Process-Oriented Sampling

JANNIS HERGESELL
 Technische Universität Berlin

NINA BAUR
 Technische Universität Berlin

LILLI BRAUNISCH
 Technische Universität Berlin

Abstract

Using the concepts of "duration" and "temporal patterns," this paper discusses how key steps during sampling change, if researchers take temporality seriously: When defining cases, scholars have to select a suitable temporal scale and reflect on possible changes of boundaries and properties of cases. When defining the population or field, researchers need to set an appropriate time frame and define periods within this time frame to be analyzed. When selecting the actual cases for analysis, researchers have to choose an appropriate sampling procedure, decide upon relevant periods of analysis as well as the number of points in time to be analyzed.

Résumé

En utilisant les concepts de "durée" et de "modèles temporels," cet article examine comment les étapes clés du processus d'échantillonnage changent, quand la temporalité est prise au sérieux: en déterminant leur cas d'étude, les chercheurs doivent choisir une échelle temporelle appropriée et réfléchir aux changements possibles de la démarcation et des propriétés des cas. En définissant la population ou le domaine, les chercheurs ont besoin de fixer un cadre temporel et des intervalles de

Jannis Hergesell, Department of Sociology, Technische Universität Berlin, Fraunhoferstr. 33–36 (FH 9-1), 10587 Berlin, Germany. E-mail: jannis.hergesell@tu-berlin.de

temps en son sein. En sélectionnant les cas, les chercheurs doivent choisir une procédure d'échantillonnage, déterminer les périodes d'analyse et le nombre de points dans le temps.

TIME AND SOCIAL RESEARCH

TIME IS ONE OF THE core categories of sociology (Baur 2005:13) since every kind of sociality is shaped by its temporality. Without taking the historicity of social processes into account, researchers can neither theoretically conceptualize nor empirically examine other social dimensions, such as power, knowledge, or space, as well as their entanglement. However, this does not imply an examination of the past for its own sake (Bühl 2003:32), as is the case in historical studies. Instead, process-oriented social research stands in the long tradition of historical sociology that grasps current phenomena by reconstructing their "being historically so and not otherwise" (Weber 2002:103, translated by authors). Process-oriented social research thus focuses on the temporal course of analyzed phenomena to understand the processes "by which we have become what we are" (Schützeichel 2004:9, translated by authors).

Many classical sociologists systematically reconstructed social processes in order to understand the temporal course of phenomena and to uncover causal relationships unfolding over time. For example, Weber (2001) explained the emergence of occidental rationalism through the historically grown elective affinity between Protestant ethics and capitalist logics. By reconstructing the sociogenesis of civilizing process, Elias (2000) showed how external constraints were increasingly internalized and so formed the contemporary habitus in Western societies. However, from the middle of the last century, sociology increasingly moved away from its roots of (historical) process-oriented research. Although there are currently some approaches that still concern themselves with processuality, these have one thing in common with the classics: The have neglected to develop a systematic process-oriented methodology, which addresses the specific characteristics of time-sensitive research designs.

The absence of a process-oriented methodology is especially evident in process-oriented sampling, which is essential for applying a process-oriented perspective in social research regarding current sociological questions. Thus, the potential of process-oriented social research for investigating contemporary society comprehensively and causally by considering the social dimension of time remains unused. This holds true not only for research explicitly addressing questions of contemporary social change (such as digitalization, globalization, or biographical research) but also for other areas of sociology not primarily concerned with the processual nature of their phenomena (such as social inequality research, cross-cultural comparison, or science and technology studies).

This paper aims at starting to fill this gap by developing some guidelines for process-oriented sampling. We will first discuss and criticize existing state-of-the-art approaches and then introduce two key concepts that have proven to be relevant for methodological issues concerning process-oriented sampling: durée (duration) and temporal patterns. We will continue to reflect on how we think the key steps during sampling change if we take temporality seriously. In our argumentation, we refer to a social-constructivist understanding of sociality in general and to the methodology of interpretative social research in particular. However, we limit our discussion neither to purely qualitative or quantitative research designs nor to individual theoretical schools. Our goal is to advance the methodological debate on process-oriented sampling in general, which is connectable to as many sociological concepts as possible.

SAMPLING IN PROCESS-ORIENTED RESEARCH

Sampling strongly influences if and how results can be generalized, how data can be linked, and is an essential part of any research process (Akremi 2019). Accordingly, almost all methodological traditions in the social sciences have extensively discussed issues of sampling. In the course of this debate, various sampling procedures have been developed, which are as varied as random sampling (Baur, Behnke, and Behnke 2010:139–69), purposeful sampling (Akremi 2019; Creswell and Poth 2018:159; Marshall 1996:523; Miles, Hubermann, and Saldana 2013), theoretical sampling (Strauss and Corbin 1990:176–94), fuzzy-sets (Ragin 2000), and selection of single cases for case studies (Baur and Lamnek 2017; Yin 2014).

