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ARTICLE

Problematizing 'wickedness': a critique of the wicked problems concept, from philosophy to practice

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ABSTRACT

The concept of 'wicked problems' is a major current in the fields of policy analysis and planning. However, the basis of the concept has been insufficiently examined. This re-examination of its conceptual basis explains the origins of the limitations and flaws in the wicked problems concept. This paper analyses and rejects the notion of 'wicked problems' on philosophical and practical grounds. We argue instead that the policy sciences already had better conceptualizations of public problems before Rittel and Webber's flawed formulation. We return to this literature, and build upon it by reframing 'wickedness' in terms of higher and lower levels of problematicity in problem structuring efforts. In doing so, we offer an alternative, novel combination of the philosophy of questioning and the policy work approach to policy practice. 'Wickedness' is re-conceptualized as problematicity, conceived as the distance between those who question or inquire into a policy problem. This is primarily a political distance, articulated in terms of ideas, interests, institutions and practices. High problematicity arises only when wide political distances are explicitly maintained, such that partial answers cannot be reached. Practitioners deal with problematicity by a dual practical strategy of balancing closing-down and opening-up sub-questions to the problem in order to structure them such that they become amenable to action through partial answers. This simultaneously incorporates a politics of negotiating political distance via partisan adjustment and serial strategic analysis. The argument constitutes a theoretically and practically superior alternative to the 'wicked problems' perspective.

KEYWORDS

Wicked problems; questioning; distance; policy work; unstructured problems; problematology

1. Introduction

The frustrating experience lying behind 'wicked problems' in public policy is that some problems are particularly resistant to 'solutions' and are 'thus' to be categorically differentiated from other problems.[1] The originators of the term, Rittel and Webber (1973), were not policy specialists but urban planners who, frustrated by the inability of

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analytical systems approaches to solve many problems, felt it important to give these problems the name 'wicked' in order to call attention to their characteristics and to start thinking about alternative approaches for dealing with them. Crucially, 'wicked' problems were defined in opposition to what they were not: 'tame' or 'benign' problems, which are eminently solvable. Research on solution-resistant policy problems has been conducted by many scholars since, but the term 'wicked' has been used in many different ways, often stretching the concept too far, as noted by Peters (2017). This stems from its rhetorical appeal, as when used by practitioners to avoid blame for policy failure, or to draw attention and resources to certain problems. However, scholars have never questioned the philosophical grounds of the concept, nor located it sufficiently within the historical climate of its day, i.e. the larger questioning of the capacities and limitations of governmental policymaking. We therefore problematize the wicked problem concept, and wickedness itself, thinking more carefully about the distinctions 'wicked/tame' and 'problem/solution', and then providing a novel approach and alternative language for speaking about difficult policy problems and responses to them.

This paper takes a critical view of the wicked problem concept, throwing its ontological basis into question, rejecting the notion of wicked problems as a special class of policy problems and ultimately reframing wickedness in terms that more adequately describe how policy workers deal with such problems in practice. First, we analyse the philosophical and historical origins of the wicked/tame problem distinction to discover the source of its weaknesses, signalled but not seriously analysed in many recent works on the subject. We argue that the wicked problem concept has no coherent conceptual basis because 1) the distinction between wicked and tame problems has been misinterpreted and is, at base, unsustainable, and 2) any effort to analytically define types of problems separately from the relationships between policy workers dealing with them is unjustifiable. Second, we provide a novel alternative conceptual basis for dealing with both criticisms via a new philosophy for thinking about policy problems in terms of a question–answer logic, synthesized with the policy work perspective and a dual reconceptualization of 'wickedness' (i) in terms of degree of problem structuredness (problematicity), and (ii) in terms of distance, primarily as a political differentiation (Hoppe, 2017a; Turnbull, 2013). 'Wickedness' is reconsidered as but one label among others for a large degree of problematicity along a sliding scale from low to high (cf. Conklin, 2005; Newman & Head, 2017). Third, we extend our discussion to a consideration of how practitioners deal with difficult problems through their 'policy work', i.e. an endless but almost always interrupted process of problematizing and tentatively responding to ever-emerging problematic situations in policy practices. Contrary to many 'wicked problem' scholars, we conclude that there is no special ontological class of 'wicked' problems, and therefore these require no special research program, nor special approaches to problem solving. Instead, we argue that unstructured or intractable problems are best treated through practical judgment and the acceptance of long-run processes – processes that are themselves partial answers to the question of negotiating the non-violent treatment of political distances – characterized by partial answers and often incremental progress. We introduce an empirical question–answer model of strategic policy analysis (in the sense Lindblom (1979) used this term) and apply it to an example of car mobility as an unstructured problem. We conclude by summarizing in five theses the advantages of the question–answer and distance framing of policy work from the perspective of both the

empirical studies of policymaking and a normative, prescriptive heuristics for strategic policy analysis and design.

2. Problems with the wicked/tame problem distinction

Presumably seminal works such as Rittel and Webber's (1973) article on wicked problems exert considerable formative influence on research fields. The 'wicked' terminology appeals because it elicits our natural curiosity about 'the most difficult' policy problems. However, it is also appealing because it resists precise definition. The term can be applied to many different policy problems and put to many different uses, both by practitioners and by academics. The many articles on wicked problems – each with their own adaptation of Rittel and Webber's original definition, along with their own recommendations for solutions – demonstrate the purposive ambiguity of the term for generating new work, but also its problems, because there has been no convergence on which problems are wicked nor what we should do about them (Head, 2008, 2016; Noordegraaf, Douglas, Geuijen, & Van Der Steen, 2016; Roberts, 2000). The most thorough treatments of the wicked problems idea end up speaking about policy problems in general and thereby at least implicitly reject the view that there are unique properties of 'wickedness' (see, for example, Head, 2008). Other work demonstrates the lack of clarity by drawing equivalent definitions between wicked problems and those that are 'Ill-structured' (Daviter, 2017) or 'ill-defined, ambiguous, and contested' (Termeer, Dewulf, Breeman, & Stiller, 2013), not to mention the many other analogical terms used besides 'wicked', such as 'messy', 'fuzzy' or 'complex'. Other notable works that eschew the wicked terminology altogether include, for example, the excellent book on policy 'messes' by Roe (2013) and the more generalizable and productive work about difficult and complex policy problems (Hoornbeek & Guy Peters, 2017; Peters, 2005), or governance 'dilemmas' (Bevir & Rhodes, 2006). Critics have commented that the wicked problem idea is too totalizing, unhelpfully resisting analysis and promoting an impossible idea of 'success' (Alford & Head, 2017). Importantly, the idea that problems are either wicked or tame rules out 'degrees' of wickedness, or even 'tendencies' toward wickedness, which might be more helpful (Alford & Head, 2017; Daviter, 2017; Farrell & Hooker, 2013; Newman & Head, 2017). What is the source of all this indeterminacy? Is it simply a matter of defining reality in sharper, more correct analytical terms? Or is it more fundamentally embedded in the concept itself? We argue that the source of the indeterminacy and the subsequent lack of progress can be found by returning to the underlying basis of Rittel and Webber's classification of 'wicked' versus 'tame' problems. By examining it more closely, and situating their work in its disciplinary and historical context, we find important reasons to problematize the wickedness concept.

i. Problematizing the wicked/tame problem distinction: science versus *social sciences/humanities.*

Contrary to what is presupposed in much of the subsequent literature, Rittel and Webber's wicked/tame problem distinction does *not*, in fact, aim to distinguish different types of policy problems. In actuality, they use the distinction to differentiate between *societal* problems and those of the *natural sciences*. Their aim, they state, is to argue

