

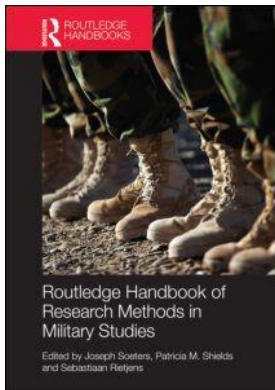
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9

PROCESS TRACING IN CASE STUDIES

Pascal Vennesson and Ina Wiesner

I. Wiesner (2013) *Importing the American Way of War? Network-Centric Warfare in the UK and Germany*. Baden-Baden: Nomos.

Military organisations regularly face the challenges and dilemmas of innovation. The longbow, the airplane, the computer as well as the mass army or amphibious warfare are technological and conceptual innovations that altered the conduct of war. They also reshaped military organisations leading, in some cases, to the creation of new combat arms or concepts of operation while, in others, to modest adaptations or even to deliberate resistance. The military uses of cyberspace, counterinsurgency, drone campaign strikes and Network-Centric Warfare are at the heart of the politics of military innovation at the beginning of the twenty-first century. They may durably affect operational planning, resource allocation, procurement decisions, training, and organisations. Yet surprisingly little is known about the factors that explain success and failure in military concept adoption. Why do some military organisations successfully incorporate new technologies or ideas while others do not?

Importing the American Way of War? examines the adoption by the British and German armed forces of Network-Centric Warfare (NCW), a concept based on the networking of relevant military units to achieve combat superiority. After being developed by US military officers in the late 1990s, the idea of networking sensors, commanders, and shooters to achieve greater mission effectiveness quickly spread to other military organisations. By 2001, a number of militaries started to emulate this innovation – albeit in different ways and with uneven results. What are the factors that account for differences in the adoption of NCW? To answer this question, Wiesner develops a small-N structured-focused comparative analysis and uses process tracing as an analytical tool to open the ‘black box’ that lies between initial conditions for the adoption of a military innovation and the eventual outcomes.

Process tracing helps to carefully reconstruct and compare the sequences of events constituting the process through which the relevant actors in each country became aware of NCW, used the concept and implemented it. It becomes possible to identify, and explore, the causes and

consequences of differences in timing and pace, as well as differences in concept and implementation faithfulness. In doing so, she draws descriptive and causal inferences from various pieces of evidence that formed part of the temporal sequence of events. While the British military started to embrace NCW early in 2001 and introduced the concept rather quickly, the German military paid closer attention to NCW later in 2004 and proceeded slowly with its adoption. Further differences appeared with regards to concept faithfulness. Britain tailored NCW to fit its military culture and its operational needs. By contrast, despite a profound difference in military culture with the US and distinct security challenges, the German NCW concept essentially copied the US original. Finally, the assessment of implementation faithfulness revealed that, in the UK, the conceptual ambitions and the eventual adoption output lay close to each other. In the German case, however, implementation contradicted not only the conceptual outline, but also operational realities. Framed by an institutionalist argument, this study establishes that a different emphasis on military effectiveness and societal legitimacy in each country led to the different adoption processes and outcomes. In the case of NCW adoption, the British military was an efficiency maximiser whereas the German military was a legitimacy maximiser.

Introduction

Process tracing, succinctly defined as a method designed to ‘identify the intervening causal process . . . between an independent variable (or variables) and the outcome of the dependent variable’ (George and Bennet 2004: 206), is one of the most important analytical tool in case study research, particularly for within-case analysis (Mahoney 2012: 571; Goertz and Mahoney 2012: 100–114). The goal of this chapter is to present and discuss process tracing in military studies. Specifically, we address three questions: What is process tracing and how does it relate to other methods employed by social scientists? What is the purpose and added value of process tracing in military studies? How is process tracing in case studies actually conducted? We argue that process tracing is a valuable analytical tool for researchers interested in analysing the specifics of one case (or a small number of cases), in finding generalisable patterns and in making theoretical arguments. We start our chapter by locating process tracing in current social sciences methodology. We point out its value for explaining unique and outstanding events that often are interesting for scholars of military studies. We then discuss the utility of process tracing. Finally, we reflect on the actual uses of process tracing in case study research.

