12 Case studies and process tracing: theories and practices

Pascal Vennesson

Introduction

A significant part of what we know about the social and political world comes from case studies. Case studies famously contributed, for instance, to uncovering the tendency towards oligarchy in political parties, the inner working of the exercise of power in democracies, the dynamics of international crises, the logics of authority and control in organizations, the interplay between values and institutions in the Indian caste system, the sources of success and failure of deterrence, and the causes of social revolutions (Michels 1911; Dahl 1961; Crozier 1964; Dumont 1970; Allison 1971; George and Smoke 1974; Skocpol 1979). Beyond these classical and influential works, the case study research tradition remains popular as researchers explore the political development of imperial Germany in comparative perspective, the causes and characteristics of nuclear accidents, the 1986 Challenger launch disaster, the evolution of institutions, the role of reputational claims in foreign policy decision-making or the genesis of the welfare state (Esping-Andersen 1990; Sagan 1993; Mercer 1996; Vaughan 1996; Berman 2001; Thelen 2004; for more examples, see Feagin, Orum and Sjoberg 1991; George and Bennett 2005: 287–325; Gerring 2007: 2–5). In international relations, case studies have made a central contribution to both the international security and the international political economy subfields (Snyder 1989; Kacowicz 2004; Odell 2004).

What is a case study and what purpose does it serve? From an epistemological point of view, what is the place, and contribution, of case study research?

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How can case studies be performed empirically, especially using process tracing, a research procedure intended to explore the processes by which initial conditions are translated into outcomes? This chapter answers these questions and adds to the existing discussions of case study research in two ways. First, it addresses the persistent difficulty of practitioners of case study research to articulate their epistemological and methodological contributions, compared to other approaches, especially quantitative ones (Gerring 2007: 5–8). Even the classic work of Eckstein, for example, heralded as a keystone in the renaissance of qualitative methods, was rather restrictive and only favourable to certain types of case study (Eckstein 1975; 1992: 118). I argue that the social scientific contributions of case studies remain underappreciated, not because of the case study approach itself, but because the common epistemological framework of discussion usually focuses on data collection and testing. To get a fuller sense of the social scientific contributions of case studies, researchers would benefit from incorporating the epistemological conception of Gaston Bachelard, which treats the different elements of research, from conceptualization to investigation, as inseparable (Bachelard 1938, 1949).

Second, this chapter explores the ways in which case studies are performed empirically, in particular through the use of process tracing, a procedure designed to identify processes linking a set of initial conditions to a particular outcome. Process tracing is an important, perhaps indispensable, element of case study research (George and Smoke 1974, 1979; George and McKeown 1985). Yet, the most recent and systematic formulation of process tracing by George and Bennett is cast in a positivist perspective well-suited for certain kinds of case study, but less adapted for others (George and Bennett 2005: 205–32). Process tracing can be fruitfully used in both positivist and interpretivist research designs, allowing researchers to combine a positivist and an interpretive outlook in case study research. However, process tracing is also fraught with pitfalls and has limits. I discuss these limits and provide suggestions to overcome the main obstacles. In sum, this chapter belongs to the growing body of work that seeks to explore the interrelations between theoretical issues and the actual experiences of case study research (Davis 2005; George and Bennett 2005; Trachtenberg 2006; Gerring 2007). While this chapter is relevant for both single cases and comparisons of a small number of cases (commonly between one and ten), I concentrate on within-case analysis, where the researcher examines multiple features of each case to assess causal and constitutive relations between factors (the comparative research strategies are presented by della Porta, ch. 11; on within-case analysis: Mahoney 2000a: 409–17; George and Bennett 2005: 18).

My argument proceeds in three steps. I begin by defining the notion of case study and highlighting the main characteristics and purpose of case study research. Based on Gaston Bachelard's epistemology, I then propose a framework to identify, and get a better sense of, the social scientific contributions of case studies. Finally, I turn to the empirical practice, especially the different ways to envision and conduct process tracing. I also identify some limits of process tracing and suggest ways to overcome them.

Case study: what is it? What for?

What is a case study?