'that the social professions were misled … into assuming they could be applied scientists – that they could solve problems in the ways scientists can solve their sorts of problems. The error has been a serious one' (1973, p. 160). They note that wicked problems are not, in fact, limited to particular types of problems. It is *societal problems in general* that belong in the wicked category, in stark contrast to the solvable mathematical problems of engineers, e.g. 'Planning problems are *inherently* wicked' (1973, p. 160; our emphasis). A key element that they say cannot be dealt with analytically is the problem of values – hence, also politics – which cannot be excluded from practice; 'the expert is also the player in a political game, seeking to promote his private vision of goodness over others. Planning is a component of politics' (1973, p. 169). Their 10 properties of wicked problems all speak to a common theme: the persistence of the problematic nature of societal problems and their solutions, and the inadequacy of systems analysis to deal with them. Wickedness is thus another name for an ontological distinction between the sciences, and their characterization of the natural sciences as dealing with 'tame' or 'benign' problems reiterates the misunderstanding belonging to both sides of these 'two cultures' (Snow, 1959). In sum: *the wicked/tame problem distinction is simply the old false distinction between social and natural sciences, rewritten in the language of policy and planning*. This entails a major misconception in the research literature on wicked problems: the subsequent effort by scholars to delineate *which* societal problems are wicked, or even to what degree they are wicked, is in pursuit of a definition never intended by Rittel and Webber, given that they argue *all* societal problems, including those of planning and policy, fall into the wicked category. It is unsurprising that scholars have been unable to put their finger on wickedness as a category that varies *within* an ontological subset of policy problems.

However, we take further issue with Rittel and Webber's classification. The strict, ontological demarcation of wicked and tame problems according to the branches of science is a serious misconception, and as such very misleading. Since the late 1960s, a large literature in the sociology of science (since, STS 'Science and Technology Studies') has shown that practice in the natural sciences is far from mechanistic reasoning about tame problems. Works by prominent scholars such as Ravetz (1971), Bourdieu (1975), Latour and Woolgar (1979), Collins (1985), Fuller (1993) and Ziman (2000) recount the extent to which scientific practice is a social *process*, one conducted through intuitive, habituated actions, infused with sociocultural norms and bound up in political conflicts. Implicitly perhaps, Rittel and Webber's article signalled the emerging problematization of the relationship between science and politics, or knowledge production and public policymaking. Beginning from the 1970s with knowledge utilization studies (Weiss 1977; Lynn 1978) in the policy and administrative sciences, 40 years later there is a booming literature on this topic in STS (Sismondi, 2008) under headings like science–policy interaction (Jasanoff, 1990, Guston 2014), boundary work and boundary organization (Guston, 2001; Hoppe, 2010), styles of science advice (Pielke, 2007) and advisory systems (Halligan, 1995; Hoppe, 2014), or post-normal science (Ravetz, 2006) and Mode-2 science (Gibbons, Nowotny, Scott, & Trow, 1994). Rittel and Webber's reference to social problems – of poverty, of urban reform, of crime control, broken families and poor education – is also a story about the revolt against professionalism that swept over the United States and Western Europe during the 1970s and 1980s. An important response among policy scholars was what Wildavsky (1976) called

'the retreat on objectives' and, a decade later, the massive conceptual retreat from government to governance. The pollution and other material externalities crises in, for example, agriculture and food, health, forestry, water and climate of the late 20th and early 21st centuries broadened the circle of 'wicked' problems to 'environmental', 'technological' and 'ecological'. But what is overlooked by most scholars is that, for Rittel and Webber's problem distinction, this has devastating consequences. If not only social problems can be wicked, but problems deeply involving the natural sciences as well, then the distinction between the 'ill-defined' problems of the social sciences and the 'well-defined' or 'tame' problems of science (i.e. logic, mathematics and the sciences of the non-human world, especially physics) and engineering is also obsolete. Put differently, the distinction between tame and wicked problems, which Rittel and Webber believed to coincide with 'scientific' and 'non-scientific', is not a sober analysis of problem structuring by scientists and non-scientists, but a lament by threatened professionals that scientific problem solving has led them astray.

But instead of taking Rittel and Webber's contribution as a plausible description or phenomenology of the way policy workers are routinely confronted by problematic situations in their everyday professional life, generations of scholars have followed in playing a scientific language game of essentializing and ontologizing 'wicked' problems via attempts at classifying them by looking for the (variable) presence of their properties (Hoornbeek and Guy Peters, 2017; Peters, 2017). In their unstoppable taste for innovation, they have recently 'discovered' the properties of 'super-wicked' problems (Lazarus, 2009, Levin, Cashore, Bernstein, & Auld, 2012), such as the role of disciplinary, territorial and administrative-political boundaries, near-immovable structural inertia, severe time constraints and the inexpressibility of 'unknown unknowns' in the current symbolic order (Metze & Turnhout, 2014). The upshot of all this is that for policy scholars to seek out 'wicked' problems as a subset of policy problems is to engage on a futile journey and to perpetuate a misclassification inherent in the distinction by Rittel and Webber as originators of the concept. In sum, the wicked/tame distinction is flawed both in its original conception and in the subsequent interpretation of that conception.

ii. Problematizing the wicked/tame problem distinction: systems analysis versus policy science.

Further insight can be obtained if we historicize Rittel and Webber's contribution to debates in the early 1970s. This helps us understand better the question they were addressing and why their classic article had value as a political intervention in scholarship rather than as the basis of an intellectual research programme. In the United States, this period was marked by reflection upon the policy failures of the 1960s and the disappointment in systems analysis to successfully cope with the new questions of political values and open social systems that presented challenges to policymakers and planners. Reaffirming earlier analyses of the disciplinary genealogy of the policy sciences (e.g. Friedmann, 1987, p. 137–179; Wildavsky, 1980; p. 26–40), Garry Brewer's (2017) recent contribution to *Policy Sciences* explains the close involvement of The RAND Corporation in the institution of this journal, along with its reluctance to depart from the tenets of systems analysis, with its 'rationalistic and reductionist premises' and assumptions of 'solution goals of optimality and efficiency' (2017, p. 2). Brewer

lamented, along with Lasswell, that the human values of the policy sciences had not been incorporated in scholarship, so upon taking over as editor in 1974, he made it his aim to move beyond the dominant system-analytic perspective and to reinvigorate the 'policy sciences' approach. He then published his still-cited paper on the 'emerging' policy sciences in the journal and also as a RAND report (Brewer, 1974). On rereading Rittel and Webber's contemporaneous 1973 work, we see that it was closely integrated within the context of these debates. Its status as an intervention in these debates, rather than a research programme, is further found in the fact that it contains few citations of scholarly work, one of which refers to RAND's analytical value of specifying rational goal formulation in planning (1973, p. 156). Rittel and Webber's article was primarily – and no more than – an invocation for a community of rationalistic researchers to critically reflect on their paradigm. It was not at all a coherent research program on specific types of problems.

Viewed historically, their contribution can be explained as but one part of the much wider questioning of the systems view, which led policy scientists to re-engage with work by scholars such as Lerner and Lasswell (1951), Lindblom (1968), Simon (1947), Cyert and March (1963), Vickers (1965) and Wildavsky (1971), who had all already questioned the primacy of goal-setting and the solutions focus of systems planning. Despite the fact that such classic works on policy (and business) problems could all be set in contrast to systems-analytical thinking, Rittel and Webber make no reference to them. Their work was formed solely with regard to a debate within RAND and in the context of systems analysis failures. While it proved fecund ground for planning scholars to reflect upon their own discipline, it lacked any basis in existing policy sciences scholarship, being constrained by the debate to which it referred and which guided it. Furthermore, they could not escape the presuppositions of the systems view because they did not provide an alternative framework to it, unlike Lasswell who, in his 'problem orientation', asserted the worth of the humanistic values of the policy sciences alongside natural science. To ontologize wickedness, and then make a research stream of it, is to commit a cardinal error that reasserts a systems-like view in place of the generalized shift away from it.

iii. Problematizing the wicked/tame problem distinction: the view from nowhere.