Process tracing and case-oriented research

Ways to study military affairs

With the exception of normative peace research and critical security studies, the majority of social science research conducted in the fields of military studies, such as peace and conflict studies as well as security studies, share a broadly positivist meta-theoretical foundation. Most researchers seek to uncover causal relationships or they engage in testing general hypotheses, or propositions, about causal relationships. The three most common methodological approaches in this regard are the statistical method, experiments and the case study method (Bennett

and Elman 2006: 457). Scholars using statistical methods analyse large-N observational datasets to infer about the relations between outcomes and conditional factors. Researchers also use experiments to assess cause-effect relationships in a controlled environment (see also Chapter 20 by Teigen). Yet there might be circumstances in which experiments are not feasible either for practical or ethical reasons. Likewise, scholars might consider that statistical analysis is insufficient, for example if they are interested in unique, outstanding events such as wars, battle outcomes or specific political and military decisions. They may also seek to explore the impact of certain factors on military organisations (for example the end of conscription) or the causes of specific outcomes (success and failure in war) that cannot be observed in a large number of cases. Moreover, some scholars are dissatisfied with the statistical method's bracketing of the social settings which frame their unit of analysis, the specific case that they want to examine. They believe that context matters. Finally, the statistical method has been criticised for producing assumption about causal relationships between two variables when in fact all it is able to show is their covariation (Gerring 2008). Both in order to establish the existence of a causal link and to understand the character of the causal relationship researchers most likely turn to qualitative methods (Goertz and Mahoney 2012: 101f.).

In these situations, case study research is the method of choice. In general, scholars employing qualitative methods are not interested in 'the net effect of a cause over a large number of cases, but rather how causes interact in the context of a particular case or a few cases to produce an outcome' (Bennett and Elman 2006: 458). Depending on their research interest and on the availability of empirical resources, researchers select a small number of cases, sometimes even one single case. The case study approach is the 'detailed examination of an aspect of a historical episode to develop or test historical explanations that may be generalizable to other events' (George and Bennett 2004: 5). Like the researchers who use statistics or experiments, those who use case studies (and share a positivist meta-theoretical preference) aim at making inferences about cause-effects relationships that hold generalisable claims.

Originating in the field of cognitive psychology in the early 1970s, and later expanded and reformulated notably by the political scientist Alexander George, process tracing is one way of conducting case studies (George and Bennett 2004; Bennett and Elman 2006). We define process tracing as a technique designed to re-construct causal processes with the aim of developing or evaluating theoretical propositions about what accounts for an outcome in the specific phenomenon under study. Process tracing helps to uncover the links connecting outcomes and antecedent factors. It is common to ask whether there is any difference between process tracing and historical explanation (Bennett and George 2001: 144–152; George and Bennett 2004: 208–209, 224–230). While process tracing shares some of the basic features of historical research, historians and social scientists differ in the type of process tracing that they conduct and in their emphasis. Generally, historians are more interested in using process tracing to explain particular historical events in nearly all of their complexities, whereas social scientists seek to explain specific cases and establish generalisable causal patterns across cases or categories of cases. What distinguishes process tracing by social scientists is that usually one of their goals is to test, refine and develop theories (although historians at times also use process tracing for these goals). They seek to uncover patterns and causal mechanisms that ultimately lead to a theoretical approach being rejected, refined or confirmed.

Process tracing has often been used, implicitly or explicitly, in the field of military studies to explain diverse phenomena, for example, the adaptation of armies to changing circumstances

during the course of conflicts for which they are initially unprepared (Nagl 2005), the adoption of military concepts by military organisations (Farrell 2002), the production of knowledge and ignorance within, and by, military organisations (Eden 2004), or weapon-systems procurement decisions (Tessmer 1988). In these and other areas of interest, process tracing helps to establish cause-effect relationships and to uncover causal mechanisms; thus helping to specify how a certain outcome was brought about. A causal mechanism is:

A link or connection in a causal process. In the relationship between a given independent variable and a given dependent variable, a causal mechanism posits additional variables, sometimes called intervening variables, that yield insight into how the independent variable actually produces the outcome, including the sequence through which this occurs. Compared to the original causal relationship that the scholar is considering, the causal mechanism is often located at a more fine-grained level of analysis.