Since the pioneering work of Frédéric Le Play at the end of the nineteenth century and the Chicago school of sociology in the 1920s and 1930s, case studies have been ubiquitous. However, their importance and influence have waxed and waned, and their meaning and characteristics have changed as well (Platt 1992a, 1992b). Within each discipline in different countries, and even within subfields (for example, in foreign policy studies, comparative politics, public administration or political sociology), one can trace the cyclical alternation of enthusiasm and disappointment with case study research. Case studies are diverse in their objectives, characteristics and results. Their contributions to social scientific knowledge, their role in theory building, their empirical added value, and the ways in which they are conducted are regularly debated (della, Porta, ch. 11).

As soon as one ventures beyond a limited core, researchers' preferences differ on key characteristics of case studies: the ideal number of cases, the nature and richness of the data collected, the ways in which the data can, and should, be collected, the logic of generalization, the role of inductive and deductive approaches, the importance of time span and historical depth, the access to actors and their perceptions, the units of analysis, the connection with fieldwork, and participant observation. These theoretical and methodological debates are shaped both by the partially autonomous logic of each discipline, and by deep-seated, but often overlooked, national intellectual traditions (Galtung 1981). These discussions are also influenced by the transnational diffusion of ideas that often come from the United States, stemming from the evolution of social science disciplines in that country (Monroe 2005).

While virtually everyone claims to seize the epistemological middle ground, the conceptions of case studies range from the most positivist (King, Keohane

and Verba 1994; Maoz 2002) to the most interpretivist (Burawoy 1998; Passeron and Revel 2005), with a set of intermediate positions (Ragin and Becker 1992; McKeown 1999; Brady and Collier 2004; George and Bennett 2005; Gerring 2007). Not only are there different conceptions of what case studies are and should be, but there are also troubling discrepancies between case study theorizing and case study practices (Platt 1992b; Rogowski 1995).

The ordinary meanings and usages and the history of the word 'case' provide a useful starting point to getting a better grasp of its social scientific meanings and their evolutions. The word 'case', derived from the Latin *casus*, means an occurrence, something that happens, usually with an unfavourable connotation: an accident, a misfortune. It belongs to the legal vocabulary to designate a scandal or a lawsuit, and pedagogically in law and business to designate a learning method. The word 'case' also belongs to the religious vocabulary and refers to a particular, and embarrassing, moral problem which raises a difficult ethical debate (casuistry) (Jansen and Toulmin 1988; Passeron and Revel 2005). Finally, 'case' is also used in mathematics (limit case) and in medicine, where it designates the state and the history of a patient. These common meanings point us to some key characteristics of the ways in which 'case' is used in social sciences. On the one hand, the case appears as an unusual and specific challenge to established descriptions or reasoning. A case is therefore disconcerting: it provokes reflection and points to the need for an adjustment of a theoretical framework (Platt 1992: 24; Passeron and Revel 2005: 10, 16). On the other hand, the case requires a solution, its meaning defined in relation to theoretical frameworks and, however unique, it can be put in relation to other cases (Bradshaw and Wallace 1991; Abbott 1992: 53–82; Passeron and Revel 2005: 10–11). In sum, confronted with the case, the challenge is to acknowledge and uncover its specific meaning, while extracting generalizable knowledge actually or potentially related to other cases.

A case is a phenomenon, or an event, chosen, conceptualized and analysed empirically as a manifestation of a broader class of phenomena or events (on definitions: Eckstein 1975: 85; Jervis 1990; Ragin 1992: 1–17; King, Keohane and Verba 1994: 51–3; 1995; Yin 1994; George and Bennett 2005: 17–19). A case study is a research strategy based on the in-depth empirical investigation of one, or a small number, of phenomena in order to explore the configuration of each case, and to elucidate features of a larger class of (similar) phenomena, by developing and evaluating theoretical explanations (Ragin 2000: 64–87). Four points related to these definitions can be emphasized. First, the case is not just a unit of analysis or an observation, understood as a piece of data. It is not a data category, but a theoretical category (Ragin 1992: 1; Hall

2003: 396–7). Second, the case is not *a priori* spatially delimited. The delimitation of the case, spatial and otherwise, is the product of the theoretical conceptualization used by the researcher. These boundaries are by no means obvious or to be assumed: they result from theoretical choices (Rueschemeyer 2003: 320). Third, the phenomenon under study does not have to be contemporary; it can be from the past. Fourth, in case study research, data can be collected in various ways, and it can be both qualitative and quantitative.