As diverse as these sampling procedures are, all traditions agree that researchers have to reflect both on how they define cases and populations and on how they sample substantially, spatially, and temporally. Nevertheless, process-oriented sampling has been long neglected both in methodological debates and in process-oriented sociology (Bidart, Longo, and Mendez 2013; Lybeck 2017; Baur 2017).

The methodological discussion on sampling typically focuses on discussing the strengths and weaknesses of various sampling procedures (Onwuegbuzie and Leech 2007) and on developing new sampling strategies. This includes issues like how many cases researchers should select and how research findings can be generalized from a small (Abbott 2004:21–23) or large number of cases (Ebbinghaus 2005). There has also been a long-lasting debate on how different social fields and substantial research questions influence sampling (Byrne and Ragin 2013; Creswell and Poth 2018). Comparative and cross-cultural research (Baur 2014), as well as approaches of historical sociology such as world system analysis (Demetriou 2012) and comparative historical analysis (Tilly 1984), have

also addressed issues linked to the spatial aspects of the research question. For instance, comparative historical analysis has extensively discussed questions such as specifying the level and scale of analysis (Mills, van de Bunt, and de Bruijn 2006), how the relationship between individual phenomena's embeddedness in and interactions with their social context affect sampling, and how sampling issues are related to generalizability of results and assessing causality (Goertz and Starr 2003; Kiser and Hechter 1991; Mahoney 2004). World system analysis shows how identifying the units of analysis is relevant as the research question is a necessary precondition for proper case selection (Moran 2009:116). In summary, literature has extensively discussed how substantial and spatial aspects of the research question affect sampling but has been long neglecting the temporal aspects of sampling.

Likewise, historical sociology (Schützeichel 2004) and processual sociology (Abbott 2016) have extensively discussed the nature of social processes. However, as these debates focus on theorizing either the nature of social processes or the theoretical implications of social processes, they generally lack discussing methodological implications of taking temporality and processuality of social life seriously (Abbott 2001; Aljets and Hoebel 2017; Baur 2005; Kaven 2018:2). The rare discussions on process-oriented methodology either focus on data collection (e.g., Baur 2009a, 2009b) or data analysis (for an overview, see Baur 2005). So all in all, there is a general lack of guiding principles for time-sensitive sampling, which both accounts for the characteristics of processes and allows for generalizability of results (Aljets and Hoebel 2017; Baur 2017).

TEMPORALITY: ANALYSIS OF SOCIAL CHANGE

When systemizing the debate on sampling and the nature of social processes, two key concepts have proven especially fruitful for process-oriented methodology: durée (duration) and temporal patterns (Baur 2005:125–63). Which duration and temporal patterns are to be found and should be investigated are methodological questions that need to be clarified prior to sampling and data collection. Regardless of the researchers' theoretical perspective and the methods they apply, a time-sensitive study of social change always requires investigating the temporal structure of the phenomenon in order to make further decisions in the research process possible. If it turns out that the social change of interest extends continuously over several decades, completely different sampling and data collection strategies will be required than in the case of rapid social change characterized by permanent restructuring. Dealing with the key concepts of process-oriented research can result in the researcher's decision to focus precisely on describing a short section of a process. It may also become apparent that the phenomenon needs to be examined over a longer period

and in a more complex methodological framework with its social context to answer the research question.
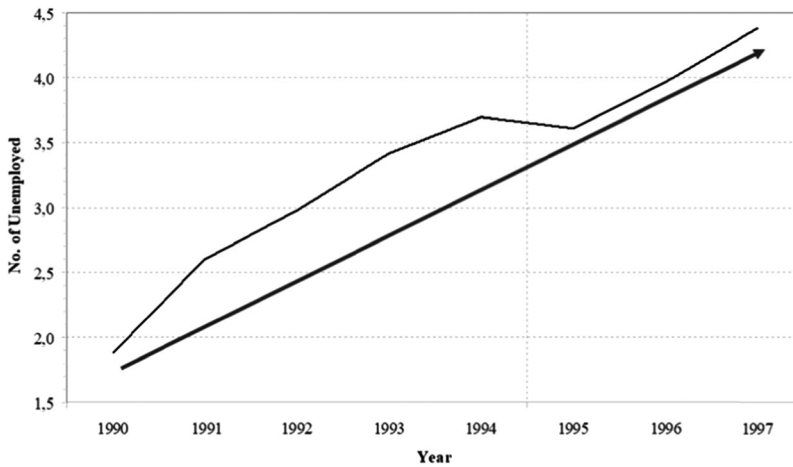
Duration

Social processes differ in the amount of time they need to unfold. They vary in duration, "time layer" (Zeitschicht) (Koselleck 2018) or "durée" (Braudel 1958). The duration of a social process does not only influence the choice of suitable and available data (Baur 2005:99–103, 138–42) but is also important for the way the cases and population have to be defined during sampling. Analyzing the duration of a process includes at least four components: overall duration, the timing of key events, the pace of change, and the rhythm of change. In addition, research questions can address phenomena on various time layers.

