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A critical assessment of the wicked problem concept: relevance and usefulness for policy science and practice

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ABSTRACT

The concept of wicked problems has served as an inspiration for research in a variety of research fields but has also contributed to conceptual confusion through the various ways in which it has been defined and used. In this special issue, a number of ontological, theoretical and methodological issues are discussed. First, while its use as a buzzword has undermined precise conceptual definition, recent work goes beyond the wicked versus tame dichotomy and conceptualizes wickedness as a matter of degree, differentiates between dimensions of wickedness and emphasizes the relational character of problem definitions. Second, new and existing governance approaches have often been unproblematically proposed as ways to solve wicked problems, while only imperfect solutions, partial solutions or small wins are achievable in practice. Third, the concept of wicked problems has had little direct impact on policy theories, and while some argue that the analysis of wicked problems should be mainstreamed in public policy thinking, others propose to reject the concept and rely on existing policy theories. Fourth, as a concept used in policy practice, wicked problems tend to provoke either paralysis or an over-estimation of what policy can do about wicked problems. Possible ways forward include (1) leaving the concept behind; (2) using the wicked problems literature as knowledge base to understand when and why policy and governance approaches fail; and (3) developing dimensions of wicked problems (i.e. conflict, complexity and uncertainty) into more analytically precise research tools and linking them with more closely with contemporary policy science developments.

KEYWORDS

Governance; decision-making; wicked problems; policy

1. Introduction

Many contemporary problems are increasingly characterized as ‘wicked problems’ that confront societal and policy actors and existing institutional regimes. Examples in recent literature are plentiful, including climate change, refugees, terrorism, digital warfare, ageing populations and loss of biodiversity. Much of the policy studies have argued that these problems are particularly challenging as they transcend the borders of traditional policy domains, involve a wide variety of actors across different scale levels

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and resist our attempts to solve them. However, the debates on wicked problems are certainly not something new.

The earliest published definition of wicked problems can be found in a 1967 guest editorial by C. West Churchman in *Management Science*, where the following definition is attributed to Horst Rittel: ‘a class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing’ (Churchman, 1967, p. B-141). The adjective ‘wicked’ was initially supposed to describe ‘the mischievous and even evil quality of these problems, where proposed “solutions” often turn out to be worse than the symptom’ (Churchman, 1967, p. B-141). Applying rational approaches, such as operations research, to wicked problems requires isolating a piece of the problem to solve it, leaving the untamed part of the problem unaddressed. In the words of the same author, this boils down to taming the growl of the wicked problem, such that it ‘no longer shows its teeth before it bites’ (Churchman, 1967, p. B-141). Attempting a deep understanding of the untamed aspects of wicked problems is therefore a moral obligation according to Churchman. The subsequent seminal paper by Rittel and Webber (1973) elaborated and established the notion of the wicked problems, for which there are ‘no solutions in the sense of definitive and objective answers’ (p. 155).

Since its inception in planning studies in the early 1970s, the idea of the existence of wicked problems has become rooted in many research fields, see Figure 1. Wicked problems are most frequently studied in fields of public administration, policy, planning and management, focussing on problems related to environmental and urban problems. In recent years, the concept of wicked problems has also been taken up in fields as diverse as education, economics, engineering, development studies, computer science and health.

The revival of the concept also raises a number of critical theoretical, conceptual and empirical questions that have only been sparsely addressed in the academic literature.



Figure 1. Treemap visualizing the distribution of the 2969 publications citing Rittel and Webber (1973) over Web of Science categories – only the 25 most populated categories are shown (Retrieved from Web of Science, 27 March).

The seven contributions in this special issues aim to critically reflect on the concept of wicked problem by reflecting on a number of key questions and themes.

The first set of questions revolves around the conceptual definition of wicked problems and how useful and relevant it is to better understand societal problems. Is it more than a popular buzzword? Specifically, questions emerge about whether the analytical distinction initially proposed by Rittel and Webber between wicked and tame problems helps researchers and policy analysts to improve existing theories or define new ones. And has this distinction resulted in policy actors labelling all problems to be wicked or overly simplify today's policy problems by framing them as 'wicked' problems. How can the notion of wicked problems be further conceptualized to become more meaningful for contemporary policy studies?