Varieties of case studies

What purpose do case studies serve? Case studies come in different shapes and forms, and they can serve a variety of purposes, often simultaneously (Lijphart 1971; Eckstein 1975; Levy 2002). Researchers use case studies to develop and evaluate theories, as well as to formulate hypotheses or explain particular phenomena by using theories and causal mechanisms (Bennett 2004: 21). Furthermore, some works can be defined as case studies although their authors do not explicitly describe them as such (Allen 1965; Dore 1973). Case studies are also combined with other methods like statistical analysis and computer simulation, for example (Voss 1993; Biddle 2004). I identify four main types of case study, each corresponding to a different purpose (for different typologies: Lijphart 1971; Eckstein 1975; Levy 2002; Bennett 2004: 21–2; George and Bennett 2005: 74–6).

First, the descriptive case study (configurative-ideographic) is a systematic description of the phenomena with no explicit theoretical intention. It is common to label this kind of research as simply suggestive and to dismiss its social scientific contribution. It is true that the notion of a descriptive case study does not sit easily with our definition, which implies a theoretical framing. Still, while the work of many historians and anthropologists might lack an explicit theoretical framework, that does not mean that a theory is altogether absent. Furthermore, in any type of case study there is an unavoidable descriptive dimension. Case studies sometimes explore subjects about which little is previously known or phenomena in need of an interpretation that sheds new light on known data, and their descriptive aspect is invaluable.

Second, the interpretive case study (disciplined configurative) uses theoretical frameworks to provide an explanation of particular cases, which can lead as well to an evaluation and refinement of theories. Third, the hypothesis-generating and refining case study (heuristic) seeks to generate new hypotheses inductively and/or to refine existing hypotheses. The researcher can clarify the meaning of certain variables and the validity of empirical indicators, suggest alternative

causal mechanisms and identify overlooked interaction effects. A deviant case is especially useful to generate new hypotheses and/or to adjust theoretical propositions. Fourth, theory-evaluating case studies are used to assess whether existing theories account for the processes and outcomes of selected cases.

The social scientific contributions of case studies

Bachelard's applied rationalism and case study research

How can practitioners of case study research better articulate what they are doing, epistemologically and methodologically speaking? What are the specific social scientific contributions of case study research? Borrowing from Gaston Bachelard's epistemology of science, I suggest one way to highlight as a coherent whole the different social scientific dimensions of case study research. This connection between the case study method and Bachelard's epistemology is needed for two reasons. First, the epistemological categories that we use, explicitly or implicitly, affect the ways in which we evaluate the social scientific contributions of research strategies and methodologies, including case studies. I bring a different epistemological tradition to bear in debates about case studies that have been predominantly shaped by the analytic tradition in the philosophy of science, embodied in the work of Popper, Kuhn and Lakatos for instance (Davis 2005; George and Bennett 2005: 127–49). While not limited to case study research, Bachelard's epistemology helps us to get a fuller and more coherent perspective on its contributions.

Second, Bachelard's epistemology is useful because it treats as inseparable the different dimensions of scientific practices and does not focus on one taken in isolation. It is not that the usual focus on data collection, theory testing and causal inference is wrong, but it is important to keep in mind that this is only one aspect of a social scientific investigation. These operations depend on other epistemological acts that should be evaluated as a whole and not separately. Yet, in an intellectual context dominated by a conception of epistemology that focuses on data collection and theory testing, it is difficult to find the categories, and reasons, that give their full epistemological meaning and value to the other epistemological acts. When we adjust the epistemological framework, it becomes clearer that case study research is not just a casual idea generator, and that it is not limited to theory development.

The French philosopher of science Gaston Bachelard (1884–1962) probed the epistemological implications of the transformation of scientific practices in

chemistry, biology and physics, especially relativity theory and quantum physics (Bachelard 1934, 1938, 1949, 1971). He examined scientific thought, not so much in the static form of scientific theories, but by emphasizing the dynamic process of the experimental and theoretical practices of science (Tiles 1984: 9). His main concern was the creation, revision and rejection of scientific theories. Closely linking philosophy of science and history of science, he sought to reconstruct the philosophy implicit in the practice of scientists and to identify what he called their applied rationalism (Tiles 1984; Gayon and Wunenburger 2000; Wunenburger 2003; for an application of Bachelard's epistemology to the social sciences: Bourdieu, Chamboredon and Passeron 1968).