Heuristically, three types of overall duration can be distinguished (Baur 2005:99–103, 138–42; Wehler 1972).

First, *short-term social processes* (temp cours) unfold in moments, hours, or days. Knoblauch, Wetzels, and Haken (2019) provide the example of an analysis of a short-term process by analyzing collective cheering at sports matches that emerge and end in fractions of a second. To be able to analyze the temporal patterns of these collective emotions, the research team uses video data, which provide very dense information for processes unfolding rapidly. Second, *medium-term processes* (time of generations) cover everything that is reflected in the memory of the living and can thus be accessed, for instance through interviews or surveys—as a rule of thumb, people's memories cover a maximum period of 60 to 90 years. For example, using biographical interviews, Rosenthal and Bogner (2017) show how life stories and life courses of individuals from the Global South are embedded into and entwined with the dynamic figuration of larger social groups and we-groups (such as religious or political organizations or movements). Third, *long-term processes* (longue durée) (Braudel 1958) go beyond the memory of the living, which means that only process-generated data can be used as a data source (Baur 2009a,b). Many social processes of theoretical interest unfold only within one or several centuries or even millennia: among others, modernization, industrialization, colonialization, state-building, or the transformation of institutions, organizations, values, and so on. For example, in *The Civilizing Process*, Elias (2000) uses etiquette books, documents, and various archival sources to show that since the Middle Ages, within Europe, social class was expressed by a distinguished habitus, which over the centuries resulted in a slow transformation of standards regarding violence, sexual behavior, bodily functions, table manners, and forms of speech by increasing thresholds of shame and repugnance (Baur and Ernst 2011). In parallel, competition between elites resulted in a slow concentration of power and the formation of modern states.

Figure 1

**Trajectory: Continuous Increase of Unemployment in Germany
(1990–97)**

Source: Own calculation based on data by DISI and iab.

Temporal Patterns

From a methodological point of view, not only the duration of a process is relevant but also its pattern over time. Before sampling, scholars should reflect upon which types of patterns they are aiming at identifying, because the types of patterns of social change researchers want to grasp influence the principles of case selection. One can roughly distinguish three basic patterns of social change (Baur 2005:107–109, 125–37; Kaven 2015):

1. Social change may take systematic patterns or develop path-dependently along so-called *trajectories*. An example of such a temporal pattern is the development of unemployment numbers in Germany in the 1990s. There was a continuous increase in unemployment (see Figure 1). The temporal pattern shows a clear, uninterrupted development within the analyzed time frame. This specific trajectory led to various deductions in German policy debates, such as persistent economic problems and a decreasing quality of life, which in turn led to the retrenchment of the German welfare state symbolized by the so-called "Hartz reforms" in 2004/2005.

Figure 2

**Turning Point in the Development of Unemployment in Germany
in 1990**

Source: Own calculation based on data by DISI and iab.

2. Social processes can also be structured in different phases, and the transition between these phases can be characterized by abrupt changes. These rapid and profound transformations of the defining features of the process are called *turning points* (Bidart, Longo, and Mendez 2013:749). For example, the unemployment rate in West Germany continued to decline until the mid-1990s, and then rose steadily from 1990 onward (Figure 2). Empirically such turning points are often caused, for example, by economic crises, political changes (revolutions, wars), or technical innovations. Possible causes for this specific turning point could include increasing globalization or the systemic shock due to German reunification.

3. Social processes can also be characterized by *cycles* or repetitions: over time, events recur similarly. To provide an example, following business cycles, since World War II, unemployment in Germany has continuously fluctuated between higher and lower unemployment (see Figure 3). From this point of view, the increase in unemployment in the 1990s was caused by recession, which was followed by a decrease in unemployment during the next boom.

Figure 3

Cyclical Fluctuations the Development of Unemployment in Germany (1948–2008)
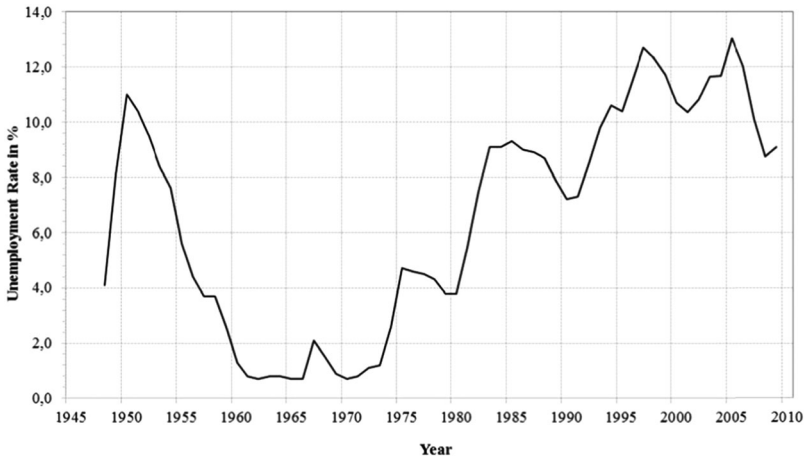
Source: Own calculation based on data by DISI and iab.