(Seawright and Collier 2004: 277)

Process tracing is useful to establish causal-process observations (distinguished from data-set observation), ‘an insight or piece of data that provides information about context or mechanism’ (Collier et al. 2010: 184). These observations about contexts and processes provide an alternative source of insight into the relationships among the explanatory variables, and between these variables and the dependent variable. Through process tracing, the researcher can assess not merely the presence or absence of an antecedent but the logic of the association between antecedents and outcomes (Steinberg 2007: 191–193; Falleti and Lynch 2009). By helping to establish such causal-process observations, process tracing provides a distinctive leverage in causal inference. Statements about covariation and causal mechanisms differ in that the latter is richer in content, embedded in context and thus depicting a more comprehensive view of a particular event. Exploring causal mechanisms allows understanding how variables might be related (Gerring 2008). By establishing the causal sequence of events the researcher can prove that X in fact anteceded Y. By uncovering how, in a specific case, X brought about Y, or, to what degree and in what way X influenced Y and how other factors influenced the process the researcher might furthermore be able to develop a theoretical argument about how – in general – X causes Y, thus eliminating rival hypotheses derived from competing theories. Finally, alternative explanations are considered by outlining the process tracing expectations of a range of explanations and then considering the evidence in the light of these theoretical propositions. The researcher asks: if this explanation is correct, what would be the process leading to the outcome of interest? Not every single potential explanation requires a detailed process tracing, however, as some might be quickly proven irrelevant while only a few others will require more detailed investigations.

Debating process tracing

Since the end of the 1990s, the use of process tracing for social science research has become more widespread and increasingly discussed (George and Bennett 2004; Bennett and Elman 2006; Checkel 2008; Vennesson 2008; Collier 2011). Scholars who use the statistical method, for example, consider that the potential value of process tracing is to increase the number of observations within one or a small number of cases and thus make inferences about causal-effect

relationships even in small-N studies more significant (King et al. 1994: 226f.). Likewise it was suggested that process tracing could supplement statistical analysis to test theories. Others criticised this narrow conception of process tracing (Tarrow 2004; Collier et al. 2010; Goertz and Mahoney 2012). Case-oriented research and process tracing make scientific contributions in their own terms and should not be regarded as an imperfect epigone of the quantitative logic (George and Bennett 2004; Brady and Collier 2004).

The many faces of process tracing

Like in social science research in general, process tracing accounts in military studies vary along a spectrum from descriptive narration to abstract causal explanations (Bennett and George 2001; Vennesson 2008). An example of a narrative analysis of processes in the military studies field is Arnold Tessmer's study of the Airborne Warning and Control System (AWACS) procurement decision (Tessmer 1988). The author traced the processes within the North Atlantic Alliance (NATO) leading to the decision to collectively purchase AWACS in the late 1970s. By taking into account events before and after the decision Tessmer 'focuses on the process, details, and motivation in a narrow instance of give and take between allied governments with similar but decidedly different interests and values' (Tessmer 1988: xv). Insightful and empirically rich, Tessmer's work did not seek to explicitly test theories. Still he identified the factor – a strong bureaucracy at the collective level – that he deemed critical for the eventual success of AWACS despite the reluctance of some member states to commit to the programme.

In addition to this kind of 'thick description' of a case, process tracing can also contribute to its 'thick analysis' (Bennett and Elman 2006: 472). It can offer both a complex depiction of one or a small number of cases and an analysis of whether a theory's causal mechanisms operate as expected to affect the particular outcome(s) of the case(s). To be sure, description is valuable for gathering evidence on singular events and is an important component of process tracing (Collier 2011). Yet, played to its full strengths, it adds an analytical focus and helps to scrutinise cases in a systematic way with the ultimate aim of making generalisable statements, albeit most likely no universal claims. As such, it does not 'only help us to reveal complexity, but to make sense of it' (Steinberg 2007: 183).

John Nagl's study about the counterinsurgency lessons from Malaya and Vietnam provides an interesting example of an analytical process tracing account.¹ Why is it that the British army in Malaya and the US Army in Vietnam dealt so differently with wars that they had not been prepared for? Focusing on military culture Nagl traced the processes that led to a successful adaptation of military practices in the Malayan case and the failed adaptation of the US Army in Vietnam (Nagl 2005). He shows that one important reason for the outcomes was a different take on lesson learning in each army. Whereas the British army was a 'learning institution' and could quickly adapt to the changed circumstances, the US Army was not (ibid.: xxii). Despite their differences in research interest (procurement decision, military adaptation) and research design (single case study, structured focused comparison) Tessmer and Nagl used the process tracing technique to reconstruct their cases. Nagl's work exemplifies a fuller contribution of process tracing by providing an informing narrative, a sound analytical framework, and a contribution to the theoretical debate about military culture.