The central point of Bachelard's applied rationalism is that the different epistemological acts at the core of scientists' practice cannot be separated from one another. A data collection is only as good as the theoretical construct that it tests; in turn, the value of this theoretical construct depends on its capacity to break with common sense and to provoke a genuine epistemological rupture. Thus, on the one hand, Bachelard rejects the empiricist approach that focuses on the observational aspects of scientific activity, notably testing and data collection, in order to generalize the findings. On the other, he rejects the idealist conception, which ignores instrumented experiment altogether and recognizes no demand for systematic empirical testing of theories (Tiles 1984: 52–3). In short, for Bachelard a scientific fact is conquered, constructed and observed (*conquis, construit, constaté*; Bourdieu Chamboredon and Passeron 1968: 24, 81; Kratochwil, ch. 5).

On this basis, I argue that case studies should be conceived as contributing to each of these three epistemological acts, and not to one or the other in isolation. First, as a research strategy, case studies imply a break with the immediate experience that is highlighted by the question: 'What is this a case of?'. Researchers are not passive; they engage in 'casing', and in so doing they hope to overcome the epistemological obstacles that stem from conventional categorizations. Second, case studies are shaped by an explicit effort of theory construction. Third, case studies are not based only on assumptions about actors' goals and preferences. An in-depth empirical investigation using different types of data-gathering methods and procedures, like process tracing, is a key component of case study research.

Epistemological rupture, conceptualization and observation in case study research

'Casing' corresponds to Bachelard's first epistemological act: the rupture with conventional wisdom. Cases are not waiting out there to be studied. The

process through which researchers delimit, define and describe cases contributes to carving an aspect of reality that is different from the ways in which the phenomenon, or the event, is taken for granted. Researchers make something into a case: they are 'casing' (Ragin 1992: 218). Casing takes place at various stages during the research, but especially at the beginning and at the end. A case study does not presuppose a relatively bounded phenomenon, nor is it based on the need to select such a phenomenon. The boundaries of the phenomenon are defined by the investigator. Quite often the process of 'casing' leads the researcher to define units of analysis in a way that is different from conventions, legal, bureaucratic or otherwise (Ragin 1992: 218–21). Thinking in terms of case means rendering problematic the relations between ideas and evidence. While it is possible to choose conventional casing to simplify some problematic relationships between theory and data, this choice is itself an aspect of the conceptualization. It can be a useful starting point, but in the course of the investigation the researcher can build categories and time frames and uncover new relations. If so, 'casing' becomes a way to break with conventional images of the social and political world.

The case is the product of a preliminary, and then of an ongoing, effort to define the object of study. The type of population under study is not given; it is a working hypothesis that is revised in the course of the research (Ragin 2000: 14, 43–63). In short, 'casing' implies a critical reflection on the conventional boundaries and commonly accepted categories of social and political phenomena. Furthermore, when we ask 'What is this a case of?', we are constructing a representation of the experience, or of the observation (Davis 2005: 81). The researcher is breaking with a commonsensical representation of a historical process, and she is conceptualizing a problem. The epistemological rupture and the conceptualization go together. The case is defined and constructed by a theoretical approach that provides a framework of hypotheses to probe the various aspects of the empirical data.

The theoretical framework that underlies case study research corresponds to Bachelard's second epistemological act: theory construction. Case study research implies a theoretical intention translated in a new vocabulary. A purely historical description differs from a social science approach to a case, converting historical information into a suitable analytical vocabulary that can be applied to other cases (George 1979; George and McKeown 1985; Walton 1992). The empirical analysis is based on this theoretical intention, which helps to define both the hypotheses and the data needed. It is also in this conceptualization that comparisons, ideal types and typologies play a role. This theoretical construction is not confined to the beginning of the

investigation. The researcher revises his main concepts because he is learning from the cases that he has decided to examine (Ragin 2000: 31–2). In sum, the definition of the empirical category and the clarification of the relevant theoretical concepts are an element of the theoretical and empirical contributions of case study research, quite apart from the data generated, the interpretive insights and the capacity to evaluate theories empirically.

