

10. From case-study designs to process-tracing

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Abstract

This chapter discusses case-study designs and process-tracing in the study of welfare state reform. We begin by outlining the analytical foundations of this methodology, highlighting its connection with comparative historical analysis and historical institutionalism. We then identify criteria and best practices for process-tracing and evaluate their application based on a meta analysis of recent publications on welfare state reform. Our analysis shows a trend towards a theorization in terms of causal mechanisms and processes, indicating greater integration of process-tracing principles. However, we also observe variations in research practices, such as inconsistent examination of alternative hypotheses, unclear data triangulation and limited transparency in reporting findings. While best practices for process-tracing are well-established in political methodology, we thus conclude that data must be better analysed, organized and communicated. The chapter offers reflections on these issues, emphasizing the need to better link data collection and analysis and to ensure transparency in process-tracing research.

Keywords: Case studies, process tracing, comparative historical analysis, qualitative and mixed methods, Bayesian inference

1. Introduction

The enduring relevance of case-study designs in analysing welfare state reforms is, at least in part, the product of longstanding intellectual legacies. Many, if not a majority of, contributions in the field are indeed – more or less explicitly – rooted in the tradition of comparative historical analysis that emphasizes the importance of small-*n* research designs and an in-depth analysis of individual cases (Thelen, 2003; Lynch and Rhodes, 2016)¹. Fundamentally, this tradition sees similarities and differences between cases as driven by contextual conditions and causal mechanisms that can be clearly identified in the past (Mahoney and Thelen, 2015). Studies of welfare state reform are therefore particularly attentive to events and historical processes leading to institutional change or stability in various policy areas thereby making (within) case-study designs a natural choice (e.g. see Palier, 2010; Ebbinghaus, 2011; Emmenegger, 2014).

Case studies are the intensive study of one or a few cases through observational data to shed light on a larger population of cases (Gerring, 2016). This is a well-established approach in research on contemporary welfare state reform where cases can be countries, sectoral regimes, institutionalized value systems, reform trajectories or policy episodes. In fact, there is a long tradition of such designs in the field. For example, most chapters in Pierson's *New Politics of the Welfare State* (2001) engaged in comparative analyses of a few selected country cases, such as Giuliano Bonoli's contribution on veto points and welfare state adaptation, Herbert Kitschelt's examination of partisan competition, and Susan Giaimo's chapter on healthcare reform. In turn, the book has served as a catalyst for numerous case studies of welfare state reform (see Starke, 2006, for an early review) and research endeavours aiming to achieve a balance between cross-case and within-case analysis (e.g. see Häusermann, 2010).

One might have the impression that the practice of case-study research has barely changed since Pierson's *New Politics of the Welfare State*. In the present chapter, however, we argue the contrary. Although the motivation for using in-depth case study analyses has broadly remained the same, the methods of conducting and implementing such analyses have evolved significantly over the past twenty-five years. This ongoing transformation results from the growing popularity of process-tracing among scholars of welfare state reform. As a case-study approach giving central importance to 'causal process observations' (CPOs) as evidence in favour or against alternative hypotheses (Mahoney, 2010), process-tracing has played a pivotal role in formalizing and strengthening qualitative approaches in this literature. In short, case-study research has been significantly reconfigured as process-tracing has become the standard qualitative approach not only in welfare state research, but in political science more generally (Mahoney, 2010; Trampusch and Palier, 2016).

¹ Hereinafter, our understanding of what a 'case' is follows Gerring's definition (2016: 26): "a spatially and temporally delimited phenomenon of theoretical significance".

To develop our argument, we first provide a concise introduction to the analytical foundations of process-tracing, highlighting its intimate connection with comparative historical analysis and relatedly, the typical study types in qualitative research on welfare state reform. On this basis, we identify a set of criteria and best practices for process-tracing, and evaluate its recent application in a sample of published papers on welfare state reform. Our analysis indicates convergence around theorizations in terms of causal mechanisms and processes, a trend which reflects the increasing integration of process-tracing principles in the field². Nonetheless, it also reveals room for growth such as a more consistent examination of alternative hypotheses, greater clarity regarding the triangulation of available data, and greater transparency in reporting research findings. We conclude that, while the best practices of process-tracing are now well-established (see Bennett and Checkel, 2015), more refinement is needed in how we analyse, organize, and effectively communicate our data in this context. The final two sections provide a series of reflections in this regard, emphasizing the imperative to better link data collection and data analysis, as well as a transparency of process-tracing research.

