

# **Ever more complex, uncertain and urging? ›Wicked problems‹ from the perspective of anti- naturalist conceptualizations of time**

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## **Abstract**

*In recent years, ›wicked problems‹ have gained widespread attention both in academic and political discourses. The term is typically used to describe constellations in which long-term strategies are needed in order to cope with complex cause-and-effect-relationships, time is pressing due to self-enforcing dynamics, and well-established techniques of knowledge acquisition seem no longer valid. Therefore, time is obviously of particular importance for the identification of wicked problems. However, in the literature these temporal features are treated as naturally given, which obscures the social practices through which wickedness as a ›complex‹, ›uncertain‹ and ›urging‹ socio-political condition is constituted. To problematize this perspective, this article makes use of phenomenological sociology and systems theory to show how time is not objectively given but emerges from individual sense-making processes and communicative operations respectively. With these anti-naturalist perspectives on time it becomes possible to critically analyze the political implications that accompany the discourse on wicked problems.*

## **Keywords**

*Zeit, wicked problems, Policy-Forschung, Phänomenologie, Systemtheorie*

We live in a time in which time itself seems to pose major challenges to individual lifeworlds, social relations and political affairs. Public, political and academic debates are flooded with time-related diagnoses which assert a continuous acceleration of the social world and a steadily increasing lack of time. It is said that the speedup of economic and technological dynamics produces a fundamentally risky and unpredictable future and ever more complex and ambiguous social problems. The sociologist Hartmut Rosa (2005) even understands the acceleration of the life-world as the constitutive feature of the current age. According to his much-noticed thesis, the transition from the industrial age to late modernity can be understood as a transformation of time itself, a transformation that regularly leads to a pathological desynchronization of social systems. With regard to the political realm, Rosa (2005, 391-427) states that the time available for collective problem-solving is decreasing, while, due to the complexity of social problems, the need for more time is increasing. This constellation culminates in a »temporally frozen democracy« (Laux / Rosa 2013, 85) where politics is shifting from long-term planning strategies to short-term reactive measures (Rüb 2008) and where the need for quick solutions undermines democratic procedures of participation and deliberation (Laux 2011). Therefore, it seems that in late modernity it is not only changes *in time* but also the change *of time* itself that leads to severe challenges for social integration and the democratic state.

It is in these larger societal diagnoses where we can also position the debate on *wicked problems* as apparent in the literature on social problems and policy-making. In their seminal contribution, Rittel and Webber (1973) claimed that modern political planning is characterized by a historical shift: Whereas in the course of industrialization and urbanization a range of »relatively easy problems« (Rittel / Webber 1973, 156) occurred – which have been solved more or less successfully through the provision of power supply and waste disposal systems, roads and railways, hospitals and schools –, today political planning is confronted with wicked problems in the sense of particularly complex, ill-defined and intrinsically contested issues. In the years that followed this early contribution, the notion of wicked problems got widespread attention and also emanated to political and administrative spheres throughout the world, informed by departmental research (APSC 2007; Morrison 2013) and scientific policy advice (Rüb 2014; Wissenschaftsrat 2015). Today, wickedness typically refers to a situation in which (among other things, see below) long-term strategies are needed in order to cope with complex problems which will appear over and over again in the future, in which time is pressing due to self-enforcing dynamics, and in which well-established techniques of knowledge acquisition seem no longer valid (Head 2008; Levin et al. 2012; Head / Alford 2015; Danken et al. 2016; Crowley / Head 2017; Peters 2017).

When taking a closer look at these characteristics, it becomes apparent that the *dimension of time* is, at least implicitly, of particular importance. On the one

hand, temporal distinctions between past and present are made in order to distinguish an era of easy problems from the current age of wickedness. On the other hand, temporal features like novelty, uncertainty, and urgency are depicted to identify wicked problems and to reflect on the challenges for collective problem-solving. At the same time, there is a tendency to naturalize these temporal characteristics: That ›time has changed‹, that ›things speed up‹ and that social problems are increasingly ›unforeseeable‹, ›uncertain‹ or ›urging‹, are depicted as objective developments which automatically transform a socio-political situation into a wicked problem. The prevalence of this perspective is surprising since in (interpretive) policy analysis it had long been recognized that social problems are not objectively given but arise from complex practices of problematization (Rochefort / Cobb 1994; Bacchi 2009; Barbehön et al. 2015). In these debates, however, the temporal dimension of problematizations has not yet been systematically analyzed (but see Wagenaar 2011, 284-289; Portschy 2015), perhaps because it clashes in a fundamental way with the deep-seated Newtonian assumption that time is a natural force, flowing uniformly and independently from anything else (see below).