A number of related techniques, such as analytic narratives (Bates et al. 1998) and comparative historical analysis (Mahoney and Rueschemeyer 2003), that share some similarities with process tracing have been developed. Furthermore, some interpretivist scholars might go about their research in a similar fashion as positivist case study researchers. There is a disagreement

on whether research tools used in interpretive research can be understood as process tracing (Bennett and George 2001; Vennesson 2008) or not (Checkel 2006). Even though many interpretive, or historical, accounts are not concerned with causal analysis in the first place and might not qualify as examples of process tracing, it is a useful procedure to explain but also to understand cases.

Process tracing, within-case analysis and structured focused comparison

Process tracing belongs to case study research, especially within-case analysis (Mahoney 2003; Bennett and Elman 2006: 455). Well-researched single-case studies contribute to the explanation of outcomes, such as Lynn Eden's account of the impact of organisational frames in the US Air Force's neglect of the effects of fire in its damage assessment of atomic blasts (Eden 2004). Process tracing is also useful in small-N comparative study designs, in which more than one case is examined and in which the process tracing technique is combined with a structured focused comparison research design:

A comparison of two or more cases is 'focused' insofar as the researcher deals selectively with only those aspects of each case that are believed to be relevant to the research objectives and data requirements of the study. Similarly, controlled comparison is 'structured' when the researcher, in designing the study, defines and standardises the data requirements of the case studies. This is accomplished by formulating theoretically relevant general questions to guide the examination of each case.

(George and McKeown 1985: 41)

A theoretically informed research framework such as structured focused comparison allows assessment of two or more cases to generate comparable statements about causal mechanisms in each case and to apply these findings to evaluate theoretical assumptions. Process tracing is one important tool to engage in such a structured focused comparative research.

The utility of process tracing

How can process tracing help social scientists to make sense of a case or a class of events? Even though process tracing does not solely aim at writing good narratives, the descriptive function of process tracing should not be disregarded (Collier 2011). Through descriptive inference based on process tracing the researcher might be able to uncover the causal mechanisms of a unique and outstanding event, such as the terrorist attacks of September 11, 2001, without necessarily aiming at making inferences about the class of phenomena, like the conditions under which terrorist attacks happen. Besides the descriptive value of process tracing it can serve a heuristic function, that is hypothesis generating and theory developing, by 'inductively identify[ing] general causal mechanisms that may be at work in other cases' (Bennett and George 2001: 144).

Moreover, process tracing helps to evaluate theories (Ragin 2000; George and Bennett 2004; Checkel 2006; Mahoney 2012). As a complement of statistical analyses, for example, process tracing can help identify measurement error, spurious correlations or instances of endogeneity (Bennett and Elman 2006: 459). Since correlation does not imply causation, process tracing is one option to assess through observational evidence causal claims that have been made based on statistical operations. The main advantage of process tracing for hypothesis testing is that assumed cause-effect relationships can be verified that otherwise would have required larger

cross-case settings (Goertz and Mahoney 2012: 87). Through its focus on within-case causal mechanisms, process tracing can substitute for the lack of cases in small-N studies thus permitting hypothesis testing even in a single case.

Process tracing can also help to uncover factors that have previously been overlooked. During the course of the empirical research, some incidents or conditions might appear important that have not been covered in the theoretical assumptions (Bennett and George 2001: 144). Some scholars further argue that process tracing allows for both theory development and evaluation using the same case(s) (George and McKeown 1985; Bennett and George 2001: 149).

Process tracing in action

The choices for a research design, for the set of sources to consult and ultimately for the conduct of the research is dependent on the particular question the researcher is puzzled by. Process tracing is one technique available to gather evidence to solve the puzzle. The actual use of process tracing is as varied as there are case studies. In what follows we offer some reflections on the application of process tracing based on our own experiences with the procedure. We touch upon the issues of framing the research, data gathering and data analysis.