2. A primer on process-tracing

Case-study research in the social sciences can serve different purposes and adopt various designs (see Ragin and Becker, 1992). In political science, case studies have been predominantly used to answer ‘why’ questions about how outcomes in specific cases can be explained by the interplay of specific causal factors (Goertz and Mahoney, 2013)³. Together with qualitative comparative analysis (see Chap. B.3), process-tracing is the qualitative method of choice to answering causal questions (for excellent introductions and reviews, see Beach and Pedersen, 2019; Bennett, 2010; Bennett and Checkel, 2015; Trampusch and Palier, 2016). We focus here on introducing key motivations and principles behind this method, before turning to an examination of its application in published research on welfare state reform.

Process-tracing is often presented as a case-study method oriented towards *within-case* analysis, that is, in-depth analysis of a case (Bennett, 2010). It is associated with hypothesis building and testing, and a general concern for issues of causality in the research process. It more formally seeks to identify “the intervening causal process – the causal chain and causal mechanism – between an independent variable (or variables) and the outcome of the dependent variable” (George and Bennett, 2005: 206). In essence, it entails “the analysis of evidence on processes, sequences, and conjunctures of events within a case for the purposes of either developing or testing hypotheses about causal mechanisms that might explain the case causally” (Bennett and Checkel, 2015: 7). In this context, process-tracing invites researchers to be

² A complementary interpretation of the growing use of process-tracing in the literature, not discussed here, views it as a reflection of the increasing emphasis on internal validity and causal inference in political science. However, the similarity of causal inference in quantitative and qualitative research is debated, as is the extent to which process-tracing is equivalent to design-based research and natural experiments in quantitative methodology. For further discussion, see Goertz and Mahoney (2013).

³ Case studies are also suitable to answering descriptive or interpretive ‘how’ questions (e.g. on how different stakeholders view welfare state reforms), but such questions require the use of other types of methods of data analysis, e.g. content analysis or discourse analysis (Schwartz-Shea and Yanow, 2012).

more reflective and explicit about how they gain confidence in specific theories based on various pieces of evidence. In other words, how do we know that evidence is (or is not) proof of a causal relationship between condition X and outcome Y?

The centrality of timing in process-tracing explains its close connection to comparative historical analysis scholarship. Process-tracing is indeed generally conceived as the methodological corollary of historical institutionalism, not least due to the study of cases in this tradition. Historical institutionalism (commonly shared by welfare state researchers, see Lynch and Rhodes, 2016) claims indeed that “social structures in the real world (‘societies’) can be classified into categories, or families, of ‘cases’ similar in some respects while differing in others” (Mahoney and Thelen 2015: 264). In this approach, cases are not viewed as fixed once and for all, but as subject to historical dynamics that can be discovered by tracing historically the causal processes leading to particular outcomes (Thelen, 1999). While process-tracing has a longer genealogy, significant developments to this method over the past two decades were part of an explicit attempt to improve the rigour of these kind of (qualitative, within-case) studies, by establishing empirical standards and criteria that demonstrate support for claims of path dependence, critical conjunctures, or sequence effects (Skocpol and Pierson, 2002; see also Mahoney, 2010). In fact, many historical institutionalist studies sometimes effectively employ the principles of process-tracing without explicitly acknowledging it.

Beach and Pedersen (2019) distinguish between three ‘variants’ of process-tracing, which depend on the type of research question and its function. Under *theory-testing* process-tracing, “we know both *X* and *Y* and we either have existing conjectures about a plausible mechanism or are able to use logical reasoning to formulate a causal mechanism from existing theorization”; *theory-building* process-tracing usually starts “with empirical material and uses a structured analysis of this material to detect a plausible hypothetical causal mechanism whereby *X* is linked with *Y*” (Beach and Pedersen, 2019: 16); while the starting point of *explaining-outcome* process-tracing is to account for a specific outcome in a single case by providing a minimally sufficient explanation based on theories that have already been established. Explaining-outcome process-tracing is a specific variant, but we agree with Bennett (2008; see also Bennett and Checkel, 2015) in recognizing that process-tracing inherently involves both inductive (theory-building) and deductive (theory-testing) elements depending on the state of pre-existing theories and the researcher’s case knowledge. Hence, both should be considered as two different ‘sides’ of process-tracing whose relevance varies from project to project.

