more explicit about embedding qualitative work in a broader mixed-method research agenda. Instead of encouraging researchers to use qualitative "soaking and poking" to probe the validity of existing quantitative findings, we urge researchers to read the existing literature in very particular ways, use quantitative data to select cases to map the underlying relationship of interest, and use the resulting map to assess the feasibility of meeting the analytic requisites of future quantitative studies. Indeed, one set of lessons of this book concerns the difficulties of using case studies to improve confidence in the causal nature of relationships. This is not a critique of case studies per se, but rather it is a recognition of the inherent difficulties of causal inference in a world of complex relationships.

Finally, this is a book about methods, not particular empirical findings. In evaluating examples of pathway analysis and case selection, our