Framing the research

As an analytical tool, process tracing affects the framing of the research design, the gathering of pieces of data and the analysis (George and Bennett 2004; McNabb 2008: 287ff.). By relying on prior theory-based expectations that guide, at least initially, the empirical work, process tracing differs from research procedures where theorising starts only after the gathering and organising of data.

The conduct of the example study (Wiesner 2013) exemplifies this understanding. An explorative research revealed that despite similar operational requirements, financial resources and rhetorical commitment to the NCW-project the British armed forces were more successful to introduce the concept. The main goal was to explore and understand the reasons for this difference. How did the two military organisations differ in their adoption of NCW, both in terms of process and outcome? Which explanatory factors account for the differences? For these particular research questions, process tracing presented itself as the best choice of method. Had the puzzle been framed differently – for example as an inquiry into the differences in the NCW projects of all 28 NATO countries – a testing of the explanatory power of predefined sets of independent variables under quasi-controlled conditions would have been better adapted, with process tracing serving as a way to examine the internal validity of the argument (Gerring 2007: 172–185).

Prior to the conduct of empirical research on the introduction of NCW two analytical frameworks were developed to guide the case study empirical inquiries. One template concerned the adoption process. Relying on literature on foreign concept adoption (Bennett 1991; Rogers 2003), the typical phases of adoption processes were identified (see Table 9.1). These three phases, knowledge acquirement, utilisation, and implementation and the more fine-grained adoption stages structured the research questions regarding the introduction of NCW such as: when, how, and through which institutional channels did NCW appear? What role did decision-makers play? What differences existed between the original NCW conception and each national version? How were the concept and its introduction discussed within the military organisation and, finally, how (well) did the implementation of the concept proceed? The phases were conceptual categories: they were not seen as normative, nor confused with the actual adoption processes.

Table 9.1 Three phases of the adoption process

<i>Adoption phases</i>	<i>Adoption stages</i>
Knowledge acquirement	From dissemination to awareness
	From awareness to decision to active knowledge acquirement
	Knowledge acquirement
Utilisation	Adaptation
	Legitimising
	Decision-making and decision to adopt
Implementation	Initial stage
	Transitional stage
	Final stage

(Wiesner 2013: 56)

Admittedly, such a linear framework might partially limit the richness of a case study, it might also lead to the omission of otherwise interesting potential factors and sequences of events. However, it helped to reduce the complexity of the cases, which in turn allowed for generalising about the phenomena observed. It is important to note that process tracing can also lead to a refinement or a reordering of these phases.

The examination of the German and the British case of NCW adoption benefited from relying on this analytical framework. The compartmentalisation of the adoption process into its phases and stages enhanced the comparability of the two cases in this structured-focused comparative case study setting. During the research the adoptions phases in both cases were assessed in the form of an analytical narrative. The pre-structuring of the research effort allowed to draw comparative conclusions about the performance of British and German defence in these phases and, hence, also about the qualitative adoption differences between the two cases. These differences are displayed in Table 9.2.

Explaining these patterns was the second aim of the NCW adoption study. Why did the timing (the point in time when the concept was introduced) and the pace of adoption differ in Germany and in the UK? Why were both concept and implementation faithfulness different? To answer these questions, the NCW adoption study was located in a broader discussion of ‘effectiveness versus legitimacy’-debate that had inspired thinking about military innovations and diffusion (Goldman 2003). Institutional legitimacy is the social acceptability and credibility that organisations require in order to ‘survive and thrive in their social environment’ (Scott 2001: 237). Gaining legitimacy can be a motive for foreign concept adoption. Was NCW introduced to increase the effectiveness of the armed forces in military operations? Or did it serve to maintain or increase the institutional legitimacy of the military organisation? To answer these questions, a second analytical framework based on social-institutionalist theory was used.

Table 9.2 NCW adoption patterns in the UK and in Germany (2001–2010)

	<i>UK</i>	<i>Germany</i>
Timing/pace	early/quick	late/slow
Concept faithfulness	low	high
Faithfulness of implementation	moderate to high	low

(Wiesner 2013: 131)

Relying on the existing literature on concept diffusion and adoption, a set of potentially relevant factors was preselected that were likely to have influenced the adoption processes in both cases. To add rigour to the examination those factors were grouped with respect to their level of occurrence (international, national/societal, organisational) and their nature in terms of effectiveness or legitimacy. Finally, the potentially relevant factors were operationalised in a set of questions to be applied to both cases (Wiesner 2013: 66). When the actual conduct of research took place the investigator was equipped with a useful framework to organise and conduct document analysis, interviews and – to a limited extent – direct observation.