Process tracing is one possible way to translate into practice Bachelard's third epistemological act, the empirical observation. In their empirical inquiry, researchers use, and often combine, cross-case comparisons and within-case observations and methods. For within-case analysis, several options are available: congruence method, process tracing, and typological theory, which integrate comparative and within-case analysis (Elman 2005; George and Bennett 2005: 179, 181–204, 235; see also Mahoney 2000). Initially formulated by Alexander George, the notion of process tracing became increasingly widespread in case study research (George 1979; George and Bennett 2005: 205–6). George argued that a research strategy was needed to assess whether the correlations among variables discovered using statistical methods were causal or not (George 1979: 46). Process tracing is: 'a procedure for identifying steps in a causal process leading to the outcome of a given dependent variable of a particular case in a particular historical context' (George and Bennett 2005: 176; Steinmo, ch. 7; on the epistemological implications of a focus on sequences of actions, Favre 2005). Several notions like analytical narratives as used in a rational choice perspective (Bates, Greif, Levi *et al.* 1998; Rodrick 2003), or systematic process analysis (Hall 2003; see also Heritier, ch. 4) are close, if not virtually identical, to the notion of process tracing. Using process tracing, the researcher assesses a theory by identifying the causal chain(s) that link the independent and dependent variables. Her goal is to uncover the relations between possible causes and observed outcomes. This procedure can be used in theory testing as well as in theory development.

Because the notion of process tracing is by now widespread in political science, scholars have used it in a variety of ways: to discover a causal mechanism and show that a posited underlying mechanism connecting causal and dependent variables exists; to demonstrate the conjunction and the temporal sequence of variables; to increase the number of observable implications that a theory predicts; or to operationalize variables, measuring independent and dependent variables, by looking at the decision-making process to search for relevant evidence (Elman 1996: 17–18). How process tracing can be put to

work and contribute to both positivist and interpretivist research designs is the question to which I now turn.

Bridging positivist and interpretivist approaches to process tracing

Process tracing in action

In *Case Studies and Theory Development in the Social Sciences*, George and Bennett, building on George's previous work (1979) as well as his collaborative contributions (George and Smoke 1974; George and McKeown 1985), give a systematic and comprehensive account of process tracing. Their reformulation is important because until then, the notion was presented in a dispersed fashion. Now, the most common conceptions of process tracing are more standardized than the original formulation, and they emphasize the identification of a causal mechanism that connects independent and dependent variables (Mahoney 2000: 412–15; Bennett and Elman 2006: 459). The emphasis is on causality, deduction and causal mechanisms. However, something has been lost in the more recent formulations of process tracing. This is unfortunate, since process tracing can make an important contribution to both a positivist and an interpretivist empirical approach to case study research (Adler 2002: 109; Kacowitz 2004: 108–11; Davis 2005: 176–7; see also Dessler 1999; Finnemore 2003; Checkel 2006). Political phenomena have clock-like (regular, orderly, predictable), cloud-like (irregular, disorderly, unpredictable) and interacting (creative, adaptive, problem-solving) characteristics; process tracing can help to uncover all three of them (Almond and Genco 1977; Jervis 1997). Process tracing also provides an opportunity to combine positivist and interpretivist approaches in the making of a case study (Lin 1998: 166–9), allowing the researcher to explore both the causal 'what' and the causal 'how'.

In a positivist perspective, the main goal of process tracing is to establish and evaluate the link (or the absence of a link) between different factors (see Héritier, ch. 4). Through the use of histories, archival documents, interview transcripts and other sources, the investigator examines whether the causal process of the theory that he is using can be observed in the sequence and values of the intervening variables (Mahoney 2003; George and Bennett 2005: 6). Thus, the researcher can check whether the indicators used to measure the dependent and independent variables have been well chosen, including whether they resonate with the actors' beliefs and representations. He also

examines critically the reliability of the data and its representativeness, in order to evaluate the relative importance of plausible causal factors. The researcher's focus is on learning whether a particular factor can be traced and linked to another.

In an interpretivist perspective, process tracing allows the researcher to look for the ways in which this link manifests itself and the context in which it happens. The focus is not only on what happened, but also on how it happened. It becomes possible to use process tracing to examine the reasons that actors give for their actions and behaviour and to investigate the relations between beliefs and behaviour (Jervis 2006). Process tracing is a fundamental element of empirical case study research because it provides a way to learn and to evaluate empirically the preferences and perceptions of actors, their purposes, their goals, their values and their specification of the situations that face them. Process tracing helps the researcher to uncover, directly and indirectly, what actors want, know and compute (Simon 1985: 295).