Starting from this initial observation, this article will take a closer look at the relationship between time and wicked problems. Instead of taking time as an ontologically given, neutral and unambiguous frame for the processing of social phenomena, the article systematically unfolds theoretical perspectives which understand time as a contingent artifact that emerges from these very processes. More specifically, I will turn to phenomenological sociology and systems theory which offer (distinct) anti-naturalist perspectives on time by focusing on the temporality of individual sense-making processes and communicative operations respectively.<sup>1</sup> By denaturalizing the temporal dimension that is manifest in the notion of wicked problems, it becomes possible to critically investigate the social practices through which wickedness as a particular facet of the discourse on acceleration comes into being. It is thus not the aim of the article to uncover that wicked problems are ›in reality‹ not that wicked, but to analyze the role of time for classifying certain constellations as ›wicked‹ (and others as ›tame‹) and to make visible how the temporal practices associated with wickedness come along with specific political implications.

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1 I use ›anti-naturalist‹ as a generic term for theoretical approaches which refrain from the assumption that in the social world time can be conceptualized as objectively given and uniformly flowing law of nature which exists independently from social processes. In this respect, phenomenological sociology and systems theory are but two (opposing) variants of anti-naturalist argumentation; for a discussion of other theoretical approaches see Adam (1990), Nassehi (2008a) or, with regard to policy analysis, Portschy (2015).

## Time in the debate on wicked problems

Wicked problems, as both an analytical category and an element to derive time diagnoses, entered the scene in the early 1970s when reflections on the limits of political planning and social engineering reached a new peak. In a widely noticed essay on the dilemmas of planning theory, Rittel and Webber (1973) related the difficulties of political planning to processes of social differentiation and modernization. They argued that we have reached a level of complexity which produces wicked problems as a historically new kind of collective challenges. These problems are hard to define since in a pluralistic society each definition builds upon a specific understanding of the common good. Moreover, wicked problems are »essentially unique« (Rittel / Webber 1973, 164) by differing from the »standard problems« that are characteristic at a given place and time. In this sense, wicked problems are always new and unforeseeable. In such constellations, goal formulation becomes intricate as there are no objectively identifiable, correct solutions and, thus, no eternally valid political measures. Wicked problems can therefore never be definitely solved but only be managed in a never-ending chain of decisions (cf. Rüb 2013, 245). At the same time, Rittel and Webber (1973, 163) maintain that, due to complexity and knowledge deficits, political decisions taken to solve wicked problems entail incalculable side-effects which leave their mark in the future and can never be completely annulled. In such situations which are considered paradigmatic for (late) modernity, the notion of political planning becomes problematic due to high degrees of complexity, contingency and contentiousness.

In the years after this initial contribution, the notion of wicked problems was further specified. Whereas Rittel and Webber depicted seemingly all modern problems as being wicked, Head (2008, 103-104) suggests accounting for complexity, uncertainty and diversity as the defining characteristics of wickedness. Following this, one could distinguish between tame problems characterized by »low perceived levels of uncertainty« and the availability of »routine solutions« (Head / Alford 2015, 717), on the one hand, and, on the other hand, wicked problems for which this level of certainty and routine has not (yet) been reached. In a similar vein, Peters (2017) discerns between »wicked« and »difficult« problems in order to counter the inflationary use of the notion of wickedness in contemporary policy research and to rescue its function as a distinct analytical concept. For the purpose of further analytical differentiation, Levin et al. (2012, 124) have introduced the category of *super wicked problems*, which they describe with four key features: »time is running out; those who cause the problem also seek to provide a solution; the central authority needed to address them is weak or non-existent; and irrational discounting occurs that pushes responses into the future«. As regards the prospects for effective problem-solving, super-wickedness is said to constitute a »tragedy« as the current design of most political institutions leads to policy decisions which »largely respond to short-term time horizons« (Levin et al. 2012, 124) and thus ne-

glect the long-term effects of wicked problems. Starting from one of these definitions, research then typically asks which governing principles, institutions and procedures (e.g. policy integration, networks, expertise, participatory arrangements) are needed to adequately deal with wicked problems in public policy and administration (cf. Durant / Legge 2006; Weber / Khademian 2008; Termeer et al. 2015).