Questions also emerge as to whether the notion of wicked problems offers any new insights on how to tackle wicked problems in policy practice. During the past 50 years, many insights have been developed to tackle societal problems, without referring to wickedness of these problems. Has wickedness become a new frame to advocate already existing governance approaches or does it offer new governance ideas for tackling a specific type of problems?

This also raises questions about the added value of the concept of wicked problems for classic themes in policy studies, including policy coordination, policy delivery, policy design, policy evaluation and performance-based public management? Have insight from studying wicked problems resulted in revising these classic theories?

Finally, important questions also emerge about what the relevance is to policy practices. Does the concept of wicked problems help policymakers deal with complex challenges or does it merely paralyse them? What kind of actionable knowledge and governance arrangements can be used to navigate the challenges wicked problems pose?

Guided by the above themes, this special issue presents a critical stocktake on how the discussions of wicked problems have evolved and critically reflect on what we have learned so far both in terms of new theories and scientific insights, as well as the policy relevance of the concept. Such critical stocktake of the concept of wicked problems is, in our view, well overdue and vital to explore potential directions for moving forward. This introductory article tries to synthesize the discussions in the special issues along the key issues raised above and provides some suggestions on how to move forward.

2. The challenge to define wicked problems

In the foundational article by Rittel and Webber (1973), 10 claims are made about wicked problems (summarized by Peters, 2017):

- (1) Wicked problems are difficult to define. There is no definite formulation.
- (2) Wicked problems have no stopping rule.
- (3) Solutions to wicked problems are not true or false, but good or bad.
- (4) There is no immediate or ultimate test for solutions.
- (5) All attempts to solutions have effects that may not be reversible or forgettable.
- (6) These problems have no clear solution, and perhaps not even a set of possible solutions.
- (7) Every wicked problem is essentially unique.

- (8) Every wicked problem may be a symptom of another problem.
- (9) There are multiple explanations for the wicked problem.
- (10) The planner (policymaker) has no right to be wrong.

These claims have to be understood in the context of the academic debate at the time. The authors object most strongly to the rational choice assumptions embedded in comprehensive planning approaches to societal problems (Head & Alford, 2015), namely that with the right information, the correct or best policy solution can be calculated. To be able to do this, one needs a clear definition of the problem, a good understanding of the causes of the problem, a clear stopping rule to determine when the problem has been solved, a bounded list of solution options, a good test for assessing these solutions and the confidence that the best solution will not cause unintended harm. The 10 claims made by Rittel and Webber can therefore be read as a set of arguments against purely rational approaches to policy.

In the subsequent literature, however, these claims have largely been picked up as defining characteristics of a particular type of policy problems (Peters, 2017) and sparked a debate on what wicked problems really are. With the exception of an effort to define 'super-wicked problems' by adding additional criteria (Lazarus, 2008; Levin, Cashore, Bernstein, & Auld, 2012), the majority of wicked problem scholars have attempted to reduce the 10 criteria to a smaller number of distinguishing characteristics. Roberts (2000) condensed Rittel and Webber's (1973) problem-related characteristics (1, 6, 7, 8 and 9) and solution-related characteristics (2, 3, 4 and 5) into just two defining dimensions of wicked problems: a lack of consensus on problem definition, combined with a lack of consensus on solutions. Xiang (2013) condensed the 10 characteristics into 5: indeterminacy in problem formulation, non-definitiveness in problem solution, non-solubility, irreversible consequentiality and individual uniqueness. Head and Alford (2015) boiled down wicked problems to a combination of complexity, diversity and uncertainty, emphasizing that wickedness is a matter of degree.

Since Rittel and Webber's analysis, the underlying thinking about wicked problems has further advanced in different strands of public policy, political science and public management. Despite many new insights, the 10 characteristics of Rittel and Webber (1973) still dominate the debate. Most papers in this special issue try to disentangle the concept and go beyond the dichotomous analytical framing of wicked versus tame problems, albeit in different ways.