Table 1. The three different forms of process-tracing

Variants of process-tracing	Function assigned to process-tracing	Circumstances in which it can be used	Main question
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Theory-centric	<ul style="list-style-type: none"> • Theory-testing process-tracing 	<ul style="list-style-type: none"> • Access to sophisticated theories relevant to phenomenon 	<ul style="list-style-type: none"> • Is the hypothesized causal mechanism present and does it function as theorized?
	<ul style="list-style-type: none"> • Theory-building process-tracing 	<ul style="list-style-type: none"> • Little pre-existing theoretical knowledge about phenomenon 	<ul style="list-style-type: none"> • What is the causal mechanism between X and Y?
Case-centric	<ul style="list-style-type: none"> • Explaining outcome process-tracing 	<ul style="list-style-type: none"> • Access to sophisticated theories relevant to phenomenon, but willingness to test their relative relevance in specific case 	<ul style="list-style-type: none"> • Which minimally sufficient mechanistic explanation accounts for the outcome?

Source. based and adapted from Beach and Pedersen (2019)

In all process-tracing modes, the shift from traditional qualitative case studies mostly aiming to provide a detailed narrative about a case to genuine process-tracing (see Hall, 2008) entails a more explicit emphasis on within-case inferences, especially when compared to small-*n* approaches. It also involves transitioning from presenting evidence in a narrative form to presenting it as a stepwise test of each component of a causal mechanism (Beach and Pedersen, 2019).

The focus on causal mechanisms is a crucial aspect of process-tracing, around which many of its differences (and innovations) compared to other forms of qualitative case-study methods revolve. In essence, process-tracing entails the thorough analysis and (re)assessment of causal process observations to serve as evidence for constructing or testing hypotheses, not unlike a detective weighing evidence in a case (Collier, 2011). These tests are not solely employed to merely evaluate the credibility of hypotheses at the aggregate level; rather, researchers are expected to scrutinize the probative value of each observation. One approach are Van Evera's tests (van Evera, 1997), often referred to as 'process tracing tests' (Bennett, 2010), based on reasoning about the uniqueness and certainty of theoretical predictions or the necessity and sufficiency of passing the test to establish causation (Collier, 2011; Mahoney, 2012):

- a) *Straw-in-the-wind*: Passing affirms the relevance of the hypothesis, but does not confirm it, whereas failing does not eliminate the hypothesis, but slightly weakens it. Neither sufficient nor necessary for affirming causal inference.
- b) *Hoop*: Passing affirms the relevance of the hypothesis, but does not confirm it, whereas failing eliminates the hypothesis. Not sufficient, but necessary for affirming causal inference.
- c) *Smoking-Gun*: Passing confirms the hypothesis, whereas failing does not eliminate (but weakens) the hypothesis. Sufficient, but not necessary for affirming causal inference.

- d) *Doubly Decisive*: Passing confirms the hypothesis and eliminates others, whereas failing eliminates hypothesis. Both sufficient and necessary for affirming causal inference.

These tests have, however, rarely been used explicitly in published process-tracing research (e.g. Fairfield, 2013), and there are ongoing discussions regarding the strict interpretation of the necessity/certainty and sufficiency/uniqueness dimensions (Fairfield and Charman, 2022). However, the key takeaway here is that under process-tracing, different pieces of evidence can either strengthen or weaken a specific hypothesis to varying degrees. In practice, process tracing almost never claim that a piece of evidence would pass a doubly decisive test; the straw-in-the-wind test is not considered particularly useful as it does not significantly affect confidence in alternative explanations. Therefore, the analytical focus typically lies on hoop tests and smoking-gun tests, as failing a hoop test can help eliminate a rival hypothesis, while passing a smoking-gun test can either confirm one's specific hypothesis or significantly increase confidence in it (Naczyk, 2021).