Confronted with the problem of the variety and complexity of human perceptions, preferences and motivations, two types of solutions are available (Simon 1985, 1986, 1995; Frieden 1999: 53–66; Scharpf 2006). One option is to make assumptions about actors' preferences and perceptions. The researcher relies on common-sense intuition or deductive reasoning and makes a judgement call on their plausible or reasonable character (Simon 1985: 297). Hence, there is no point in process tracing. The other option is to acknowledge that preferences and perceptions are empirical questions that only a painstaking empirical investigation can uncover (Simon 1985: 298, 300). From this perspective, it is not enough to add theoretical assumptions about the shape of the utility function, about the actor's expectations or about their attention to their environment. In social sciences, these assumptions must be submitted to a careful empirical test.

By using process tracing in this way, a connection that appears as only plausible, or *ad hoc*, can be integrated in a broader framework with a more consistent overall logic. This richer account appears coherent with the actors' frames of reference, even if it might appear less coherent outside of this framework. One of the strengths of process tracing is to help the researcher to flesh out causal mechanisms. For example, previous work experience is a significant factor in some people's exit from welfare in the United States (Lin 1998: 165). This previous experience is linked to employability. But how? Many plausible mechanisms can be embedded in the relation between previous work experience and the probability of exiting welfare. As Lin explains, previous work experience might signal to employers that one already has some relevant

training or knowledge of the workplace. They might also see this experience as a sign of the employee's motivation. Alternatively, while employers might not care at all about work experience in and of itself, it may still matter because it is linked to something else that they see as important: recommendations from past employers. And there might be other possibilities that simply have not been identified in advance. To know which of those plausible mechanisms is at work, process tracing is invaluable. It might reveal that the causal mechanism that was assumed at the onset does not fit the empirical observations. This new knowledge would then feed back into theory development, showing the inductive potential of process tracing.

For some types of case studies, devoted to the study of norms, for example, uncovering the reasons that actors give for their actions is a key aspect of the empirical investigation (Amenta 1991: 179–80; Davis 2005: 179). The challenge is similar when researchers seek to uncover the kinds of problems that actors are trying to solve, and how they conceive solutions, their assumptions about their professional activities and their efforts to explain why their actions are reasonable and sensible. For example, this is what Lynn Eden did when she explained why and how, in the US Air Force, the 'blast damage frame', centring on damage from high-explosive conventional bombs, came to dominate the 'fire damage frame', emphasizing damage from incendiary bombs, in the understanding of the impact of nuclear weapons (Eden 2004; see also Evangelista 1999; Homer-Dixon 1999). Hence, process tracing helps the researcher to reconstitute the actors' beliefs and perspectives and to regroup them in a limited number of categories, keeping in mind the evaluation of broader theoretical arguments.

Process tracing based on intensive, open-ended interviewing, participant observation and document analysis helps to understand the meaning and role of established regularities, and can help to suggest ways to uncover previously unknown relations between factors. In the original formulation of process tracing, George was aware of this need to combine both perspectives. Process tracing, he explained, involved both reconstructing the ways in which the actors characterized the situation, and developing a theory of action (George and McKeown 1985: 35). Furthermore, the process that is uncovered does not have to be only causal, it can be constitutive as well – that is, accounting for the property of the phenomenon by reference to its structures and allowing the researcher to explain its conditions of possibility (Davis 2005: 175, 176). In his original formulation, George talked not only about a causal mechanism, but also of an intervening process, a causal nexus (George 1979: 46). Finally, it has become common to refer to the inductive use of process tracing in

theory development. But in the original formulation, the resort to induction was broader. George underlined that to translate the historians' terms (or the actors' terms) and to evaluate the variance in the values of independent, intervening and dependent variables was a delicate operation. The loss of information and simplification could undermine the theory's validity and its usefulness. Consequently, the variance in each variable could be described inductively to check whether, and to what extent, a particular variable varies in different cases (George 1979: 47). Process tracing can be used to assess the relative impact of certain variables, but also to get a better sense of the actors' perceptions.

Is process tracing different from telling a story, however? There are different varieties of process tracing; some are close to a detailed narrative – similar to the type of narrative commonly found in the work of historians and anthropologists – while others rely more on broad causal explanations (Bennett and George 2001). In general, process tracing differs from a pure narrative in three ways (see also Flyvbjerg 2006: 237–41). First, process tracing is focused. It deals selectively with only certain aspects of the phenomenon. Hence, the investigator is aware that some information is lost along with some of the unique characteristics of the phenomenon. Second, process tracing is structured in the sense that the investigator is developing an analytical explanation based on a theoretical framework identified in the research design (these are the characteristics of the comparison, but they apply to process tracing as well: George 1979: 61). Third, the goal of process tracing is ultimately to provide a narrative explanation of a causal path that leads to a specific outcome.