It is not the aim here to elaborate on all facets of the debate on (super) wicked problems or to judge its analytical merits in policy research. Rather, I want to single out a particular aspect which features in all conceptualizations mentioned above: *time and temporal characteristics*. In this respect, we can distinguish between two ways of how time comes into play. Firstly, the concept of wicked problems is entangled with references to *temporal horizons* through the differentiation between a past and a fundamentally different present (and future): Whereas back then, the story goes, politics only had to deal with easy or tame problems, we are nowadays confronted with complexity, uncertainty and diversity which culminate into (super-)wickedness. Moreover, wickedness imagines a future filled with severe risks, which soon will materialize if we do not act immediately. Thus, the event of damage is not observable today but transferred into the future. This logic is particularly apparent in the definition of a super wicked problem given by Levin et al. (2012, 127, italics in original):

»The time dimension means the problem will, at some point, be too acute, have had too much impact, or be too late to stop or reverse. [...] Climate change is arguably the most illustrative case of time running out. Significant impacts *will* occur; with each passing year, they become more *acute*; and if we do not act soon, the risk of harm to human communities and ecosystems, as well as non-linear change and catastrophic events, increases.«

Secondly, time plays a role in the very definition of wicked problems as wickedness is typically described with the help of *temporal features*. Novelty and uniqueness, complexity and uncertainty, urgency and irreversibility are features which all carry temporal notions. These characteristics stand in a mutual relationship with the time horizons described above: The novelty, uniqueness and uncertainty of a wicked problem derives from the perception that the situation at hand substantially differs from the ›standard‹ and ›routine‹ issues and that therefore the knowledge from the past is no longer applicable. Along these lines, urgency could only be claimed in a meaningful way if it was related to the anticipation of a future filled with risks, which soon will occur if action is not taken immediately.

On the one hand, therefore, time is of central importance to the definition of wicked problems as a specific kind of social problems. On the other hand, however, the concept of time itself remains fairly implicit. Time is treated as a naturally given and uniformly flowing feature of nature which, quite similar to the ›container model of space‹, constitutes the neutral surrounding for the social phe-

nomena that unfold within it (cf. Reckwitz 2016, 34). This perspective goes back to Isaac Newton and his famous definition of »absolute, true, and mathematical time« which »of itself, and from its own nature, flows equably without relation to anything eternal« (quoted from Adam 1990, 50). In the policy-related literature, time is accordingly conceptualized as a physical parameter which has a »definite, irreversible direction: It ›flows‹ from the past through the present into the future« (Blank et al. 2011, 71).<sup>2</sup> Although, following this definition, time can be managed or strategically used, for example through the imposition of political deadlines (cf. Zahariadis 2015), it is nevertheless assumed that time as such exists independently from social processes.

In contrast to this perspective, we can conceive of time also as a contingent product that emerges in interrelation with social processes (Nowotny 1992; Moran 2015; Reckwitz 2016). In this sense, time is not a preexisting and uniform frame *in* which social processes take place, but a contingent artifact that is constituted *by* these very processes. This perspective enables us to investigate the contingent temporal practices through which wickedness is socially constructed and, the other way around, how these constructions condense into a collective understanding of ›the nature of time‹ in a (post-)modern environment. In the following two sections, I will discuss the specific potentials of phenomenological sociology and systems theory in order to elaborate more systematically on such anti-naturalist conceptualizations of time and their implications for the notion of wicked problems.<sup>3</sup>

## Time and meaning: phenomenological sociology

The philosophical strand of phenomenology is typically associated with the works of Edmund Husserl and, as regards the realm of sociology, of Alfred Schütz. Since Schütz himself explicitly builds on Husserl to transfer phenomenological thinking to the social world, in the following I will exclusively focus on Schütz' work and the role time plays in it. Due to my particular focus of interest, the discussion will necessarily be sketchy and selective (for more thorough accounts of time in Schütz see Muzzetto 2006 or Nassehi 2008a, 99-111).

In his major work »The Phenomenology of the Social World«, Schütz (1967) argues for a sociology which systematically focuses on the *meaning* that social phenomena provide for the actors engaging with these very phenomena. Instead of searching for naturally given and objectively identifiable, law-like principles equivalent to the natural world, Schütz is convinced that in order to understand

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2 All quotations from German sources are my own translations.

3 The aim of the discussion is not to provide a systematic comparison or even a synthesis of the two theories (see Nassehi 2008b on that). Rather, I want to carve out the specific merits of both perspectives as regards their contributions for critically investigating the temporal aspects prevalent in the notion of wicked problems.

the social world we need to ask for the meaning that actors assign to their environment. He thus follows the project of Max Weber who already called for an interpretive sociology. According to Schütz (1967, 15-20), however, Weber falls short of reflecting on the conceptualization of the perceptual and social processes through which meaning comes into being, both for the actor who engages in a particular action and the (scientific) observer of this action. Instead of simply presuming that, for instance, a particular way of behavior carries meaning for the acting person, Schütz asks how this very meaning is constructed in the first place. In this regard, his main thesis is »that *the problem of meaning is a time problem*« (Schütz 1967, 12, italics in original). Throughout major parts of his book, Schütz (1967, 45-96) therefore reflects on the constitution of meaningful experience in the constitutor's stream of consciousness and the way in which these interpretive practices both condense into and are bound to individual time horizons.