Noordegraaf et al. (2019) argue that people and practices in the definitions of wicked problems are not included and aim to revise and enrich wickedness theory. Across the literatures, they argue, here is little emphasis on how people experience issues and whether they see and/or feel these as 'wicked'. As an alternative, they introduce the concept of situated wickedness, which offers a street-level understanding of wicked problems. This alternative to the original framing of Rittel and Webber helps to shift the focus from 'wicked problems' to wicked *situations*, i.e. situations that can be said to contain the ingredients of wickedness and are experienced as wicked for the people involved.

Bannink and Trommel (2019) also criticize the dichotomy of wicked versus tame problems and propose a further specification based on two dimensions: normative

conflict and factual complexity. These two dimensions interact to produce wicked problems, they argue, because normatively preferred solutions and factual justifications are linked at actor level. Actors' factual judgements are necessarily informed by their normative judgements. Similar to Hisschemöller and Hoppe's (1996) concept of unstructured problems, they propose that wicked problems are characterized by both heterogeneity of preferences or interests (conflict) and factual uncertainty (complexity).

Kirschke, Franke, Newig and Borchardt (2019) approach the distinction between wicked and tame problems in an empirical way, relying on expert evaluation of 37 water-related problems in Germany. Five continuous dimensions (rather than dichotomies) were used to assess the problems: number and heterogeneity of goals, number of variables involved, dynamics of these variables, interconnections between the variables and informational uncertainty. Based on factor analysis, these five dimensions could be reduced to three underlying factors: (1) system complexity, (2) goal conflict and (3) informational uncertainty. These three factors provide empirical support for the very similar dimensions proposed theoretically by Head and Alford (2015). A subsequent cluster analysis revealed four clusters of problems, including a wicked problem cluster scoring very high on goal conflict and high on complexity and uncertainty.

Turnbull and Hoppe (2019) go even further and argue the notion of 'wicked problems' as a special ontological class of policy problems, arguing that Rittel and Webber (1973) mainly contrasted scientific problems with policy problems and called all policy problems wicked. They also take issue with the attempt to characterize policy problems as wicked on substantive grounds only, without taking into account the relations between policy actors who are addressing or 'questioning' these problems on a daily basis. They reframe 'wickedness' in terms of higher and lower levels of 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. Engaging with policy problems affects their problematicity and positions them somewhere on a continuum between structured and unstructured. High problematicity arises only when wide political distances are explicitly maintained, such that partial answers cannot be reached.

The articles in the special issue demonstrate the desire to go beyond categorizing policy problems in the wicked versus tame dichotomy. First of all, none of the articles uncritically adopts the conceptualization provided by Rittel and Webber. On one hand of the spectrum are those articles that retain wicked problems as a separate category of problems but emphasize the value of looking at the underlying dimensions of problems in a continuous way. These articles warn against stretching the concept, or using it as a 'plastic word', and thus argue for a more precise operationalization. This means to move away from wicked problems as a clear-cut category of problems, and for example understand degrees of wickedness, often differentiated across a number of dimensions. At the other end of the spectrum are those who feel wicked problems as concept is inherently flawed, therefore rejecting the concept of wicked problems altogether. Nevertheless, they see the value of proposing a continuum of problematicity along which problems vary. A second, but less pronounced tendency in the special issue papers is to point towards the importance of the links between problems, actors and efforts to address the problems. For Noordegraaf et al. (2019), the way people experience problems is a key aspect of their wickedness, and Bannink and Trommel (2019)

argue that it is because normative and factual judgements are linked at actor level, that problems become wicked. Turnbull and Hoppe (2019) go a step further and include the political distance between policy actors engaging with the problem as a defining characteristic of the problematicity of policy problems. The level of problematicity, then, is not an inherent characteristic of the problem, but of the way the problem is being questioned in the network of policy actors.

3. New insights for tackling wicked problems?

The second set of questions revolve around the contribution of the concept of wicked problems in gaining new insights in how to tackle particularly thorny policy problems. A number of papers in this special issue reflect on new insights for tackling wicked problems in present-day public governance.