Combining a positivist and an interpretivist perspective in process tracing is a stimulating opportunity, both theoretically and empirically. But it is important for policy reasons as well. Since the beginning of the twentieth century, case study research has had an important policy component. In their classic account of deterrence in American foreign policy, George and Smoke made an explicit link between theory and policy in international relations (1974: 616–42). Recognizing both dimensions of process tracing helps the transition from the recognition of causal patterns towards the discovery of solutions. For example, a correlation between variables might be significant but not subject to manipulation by policy-makers. No matter how well identified the cause–effect link, a policy needs the support and co-operation of stakeholders to be implemented in order to avoid unintended consequences and to facilitate implementation (Lin 1998: 168). Evaluating the material benefits or costs of a policy for a population means that the frames of reference to identify costs and benefits are themselves identified and known.

Finally, case study research, together with process tracing, can help to improve and refine the analogical reasoning of practitioners (May 1973; Neustadt and May 1986; George 1993).

In sum, a positivist perspective of process tracing helps to identify the existence of causal relations, to go beyond correlation and evaluate causality empirically (Dessler 1991). However, the positivist approach to process tracing faces difficulties in explaining how the mechanism implied in the causal relation actually works. The interpretivist perspective of process tracing leads to a detailed examination of the causal mechanism and explains how specific variables interact. This perspective, however, faces difficulties in weighting the relative importance of different factors.

Challenges and limits in case study research and process tracing

Process tracing as such is no guarantee that one will successfully conduct an empirical investigation. Case study research in general and process tracing in particular face four main challenges: the reliance on pre-existing theories; the assumption that each case can be treated autonomously and that the cases are distinct from one another; the need for empirical data; and the pitfalls of cognitive biases (see also Collier and Mahoney 2006; Checkel 2006: 367–9). While these limits are not all specific to case study and process tracing, they are particularly relevant in this type of research. The first limit regards theories. In case study research, the case selection, the comparison, the within-case analysis and the empirical investigation are all theory-dependent. Case study research and process tracing presuppose the existence of theoretical frameworks. These frameworks are supposed to guide the researcher in his approach, as in his empirical work. But time and again, case study specialists recognize that either those theoretical frameworks are lacking, or they are ill-suited, leaving the researcher vulnerable to an ethnocentric bias or forced to use an ill-adapted theory. When a theory does exist, it is often insufficiently specified and rarely tailored to the problem at hand. There can be elements of theories, dispersed or available in a primitive formulation, but they have to be rethought and redesigned. In such situations, which are fairly common, researchers are engaged in theory development and their contribution to case study and to process tracing remains significant.

Since at times there are not off-the-shelf theories ready to be evaluated – or the situation is uneven depending on subfields and research areas – it implies that most of those who do case studies are quasi-systematically engaged in theory development. Furthermore, the line between theory development and

theory evaluation is often blurred. Many researchers want to do both: to contribute to the development of a theory, but also to propose a preliminary evaluation. Indeed, this is exactly what George and Smoke did in *Deterrence in American Foreign Policy* (1974; see also Vaughan 1992). It might be prudent to label this kind of work 'theory development', but the label is misleading, since the researcher is also evaluating theories. In sum, case study research and process tracing are heavily dependent on the existence of middle-range theories that provide a set of hypotheses – sometimes even broad guidelines rather than clearly formulated hypotheses, which serve as a guide for the conduct of the research. Yet, in many situations, researchers should keep in mind that they will have to contribute to this theoretical endeavour themselves. Off-the-shelf theories are likely to be either lacking completely, or inadequate to the task.

The second challenge has to do with the autonomy of each case. At the root of case study research is the assumption that cases, however defined by the researcher, are autonomous instances of something. They are distinct from one another and can be treated as separate units of analysis. However, some major social and political trends, like the European Union or the growing interconnectedness of the international system, for example, seem to put this assumption in question. Cases are often deeply connected to one another, even embedded in one another, and the task of the researcher becomes accounting for both the distinctive and the common dimensions of the cases.