To begin with, Schütz claims that the constitution of meaning is bound to *acts of retrospection*. He assumes that meaning comes into being through a backward-look on an individual experience which has already passed. Thus, »only from the point of view of the retrospective glance do there exist discrete experiences«, which implies that »only the already experienced is meaningful, not that which is being experienced« (Schütz 1967, 52). This practice of retrospective sense-making unfolds from the viewpoint of the present and, thus, on the basis of stocks of knowledge which the individual has gathered in the course of their life. On the one hand, this leads to an individual identity in time in the sense of a specific history of accumulated experiences (Nassehi 2008a, 100). On the other hand, these individually specific histories constitute the interpretive repertoire of the individual for making sense of every new experience which they encounter. Based on these temporal configurations, retrospection unfolds as a performative act:

»*meaning is a certain way of directing one's gaze at an item of one's own experience*. This item is thus ›selected out‹ and rendered discrete by a reflexive Act. Meaning indicates, therefore, a peculiar attitude on the part of the Ego toward the flow of its own duration.« (Schütz 1967, 42, italics in original)

This implies that meaning does neither emerge from a naturalist mechanism, nor does it reside in the object itself. Rather, meaning is constituted by an active and conscious practice of singling out a phenomenon from the entirety of experiences and by drawing boundaries between this particular experience and the multitude of all other experiences.

While for Schütz the processes of ascribing meaning to past experiences are intrinsically linked to individually accumulated stocks of knowledge, these records do also inform the way we *anticipate the future*. In this regard, Schütz (1967, 57-63) refers to the concept of action which differs from mere behavior in the fact that action is based on an explicit draft of a plan of action. This plan in-

volves the imagination of a future in which the act has already been performed and the goal to be attained has been reached. Similar to the retrospective sense-making of past experiences, this process of anticipation unfolds from the viewpoint of the present which is filled with accumulated experiences of the individual. Therefore, drafting a plan for the future is not a free invention but a configuration of what is already known from the past. As Schütz (1967, 61, italics in original) summarizes:

»the actor projects his action as if it were already over and done with and lying in the past. It is a full-blown, actualized event, which the actor pictures and assigns to its place in the order of experiences given to him at the moment of projection. Strangely enough, therefore, because it is pictured as completed, *the planned act bears the temporal character of pastness.*«

In the lifeworld of the individual, these anticipatory action plans are of extraordinary importance in order to strategically pursue personal goals (Schütz 1959, 76). However, action plans are not actions, and the realization of a plan is taking place under its own temporal conditions. On the one hand, the anticipation of a future is necessarily incomplete as it is based on specific experiences which can never be exhaustive. The knowledge about cause-and-effect-relationships may be proven wrong so that a configuration between a certain action and the attainment of a desired goal may be based on false assumptions. Thus, anticipations always carry »empty horizons« (Schütz 1959, 85). On the other hand, the point in time when future action is planned is never identical with the point in time when the plan is realized. Between these two temporal points, the actor her-/himself grows older, makes further experiences and the social world around her/him changes. However accurate the initially designed plan of action might be put into practice, the presents of planning and acting are never identical. Ultimately, this points to the problem of unanticipated consequences, which are, according to the phenomenological approach, intrinsically linked to how action unfolds in the social realm.

But what has phenomenological sociology to say about *wicked problems* more specifically? At the most general level, Schütz' thinking points to the need to engage in reconstructions of meaning-making processes in order to understand why actors behave and act the way they do – a meta-theoretical and methodological principle that forms the basis of the interpretive strand of political science (Nullmeier 2013; Bevir / Rhodes 2016). This holds true with regard to wickedness as well, which is basically a cipher for a product of retrospective interpretations. Confronted with a particular social situation, the individual builds on their accumulated experiences and, amongst other things, arrives at a differentiation between ›already known‹ and ›new‹:

»By reference to the stock of knowledge at hand at that particular Now, the actually emerging experience is found to be a ›familiar‹ one if it is related by a ›synthesis of recognition‹ to a previous experience in the

modes of ›sameness‹, ›likeness‹, ›similarity‹, ›analogy‹, and the like. [...] Or the emergent experience is found to be ›strange‹ if it cannot be referred, at least as to its type, to pre-experiences at hand. In both cases it is the stock of knowledge at hand that serves as the scheme of interpretation for the actually emergent experience.« (Schütz 1959, 79)

In contrast to the widespread assumption that wicked problems are intrinsically ›new‹ and ›unknown‹, with Schütz we can grasp these features as contingent attributions which are made from the viewpoint of the present and thus on the basis of a particular stock of knowledge. What today is interpreted as wicked problem may tomorrow appear as tame and easy, while in the meantime, altogether new interpretations of wickedness have entered the scene. Similarly, the assertion that in earlier times politics and society only had to deal with easy problems (cf. Rittel / Webber 1973, 156) disregards the question whether the contemporaries did actually perceive their own problems as easy. This is what Schütz (1967, 71-74) has called the »attentional modification of meaning«. It describes the fact that ›the same‹ event may obtain different meanings, depending on the specific here and now from which it is interpreted. The differentiation between wicked and tame problems is therefore in itself temporal and not eternally valid – an insight that may temper the at times all too dramatizing and naturalizing discourse on the »tragedy of super wicked problems« (Levin et al. 2012).