In sum, theoretically guided case studies need some idea of social sciences theories or approaches that will be applied, tested or altered in the course of research. For social scientists using process tracing the research agenda might not so much be concerned with understanding a specific case but with patterns and causal processes that were at play not only in the particular case but hypothetically also in others. The use of diverse and independent empirical sources, such as interviews, media reports, documents, as well as when relevant a discerning use of the participants' correspondence, private papers or memoirs, is an important aspect of process tracing. These sources help to identify the arguments or reasons that actors give for their action. In some cases, it might be possible to compare public statements and private deliberations. In others, the researcher can use more spontaneous and unplanned statements to get a more fine-grained knowledge of genuine beliefs. While there is simple recipe to determine that sufficient data has been collected, a researcher can be increasingly confident that it is the case when the gathered evidence becomes repetitive.

Also, explorative research is useful in this research phase. Early evidence sharpens the research question as well as framework and design. Theoretical framing might not be fully completed once the data collection starts. Often the theoretical framework as well as its operationalisation is subject to adjustment once 'real-world' data is coming into play as empirical research progresses.

Data gathering

Qualitative empirical research, especially on topics that have not received much attention, is time consuming. To trace processes scholars may rely on a variety of sources. In the conduct of process tracing, any kind of empirical sources and tool (interviews, archives, statistics, participant observation, etc.) can be put to the task. Official documents, meeting minutes, speech manuscripts, diaries, newspaper articles and articles in professional journals relevant to the case(s) are often valuable, although problematic in their own way, written sources for establishing the process that led to a specific outcome. If process tracing is conducted in a structured and theory-informed way the researcher will specifically look in these written material for the absence or presence of particular process-relevant factors.

If the research puzzle is related to a contemporary case process tracing can benefit from data gathered in interviews (Tansey 2007). Not only can interviews ease the problem of unavailable or inaccessible documentation. Interviews might, moreover, be a valuable source for learning more about actor's motivations, disagreements in decision-making processes and paths not taken.

Although not a standard practice in process tracing, qualitative research on contemporary topics can also benefit from a range of direct observations that can include participant observation. Although access to military organisations or even temporary embedment, especially in foreign armies is hard to negotiate, it is not impossible (Navarro 2013; Ruffa 2013). Embedded research and direct or participant observation have two main advantages within the confines of process tracing. First, direct and participant observation are valuable for making better sense of gathered information especially in cases the researcher is not familiar with (i.e. research including

technical issues or in different cultural settings). Second, direct and participant observations bring the researcher closer to the scene. Through closer contacts to political or military actors, the researcher might be able to become aware of, or to obtain, information and documents.

Making sense of the data

Process tracing accounts benefit from the integration of new evidence into the research framework. Moreover, the objectives of data gathering might change in the course of the research. Evidence for rival explanations might appear that need to be addressed or included into the research framework. Social scientific research is a circular process in which the researcher usually goes back and forth between theorising, data collection and analysis. Openness to adjustment can result in a better specification of causal mechanisms and, thus, more reliable research findings.

In the example study it became apparent during a round of interviews conducted with British experts that ‘expected cost saving’ in the procurement department had been a motive for embracing the networking concept. This factor was unexpected since neither theoretical considerations nor explorative research had suggested budget saving as a potential cause of introducing NCW. As a result, this factor had not been considered in the initial theoretical framework that guided process tracing. Nor had it been explored in the pre-structured interviews with German officials that had preceded the British case study. Cost saving was added to the research framework, and a second round of interviews with German experts was conducted to assess the (potential) impact of this factor which, in the end, did not turn out to have played a decisive role in the German case.

Finally, process tracing accounts do not necessarily need to be organised chronologically but rather with regards to theoretical assumptions (George and McKeown 1985: 53). In the example study empirical evidence was arranged to represent the three adoption phases rather than in their chronological order. Process tracing can, but does not need to result in a narration of a particular event.