Temporal patterns can be seen as heuristics linked to duration: Depending on the time span taken into consideration, the same interaction pattern may appear as a trajectory, turning point, or cycle—this, in turn, means that the temporal pattern researchers are interested in also influence the time frame of analysis. The above examples show that this choice should not be made arbitrarily because the theoretical conclusions drawn from results may be completely different depending on the types of patterns found.

CASES AND TEMPORAL SCALE

Regardless of which research tradition researchers follow, the major challenge when defining cases in process-oriented analysis is that cases do not remain stable over time. Instead, they have a beginning and an end, and their main properties can change. When regarding meso- and macrosocial phenomena such as organizations and states, it becomes clear that cases can change both in composition and in their boundaries, resulting in open boundaries and fuzziness (Abbott 2001:145–60, 261–80). In addition, cases are usually embedded into social contexts, which include historical circumstances, spatial relations, economic, legal and

aesthetic circumstances, other cases, and persons involved in the case (Stake 1994:238). Cases interact with these social contexts, and both the relation to and interaction with the context may change over time. This means that it is often not clear how cases are demarcated from their contexts (Baur and Lamnek 2017:276).

Somehow, researchers have to handle these changes in the boundaries of cases. One option is to analyze the changes themselves empirically. If there is no time for this or this is not a study's focus, it is of course also an option to simply define the substantial properties and temporal and spatial boundaries of the cases. However, if researchers choose the latter, they should at least reflect if and how the definition of cases may influence or even distort results. In the examples given in Figures 1 to 3, the empirical case was "Germany." Since 1945, there have been three changes of territorial borders. While these border changes do not change the basic temporal patterns discussed above, they do affect the overall level of unemployment to the extent that policy implications would have been completely different, if these changes of case properties had been taken into account (Baur 2014:274–83).

When thinking about the order of events and changes in cases, researchers are basically thinking about "before," "after," and "simultaneously." To be able analyze either the history within one case or between cases, they need to set a *temporal scale* of comparison that allows for assessing temporal patterns. Researchers usually do this by using calendars and ordering events or case histories chronologically.

However, what researchers seldom reflect upon is that there is no such thing as an "objective" time scale—instead, calendars themselves are socially constructed (Baur 2005:121–32): Calendrical systems divide continuous time (Naturzeit) into intervals, and they diverge in how long the time intervals are, when they begin, and when they end. Besides, time intervals can often be scaled up and down: A century can be divided into decades, years, months, weeks, days, hours, seconds, and so on, and the rules of transforming one scale into another vary between calendrical systems. For example, in Western societies, most people use the Gregorian solar calendar. In contrast, the Hellenic calendars, Hebrew calendar, and Islamic calendar are lunar calendars. In the lunar calendars, months are shorter than in the solar calendar. Many Mesoamerican calendars used by the Aztecs and Mayas divided the year into 260 days, while the Gregorian calendar has 365 days. While the Gregorian and Islamic calendars have 12 months, the Hebrew calendar has 12 or 13 months. The Gregorian calendar uses a 7-day week, while Ancient Rome used an 8-day week, and the ancient Chinese calendar, ancient Egyptian calendar, and French Republican calendar had a 10-day week.

As can be seen from these examples, there is no simple pattern when comparing calendrical systems. Nevertheless, choosing an appropriate

Figure 4
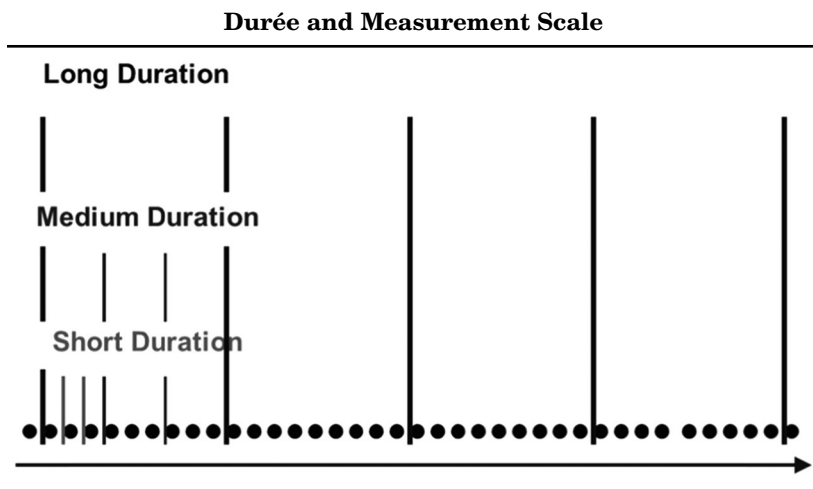
Dúree and Measurement Scale

calendar and measurement scale is methodologically important for several reasons:

Depending on the duration of the social phenomenon of interest, a measurement scale may be too fine-grained or too coarse (Figure 4; see also Baur 2005:113–24, 125–37). For example, Knoblauch et al. (2019) could not have analyzed collective cheering if they had not had data that allow for the reconstruction of social interactions on the level of milliseconds. They needed many measurement points over a very short period. Medium-term phenomena, on the other hand, usually require a calendrical scale of months or years, while long-term social processes are best measured in decades or centuries. However, this does not necessarily mean that many or few measurement points are per se good. Rather, this depends on the specific research question. For example, Knoblauch et al.'s (2019) measurement scale would not have done at all for Elias (2000) who was interested in social change over centuries: Even if Elias would have been able to get such fine-grained data for a time span of over a millennium, he would have simply drowned in data.