While these considerations refer to wicked problems as a form of interpretive categorization, actors' reflections on what is needed and what can (not) be done in order to address a wicked problem can also be examined from a Schützian perspective. Political strategies are then to be seen as action plans in the sense of anticipations of the future. These anticipations are not determined by the problem ›itself‹ but by the way currently available stocks of knowledge are integrated into a projection of future developments and possibilities for action. In the currently prevailing logic of so-called ›evidence-based policy-making‹, the use of monitoring devices, benchmarking procedures, experiments and scenarios are prominently used in order to translate past experiences into guiding principles for the future (Strassheim 2016, 158-161). However, as these techniques of acquiring and utilizing past knowledge are necessarily incomplete, claims to what is ›without alternative‹ or which aspects of a wicked problem ›cannot be solved at all‹ have to be treated with caution. Such claims are not derived from some sort of objective knowledge but intrinsically linked to what has been experienced in the past and how this is specifically remembered and reactualized at a particular present. At the same time, we also have to acknowledge that anticipations of the future entail productive effects. In this sense, to assert that we are confronted with a wicked problem is not to be seen as a purely tragic confession that the problem will ›never‹ be solved definitively and ›only re-solved over and over again‹ (Rittel / Webber 1973, 160; similarly Rüb 2013, 245). Rather, the sorting of complex phenomena into a distinct category with the name ›wicked problem‹ tames contingency in the present and

demarcates a space for meaningful argumentation and action (cf. Portschy 2015, 96).

A phenomenological perspective on time is thus particularly helpful to examine how wicked problems are not objectively given but arise in individual sense-making processes informed by past experiences and anticipations of the future. However, when taking account of the social world with its interactions, institutions, rules and discourses, Schütz is only of little help as phenomenological sociology largely remains a theory of the human consciousness (Muzzetto 2006, 22-23; Nassehi 2008a, 108-110). In the following section, I will therefore discuss systems theory which focuses on the interrelation of time and social processes from a systemic perspective.

## **Time, communication and observation: systems theory**

Both in Niklas Luhmann's general account of systems theory (Luhmann 2015) and in his reflections on the logics of the political system (Luhmann 2002), time plays a crucial role in many respects. Against the background of my particular interest in the interrelation of time and wicked problems, I will focus, firstly, on how social systems establish temporal orders and, secondly, how observations are structured by temporal semantics (for more comprehensive discussions of time in Luhmann see Gehring 2007; Nassehi 2008a, 145-235; Brose / Kirschsieper 2014).

The aim of Luhmann's approach is to provide a universalist theory able to capture any kind of social contact in a single conceptual architecture (Luhmann 2015, 33). To do so, he adapts the main ideas of *autopoietic systems theory*. This entails, firstly, to look at phenomena not as single entities but as parts of larger systems which differentiate themselves from their environments; and secondly, to assume that everything that is relevant for a system is (re-)produced by the system itself. According to the principle of autopoiesis, a system does not maintain an input-output-relationship with its environment. Rather, a system reacts to irritations in its environment in self-referential processes and according to its very own operative logic. Luhmann generalizes this initially biological perspective by conceptualizing the human consciousness, interactions, organizations and functional subsystems as autopoietic systems as well. With regard to societal subsystems, Luhmann (2015, 242-248) accordingly assumes that they operate self-referentially and on the basis of distinct rationales: While, for example, the economic system is founded on the distinction between ›payment‹ versus ›non-payment‹, the political system is coded through ›power‹ versus ›no power‹. Any irritation taking place within a system's environment is interpreted and processed endogenously and in line with these specific logics. This implies that objects or events as such do not possess an

objective meaning, since they come into being and attain significance not until they are distinctively appropriated within a particular system. Moreover, it follows that a social system does not translate an environmental input into an output according to some kind of functional requirement. Rather, a system unfolds its operations solely in reaction to those operations the system itself performed in the past (Luhmann 2015, 60-62).