This leads us to consider the general limitations of this approach to analytical categorization found within this instance of theorizing about public policy problems. Following on from the ontological reading of wicked problems promoted by Rittel and Webber is another issue, one that also lurks within the analytical research on wicked problems. The presumption is that problems can be analysed from above, as though ontologically distinctive and autonomous from social activity around those problems. That is, the problem 'as such' is assumed to have an autonomous, unique nature of its own (e.g. Hoornbeek and Peters, 2017), which can be discovered, much like bacteria observed by a scientist through a microscope. But this isolates the problem itself from the surrounding context, including from the theory-dependence of the observer (Fischer, 1998). This analytical ontology combines reductionist thinking about problems with the decontextualization of policy analysis via this 'view from nowhere'. There have been convincing criticisms of this perspective from social-constructivists (Berger and Luckmann, 1966),

STS scholars (Ziman, 2000, p. 128–132) and policy scholars (e.g. Wildavsky, 1974; Dery, 1984). All problems are only problems for those involved in experiencing or treating them, which means they are inevitably viewed from somewhere, such that bound up in their viewpoints are innumerable interpretations, perspectives and social relations with other interested actors. Krieger (1981, p. 39ff) has usefully stated that 'having a problem is a claim on others, on how they ought to think about our situation and how they ought to act. . ..But the problem is posed by me, and unless others feel it or can be made to feel it, it will not be a problem for them'. A decade before Rittel and Webber, De Jouvenel (1963, p. 189, 204–212) already stressed that politics and public policy deal with 'unresolvable problems' because the requirements for speaking of a 'solution' as carrying irresistible conviction is a myth. Political and policy problems cannot be dissolved. Only 'settlements' are possible, which do not meet the criteria of some stakeholders and therefore leave them unconvinced and, while perhaps legally bound, dissatisfied. Braybrooke and Lindblom also were keenly aware of the non-analytical, politically constructed character of policy problems. They called them 'synthetic problems', because most of the time a problematic situation is a cluster of interlocked problems with interdependent solutions, turning 'problem solving' into a continuous, complex adjustment of interests process with no definitive answers (Braybrooke & Lindblom, 1963, p. 54–55). Following in Lindblom's trail, Wildavsky (1980, p. 5, 386–87, 390) defines practicing policy analysis as iteratively *creating and crafting problems* that enable temporary, tentative, partial settlements: policy analysis, therefore, is misrepresented as problem solving, but becomes problem succession; 'problem creation – problem solution – problem supersession'.

Many recent works on wicked problems concur that the analytical approach is limited when applied to practice. For example, Head and Alford (2015) make a sustained critique of the weaknesses of managerialist thinking and the rational-technical approach to treating complex policy problems, arguing instead for better collaborative relationships, new adaptive leadership styles and enabling structures and processes. We agree with all these recommendations. However, where we diverge is in the utility of retaining an *analytical approach to a theory* of problems, for example, categorizing them in three types (Head & Alford, 2015). Given that the works cited above argue that the wicked/tame distinction is inadequate, and given that they all point toward political differences as a central factor in making policy problems difficult to handle, then why retain the adjective 'wicked' and why endeavour to factor out the political by analytically dividing it from the facets of the problem itself? The view from above becomes so conceptually ill-defined that we should return to a more generalizable view of problems and one that is linked directly with the experience of policy workers who handle them.

We have shown that the 'wicked problem' language suffers from crippling objections via at least three points: 1) the wicked/tame distinction itself is built on assumptions about science rejected by specialist scholarship; 2) subsequent public policy research attempting to find variegated dimensions of wickedness aims to build distinctions upon a concept ill-equipped to support them; and 3) the analytical view of problems that underpins this endeavour is inadequate as a descriptive approach for how policy workers confront problems in their everyday practices. Moreover, these criticisms were available at the time Rittel and Webber introduced their now classic distinction. We conclude that the wicked problems concept is fundamentally flawed. Given this,

and the definitional problems raised in recent research (Alford & Head, 2017; Noordegraaf et al., 2016; Peters, 2017), we argue that there is no benefit in seeking out a more precise definition to underpin the wicked problem nomenclature. Instead, it is best seen as one moment in a broad historical problematization of the problem-solving ideal in planning and policymaking. In doing so, we understand its sense and its utility. But this also means that we should look, first, to concepts in the policy sciences literature for a stronger body of work to think about the nature and treatment of policy problems. Second, it suggests we reframe wickedness – or complexity, or ill-structuredness – in terms of practice, i.e. how it is experienced in the context of practical action around policy problems, faced by policy workers. Given the futility of defining any general properties of wicked problems and consequently any general set of actions to address them, we abandon the *ontological conception of wickedness* in favour of a new terminology, which we label the *questioning–distance framework*.

3. From 'wickedness' to degree of problem structuredness and political distance

To move away from an ontological conception of wickedness and reconceptualize it more productively, it should be brought back into the policy sciences, which have long pointed to 1) the inherent uncertainties and ambiguities in policy problem discovery and definition, 2) the partiality and contestability of their solutions, and 3) the inherent political quality of the policy process. Common to all three dimensions is a generalized persistence in their problematic qualities – in other words, their problematicalness or 'problematicity' (Meyer, 1995; 2017, p. 83, 113). We therefore propose an alternative framework for understanding policymaking, which is not ontological but based on questioning, thus allowing each element – problem, solution, process – to maintain its problematic qualities (Turnbull, 2014). The framework is based on a dual conception of answering, one in which each answer, simultaneously, has both repressing and expressing (opening-up) properties. When a policy actor responds to a problem by excluding some interpretations – e.g. drugs policy is about crime, not or less so about harm reduction – it structures the problem by limiting its scope. This is a repressing and constraining answer, but it makes progress in the sense of making possible deeper and more detailed probing. But, in remaining a (new, different, adjusted) problem, it is also a 'weak' answer that expresses the continued problematic and invites further questioning. Both properties coexist and allow policy workers to question their problems in context, i.e. with regard to their own problems. This questioning also takes in relations with other policy actors; hence, the relative distance between them – from agreement among friends to outright contradiction and conflict between foes, and all positions in between, such as indifference – is simultaneously in question in each and every action. Policy workers must decide as much upon how to treat these relationships – whether to remain the same distance from others, to move closer to them or further away – as upon what they think is the best response to a problem. Ultimately, it is the question concerning political distance that enables a more formal 'decision' or 'resolution' of the policy process insofar as political rapprochement has gone as far as it can, or further questioning is closed off in some way, perhaps by the exertion of institutional authority or a change of government via the ballot box. The policy process proceeds as the path-

dependent accumulation of questions and answers; therefore, this process is not a priori defined or directed, but emerges. Nonetheless, policy fields build up established mechanisms via accepted answers, which serve as reference points along the way, to which policy workers refer in order to either open up or close down questioning.

We bring this new conceptual approach together with the idea of *policy work*, the practical questioning by (teams of) individuals who, in settings of the governance of collective action and change, distinguish between what is problematic and what is not (Colebatch, 2006; Colebatch, Hoppe, & Noordegraaf, 2010). Problems, conceived as disparities between 'ought' and 'is', range from unstructured to structured (Hoppe, 2011). As convincingly argued and demonstrated by Simon (1973), their difference depends upon constraints on the elements that define a problem; they are either 'given' and 'closed' (strong, repressing or commanding answers) or 'open' and 'amenable to further choice' (weak answers, which invite and elicit further probing). However, in societal problems, both elements are strongly present at the same time. Policy practice involves *both* the repression of questions through standard operating procedures, professional protocols, institutional rules, cultural norms, codified scientific knowledge or prejudice and common-sense bias *and* the explication of questions through reflective research or political contestation, including contests of alternative values and ideas. Importantly, each policy worker is able to question problems from his or her own world view and value position, workgroup position, institutional position and subsequent interests, without requiring reference to a fixed idea of the problem at large. Each problem may mean something different for various stakeholders, such that the problem structuring process emerges over time via a practical rationality that gels (or fails to gel) into institutionalized practices. But political movements of distance between the stakeholders also structure the questioning process and define its parameters. Hence, Wildavsky (1980, p. 11) observed that policy analysis, always, is driven by the intertwined dynamics of intellectual cogitation and social interaction, by 'puzzling' as well as by 'powering' and 'participation' (Hoppe, 2011).