When comparing documents, it can turn out that the same date is actually not the same date. For example, at first sight, Miguel de Cervantes and William Shakespeare both seem to have died on April 23,1616. However, until the fifteenth century, both Spain and England used the Julian calendar. Spain then introduced the Gregorian calendar in 1582, England only in 1752. Considering this, Shakespeare actually died 11 days later

than Cervantes. Calendrical systems do not only vary temporally but also between cultures and religions. In interviews or surveys, interviewees will refer to the calendrical system they have used without explicitly saying so. For example, in many East Asian countries, the moon calendar is used for ordering religious festivals (such as the Chinese Ghost Festival or Buddhist holidays) while the Gregorian calendar is used for ordering business events, meaning that interviewees might even unconsciously jump between calendrical systems within the same interview.

In quantitative research, unequal time spans within a given calendrical system may affect results. For instance, in the Gregorian calendar, February usually has 28 days, the other months have 30 or 31 days—which may affect the overall activities that can be completed in a month.

For many research questions, these issues can be ignored, such as when the time frame analyzed is short and researchers conduct qualitative research within one country. Should the calendrical system be relevant for a research question, it can still easily be handled. For example, in quantitative research, one could either define a finer time scale (e.g., days instead of months) or calculate rates (e.g., activity per day) instead of absolute numbers (e.g., overall activity). In interviews, one can ask interviewees what calendrical system they are referring to, and different calendrical systems can be converted into each other using chronology (Baur 2005:121–32).

TIME FRAME AND PERIODIZATION

For process-oriented sampling, it is not only crucial to reflect on general questions of temporal scale. Researchers should also systematically determine the concrete time frame of the analysis as well as the subdivision of the selected time frame into smaller units. Only by doing so, can they accurately examine how the investigated phenomenon's processuality or analyzed social change takes place, and thus exploit the full potential of process-oriented social research.

Time Frame

As a general rule of thumb, an ideal study *starts* either when the social process of interest begins or earlier, and it *ends* when the social process ends or even later. In the examples introduced above, Knoblauch et al. (2019) were interested in typical forms of collective cheering (i.e., a cyclical pattern). This means that the data have to grasp the whole process of cheering (which in this example is not difficult, as the whole process unfolds within a couple of seconds). However, the actual time frame of analysis needs to be longer as data also need to cover several of those cheering processes because the scholars were interested in *typical* interactions. What is typical can only be assessed if many cheering processes are

observed. Still, for this type of research question, it is usually enough to collect ethnographic data over several weeks or months. In contrast, Elias (2000) needed to cover several centuries to observe how the process of civilization unfolded. Moreover, as Elias (2000) was looking for a trajectory and not for a repetitive pattern, it was not as easy to define the starting and end points of the analysis.

Trajectories often do not have a fixed beginning and end. If there is a beginning or end, it is often marked by a turning point. However, even if there is a turning point, it is often difficult to fix it to a specific date. For example, historical sociologists often begin their analysis with the beginning of modernity. While this seems straightforward at first sight, it is not clear at all when modernity actually begins because this strongly depends on the social phenomenon under investigation: If one is interested in military or political processes in Western Europe, modernity begins with the discovery of America (1451–1506). In the case of religious transformation, Western European modernity begins with the Reformation, with the work of Martin Luther (1483–1546). If, on the other hand, the history of ideas is of interest, the beginning of Western European modernity can be set in the Renaissance, with its pioneer Frederick II (1194–1250). In the case of administrative and legal processes, Western European modernity either begins with the French Revolution (1789) or the Civil Code (Code Napoleon) (1804) (Baur 2005:82–83).

As can be seen from this example, setting the beginning of the analysis is often difficult to assess for several reasons:

1. The example of the beginning of legal modernity shows that it is often not even clear *what the critical event is*.
2. The critical event is often not a single point in time, but an *extended time period*—in the above example, both Luther and Frederick II's lifetimes lasted more than 55 years.
3. Which *type of critical event* one chooses is a highly momentous decision for data collection and analysis. For the four phenomena mentioned above, modernity begins somewhere between 1194 and 1804. It will most definitively affect research findings if one starts analysis 600 years earlier or later.

To decide upon the analysis' time frame, researchers can use different ways to identify *key events*.

Scholars can simply define key events based on *analytical specifications*: they can use their prior knowledge of the research field, the state of literature, or theoretical considerations in order to derive key events. However, this will most likely produce blind spots as setting key events has not been empirically verified.