The third challenge is related to empirical sources and their treatment. Case studies are dependent on the existence and accessibility of empirical sources. Process tracing can only work if a sufficiently high level of accuracy, and reliability, can be reached on specific processes and events. This is not a given, particularly for topics that involve confidentiality and secrecy, like a foreign policy decision or a counterterrorism policy. One can only highlight the importance of the diversity of empirical sources, and the need to allow sufficient time and resources in the research process for the collection and treatment of empirical data. It is also at this point that the knowledge and practice of various investigation techniques – content analysis, participant observation, interviews, statistical methods, and so on – become significant (see Bray, ch. 15; Checkel 2006: 366–7).

The fourth challenge – common to any type of social science research – has to do with cognitive biases, which can alter the researcher's reasoning and skew his results (Tetlock 2005). Three biases, in particular, are worth mentioning regarding case study research and process tracing. First, the confirmation bias: in the course of process tracing, the researcher might seek

information that confirms her beliefs and gloss over what could contradict them (George and Bennett 2005: 217). This bias can affect the ways in which the researcher plans to collect information, what she pays attention to, what she reports and does not report. Second, the results of process tracing might be consistent with too many theories. It then becomes difficult to assess whether alternative explanations are complementary or if some are just spurious (Njolstad 1990). Third, negative evidence might be ignored. Since positive evidence is more striking and vivid than its absence, in tracing the process, the researcher overlooks the things that do not happen.

Regarding the confirmation bias, the best strategy is an explicit effort to consider alternative hypotheses that could lead to the outcome in question through the process of interest. Focusing on other theories and hypotheses can help, as well as on counterfactuals, which can be a powerful tool to challenge our pre-existing theories (Weber 1996: 270; Davis 2005: 168–75, and more generally Tetlock and Belkin 1996). The key question here is: 'What else can it be?' To answer, the researcher might use insights mentioned in the literature, in the memoirs of participants, or in interviews, for example. To probe the argument, the comparative analysis of process tracing can be useful as well. Perhaps the factors that the researcher considers to have generated the expected consequences were present in cases in which the consequences did not happen.

Regarding the overdetermination problem, the aim is to find ways to reduce the number of explanations. Some evidence consistent with the researcher's interpretation can be coherent with other interpretations as well. There are several suggestions for dealing with such a situation: clarify potential conflict of interpretations about the evidence; clarify whether competing explanations address different aspects of a case; compare various cases; and identify the scope conditions for explanations of a case (Njolstad 1990).

Finally, regarding negative evidence, case study research and process tracing can be useful in helping to identify situations in which a specified behaviour does not occur, or in which evidence is absent. This is significant if an important proposition or argument implies that some type of evidence should be present. One way to evaluate a proposition is to ask what events should occur and what evidence should be observable if this argument or explanation is correct (Jervis 2006: 26). In-depth case studies can uncover non-events and their characteristics, for example in the relations between democracy and peace, or in deterrence success (Maoz 2002: 457).

In sum, researchers doing case studies and using process tracing should think about the answers to the following questions (George and Bennett 2005: 105–6): how can I show my readers that I did not impose my favoured theory

as the explanation? Do I consider alternative theories, and is this explicit? How do I explain that the cases that I selected constitute an easy, or a tough, test for the theory? Do case findings really support the theory in question? How do my readers know? Do the findings support other theories as well? Is it a problem and, if so, how do I deal with it?

Conclusion: Problem-solving and case studies

When he met political scientist Richard Neustadt at the White House, former Secretary of State Dean Acheson famously grumbled: 'I know your theory, you think Presidents should be warned. You're wrong. Presidents should be given confidence' (quoted in Steinbruner 1974: 332). Similarly, researchers should be given confidence in the epistemological and methodological contributions of case study research. Confidence does not mean that anything goes, nor that overconfidence is warranted, however (Rueschemeyer 2003). Just like any other research strategy, case studies have limits and can be done well or poorly. Researchers should be aware of the theoretical and methodological assumptions embedded in the very idea of doing a case study, and make full use of this methodology.

This examination of case study research and process tracing confirmed the discrepancies between case study theorizing and case study practices. When practitioners attempt to codify their epistemological and methodological practice, in order to make sense of it and/or to teach it, they often seem to lose something of the creativity, ingenuity and flexibility that was the trademark of their practice. Finally, as in any epistemological and methodological discussion, we should not confuse ends and means. Problems and problem-solving are the core of social science research. Methods are important, and they should help researchers in various ways. Ultimately, however, they cannot substitute for a 'passionate curiosity about a great problem, the sort of curiosity that compels the mind to travel anywhere and by any means, to re-make itself if necessary, in order *to find out*' (Mills 1959: 105).