Powering and participation require the negotiation of relational distances between the various stakeholders to a problem. In a policy network, for example, relational distances are partly structured by membership of the network and the norms and shared interests to which it gives rise. At the same time, power relations differ between the players, with some able to exert more weight than the others in structuring problems and directing network relations. The distance between the actors in a policy process will be marked by differences in world views and values, by institutional lines of authority, by differing political interests and by different types of (implementation) practices. These distances may be subject to *explicit* negotiation and bargaining, or they may be expressed *implicitly* through the taking of different positions with regard to the problem itself. The distance between the parties is variable with respect to their contextualized orientation toward a problem, such that, as a result of any action, it may remain the same, increase or reduce. We can already find a proto-version of this conception of distance in Lindblom's (1959, 1965) classic work on incrementalism, in the form of partisan mutual adjustment. According to Lindblom, partisans perform *strategic analysis* by focusing on those aspects of problems most important for persuading one another or securing support from allies. Wildavsky (1980, p. 17) later even called this '(t)he highest form of analysis…using intellect to aid interaction between

people'. This is a *relational* logic, with positions taken with regard to others such that policy fields develop, which structure the various actors in relations of power, while at the same time answers accumulate so as to structure problems. We abandon the 'mutual' adjective to indicate that, as Lindblom also later observed (Lindblom & Woodhouse, 1993), its pluralist assumptions are actually replaced by a logic of exclusion and mutual provocation (Hoppe, 2017b). Political strategizing and unequal political power are commonplace. Politics is integral to policy processes, even if often expressed in subtle ways, e.g. the differential access of agencies to key decision makers, or how institutions resist encroachments on their authoritative territory. Power is exerted via the structuring of distances and is thus present within *all* analytical determinations about policy problems.

The framework is represented in Figure 1. Each policy worker is a questioner *Q, Q´* and so forth, with regard to problem *P*. The questioners approach the problem from their own contextualized perspective and make their own interpretations with regard to it. The distance between them with regard to the problem will be based on their opinions as to its causes and potential solutions, but also according to the ideas and values they hold, their interests as individuals and as organizational representatives, and according to institutional lines of demarcation and relative power. Many of these features may be unconscious because they have been internalized over time through experience and are, hence, unconscious factors in policy practice. Coexisting underneath is the problem represented by the relative distance between the parties, which is simultaneously at stake in any action with regard to the problem itself.

Following this framework, we can reject wickedness as an ontological category and rethink policy relationships in terms of questioning and distance. A policy problem might be termed 'wicked' by a policy worker because achieving even incremental progress in its normative and factual questions is difficult, frequently because distances between the relative parties remain large and conflictual. Hence, labelling a problem 'wicked' is a rhetorical device designed to evaluate a problem and achieve a practical effect, e.g. to justify lack of progress, or to call for more attention to, and resources for (see Noordegraaf et al., 2016), a problem. Such problems are *unstructured*, requiring both further analytical and political effort in order to generate a process capable of

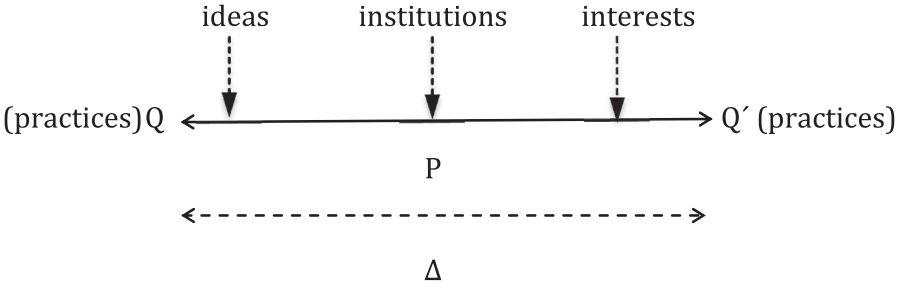

Figure 1. Questioning–distance framework.

producing progress away from an initial answer and position toward a more structured alternative. 'Wicked' is thus a rhetorical term (similar to 'fuzzy', 'messy' and even 'complex', but with additional rhetorical force in persuasively garnering attention), both in practice and in scholarship (cf. Turnbull, 2013), as our historical depiction of Rittel and Webber reveals. Lindblom's idea about incrementalist strategic analysis still holds in the case of intractable or unstructured problems, because (the most optimistic scenario is that) partial solutions about problem parts agreed on by different policy actors enable the process to continue and to maintain some level of interest and investment by stakeholders to the problem. It is the ability of actors in policy fields to realize answers, even if these are weak ones, which maintain attention on the question. International relations and mediation is the best example of this, a field in which distances are vast and the potential for damaging conflict is enormous. The Arab–Israeli conflict, for example, is unstructured because it concerns wide, persistent distances, on both questions to be posed and answers to be given, between multiple actors. In the absence of global law, the process for arriving at answers is excessively political. Here, maintaining diplomatic *relations* is the primary aim, well before reaching any firm idea of international agreements. As long as a process can be maintained, even comprising trivial engagements, then problems do not remain entirely unstructured. However, unstructuredness or high problematicity can arise even in small, superficially non-complex, local problems if there is an absence of political will to deal with them.

To summarize, the questioning–distance framework aims to move beyond the idea of wicked problems as a separate category of problems by returning to insights from the policy sciences via several innovations. First, it utilizes a more general language of questioning, key to which is the identification of two properties of answers, strong and weak, or repressing and expressing, which exhibit the simultaneous closing-down and opening-up of questioning about policy problems. These two dimensions of answering explain how this dual process operates simultaneously, without contradiction. Second, it incorporates the policy work perspective, which locates decision makers within an emergent logic of practice, rather than being gifted with analytical insight of the whole, as though observed from above in the manner of an idealized natural scientist. Their goals are to provide answers to questions-in-context. These answers are focused around structuring unstructured problems by repressing their problematic elements and at the same time opening up the questioning of other elements. Third, it introduces the concept of distance as integral to the policy process, thereby including an essential political element. 'Wicked' is, then, a rhetorical term useful for practitioners dealing with – simultaneously and entwined – both a high level of unstructuredness or problematicity around a policy problem and an excess of wide and conflictual distances from other stakeholders.

4. How policy workers deal with problems: problem structuring and negotiating distance

In this section, we turn from questioning theory to policymaking practice; from the philosophical and conceptual level to empirically showing their presence and functions in the practices and experiences of politics and policymaking as one very specific

question–answer game, i.e. showing how policy workers deal with problematic situations of collective action in the public sector. We illustrate it with a specific policy issue, the problem of car mobility.