A much more elaborate method for identifying an appropriate time frame is the so-called *backward reading* (Rückwärtslesen) (Hergesell

2019:96–99). Although more time-consuming, the advantages of backward reading are that the definition of the time frame is empirically grounded, customized to the specific substantial research question, and much more open for the unknown and unexpected. The basic idea of backward reading is that phenomena occurring in the present can only be understood causally if they are reconstructed in sequence since their inception. To capture an entire process, it must therefore be analyzed from the beginning. When applying backward reading, researchers empirically search for this beginning.

Backward reading starts with empirically specifying which characteristics shape the phenomenon of interest in the *present*. Depending on the phenomenon and the research question, this reconstruction of the phenomenon's current state can be quite extensive and time-consuming because this might require a first phase of primary research, using any type of data and analysis procedure suitable for the research question (Hergesell 2019:59–62). For example, Hergesell (2019) conducted ethnographies to show that in geriatric care in Germany in the 2010s, there is a conflict between economic and ethical interests. Also, in the 2010s, assistive care technologies were introduced because field actors believed that these technologies could resolve this conflict.

Next, researchers *trace the development of the phenomenon back in time*. Starting with contemporary references and causes of the phenomenon in the recent past, step by step, the development is empirically traced back in history. For example, Hergesell (2019) tracks the evolvement of the conflict between economic and ethical interests in geriatric care back in time.

Backward reading is completed when a *key event* occurs; that is, when empirical analysis reveals the phenomenon's first occurrence. This is the point in time when the social structures have emerged that are causally related to the present phenomenon, the so-called *formative period* (formative Periode) (Berking and Schwenk 2011:256). For example, the formative period of the conflict Hergesell (2019) is interested in is the institutionalization of geriatric care related to the approval of the German "law on invalidity and pension insurance" (Gesetz, betreffend die Invaliditäts- und Altersversicherung) in 1889. Accordingly, Hergesell's (2019) analysis of the process—that leads to the introduction of assistive care technologies in the present—begins at this point in time. In this way, possible causal relations between the constitution of a process, its temporal patterns, and its effects in the present can be identified.

Periodization

Once the starting point of analysis (formative period) has been identified, the question arises if one should really analyze the whole time frame or if the entire time frame can be divided into shorter (sub)periods (intervals) to

reduce complexity and the amount of data that are needed to be collected. When reducing complexity, researchers need to take care that they are still able to answer the research question and identify social change by comparing subperiods with each other (Baur 2017). The subdivision of a whole process into individual shorter periods is called *periodization*.

Periodization is an essential step of process-oriented sampling and especially important for long-term social processes because the sheer amount of *time needed for data collection and data analysis* is often unmanageable within a single research project if researchers also want to do detailed analysis. For example, in Hergesell's (2019) analysis of the development of geriatric care, the time frame covers almost 130 years, so the question he faced during periodization was: Is it really necessary to analyze all 130 years and collect data for each year, or can the whole process be subdivided into meaningful periods? This allows analyzing fewer points in time and instead spending more time on data analysis. In historical sociology, this is especially important because data collection often involves time-intensive archival work and archives are scattered across different locations.

In addition, the further one goes back in the time, the more urgent periodization develops, as it becomes increasingly more difficult to *find suitable data* because social processes were either not recorded in the first place or data were destroyed. If scholars manage to condense the time frame of analysis to relevant periods, they might be able to substitute nonfindable data. For example, in the development of geriatric care in Germany, one relevant period was that of marginalization and lack of resources (1933–1968) (Hergesell 2019:157–98), which covers National Socialism and World War II (1933–1945). During that time, many data were destroyed. However, for Hergesell's (2019) research question, it was not necessary to cover the whole research period but just to collect any data from that period. Instead of having to collect data for the NS time, he could instead collect data for the time after 1950 for which much more data are available.

For process-oriented sampling, periodization is an important step, which has major consequences on sampling decisions and the results of analysis. Periodization avoids the common mistake of "'flattening' the process" and reducing "change to the initial objective or the final outcome" (Bidart, Longo, and Mendez 2013:744). Instead, it allows for a focused and detailed analysis of main characteristics of the process.

In time-sensitive research designs, there are various approaches to defining periods. The most common approach in process-oriented analysis is *defining fixed periods of equal length*. The problem with this approach is that it is difficult to assess the adequate duration (Kaven 2011). If the intervals are too short, one might not be able to effectively reduce the amount of data collection—which is one of the main goals of periodization. For example, fixing intervals at 10-year lengths will result in

20 measuring points in the course of 200 years. In a quantitative study, this is not a problem (if one finds suitable data). However, if researchers conduct social science hermeneutics, they will end up with too much data for analysis. In contrast, if the intervals are too long, the process cannot be properly grasped in the empirical analysis. For example, fixing intervals at 50-year length for analyzing a 200-year time frame starting 1800 will result in five subperiods (1800–1850, 1850–1900, 1900–1950, 1950–2000, since 2000). Among others, this will result in possibly missing World War I and II in the data, although both were important turning points for many macrosociological phenomena.