3. Process-tracing in welfare state research

The development and formalization of process-tracing constitute a major innovation in case-study research in the past two decades. Over the same period, welfare state research has been particularly exposed to these developments given the predominance of historical institutionalist and case-study approaches (Lynch and Rhodes, 2016). A series of literature searches in the Scopus database reveals that the use of process tracing has gained popularity in welfare state literature. Its usage grew steadily in the 2010s, with more than 600 articles published since 2010, following its initial adoption in the second half of the 2000s, when 31 articles were published between 2001 and 2010 (see also Table 2)⁴. The rapid development of process-tracing in welfare state research raises two broad questions. The first is the extent to which the various principles of process-tracing as a research method are implemented in practice. The second – though related – question is the methodological implications of the growing use of process-tracing.

Before answering these questions about the empirical rigour of process-tracing research, it is necessary to clarify what constitutes best practices of process-tracing research, i.e. the criteria through which one can assess whether the general principles emphasized in the previous section have been correctly implemented. Several lists of best practices that pertain both to process-tracing as a method of data analysis and data collection for process-tracing are available in the literature, with Bennett and Checkel

⁴ The data includes all articles in the Scopus® database mentioning ‘process-tracing’ and ‘welfare state reform’ or related terms (social services, trade or labour unions, pension(s) politics or policy, health policy or occupational welfare) in their title, abstract or keywords. Results for additional queries, not displayed here, show that the growth of the occurrences of process-tracing reported in Figure 1 in welfare state research is strongly correlated with that of political science as a whole.

(2015: 5; see pp. 20–31 for an explanation of the criteria) and Trampusch and Palier (2016) being the most cited.

From these existing discussions of best practices, it is evident that process-tracing should be used for relevant ‘why’ research questions that should be answered with clearly theorized causal mechanisms. When theorizing such causal mechanisms, process-tracing research cannot just focus on researchers’ hypothesized causal mechanisms, but it also has to ‘cast the net widely’ for alternative explanations. In so doing, it has to be ‘equally tough on’ – that is it needs to seek the best available evidence both for – the researcher’s hypothesized causal mechanism and competing explanations. Theoretical hypotheses can be formulated deductively or derived inductively and refined through an iteration between deductive and inductive thinking. Researchers using process-tracing should be transparent about crucial analytical choices they make when applying the method.

In terms of data collection, it is clear that process-tracing requires the triangulation of multiple data sources that need to be gathered ‘relentlessly’ while remaining directly ‘relevant’ to the research question. For example, if interviews are conducted, ‘relevance’ means that interviewees will not be sampled randomly, but will be sampled purposively, i.e. ideally based on their having directly participated in the process that is being reconstructed in the research project (see also Gonzalez-Ocantos and Masullo, 2024). The biases of different data sources should be carefully considered. Case selection should also be theoretically oriented. Again, ideally, important choices regarding data collection should be documented and made transparent in published research, for instance in a dedicated methodological section or an appendix.

With these ideas in mind, we have evaluated whether and the extent to which these criteria were implemented in contemporary research on welfare state reform. We conducted a small-scale survey coupled with a comprehensive analysis of all articles on process-tracing published in *The Journal of European Social Policy* (JESP) since 2005 ($n = 23$). JESP, published by Sage Journals®, serves as the flagship journal in the field of welfare state research and is broadly interdisciplinary, covering all aspects of social policy in Europe⁵. We chose to focus on this specific journal for two primary reasons. Firstly, we aimed to base our analysis on a well-identified, influential, and agenda-setting journal in the field. Secondly, we sought a coherent observation scale for the period under study to better discern trends and evolutions. The primary findings from our survey and analysis are presented in Table 2, which we structured based on the key criteria and best practices of process tracing.