In this basic theoretical architecture, time features a prominent role (Luhmann 2015, 377-487). According to Luhmann, subsystems do not possess an eternally valid essence which would guarantee their maintenance over time. Rather, a system needs to reproduce itself constantly by unfolding a *never-ending series of communicative operations* (Luhmann 2015, 28). In the course of a communicative operation, one particular event is selected out of the entirety of a system's past. This event is then used as a reference point for a follow-up communication, which in turn constitutes a space of possibility for future follow-up communication. The past is, as regards its relevance for current operations, not simply existent but needs to be actively memorized and rearticulated; a practice which is again informed by the basic rationale of the subsystem and which can thus never be an all-embracing and neutral observation of an objectively given past. The same holds true for the future which is not determined by an iron law of history, but which is contingent upon the communicative operations conducted simultaneously in different social systems. It is through these selective recourses to the past and the subsequent construction of a contingent future, or what Nassehi (2008a, 182-188) calls the *time of autopoiesis*, that social systems develop and maintain their specific temporal orders (Brose / Kirschsieper 2014, 172).

Beside the constitution of systemic temporalities through communicative operations, we can also conceive of *time as a mode of observation* (Nassehi 2008a, 189-194). Generally speaking, social systems observe their environments by drawing distinctions between what is observed and what is not, and by categorizing the observed through practices of indication (Luhmann 2015, 63). With regard to ›society‹ as the all-embracing system which comprises all other social systems, we can see that in the course of social differentiation specific observational schemes emerge which structure the way different societies interpret themselves (cf. Koselleck 2015): While, for example, pre-modern societies differentiated between ›aeternitas‹ and ›tempus‹, i.e., between ›eternity‹ and ›transience‹, in modern societies this pattern is replaced by the difference between ›past‹ and ›future‹ (Esposito 2007, 27; Luhmann 2015, 423-424). Time is then no longer a feature which adheres to the phenomena themselves but which is constituted by current operations: »One anticipates or remembers an event because one needs it to construct and adjust meaning, and the temporal boundaries of this event result from the anticipations and remembrances, and not from the calendar or the clock« (Luhmann 1993, 242). This inherently modern ›temporalization of complexity‹ (Luhmann 1993, 235-300)

opens up the room for communicative operations directed at interventions into the future, or, in Luhmann's terms, for taking *decisions*. Decisions, understood as a particularly classified communicative operation, are only possible »if it can be presumed or if it is to be achieved that past and future diverge« (Luhmann 2002, 145). The function of a decision is thus to loosen up the impact of the past and to affect the unknown future. In this sense, a decision selectively remembers past events and constructs a future so that »in both directions, the system that decides introduces distinctions« (Luhmann 2002, 151). However, due to the autopoietic operations which social systems perform simultaneously, the future is never entirely predictable and, thus, decisions are always risky (Nassehi 2008a, 337-342). Techniques of risk modelling are attempts to cope with uncertainties, though these techniques only work in retrospect, i.e., from the viewpoint of a future present where the damage already has occurred and one can observe what should have been done differently back then. It follows that the problem of risks is basically a problem of the indeterminacy of time, and therefore the distinction between ›risk‹ and ›security‹ obscures the fact that security in the sense of total predictability is never achievable (*ibid.*).

These insights into the role of time in systems theory can be related to *wicked problems* in at least three ways. Firstly, and with regard to the time of autopoiesis, systems theory highlights that wicked problems are only available within a particular social system. Inasmuch as objects do not exist in a pure form in a neutral environment, wicked problems have to be seen as system-internal entities whose shape and meaning is contingent upon the system's specific temporal order. It follows that issues the scientific realm approaches as wicked problems do not necessarily appear in a similar fashion within the political sphere. This becomes visible when the scientific subsystem complains that the decisions taken by the political system »discount the future irrationally« and »only reflect very short time horizons« (Levin et al. 2012, 128). Systems theory makes us aware that these differences in temporal orientations are not so much a pathological deficit as they are a constitutive feature of autopoietic social systems. The short-term horizon of the political system can certainly be complained about, though criticisms of such orientations or proposals for institutional reforms need to take into account that the (re-)production of temporal orders is inseparably linked to autopoiesis. The temporal order of a system is the product of its ability to unfold a series of self-referential operations and, therefore, linked to the system's very existence. This is not to say that temporal orders are naturally given and not open to change. However, to simply call for more long-term strategies runs into danger of underestimating the specific logics and autonomous capacities of autopoietic social systems.