The key insight here is what dealing with policy problems means: *problem structuring* (Hisschemöller & Hoppe, 1996; Hoppe, 2017a). Stepping away from Rittel and Webber's rhetorical and hence scientifically inadequate wicked/tame dichotomy, we replace it with an analytically precise continuum from unstructured to structured problems as an index of degrees of problematicity (Hoppe, 2011, p. 66–76). We agree with Herbert Simon that the key process in problem processing is structuring problems, i.e. moving along the continuum from unstructured toward more (or less) structured problems: 'In general, the problems presented to problem solvers by the world are best regarded as ill-structured problems. They become well-structured problems only in the process of being prepared for the problem solvers. It is not exaggerating much to say there are no well-structured problems, only ill-structured problems that have been formalized for problem solvers' (Simon, 1973; see also Conklin, 2005). This is why, *contra* Rittel and Webber, political and scientific problem processing is similar after all. Scientists carefully craft their 'tame' or 'well-structured' problems in such a way that scientific methods are effective as justifications of their answers. Ziman (2000, p. 184) observes that in science 'the real question is whether (problems) have discoverable solutions. As Peter Medawar famously remarked: "If politics is the art of the possible, research surely is the art of the soluble."' Policy/politics does this as well, but uses different criteria for 'good questions' and 'authoritative, persuasive, and acceptable answers'. Moreover, compared with science, in politics and policy one has far less autonomy in crafting questions and answers. After all, policy problems are actively constructed definitions of reality by opinionated and committed political and policy actors, to be used in a process of claims-making to persuade others. What then, in the public sector, counts as 'good' problem definition? *If problems are social constructions, is one problem definition as good as another?*

David Dery (1984) has proposed three criteria to judge 'good' problem definitions:

(1) a problem definition should fit a *feasible solution* (one must always speak of problem–solution couplings; they cannot be framed independently of one another);
(2) a problem definition ought to be geared to some actor's *intervention perspective*, i.e. a problem ought to be amenable to organizational or inter-organizational action; and
(3) a problem definition ought to be seen as a *realistic opportunity to improve* a current problematic situation, according to the standards or feelings of a majority of active and passive stakeholders.

The second perspective is the potential *mismatch* between problems-*as-processed*-by-official-policymakers and problems-*as-experienced*-by-social-actors, as citizens in civil society. In cases of a permanent mismatch, public policymakers are justly accused of trying to solve precisely the wrong problem. Such wrong-problem problems are politically risky, as they may result in protracted controversies (Mitroff & Silvers, 2010; Schön & Rein, 1994), which may occasionally spread from one policy domain to others, thereby endangering a wider political system. Donald Trump's victory in the 2016 US

presidential elections and the victory of Leave-voters in the Brexit referendum are clear examples of the neglect and indifference by policymakers of the impacts of globalization and increasing inequality on the lifeworld, identities and political attitudes of the middle classes in supposedly consolidated democracies (Geiselberger, 2017).

Frequently, problems-as-processed by authoritative policymakers entail path-dependent, pre-structured problem definitions (Chisholm, 1995) that exclude newly emerging and promising alternative solutions seriously considered by other actors. They risk the problem of low legitimacy by maintaining too large political distances from excluded potential stakeholders. In such cases, good governance means breaking down the structured problem and opening up the cognitive and political aspects of public policymaking to new actors and ideas in order to integrate diverse interests. In other cases, genuinely new problems emerge in society, which, after a while, achieve public and political agenda status. Such problems may be unstructured substantively. Here, good governance means sincere and serious political attempts to move the unstructured problem in a more structured direction, because only at least moderately structured problems, with reduced inter-actor distances, lend themselves to 'joined-up' inter-organizational policymaking and implementation. Figure 2, inspired by Schön (1983), Cowan (1986) and Hoppe (1999), presents a model of problem structuring by policy workers in which the dialectic trajectories of opening-up and closing-down moments are clearly displayed. It presents the types of questioning processes employed by policy workers, not in linear stages but in multiple possible trajectories. The diagram is the process of individual questioning, which in each case must be mediated with regard to other individuals and organizations, according to the

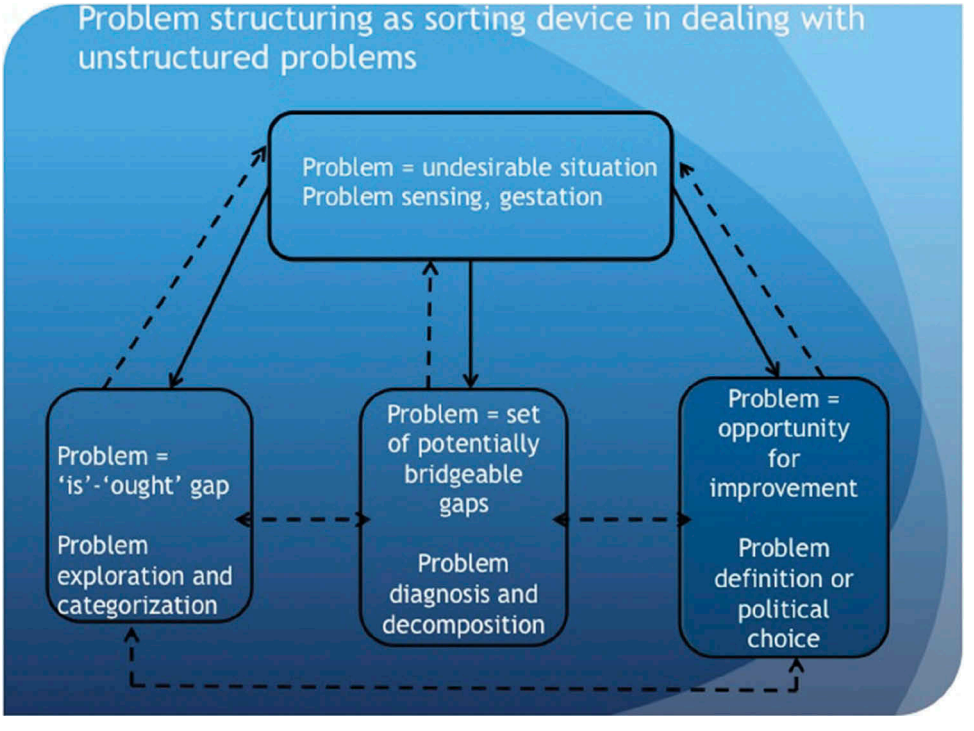

Figure 2. Problem structuring in dealing with unstructured problems.

questioning–distance process. The solid arrows represent the attempt to move away from unstructured to (one or more of the) more structured problems. The broken arrows symbolize the erratic, emerging trajectories of questioning-answering and distancing processes that do or do not display this attempted movement. For the policy worker, these processes are not at all linear or evolutionary or explicitly about learning, although the 'outcome' is frequently reconstructed and justified post hoc as 'learning'. They are rather an endless series of 'palimpsests',[2] where newer questions and answers obscure, blur or relegate older ones to lesser importance though never completely replacing them. And it is the weakening or strengthening of different participants in the distancing process that may explain why one or another question or answer about a policy issue becomes dominant or fades away.

Following this model of questioning, in a political and administrative world inundated by policy legacies or policy palimpsests, policy workers' permanent task is judging whether or not policy needs any change at all, and if so, what are the really-existing management (implementation) implications. Contrary to many policy analysis textbooks, this is not a matter of clear-cut instructions by political leaders to their bureaucratic staff, nor recognizable moments of top-level civil servants instructing middle-management subordinates to design new policy. Rather, the process is one of continuous monitoring of trends in public opinion, political climate, implementation evaluations or administrative reports for signs of problems calling for change. Policy analysts 'stumble upon' streams of complaints and protests, which indicate that citizens deem some situations or developments as undesirable and that 'politics' or 'government' should tackle them. *It is in conditions of increasing distance by actors from the status quo that government pays attention*. Being aware of public sentiments is the inevitable launching platform for equally necessary later problem definition (Kooiman, 1988, p. 14). In periods of *problem sensing and problem gestation* (Cowan, 1986; p. 766; Hoppe, 2017a), the policy worker's task is a double one. First, asking the simple question, 'What's going on here?', s/he will develop a descriptive map of the problematic situation. Textbox A sets out the example of the car mobility problem, which is increasing, with affluence, in many nations. In the car mobility problem, deep ideological attachment to the freedom provided by the car and its integration with the economy make individuals reluctant to accept restrictions on their mobility, which sets up wide and conflictual political distances for policy workers dealing with the problem.