Several general observations emerge from our meta analysis (see Table 2). While the utilization of process-tracing by JESP authors has increased since 2005, its usage remains relatively modest compared to the total number of published papers in JESP (more than 550 between 2005 and mid-2024). However,

⁵ A full description of the journal is available at: <https://journals.sagepub.com/aims-scope/ESP>. Accessed 24 April 2024.

this observation is unsurprising given that JESP also publishes articles utilizing quantitative methods, literature reviews, and conceptual papers. When considering the proportion of articles employing case studies, the utilization of process-tracing is significant. Another noteworthy observation pertains to the overall enhancement in the quality of process-tracing over time. The adherence to several criteria or principles of sound process-tracing research has significantly increased since 2005, with some exceptions primarily related to data collection. Specifically, we observed a greater emphasis on the description of the methodology, as well as more theorization in terms of mechanisms.

Table 2. Process-tracing (PT) analyses published in JESP 2005–24

	2005-2009	2010-2014	2015-2019	2020-2024
<i>Number of Scopus papers</i>	<i>n=15</i>	<i>n=65</i>	<i>N=248</i>	<i>N=369</i>
Number of selected JESP articles	n=2	n=3	n=5	n=5
PT as method of data analysis				
Is PT mentioned in the abstract or the introduction?	50%	66%	100%	80%
Is there a specific section or a substantial paragraph describing PT as a method of data analysis?	0%	33%	40%	40%
Is PT suitable for the research question? In other words, is the question a ‘why’ question?	50%	100%	100%	80%
Does the paper theorize a causal mechanism?	50%	66%	60%	80%
Does the paper’s PT test alternative hypotheses?	0%	33%	40%	20%
Does the paper include an appendix for ‘analytical transparency’?	0%	0%	0%	20%
Data collection for PT				
Is there a specific section or substantial paragraph describing data that have been collected?	50%	33%	80%	80%
Are various types of data triangulated?	50%	100% (n=2) ^a	100% (n=4) ^a	100%
If interviews were conducted, does the paper include a list of those interviews?	0% (n=1)	100% (n=1)	25% (n=4)	50% (n=4)
If interviews were conducted, are they all anonymized?	100% (n=1)	100% (n=1)	50% (n=4)	100% (n=4)
Does the paper include an appendix for ‘data transparency’ and/or ‘production transparency’?	0%	0%	0%	20%

Note. ^aPapers were excluded when sources of evidence were not cited in the findings.

Sources. Scopus, Annesley, 2007; Leiber, 2007; Martin, 2010; Trampusch, 2010; Verschraegen et al., 2011; Aurich-Berheide et al., 2015; Estevez and Naldini, 2016; Lalioti, 2016; Koreh, 2017; Beland and Lecours, 2018; Afonso et al., 2020; Scalise and Burroni, 2020; Gago and Hruschka, 2022; Benoit, 2023; Afscharian et al., 2024.

Despite growing incorporation of best practices of good process tracing research, there is still some room for improvement. One recurring gap includes the occasional misapplication of the method, resulting in analyses that are tangential to the core research question. In principle, process-tracing should be clearly differentiated from other types of case-study designs or standard historical research. In particular, it should not be used for merely descriptive purposes but rather address causal inquiries, delving into the ‘why’ behind observed phenomena (for details, see Beach and Pedersen 2019). Several

studies in our sample were, however, not framed in those terms and, de facto, addressed more descriptive, or even interpretive, research questions. Additionally, there remains a need for more comprehensive descriptions of the methodology that elucidate the data collection strategy employed. The table, interestingly, highlights a paradox: While the data collected are systematically reported, the procedures followed for their collection and analysis appear less thoroughly detailed. This gap is notable, yet not entirely surprising, considering that data analysis has received greater attention in the process-tracing literature compared to data collection methods. Relatedly, it seems that most papers in our sample have an inclination towards triangulation – a practice that enhances the reliability and validity of research findings by corroborating evidence from multiple sources. This, however, increases the need to report on the diverse data sources mobilized and, more fundamentally, about how they have been analysed. The lack of reflection about the connection between data collection and their analysis can explain, at least in part, the rather unsystematic test of alternative hypotheses in our sample. While this undermines the credibility of inferences in several papers, there are examples of good implementation of best practices in process-tracing among the JESP papers we have reviewed. These include, for example, the papers by Estévez-Abe and Naldini's (2016) comparative study of the politics of defamilization, Afonso et al. (2020) on trade union responses to labour migration, or Koreh (2017) on social insurance in Israel.