Secondly, and with regard to time as a mode of observation, we can analyze the communication revolving around wicked problems as a specific observational scheme. On the one hand, wickedness remembers and rearticulates a past where

problems used to be easy to solve and which has thus only little to tell about today's problems. As wicked problems are »essentially unique« (Rittel / Webber 1973, 164), the »routine solutions« (Head / Alford 2015, 717) developed back then appear outdated, what in turn opens up a room to recalibrate existing institutions and policy measures. On the other hand, »wicked communication« anticipates a future in which the problem will not be definitively solved but will only reappear on the agenda in a different shape. As wicked problems are contested issues with a multitude of possible definitions and solutions, the future appears as a never-ending series of decisions (Rittel / Webber 1973, 160; Rüb 2013, 245). This corresponds to the argument of systems theory that a decision is never only the endpoint but also the beginning of a new communicative operation. While acknowledging the insolubility of wicked problems might be frustrating, it also implies that they require ongoing attention, redefinitions and processing, what in sum constitutes a genuinely political, instead of a merely technocratic, situation. Wickedness is then not so much an admission of political powerlessness but rather a possibility for a system to adjust its operations to the fact that problems will pop up over and over again, and to establish structures that protect against unexpected disappointments (cf. Luhmann 2015, 453) and that enable the system to productively deal with recurring problems (e.g. »learning«). At the same time, and with quite a contrary effect, (super) wicked problems are associated with the notion that »time is running out« as in the near future the problem will be »too acute, have had too much impact, or be too late to stop or reverse« (Levin et al. 2012, 127). This feature of the observational scheme construes a present in which one cannot act fast enough, or, how Luhmann (2002, 142) puts it: the modern tendency to shift from »goal-orientated rationality« to »time-orientated reactivity«. This »politics of urgency« (Wexler 2009, 538) in turn confines the abovementioned room for political maneuver and strengthens quick solutions, sometimes at the cost of democratic procedures (cf. Laux 2011). Generally speaking, to interpret wicked problems in such a way is certainly not to say that they are only imaginations and that they entail no danger of harm in the future. Rather, systems theory invites us to observe how society observes itself, and as observations necessarily build on distinctions between what is observed and what is not, we can ask for the implications of these distinctions and their blind spots.

This leads us to a third facet regarding the contribution of systems theory for understanding the relationship of time and wicked problems. As has been argued above, the communicative operations in different social systems unfold in self-referential and simultaneous fashion, constituting a complexity which is at present never comprehensible or even controllable. The future is thus a constantly emerging space of possibilities whose actual shape depends on the operations unfolding at present. It follows that complexity or uncertainty are not exclusive features of wicked problems but characteristic for all decisions on social problems, as the temporalization of complexity turns »risk« into a constitutive feature of moder-

nity (cf. Luhmann 1993, 285). Since a problem is fundamentally a distinction between ›is‹ and ›ought‹, political action dealing with a problem necessarily features the projection of a future which is different from the past. As such, the very act of deciding is accompanied by »uncertainty generated by prediction« (Luhmann 2015, 171). The same holds true as regards the claim that decisions taken on wicked problems produce irreversibilities in the future, an assumption that is equally true for decisions taken on tame problems. Inasmuch as a decision is a »re-entry of time into time« (Luhmann 2002, 150), every operation rearranges the space for follow-up operations and establishes a future past which cannot be reversed. The fact that society nevertheless observes by distinguishing between wicked and tame problems shows that it has obviously developed techniques to productively handle the indeterminacy of time in *some* constellations. This may be seen as relief that coping with uncertainty is generally possible – although these strategies will never be able to fully account for the intrinsically uncontrollable future and, thus, to avoid unforeseen developments.

## Conclusions

This article started with the observation that time and temporal features play a central role in the debate on wicked problems. On the one hand, wicked problems are typically identified by distinguishing between an idyllic past, when problems used to be tame, and current times, where things are increasingly complex and multifaceted. Accordingly, the future appears to be even more problematic, especially when action is not taken immediately. On the other hand, and following from these temporal horizons, wicked problems are characterized with the help of temporal features like novelty, uniqueness, complexity, uncertainty and urgency. While the discourse on wicked problems, which increasingly penetrates into political and administrative circles, treats these characteristics as self-evident features that adhere to the problems themselves, we can conceive of time also as an emerging artifact. Time is then not a natural force that neutrally surrounds social processes but a contingent product that evolves along with these very processes.

Against this background, I referred to Schütz' phenomenological sociology and Luhmann's systems theory, which both offer anti-naturalist conceptualizations of time. Despite their different meta-theoretical foundations (while one is centered around the individual consciousness, the other is orientated at structures and systemic operations), both theoretical strands point out that past and future are not simply given and consistently linked by a natural arrow of time. Rather, both can be seen as temporal projection surfaces which are filled from the viewpoint of the present through practices of memorization and anticipation. Although one cannot change what happened in the past, this does not determine what is remembered (and what is forgotten) and how these memories are specifically rearticulated here

and now. Similarly, the future is not determined but an open and unforeseeable space of possibilities, a space that is constantly emerging as a result of currently performed actions or communicative operations respectively. While these actions and operations in themselves are singular spots without temporal extension, it is only through retrospective sense-making that they appear as a meaningful sequence of cause and effect (Gehring 2007, 422). To put it briefly, time does not function as a neutral frame for the evolvement of social processes. Rather, it is the contingent product of these very processes, what ultimately calls for an interpretive perspective on individual and systemic temporal practices.