(Textbox A)

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The car mobility problem

- Car use has contributed most to the growth of mobility.
- Home–work commuting is responsible for one-third of use, one-fifth is for visiting family and friends, and a good deal of the rest is for business purposes.
- Increase in home–work commuting is due to an increase in the number of the working population and the popularity of the car.
- International goods transport by trucks has increased tremendously.

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[2] A 'palimpsest' is an older document, image or painting whose text or image, without being completely effaced, is overwritten by later ones. The idea of a 'policy palimpsest' is believed to be in Simmons (1982) (Park & Radford, 1999). We thank Emery Roe for the idea and the reference.

- Accidents involving commercial trucking are responsible for numerous traffic jams each day.
- The long-term trend is that goods transport by road will become cheaper than inland vessel or train.
- The ideological attachment to the freedom inherent in car mobility, along with the freedom expressed in increased purchases of shipped goods, exacerbates the problem of mobility.
- Increased traffic obstructs the very basis of the ideological impetus behind vehicle use.
- Some problems are ruled out: more motorways are limited by space, and only increase car use, in any case.
- Any viable policy solution implies more interference with private free mobility.
- But the problem is marked by a high degree of problematicity, because the stakeholders to the problem do not wish to accept limitations on their mobility: they demand either an unviable long-term solution (more roads) that puts them at a political distance from the state or that others use vehicles less, which sets road users at a distance from one another.

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However, such simple (closing-down) answers also entail opening-up moments by triggering new questions: are these ‘facts’, jointly, pointing toward the possibility of a major traffic ‘infarction’? If yes, what is to be done next? Thus, second, the policy worker will have to obtain as much knowledge as possible about the multiple problem frames of the many problem owners or stakeholders and determine the nature of the distances between them, including who has most power to act autonomously. Policy networks offer already integrated relationships for approaching problems. In practice, a workaday awareness of policy analysis/design as a question–answer game requires the policy worker to be *frame reflective* (Lakoff, 2009; Schön & Rein, 1994). People involved in political and policy debates deliberate upon divergent and competing ideas and values, world views and beliefs, crystallizing in a plurality of policy belief systems, attitudes and practices. The problematic situation ought to be, tentatively, depicted as a *gap* (distance) between stakeholders on some clearly stated norms or standards and with regard to the more precisely defined (changes in) problematic situation, i.e. on both the question and possible answers. Using Cowan’s model (1986, p. 766), this second stage is labelled problem *categorization*, in which problems are put into a specific category, but only tentatively (problem *exploration*), without necessarily accepting the standards or models used, given the differences of opinion. Schön (1983, p. 131–132) shows how ‘reflective practitioners’ employ a trial-and-error process in problem framing, reflecting upon and experimenting with different elaborations and definitions. To this, we add argumentative deliberations with other parties, always with a view to how the parties might be brought closer together. Problem exploration and categorization often mean imposing well-known disciplinary or professional concepts, standards, models and theories as an ‘overlay’ on the problem frames discovered in social and political debate (Hoppe, 2017a). However, it also means isolating which sub-questions can be collectively advanced and which are out of bounds. In the most difficult cases, it is establishing a process that is the priority. Structuring involves

political mediation that regularizes processes as a partial answer. In problematizing well-known or novel problem frames, unstructured problems thus acquire a provisional structure, i.e. a repressing answer with regard to the former situation, or rather, a plurality of such answers. They become moderately structured. However, these also have an opening-up property, in that either the factual uncertainties or normative ambivalences around the issue require further investigative probing or political articulation (Hoppe, 2011, p. 74, 79–85). Substantive problem structuring and political distance modification co-occur to stabilize both key policy assumptions and power relations. Applied to the car mobility problem, Textbox B shows this intersection of partial answers.

(Textbox B)

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Car mobility frames[3]

Policy workers could be confronted with the following frames, which each result in partially structured problems as clear gaps between an 'is' and an 'ought':

a hierarchist frame: congested roads and traffic jams are a systems capacity problem, solvable by capacity extension; if capacity cannot be expanded using technological means, the problem becomes one of selection and substitution of transport modes (fast trains, underground transportation, etc.); political distances may increase between the state and taxpayers;

an individualist frame: road congestion and traffic jams threaten free access to roads and an individual's right to freedom of movement. Given the demand, there is an undersupply of transport possibilities per car or per car owner; the issue is how to rebalance supply and demand, looking first at expansion possibilities and kilometre-pricing second; political distances increase between likely individual winners and losers;

an egalitarian frame: the true nature of the issue is one of equal access to space for all; since the car mobility problem is one of excessive demand for one mode of transport, demand for car mobility ought to be curbed; and its substitution with more environmental and user-friendly, low-tech and small-scale transport modes should be facilitated; political distances increase between high-frequency car users and others.

These problem frames in social and political debate are matched by well-known professional and disciplinary frames of several types of experts:
the *hierarchist* frame may be explored and elaborated by use of road construction and logistic technologies, landscape and urban architecture, and ideas from town or spatial planning; hierarchy underlines distance between state and civil society;

the *individualist* frame is expressed in the concepts and models of transportation and regional economics; distance is increased toward market-inspired ideology;

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[3] For clarity's and brevity's sake, we use Douglassian cultural theory to define the frames. In reality, of course, frames are less articulate and more fuzzy and hybrid.

the *egalitarian* frame is represented in the models of environmental economists and other environmental experts, and in the concepts and theories of the many social scientists who choose to elaborate egalitarian or communitarian systems of thinking; distance is increased between communities and their larger environments.

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Problem experimentation and categorization is a socially and politically fragmented and serial process, without much deliberate coordination beyond the well-trodden venues of routine political decision making. As in evolutionary biology (Ellerman, 2014), the system is supposed to balance attention to generating variety (questioning, opening-up alternatives) with selection mechanisms (closing-down or repressing moments through authority, democratic procedure, scientific expertise, or violent repressive coercion as an extreme case, about which the policy sciences mostly choose to remain silent). Routines and institutionalized venues spontaneously bring about processes and events of partisan adjustment, hopefully leading to political convergence upon the one or two frames deemed most promising in terms of concrete suggestions for collective action, i.e. as *potentially bridgeable gaps* between 'is' and 'ought', which also reduce political distance between stakeholders. The one or two most promising problem frames (as closing-down answers) start morphing into new questions of *problem decomposition and diagnosis* (Hoppe, 2017a). It is only here that policymaking or policy work takes on the garb of problem-solving as depicted in most policy-analytical textbooks: the meticulous and detailed description of one particular problem, selection of a restricted set of alternatives, and design of detailed policy programs as means-ends chains justified by ex ante or ex post evaluation, dissemination or learning through standard policy-analytical methods or tools. This is depicted in Textbox C, in which policymaking is also often a more 'in-house puzzling' quasi-technical production, which usually makes no explicit reference to political questions.

(Textbox C)

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Car mobility decomposition

The following view on problem decomposition and political choice may be defended in the case of the car mobility problem.

- A decomposed *egalitarian* problem frame generates two partial problems: i) reduction, possibly a complete halt to the (increase in) demand for mobility; and ii) spreading the demand for mobility over time and space.
- A *hierarchist*, technical-fix frame also produces two sub-problems: i) substitution of car mobility by other modes of transportation; and ii) design and implementation of entirely new transportation modes and infrastructure.
- Finally, the *individualist* frame also suggests two solution paths: i) demand-driven expansion of the road system; or ii) more efficient use of available roads by substituting a general road tax by a pay-per-mile-driven approach.

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A synthesis of the substantive and political questioning is represented in Textbox D, the kind that might be discussed behind closed doors in the executive or in specialist academic research papers. We can see why approaches that support incremental progress are most likely to be pursued.