Another good example is Afscharian et al. (2024), an analysis of the exclusion of European Union migrant citizens from social assistance in Germany. That paper makes it clear both in its abstract and in its introduction that it uses process tracing to scrutinize and explain the introduction of a chauvinist policy reform in Germany. The introduction immediately mentions various 'potential explanations' that existing literature already offers for welfare chauvinist reforms and it clearly announces that those "usual suspects" (ideology, party competition, and problem pressure) cannot satisfactorily explain" the case at hand (Afscharian et al., 2024: 2). Those "usual suspects" are then systematically tested – and eventually rejected – through process-tracing in a specific empirical section of the paper ("Explaining Hamburg's actions" on pp. 6–7). A separate section is then used to provide evidence for the paper's own hypothesis ("The difference a well-connected policy entrepreneur makes" on pp. 7–12), which is reassessed systematically in a final discussion section ("Assessing the evidence" on p. 12). A specific section on "Methodology" (pp. 4–6) provides a relatively detailed description of the various data sources ("political documents", "expert interviews", "media reports", "descriptive statistics") that have been collected and triangulated in the paper. Noteworthy is also the fact that the paper includes a list and short description of all the interviews that have been conducted (Table I on p. 5) with the empirical sections systematically citing those interviews as empirical evidence⁶.

⁶ Ideally, the list of interviews would have been complemented by a short discussion of the sampling technique: Were interviewees sampled purposively or more or less randomly? Another potential best practice – to be implemented in the future – for the description of interviews could be to provide a sample questionnaire as this

4. Improving data collection strategies

Overall, the use of process-tracing in welfare state research has been on the rise since the mid-2000s. As shown in Table 2, a survey of JESP articles suggests that the development of process-tracing has fostered greater theorization in terms of processes and mechanisms. By contrast, there is still room for a more systematic reflection on data collection and greater transparency in reporting the empirical strategy. These issues require further reflection.

A first point to consider is data collection. A key takeaway from our survey (see Table 2) is that the reporting of data usage is more systematic than the reporting of data collection. This discrepancy is quite acute in welfare state research, but it is, in fact, a more general issue in research using process-tracing. Checkel (2021) has already pointed out that methodological literature on process-tracing has largely neglected data collection strategies and training. He suggests that greater attention should be directed towards considering data collection methods (interviews, fieldwork, ethnography, archives, surveys, and discourse analysis) and their triangulation within process-tracing. This argument also highlights the frequent lack of fit between data collection and the method of data analysis. What Checkel explicitly suggests is indeed that under, process-tracing, data collection and data analysis are ‘inextricable’.

We need greater awareness on how data collection in process-tracing itself is shaped by the epistemological underpinnings of process tracing as a method of data analysis that develops or tests hypotheses about causal mechanisms that might causally explain a case. The types of evidentiary sources used in process-tracing are, at first glance, very similar to those mobilized in qualitative research, as they include both primary sources (such as interviews, archival material, memoirs, public statements and speeches, parliamentary records, legal documents) and secondary ones (such as historical or [social] sciences scholarship or newspaper sources)⁷. But the way these sources are collected and how they are analysed largely differ from how this is done in other types of case-study research. Most interpretive qualitative research focuses on ‘how’ questions – for instance, how policymakers perceive or frame different options for social policy reform. In this context, it usually adopts a holistic, multidimensional approach to understanding social phenomena, refraining from disaggregating these phenomena into dependent (or outcome) variables and independent (or explanatory) variables (or conditions). When it comes to data collection, researchers aim to gather diverse and detailed – verbal or textual – data for interpretive qualitative research shedding light on meaning-making processes, which are often vaguely identified or specified a priori. Instead, the particular meaning is often mentioned by interviewees or appears in textual material collected by the researcher.

Process-tracing collects evidence on a fundamentally different basis: Process-tracing asks ‘why’ questions about the causal mechanism or pathways through which a well-defined outcome came about.

would allow readers to assess whether paper authors systematically tested alternative hypotheses in their interviews (beyond having already tested alternative explanations through other data sources).