Conclusion

In their definition of what makes good process tracing, Bennett and Elman emphasised that, first, process tracing accounts need to be comprehensive and balanced. Second, breaks in the theoretical story need to be avoided. Third, evidence should confirm the hypothesis, and alternative explanation should be ruled out. Finally, they advise the researcher to be attentive to confirmation bias (Bennett and Elman 2006: 459f.). In addition, process tracing provides an opportunity to pay careful attention to ‘non-events’ or ‘negative cases’, the process or outcome that did not materialize but could have.

Process tracing is not a magic procedure that miraculously solves the challenge of producing significant generalisations in qualitative case studies. Still, in the field of military studies case-oriented research and especially the technique of process tracing provide a useful way to illuminate specific events, make inferences about cause and effect relations that shaped the cases, uncover causal mechanisms, and finally, even make – with all caution involved – propositions about similar events.

Note

- 1 It is important to note that our goal here is not to provide a systematic, substantive, assessment of John Nagl's book that would include, for example, a discussion of his case selection or of the empirical elements that he overlooked. We focus instead specifically on the ways in which he uses process tracing to illustrate one possible way to put process tracing to the task in military studies.

References

- Bates, R.H., A. Greif, M. Levi, J.-L. Rosenthal and B.R. Weingast (1998). 'Conclusion'. In R.H. Bates, A. Greif, M. Levi, J.-L. Rosenthal and B.R. Weingast (eds), *Analytic Narratives*. Princeton, NJ: Princeton University Press, pp. 231–238.
- Bennett, A. and C. Elman (2006). 'Qualitative Research: Recent Developments in Case Study Methods'. *Annual Review of Political Science*, Vol. 9: 455–476.
- Bennett, A. and A.L. George (2001). 'Case Studies and Process Tracing in History and Political Science: Similiar Strokes for Different Foci'. In C. Elman and M.F. Elman (eds), *Bridges and Boundaries: Historians, Political Scientists, and the Study of International Relations*. Cambridge, MA: MIT Press, pp. 137–166.
- Bennett, C.J. (1991). 'How States Utilize Foreign Evidence'. *Journal of Public Policy*, Vol. 11, No. 1: 31–54.
- Brady, H.E. and D. Collier (2004). *Rethinking Social Inquiry: Diverse Tools, Shared Standards*. Lanham, MD: Rowman & Littlefield.
- Carreiras, H. and C. Castro (eds) (2013). *Qualitative Methods in Military Studies: Research Experiences and Challenges*. London and New York: Routledge.
- Checkel, J.T. (1999). 'Norms, Institutions, and National Identity in Contemporary Europe'. *International Studies Quarterly*, Vol. 43, No. 1: 83–114.
- Checkel, J.T. (2006). 'Tracing Causal Mechanisms'. *The International Studies Review*, Vol. 8: 362–370.
- Checkel, J.T. (2008). 'Process Tracing'. In A. Klotz and D. Prakash (eds), *Qualitative Methods in International Relations: A Pluralist Guide*. Palgrave: Macmillan, pp. 114–129.
- Collier, D. (2011). 'Understanding Process Tracing'. *Political Science and Politics*, Vol. 44, No. 4: 823–830.
- Collier, D., H.E. Brady and J. Seawright (2010). 'Sources of Leverage in Causal Inference: Toward an Alternative View of Methodology'. In H.E. Brady and D. Collier (eds), *Rethinking Social Inquiry: Diverse Tools, Shared Standards* (2nd edn). Lanham, MD: Rowman & Littlefield Publishers.
- Eden, L. (2004). *Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation*. New York: Cornell University Press.
- Falletti, T. and J.F. Lynch (2009). 'Context and Causal Mechanisms in Political Analysis'. *Comparative Political Studies*, Vol. 42, No. 9: 1143–1166.
- Farrell, T. (2002). 'World Culture and the Irish Army, 1922–1942'. In T. Farrell and T. Terrieff (eds), *The Sources of Military Change: Culture, Politics, Technology*. Boulder, CO: Lynne Rienner Publishers, pp. 69–90.
- George, A.L. and T. McKeown (1985). 'Case Studies and Theories of Organizational Decision Making'. In R. Coulam and R. Smith (eds), *Advances in Information Processing in Organizations*, Vol. 2. London: JAI Press, 21–58.
- George, A.L. and A. Bennett (2004). *Case Studies and Theory Development in the Social Sciences* (BCSIA Studies in International Relations). Cambridge, MA, and London: MIT Press.
- Gerring, J. (2007). *Case Study Research: Principles and Practices*. Cambridge and New York: Cambridge University Press.
- Gerring, J. (2008). 'The Mechanismic Worldview: Thinking inside the Box'. *Journal of Political Science*, Vol. 38: 161–179.
- Goertz, G. and J. Mahoney (2012). *A Tale of Two Cultures: Qualitative and Quantitative Research in the Social Sciences*. Princeton, NJ: Princeton University Press.
- Goldman, E.O. (2003). 'Receptivity to Revolution: Carrier Air Power in Peace and War'. In E.O. Goldman and L.C. Eliason, L.C. (eds), *The Diffusion of Military Technology and Ideas*. Stanford, CA: Stanford University Press, pp. 267–303.
- King, G., R.O. Keohane and S. Verba (1994). *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton, NJ: Princeton University Press.
- Mahoney, J. (2003). 'Strategies of Causal Assessment in Comparative Historical Analysis'. In J. Mahoney and D. Rueschemeyer (eds), *Comparative Historical Analysis in the Social Sciences*. Cambridge and New York: Cambridge University Press, pp. 337–372.
- Mahoney, J. (2012). 'The Logic of Process Tracing Tests in the Social Sciences'. *Sociological Methods and Research*, Vol. 41, No. 4: 570–597.
- Mahoney, J. and D. Rueschemeyer (2003). *Comparative Historical Analysis in the Social Sciences* (Cambridge Studies in Comparative Politics). Cambridge and New York: Cambridge University Press.
- McNabb, D.E. (2008). *Research Methods in Public Administration and Nonprofit Management: Quantitative and Qualitative Approaches*. Armonk, NY: M.E. Sharpe.