Importantly, the wicked problem concept becomes relevant when the usual bureaucratic and professional means of addressing policy problems start to fail. It is very hard to even designate a policy problem as wicked without trying the standard solutions and seeing them fail. We are left, then, with non-standard, alternative policy and governance approaches – a very broad and poorly defined category. Head (2019) argues that the first scholars who adopted the wicked problem concept often recommended the inclusion of multiple stakeholders in exploring the relevant issues, interests, value differences and policy responses. The main focus is on alternative policy and governance approaches, such as inclusive processes of argumentation among stakeholders involved, conflict resolution, adaptive and responsive policies and boundary spanning across time scales, jurisdictional levels and policy domains. Over time, different governance approaches have been put forward as ways to tackle wicked problems, e.g. network governance (Van Bueren, Klijn, & Koppenjan, 2003), collaborative governance (Roberts, 2000), adaptive governance (Gunderson & Light, 2006) or interactive governance (Torfing, Peters, Pierre, & Sorensen, 2012). The pitfall here is to assume that any of these alternative approaches are sufficient to comprehensively tackle wicked problems or to assume that wicked problems can now be solved – an impossibility according to Rittel and Webber (1973). As a critique of these assumptions, scholars inspired by cultural theory have argued that approaches relying on a singular rationality are unlikely to be effective. Rather, clumsy solutions (Hartmann, 2012) and messy institutions (Ney & Verweij, 2015), based on polyrationality, are needed. Others have made similar arguments, claiming that a combination or alternation of different governance capabilities (reflexivity, responsiveness, resilience, revitalization and rescaling) is required to tackle wicked problems, instead of sticking to one and the same approach (Termeer, Dewulf, Breeman, & Stiller, 2015; Termeer, Dewulf, Karlsson-Vinkhuyzen, Vink, & Vliet, 2016).

Noordegraaf et al. (2019) add to this debate by criticizing the ease with which scholars relate wicked problems to ideas of networks, trust and learning. They argue that if wickedness is really taken seriously, it involves ‘emotion, secrecy, divisions, competition, resistance and distrust, all of which inhibit learning and trust’ (Noordegraaf et al., 2019). When the promise of trust and learning fails to materialize because of anxieties or competitive relations, the parties involved do not get closer to a solution but rather further removed from effectively dealing with wickedness.

Linked to the ‘clumsy solutions’ discussions to address wicked problems, Bannink and Trommel (2019) emphasize the inevitability of imperfect responses. Bureaucratic, professional or managerial responses are not fit for purpose when dealing with wicked problems and lead to solutions that appear perfect but are unintelligent because they implicitly assume the problem not to be wicked. Bannink and Trommel (2019) propose four intelligent modes of non-perfect responses: (1) living with problems, i.e. moderating interventionist ambitions as part of a ‘sociology of moderation’; (2) decomposition and improvisation, i.e. making the world a little less gruesome by learning from mistakes in small-scale experiments; (3) sociological imagination, i.e. rethinking policy problems in social terms; and (4) frame reflection, i.e. reframing conflicting beliefs such that the issues at stake become less intractable. Two contrasting ideas underlie these responses that are expected to bring more intelligence to the imperfection of contemporary policy intervention: modest acceptance on the one hand and radical questioning on the other hand.

Termeer and Dewulf (2019) argue that their small wins framework can be used as intervention perspective for dealing with wicked problems. Small wins are concrete, small-scale, in-depth and positive changes which can lead to transformative change when they accumulate. Noticing small wins in the chaotic, confusing and conflictive circumstances characteristic for wicked problems is an intervention in itself. An important step is to identify whether the right propelling mechanisms are activated for small wins to accumulate. Five mechanisms are identified by the authors, which not only propel initial and transformative change in many instances but also affect how small wins impact one another so as to accelerate the accumulation of small wins: energizing, learning by doing, logic of attraction, bandwagon effect, coupling and robustness. The final step is organizing that results feed back into the policy process, through telling the involved actors and the world how important the emerging small wins are, making them more salient through inspiring stories and encouraging actors to seriously reflect on their achievements and use the insights to overcome barriers to initiating or upscaling new small wins.