⁷ See Beach and Pedersen (2019) for a more exhaustive presentation and reflection.

The primary goal is to identify the causal mechanism that best explains a specific outcome that has been defined a priori. While researchers remain open to various potential mechanisms, they typically minimize randomness by deducing a range of plausible explanations from existing empirical and theoretical knowledge. Consequently, process-tracing researchers meticulously gather data directly pertinent to explaining the outcome, starting with a broad spectrum of potential explanations. These explanations are either deductively derived from existing theories and rigorously tested using carefully selected material (forward tracing), or formulated inductively by retracing steps from the outcome, adjusting hypotheses as needed based on unforeseen factors encountered during backward tracing. Through a systematic process of elimination – or, more accurately, of updating prior beliefs – they gradually refine their hypotheses, ultimately converging on a specific explanation. These epistemological underpinnings have direct implications for how data should be collected. This is, for example, very clear with how interviews are to be conducted (Gonzalez-Ocantos and Masullo, 2024): Interviews in process-tracing need to systematically test for alternative hypotheses; they should also be conducted with people *directly* involved in the processes under study – not with people who have been randomly sampled.

Seen through the lens of these more generic observations, the application of process-tracing within welfare state research continues to fall short due to the insufficient adherence to its methodological principles throughout *all stages* of the research process. Put simply, process-tracing continues to be predominantly viewed, at best, as solely a data analysis strategy, utilized to interpret data collected in a somewhat arbitrary manner – or at least, not guided from the very beginning of the data collection process by a clear identification of the priors of the researcher about the potential causal mechanisms that might have led to a specific outcome. This, in turn, arguably explains why few papers in our sample formally state how their data have been analysed and, relatedly, why only a minority present some explicit test of alternative hypotheses. Of course, such practices may well have been followed by the researchers, but since they are only very rarely discussed in a dedicated methodological section (or appendix), some crucial aspects of their empirical strategy and choices are missing. This leads to our second point about room for growth for how transparently process-tracing research reports its findings – particularly in the field of welfare state research.

5. Outlook: Transparency in tandem with process-tracing

In our sample in the period 2020-24 about 80% of the papers do not include an appendix for analytical transparency even if transparency is widely regarded in the academic community as a key pillar of open science and its central ethical precept (see, again, Checkel, 2021 for a review and discussion). Transparency arguably holds an even greater significance in the more specific context of process-tracing: The starting point is always a set of prior beliefs by the researcher about the probability that certain causal mechanisms explain a specific outcome – the underlying hypothesis. While these might be very solidly established, these priors are *subjective* in the sense that they come from the researcher's

case knowledge and understanding of the literature. In the subsequent steps, process-tracing researchers assess the extent to which new pieces of evidence either increase or decrease their confidence in a given hypothesis (Fairfield and Charman, 2022). Furthermore, the various operations involved are also subject to a high degree of subjectivity, particularly as process-tracing requires that the credibility of competing hypotheses be carefully considered, and the confidence gained from the evidence, based on the researcher's assessment of their probative value⁸. In sum, the very features of process-tracing conspire to push researchers to be transparent not only about the data gathering process, but also about their own judgements in the implementation of their empirical strategy, in other words, in their data analysis.

Transparency in data collection and data analysis is thus more than a good practice in process-tracing research – it is the very foundation of this approach. The requirements in terms of transparency for process-tracing extend well beyond a demand for reporting or replicating the research findings. Indeed, independent peer researchers need, in principle, to be capable of reconstructing the very reasoning as documented in the process-tracing study. Yet, there are benefits from adopting such practices and advocating their diffusion. More transparency would enable researchers to scrutinize each other's data collection practices more critically and comprehensively, fostering a better-informed research community. Through an iterative process facilitated by increased transparency, best practices in data collection could gradually emerge, offering clearer guidelines for researchers and enhancing the overall rigour and reliability of the literature. Given the centrality of case-study designs in their approaches and their early (and still growing) adoption of process-tracing, welfare state researchers should not remain bystanders in these developments; rather, they should actively engage with them.

⁸ See Massoc and Benoît (2023) and Naczyk (2021) for reviews and discussion.

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