(Textbox D)

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Car mobility political choice through negotiating political distances

Taken together, the above-mentioned six sub-problems indeed reflect a kind of analytically and politically balanced view with a chance of successfully negotiating the distances between relevant stakeholders.

- From a hierarchical, technical-fix frame, it makes sense to explore egalitarian-inspired tentative solutions for spreading the demand for mobility over time and space.

- Equally, an individualist-driven expansion of road capacity is compatible with a technical approach. A technical approach may even be indispensable for reducing the demand for car mobility through substitution by other modes of transport.

The different problem-solution couplings are not per se mutually exclusive, politically. From an analytical and a political point of view, it may be argued that, together, they ‘cover all bases’ in the sense of addressing major dimensions of this highly problematic policy knot as represented by different stakeholders.

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Such policy problems may exhibit persistent problematicity when the distances between the parties to each solution remain great and cannot be reduced, even incrementally, in the face of powerful political opponents. For example, a primary opposition may come from taxpayers if insufficient revenue is available, or from drivers if they refuse increased taxes or mobility restrictions. Policy options then intersect with other related political problems, and political will may dissipate. The government might even label the problem ‘wicked’ in order to legitimate its lack of progress. A key non-government stakeholder might label the problem ‘wicked’ in order to generate attention to it and attract funding for researching alternative answers. Ultimately, progress will be judged by both movement away from an unstructured position and politically in the movement of distance between stakeholders. We note that progress does not necessitate deliberative ‘agreement’ upon a solution, as proposed in some theories of interpretive policy analysis. All that is required is some reduction to an acceptable political distance, which may remain substantial (they ‘agree to disagree’). Mutual adjustment of positions is one possibility. However, any mechanism that reaches a decision on a question and overcomes political distances is possible, up to and including the calling of an election and claiming a mandate to push a policy through.

5. Conclusion

In this article, we developed a strong argument for rejecting the concept of 'wicked problems' and returning to a policy sciences vocabulary that deals with policy problems in general. The wicked problems idea is flawed because it is poorly conceived and disconnected from its historical context, and thus stretched beyond conceptual coherence. The trajectory of wicked problems scholarship has been to pick away at its limitations to the point where the utility of the concept itself is now in question. Furthermore, its continuing use guides practical policy work in unproductive directions. Our argument rejects the idea of a 'wicked problem' as a special ontological class of policy problem. 'Wicked' is instead a specific, rhetorical term, used by scholars to help them think about the most difficult, unstructured policy problems and used by practitioners to label persistently problematic distances between stakeholders to a problem, a labelling that itself has political aims. In sum, this critical approach suggests a shift away from the wicked problem research agenda and a return to established concepts of the policy sciences and public administration, namely, to the 'problem orientation' in general (Lasswell, 1971). This is where our new framework of questioning comes in: it reimagines the concepts of problem and solution at their foundation (question, solution-as-settlement) and can, therefore, effectively build on the larger body of scholarship on problems within policy studies. By re-conceptualizing wickedness as problematicity, and understanding it to vary with political distance in a social process of questioning, we can better develop the variegated understanding desired by wicked problems scholars, while leaving behind the conceptual limitations of Rittel and Webber's terminology.

More specifically, by way of conclusion, we propose the following five theses as summarizing the gist of our argument.

1. Wickedness is not a coherent concept at the philosophical level, nor in light of social studies of science, nor in terms of the practice of policy work (where it is used rhetorically, not ontologically).
2. We have a better, alternative conception of a higher/lower degree of problematicity or structuredness of problems, which is not ontological but lies along a continuum from unstructured to structured.
3. We substitute for 'wickedness' a second, inherent dimension of policy problems, which is political distance, characterized as the distance between actors in terms of ideas/values, institutions and interests, pursued through practices.
4. We can use this to explain, and also to recommend, a type of practice that pragmatically deals with structuring unstructured policy problems, with a view to reaching productive agreements on doable policy proposals.
5. Our theory builds upon established, classical work in the policy sciences by further developing the problem orientation, which Rittel and Webber failed to do. Our clarification of the role of politics gives it proper centrality in policymaking, which Rittel and Webber realized but didn't operationalize.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

Alford, J., & Head, B. W. (2017). Wicked and less wicked problems: A typology and a contingency framework. *Policy and Society*, *36*(3), 397–413.
Berger, P. L., & Luckmann, T. (1966). *The social construction of reality: A treatise in the sociology of knowledge*. Garden City, NY: Doubleday.
Bevir, M., & Rhodes, R. A. W. (2006). *Governance Stories*. London: Routledge.
Bourdieu, P. (1975). The specificity of the scientific field and the social conditions of the progress of reason. *Social Science Information*, *14*, 19–47.
Braybrooke, D., & Lindblom, C. E. (1963). *A strategy of decision: Policy evaluation as a social process*. New York: Free Press of Glencoe.
Brewer, G. D. (1974). The policy sciences emerge: To nurture and structure a discipline. *Policy Sciences*, *5*(3), 239–244.
Brewer, G. D. (2017). There at the beginning: "e're still "emerging," maybe forever'. *Policy Sciences*, *50*(1), 1–7.
Chisholm, D. (1995). Problem solving and institutional design. *Journal of Public Administration and Research and Theory*, *5*(4), 451–491.
Colebatch, H. (ed). (2006). *The work of policy: An international survey*. Lanham MD: Lexington Books.
Colebatch, H., Hoppe, R., & Noordegraaf, M. (Eds). (2010). *Working for Policy*. Amsterdam: Amsterdam University Press.
Collins, H. M. (1985). *Changing Order*. London: Sage.
Conklin, J. (2005). *Dialogue mapping: Building shared understanding of wicked problems*. Hoboken, NJ: Wiley.
Cowan, D. A. (1986). Developing a process model of problem recognition. *Academy of Management Review*, *11*(4), 763–776.

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Englewood Cliffs, NJ: Prentice Hall.
Daviter, F. (2017). Coping, Taming or Solving: Alternative approaches to the governance of wicked problems. *Policy Studies*, *38*(6), 571–588.
De Jouvenel, B. (1963). *The pure theory of politics*. New Haven: Yale University Press.
Dery, D. (1984). *Problem definition in policy analysis*. Lawrence KS: Kansas University Press.
Ellerman, D. (2014). Parallel experimentation: A basic scheme for dynamic efficiency. *Journal of Bioeconomics*, *16*(3), 259–287.
Farrell, R., & Hooker, C. (2013). Design, science and wicked problems. *Design Studies*, *34*, 681–705.
Fischer, F. (1998). Beyond empiricism: Policy inquiry in postpositivist perspective. *Policy Studies Journal*, *26*(1), 129–146.
Friedmann, J. (1987). *Planning in the public domain: From knowledge to action*. Princeton, NJ: Princeton University Press.
Fuller, S. (1993). *Philosophy, rhetoric and the end of knowledge: The coming of science and technology studies*. Madison, WI: University of Wisconsin Press.
Geiselberger, H. (2017). *The great regression*. Cambridge: Polity.
Gibbons, M., Nowotny, H., Scott, P., & Trow, M. (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*. London: Sage.
Guston, D. (2001). Boundary organization in environmental policy and science: An introduction. *Science, Technology and Human Values*, *26*(4), 399–408.
Guston, D. H. (2014). Understanding 'anticipatory governance'. *Social Studies of Science*, *44*(2), 218–242.
Halligan, J. (1995). Policy advice and the public service. In B. G. Peters & D. J. Savoie (Eds.), *Governance in a Changing Environment* (pp. 138–172). Montreal and Kingston: McGill-Queens' University Press and Canadian Centre for Management Development.
Head, B. (2008). Wicked problems in public policy. *Public Policy*, *3*(2), 101–118.
Head, B. (2016). Forty years of wicked problems literature: The need for closer links to policy studies, paper presented to Workshop on Governance of Wicked Problems, University of Wageningen, 27-28 October.
Head, B., & Alford, J. (2015). Wicked problems: Implications for public management. *Administration & Society*, *47*(6), 711–739.
Hisschemöller, M., & Hoppe, R. (1996). Coping with intractable controversies: The case for problem structuring in policy design and analysis. *Knowledge for Policy*, *4*(8), 40–60.
Hoornbeek, J. A., & Guy Peters, B. (2017). Understanding Policy problems: A refinement of past work. *Policy and Society*, *36*(3), 365–384.
Hoppe, R. (1999). Policy analysis, science and politics: From'speaking truth to power' to 'making sense together'. *Science and Public Policy*, *26*(3), 201–210.
Hoppe, R. (2010). From 'knowledge use' to 'boundary work': Sketch of an emerging new research programme for science/policy interactions. In R. J. In 'T Veld (ed.), *Knowledge democracy – consequences for science, politics and media* (pp. 169–186). Heidelberg: Springer.
Hoppe, R. (2011). *The governance of problems*. Bristol: Policy Press.
Hoppe, R. (2014). Patterns of science/policy interaction. In P. Scholten & F. Van Nispen (eds.), *Policy analysis in the Netherlands*. Bristol: Policy Press.
Hoppe, R. (2017a). Heuristics for practitioners of policy design: Rules-of-thumb for structuring unstructured problems. *Public Policy and Administration*, June 4. Available online: 10.1177/0952076717709338.
Hoppe, R. (2017b). Lindblom on incrementalism: The tragic dilemma between understanding and shaping the world. *European Policy Analysis*, 3, 19 September 2017. Available online: DOI: 10.1002/epa2.1021.
Jasanoff, S. (1990). *The Fifth Branch. Science advisers as policymakers*. Cambridge and London: Harvard University Press.
Kooiman, J. (1988). *Besturen: overheid en maatschappij in wisselwerking*. Assen: Van Gorcum.
Krieger, M. H. (1981). *Advice and planning*. Philadelphia: Temple University Press.