This also holds true for wicked problems and related political interventions. Inasmuch as time – in the sense of the meaning and relationship of past, present and future and the derived notions of sameness, similarity, analogy, novelty, uniqueness, urgency and so on – is necessarily dependent upon practices of observation and interpretation, the action on *every* social problem is confronted with uncertainties and irreversibilities. To depict a certain constellation as wicked and to claim that we need to act now in order to change the risky future despite high levels of uncertainty is therefore not a necessity that follows from the character of the phenomenon itself. Rather, it is a particular way of constructing past and future, or as Wexler (2009, 534) compellingly puts it:

»It is not solely the nature of the ›problem‹ itself that determines whether knowledge is normal or revolutionary, tame or wicked. Rather, it is the relationship between accepted existing knowledge and newly produced knowledge that is needed to make the distinction. When newly produced or re-interpreted knowledge is seen as radically different from the existing routines and replaces this older or tame knowledge, it is wicked or revolutionary.«

This is certainly not to say that situations currently depicted as wicked are ›in truth‹ not wicked or that innovation and specialization do not lead to increasing levels of complexity. Rather, it is to say that wickedness does not arise automatically but only in complex processes of interpretation and argumentation which are, on the one hand, in themselves temporal and thus not eternally valid and, on the other hand, both informed by and constitutive for individual and collective temporal orders.

As regards critical research on wicked problems, i.e., research which does not adhere to a naturalist perspective on the temporal characteristics of wickedness, there are at least two general conclusions to be drawn. Firstly, we need to carefully investigate which situations are depicted as wicked and which as having »low perceived levels of uncertainty« (Head / Alford 2015, 717, italics added). This entails, in line with Schütz, an examination of the experiences and stocks of knowledge that policy-makers, administrative actors and scientific advisors rearticulate and integrate at present in order to anticipate the future (cf. Peters 2017, 393-394),

or, in line with Luhmann, an analysis of the observational schemes that take effect when social systems operate according to the logic of ›wicked communication‹. As these individual and systemic processes are neither a comprehensive memorization of the past nor an entirely certain prognosis of the future, they always carry blind spots and exclusions which deserve careful investigation. Against this background, critical research should not (solely) adhere to the maxim of foreseeing the future based on seemingly objective knowledge and certain evidence – a promise that in the last decades has regularly not been kept (cf. Radkau 2017). Rather, research should engage in the continuous re-imagination of possible futures (Strassheim 2016, 161) by establishing a room for productively coping with complexity and uncertainty in a non-technocratic and democratic fashion (cf. Heinelt 2016, 139–142).

Secondly, a critical perspective on wicked problems may investigate what wickedness ›does‹ to its counterpart. The practice of depicting a wicked problem construes not only a constellation of novelty, complexity and urgency, but also its constitutive outside, i.e., the realm of the tame, well-known, routinely and easily solvable problems. This dichotomization implies a closure on the side of tame problems since it is supposed that in such easy constellations we already know what the problem really is, how cause-and-effect-relationships look like and how measures taken today affect the future. However, as social problems never exist in an objectively given form, tame problems are also socially constructed based on »certainty until further notice« (Schütz 1959, 83). It is thus also in the realm of the tame problems where we can investigate and problematize the temporal structures that are effective in academic, political and public discourses and that inform how we design, legitimize and evaluate political interventions.

Finally, what does this perspective on the interrelation of time and wicked problems imply for the large-scale and time-related diagnoses referred to in the beginning of this article? If we acknowledge that the classification of a social problem as being unique, radically different from existing routines and dramatically urging is first of all a contingent social practice, a similar assumption is to be made with regard to the claim that the world is getting faster and faster and that the political realm is more and more outpaced by its environment. Again, this is not to say that social and technological shifts have no effect on the political sphere. However, one has also to acknowledge that the notion of ›the acceleration of life‹ has been at the heart of the interpretive repertoire of societies since the dawn of the modern age (Tomlinson 2007), while the political sphere, broadly speaking, did not collapse and is still producing decisions. This fact, similarly to what has been said about the distinction between wicked and tame problems, invites us to ask what is perceived as too fast for politics and what is not, what stocks of knowledge and semantics are applied to (strategically) distinguish between fast and slow, and how these classifications take effect on the way political decisions can be taken. This perspective

would allow for a more nuanced debate on the meaning of speed and acceleration by counterbalancing the at times rather one-sided voices that reduce politics to a largely paralyzed sphere.

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