To avoid this schematic setting of intervals, researchers can identify *periods by empirically analyzing social change* (Hergesell 2019:96–103). In doing so, periods are not selected arbitrarily but specified inductively, after and through an intensive analysis of the collected data. There are several methods of empirically identifying periods. Which one of them is preferable depends on the researcher's theoretical stance and the research question.

The first empirical method for periodization is *forward reading* (Vorwärtslesen): Commencing at the formative period, scholars empirically identify phases of relative stability and structural shifts concerning the social process of interest (Hergesell 2019:98). For example, Hergesell (2019:96–103) identifies four periods for geriatric care in Germany: constitution and differentiation of geriatric care (1889–1933), marginalization and lack of resources of geriatric care (1933–1968), professionalization of caregivers (1968–2005), and innovation and technology (since 2005). As can be depicted from this example, the periods empirically specified can be of *different* lengths. For example, the fourth period is significantly shorter than the second period. Furthermore, central phenomena can coincide in one period. For example, both NS era and postwar era are part of the second period because (in contrast to other social processes), for geriatric care, the end of the NS era *empirically* caused no profound structural change. The advantage of this type of periodization is that periods can be analytically separated and individually reconstructed. The immense complexity of causal relationships lasting for decades or even centuries is thus reduced and empirically accessible. In addition, the periods can be compared with one another after their reconstruction. This makes it possible to identify characteristics of a social process that are specific to a period and to detect crucial transformations of the process during its development.

Periods can also be identified *empirically based on discursive dynamics*. The concept of discourse is in itself a processual concept that does not refer to purely linguistic or language aspects but to epistemes, that is, knowledge and knowledge policies that are constituted, (re)produced, disseminated, changed, or discarded in time (Keller 2011:17). These knowledge dynamics are analyzed by looking at statements, actors, and practices in which knowledge is discursively (re)produced. Against this

background, it is not the change of trajectories of organizations, institutions, or events but the change of semantics that can be used as a basis for periodization. For example, Braunisch, Hergesell, and Minnetian analyze the use of the concept of "innovation" in the German parliament between 1949 and 2017 by mixing quantitative content analysis and hermeneutical deep-reading (Braunisch, Hergesell, and Minnetian 2018; Braunisch and Minnetian 2018). This results in four periods: In period 1 (1949–1965), the words "innovation" and "innovative" are merely used as rhetorical means or adjectives. In period 2 (1965–1980), "innovation" is increasingly linked to content. In period 3 (1980–2009), the term is used much more frequently both as fillers and as strategic topoi. In period 4 (2009–2017), the use of "innovation" becomes reflexive and the semantic demand for innovation is systematically institutionalized.

If researchers lack time or resources for an empirically grounded periodization customized to the research question ("Gegenstandsangemessenheit," Strübing et al. 2018:85), they can also periodize based on their *knowledge of the state of research*. This is possible as many social processes share similar typical periods. In the case of Germany, it often makes sense to set the beginning of the analysis either at the Prussian reforms (1807) or the March Revolution (1848/49). The next major structural fracture is often 1871, which is related to the founding of the German Reich, the kickoff of industrialization, and the constitution of the German welfare state. In some cases, it is advisable to define World War I (1914–1918) and the Weimar Republic (1918–1933) as separate periods. Often, it suffices to treat the end of World War II and the beginning of decolonization (1945) as the next fracture. The next two turning points are the 1970s (when various political and economic crises converged, commonly referred to as the "oil crisis") and 1990 (collapse of the Eastern Bloc and the onset of globalization). History will show whether 9/11 (2001), the 2009 financial crisis, the refugee crisis (2015), and/or the Corona crisis (2020) are turning points, too.

SAMPLING PROCEDURE

As we have discussed, process-oriented social research involves reflecting on several methodological aspects that are important prerequisites for actual sampling. Only this ensures that temporality is systematically and comprehensively engrained in the research design. These steps are independent of the researchers' theoretical stance or methodological orientation. In particular, these methodological considerations apply to both qualitative and quantitative approaches. The *actual sampling procedure* can begin *after* researchers have considered duration and temporal patterns, decided on a time frame and concluded periodization.

Even if only a short time frame was recognized as relevant for the analysis, the number of potential sampling time points (measurement