- Nagl, J.A. (2005). *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam* (paperback edn). Chicago, IL: University of Chicago Press.
- Navarro, A. (2013). 'Negotiating Access to an Argentinean Military Institution in Democratic Times: Difficulties and Challenges'. In H. Carreiras and C. Castro (eds), *Qualitative Methods in Military Studies: Research Experiences and Challenges*. London and New York: Routledge, pp. 85–96.
- Perceman, E. and S.R. Curran (2006). *A Handbook for Social Science Field Research: Essays and Bibliographic Sources on Research Design and Methods*. Thousand Oaks, CA: Sage Publications.
- Ragin, C.C. (2000). *Fuzzy-Set Social Science*. Chicago, IL: University of Chicago Press.
- Rogers, E.M. (2003). *Diffusion of Innovations*. New York: Free Press.
- Ruffa, C. (2013). 'What Peacekeepers Think and Do: An Exploratory Study of French, Ghanaian, Italian, and South Korean Armies in the United Nations Interim Force in Lebanon'. *Armed Forces & Society*. Online before print, 28 March 2013.
- Scott, R.W. (2001). *Institutions and Organizations*. Thousand Oaks, CA: Sage.
- Seawright, J. and D. Collier (2004). 'Glossary'. In H.E. Brady and D. Collier (eds), *Rethinking Social Inquiry: Diverse Tools, Shared Standards*. Lanham, MD: Rowman & Littlefield, pp. 273–313.
- Steinberg, P.F. (2007). 'Causal Assessment in Small-N Policy Studies'. *Policy Studies Journal*, Vol. 35, No. 2: 181–204.
- Tansey, O. (2007). 'Process Tracing and Elite Interviewing: A Case for Non-Probability Sampling'. *PS: Political Science and Politics*, Vol. 40, No. 4: 765–772.
- Tarrow, S. (2004). 'Bridging the Quantitative-Qualitative Divide'. In H.E. Brady and D. Collier (eds), *Rethinking Social Inquiry: Diverse Tools, Shared Standards*. Lanham, MD: Rowman & Littlefield, pp. 171–179.
- Tessmer, A.L. (1988). *The Politics of Compromise: NATO and AWACS*. Washington, DC: NDU Press.
- Vennesson, P. (2008). 'Case Studies and Process Tracing: Theories and Practices'. In D.M. Della Porta and Keating M. (eds), *Approaches and Methodologies in the Social Sciences: A Pluralist Perspective*. Cambridge: Cambridge University Press, pp. 223–239.
- Wiesner, I. (2013). *Importing the American Way of War? Network-Centric Warfare in the UK and Germany* (Militär und Sozialwissenschaften). Baden-Baden: Nomos.