Lakoff, G. (2009). *The political mind. A cognitive scientist's guide to your brain and Its politics*. New York: Penguin Books.
Lasswell, H. D. (1971). *Pre-view of policy sciences*. New York: Elsevier.
Latour, B., & Woolgar, S. (1979). *Laboratory life: The social construction of scientific facts*. Beverly Hills: Sage.
Lazarus, R. J. (2009). Super wicked problems and climate change: Restraining the present to liberate the future. *Cornell Law Review*, *94*, 1153–1234.
Lerner, D., & Lasswell, H. D. (eds). (1951). *Policy sciences: Recent developments in scope and method*. Stanford: Stanford University Press.
Levin, K., Cashore, B., Bernstein, S., & Auld, G. (2012). Overcoming the tragedy of super wicked problems: Constraining our future selves to ameliorate global climate change. *Policy Sciences*, *45*(2), 123–152.
Lindblom, C. E. (1959). The Science of "Muddling Through". *Public Administration Review*, *19* (2), 79–88.
Lindblom, C. E. (1965). *The intelligence of democracy: Decision making through mutual adjustment*. New York: The Free Press.
Lindblom, C. E. (1968). *The policymaking process*. Englewood Cliffs NJ: Prentice Hall.
Lindblom, C. E. (1979). Still Muddling: Not yet through. *Public Administration Review*, *39*(6), 517–526.
Lindblom, C. E., & Woodhouse, E. J. (1993). *The policy-making process* (3rd ed.). Englewood Cliffs, NJ: Prentice-Hall.
Lynn, L. E. (Ed.). (1978). *Knowledge and policy: The uncertain connection*. Washington, DC: National Academy of Sciences.
Metze, T., & Turnhout, E. (2014). Politiek, participatie en experts in de besluitvorming over super wicked problemen. *Bestuurskunde*, *23*(2), 3–11.
Meyer, M. (1995). *Of Problematology: Philosophy, science and language, trans. D. Jamison with A. Hart*. Chicago: University of Chicago Press.
Meyer, M. (2017). *What is rhetoric?* Oxford: Oxford University Press.
Mitroff, I. I., & Silvers, A. (2010). *Dirty rotten strategies. How we trick ourselves and others into solving the wrong problems precisely*. Stanford: Stanford Business Books.
Newman, J., & Head, B. (2017). Wicked tendencies in policy problems: Rethinking the distinction between social and technical problems. *Policy and Society*, *36*(3), 414–429.
Noordegraaf, M., Douglas, S., Geuijen, K., & Van Der Steen, M. (2016). Weaknesses of wickedness: A critical perspective on wickedness theory, paper presented to Workshop on Governance of Wicked Problems, University of Wageningen, 27-28 October.
Park, D. C., & Radford, J. (1999). Rhetoric and place in the 'mental deficiency' asylum. In R. Butler & H. Darr (eds.), *Mind and Body Spaces: Geographies of Illness, Impairment and Disability* (pp. 70–97). London and New York: Routledge.
Peters, B. G. (2005). The problem of policy problems. *Journal of Comparative Policy Analysis Research and Practice*, *7*, 349–370.
Peters, B. G. (2017). What is so wicked about wicked problems? A conceptual analysis and a research program. *Policy and Society*, *36*(3), 385–396.
Pielke, R. A., Jr. (2007). *The honest broker: Making sense of science in policy and politics*. Cambridge: Cambridge University Press.
Ravetz, J. R. (1971). *Scientific knowledge and its social problems*. New Brunswick and London: Transaction Publishers.
Ravetz, J. R. (2006). *The no-nonsense guide to science*. Oxford: New Internationalist/Verso.
Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, *4*(2), 155–169.
Roberts, N. (2000). Wicked problems and network approaches to resolution. *International Public Management Review*, *1*, 1–19.
Roe, E. (2013). *Making the most of mess: Reliability and policy in today's management challenges*. Durham, NC: Duke University Press.
Schön, D. A. (1983). *The reflective practitioner*. New York: Basic Books.

Schön, D. A., & Rein, M. (1994). *Frame reflection: Towards the resolution of intractable policy controversies*. New York: Basic Books.
Simmons, H. (1982). *From asylum to welfare*. Ontario: National Institute on Mental Retardation.
Simon, H. A. (1947). *Administrative behavior*. New York: Macmillan.
Simon, H. A. (1973). The structure of ill structured problems. *Artificial Intelligence*, *4*, 181–201.
Sismondi, S. (2008). *An introduction to science and technology studies*. Oxford: Blackwell.
Snow, C. P. (1959). *The two cultures and the scientific revolution. The Rede Lecture, 1959*. Cambridge: Cambridge University Press.
Termeer, C. J. A. M., Dewulf, A., Breeman, G., & Stiller, S. J. (2013). Governance capabilities for dealing wisely with wicked problems. *Administration & Society*, *47*(6), 680–710.
Turnbull, N. (2013). The questioning theory of policy practice: Outline of an integrated analytical framework. *Critical Policy Studies*, *7*(2), 115–131.
Turnbull, N. (2014). *Michel Meyer's problematology. Questioning and society*. London: Bloomsbury.
Vickers, G. (1965). *The art of judgment: A study of policymaking*. London: Methuen.
Weiss, C. (Ed.). (1977). *Using social research in public policy making*. Lexington, MA: D.C. Heath.
Wildavsky, A. (1971). Does planning work? *Public Interest*, *24*, 95–105.
Wildavsky, A. (1974). *Politics of the budgetary process* (2nd ed.). Boston, MA: Little, Brown.
Wildavsky, A. (1976). Review: The strategic retreat on objectives. *Policy Analysis*, *2*, 499–526.
Wildavsky, A. (1980). *The art and craft of policy analysis*. London and Basingstoke: Macmillan Press.
Ziman, J. (2000). *Real science. What it is, and what it means*. Cambridge: Cambridge University Press.