Figure 5

Selecting Measurement Points within Periods of Analysis
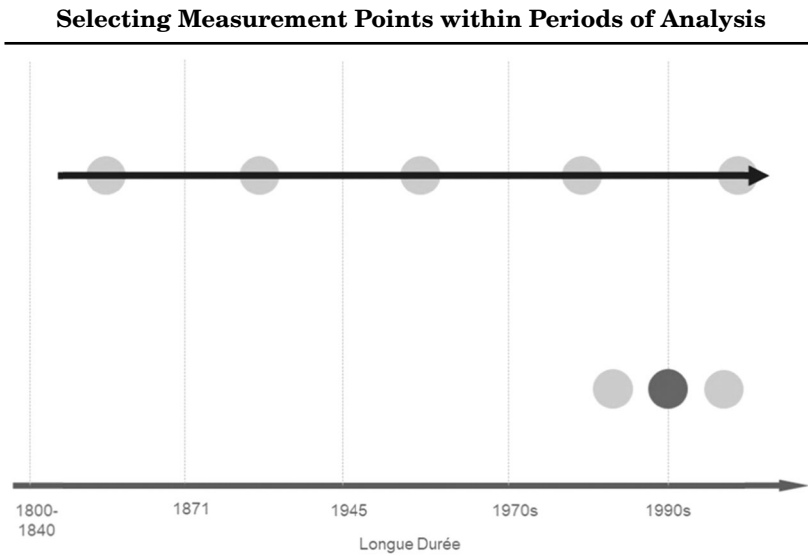
Source: Graph created by authors.

points) within this time frame is often still too high for the analysis of data from all periods. Therefore, researchers might have to *select relevant periods of analysis*. In quantitative research, they can draw a random sample stratified (Baur, Behnke and Behnke 2010:162–64) by periods. In qualitative approaches, researchers typically purposefully select certain cases (Akremi 2019; Marshall 1996:523). When doing so, they have to make several fundamental decisions, namely at what time points they want to collect how much and which data.

If researchers aim at analyzing periods of relative stability within periods, they should collect data from the *middle of the periods*. If researchers aim at investigating fractures, they should focus data collection on the *transitions between periods* (Figure 5).

When comparing different social processes, researchers need to assess, *if the periodization is the same for all social processes*. For example, Baur and Hering (2017) show that the "economic crisis of the 1970s" unfolded very differently in Frankfurt, Dortmund, Glasgow, and Birmingham in terms of timing and rhythm: In Glasgow, the crisis began in 1945, in Dortmund and Frankfurt in the 1970s, and Birmingham as late as the 1980s. In Frankfurt, the crisis had already ended in the 1970s, in

Dortmund, it lasted until the mid-1980s, in Glasgow until 1995, while in Birmingham, it continues to this day.

Finally, the question needs to be addressed, *which periods should be compared?* For example, Grunow (2006) compares Danish and German globalization processes. Sampling revealed the problem that in Denmark globalization started in the 1920s, in Germany only in the 1990s. This is a problem for sampling insofar as all other social circumstances in Denmark in the 1920s and Germany in the 1990s were completely different. As a result, it is unclear whether it is better to compare Germany to Denmark in the 1920s or 1990s.

Irrespective of which periods are deemed relevant for a specific study, researchers also have to reflect *how many measurement points* they need in order to be able to capture the properties of the process. This, in turn, depends on the expected temporal pattern (Baur 2005:191–209): At least *two periods need to be selected to grasp trajectories*. Data should be collected for phases of relative stability, that is, rather in the middle of each period. This enables researchers to compare the results across all periods during data analysis and thus to observe long-term social change or/and the specific characteristics of each period. This sampling strategy has the advantage that it is not necessary to clarify exactly when the transition phases begin and end. Also, the exact dating of the data collected is not important as long as they originate from the stable phase.

If the analyzed process is characterized by *turning points, at least four sampling points in time are needed*: Two are needed to identify the trajectory before the fracture, and another two to identify the turning point after the fracture. If the temporal pattern of the process is *cyclic, researchers need to select as many time points of data collection as possible*. Particularly, quantitative methods such as time series analysis only work, if there are many measurement points (Baur and Hergesell 2020).

Finally, it should be noted that these are just general guidelines. Depending on the specific research question, researchers might have to deviate from these sampling strategies. Say there has been a long phase of stability, after which a revolution takes place when numerous events occur in rapid succession. In such a case, it may make sense to select only a few measurement points for the stable phase and then many measurement points for the phase of transition.

CONCLUSION

In this paper, we have discussed what additional questions researchers have to reflect upon when taking temporality seriously during sampling. Based on this, we have developed a guideline for a time-sensitive sampling: First, researchers have to determine the durée (duration) and temporal patterns of the social process of interest. Next researchers have to reflect, if the cases' boundaries and properties change over time and if

this might affect sampling. In this course, they also have to decide upon a calendrical system and how fine-grained or coarse the temporal scale of analysis should be. Thinking about how cases are embedded into fields or populations reveals that researchers have to decide upon the time frame of their analysis, that is, the beginning and end of the analysis. During periodization, the process is subdivided into subperiods (intervals). Finally, researchers have to think about how many measurement points they need and on how to select relevant periods for their analysis.

Our analysis has revealed that these issues are not only relevant for process-oriented analysis but also any kind of social research. All in all, the systematic elaboration of the genuinely temporal dimension of social processes is highly relevant from a methodological point of view. In this way, it is possible to utilize the numerous theoretical preliminary works on the temporality of social processes from various disciplines in empirical studies of social change. An adequate process-oriented sampling will improve the validity and significance of studies in the field of process-oriented research.

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