Building on their reframing of wickedness into levels of problematicity, Turnbull and Hoppe (2019) also provide alternative strategies to deal with policy problems. Problem structuring is proposed as a key activity of both scientists and policymakers, by which they make problems amenable for action. This leads to good problem definitions when they fit feasible solutions, are amenable to (inter-)organizational action and are seen as realistic opportunities to improve. Turnbull and Hoppe (2019) propose 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 a serial strategic analysis. Good governance then 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’ (Turnbull & Hoppe, 2019, p. 13). This requires policy actors to be frame reflective in their attempt to structure unstructured policy problems, with a view to reaching productive agreements on doable policy proposals.

Most of the contributions to this special issue concur that the nature of the policy problem and its associated wickedness or problematicity matter a great deal for how it can or ought to be tackled. Noordegraaf et al. (2019) warn against relying on trust and learning as magic solutions for wicked problems – trust and learning are needed in wicked problem situations for the same reason that we can't have them. Perfect solutions do not exist, only clumsy solutions, or intelligently imperfect ones, as Bannink and Trommel (2019) argue. A recurring argument (Bannink & Trommel, 2019; Noordegraaf et al., 2019; Turnbull & Hoppe, 2019; Termeer & Dewulf, 2019) is that partial solutions to wicked problems are the only feasible way forward. This goes against the moral principle proposed by Churchman (1967, p. B-141) that 'whoever attempts to tame a part of a wicked problem, but not the whole, is morally wrong'. It is close to the second-best option he puts forward: being honest about not addressing the entire problem and recognizing that 'the beast is still as wicked as ever' Churchman (1967, p. B-141), albeit with an important difference. Finding feasible partial solutions meant making a rationalized abstraction in Churchman's days, while the authors in this special issue propose feasible partial solutions that account for wickedness of the problem, in the form of imperfect solutions, small wins or doable policy proposals.

4. Contribution to public policy theories

An important question that has been raised by authors in this special issue is what the concept of wicked problems adds to the classic theories and conceptualizations that exist in the policy studies, many of which found their origin well before the wicked problems debate. Key concepts and theories include those related to the stages of the policy process; agenda setting, policy design, decision-making, implementation and evaluation. And what about key theories that analyse the challenges that wicked problems create for public policy, such as administrative coordination and policy integration, or performance-based public management?

Here too, we find a broad spectrum of ideas in the special issue. According to Head (2019), 'there are strong arguments for developing a second generation approach which would "mainstream" the analysis of wicked problems in public policy . . . while continuing to recognize the centrality of conflict, complexity and uncertainty, and the need for creative thinking, a broader approach would make better use of recent public policy literatures on such topics as problem framing, policy design, policy capacity, and the contexts of policy implementation' (p. 1). Indeed, complexity of both the nature of the problem as well as the complexity of the sociopolitical context in which these are governed has pushed public policy theories to reconsider the rational and linear assumptions that were dominant around the time Rittel and Webber proposed their framework. Such shifts have been clearly observable, including focus on deliberative and interactive forms of governance, acknowledging complex policy designs and instrument mixes (Howlett, 2019), understanding processes and mechanisms of change (Capano & Howlett, 2019), and more nuanced forms of policy evaluation (McConnell, 2010). Not seldomly are these the result of bringing in new theories and analytical perspectives from closely related fields of study. Although public policy has clearly evolved since the concept of wicked problems was introduced, the influence of wicked problems is limited, at best.

Turnbull and Hoppe (2019) take a strong position by arguing that the policy sciences already had better conceptualizations of public problems before Rittel and Webber's formulation and propose to return to the policy science vocabulary that allows for a more meaningful analysis of why societal problem-solving is inherently challenging. They bring in classic public policy concepts such as politics and experimentation to provide an alternative framework to understand public policy problems.

Other articles in the special issue have taken the concept of wicked problems as point of departure and use public policy theories. Christensen, Læg Reid and Læg Reid (2019) argue that the response of many governments to deal with wicked problems has increased horizontal (and vertical) fragmentation across departments and organizations, therefore requiring coordination to increase problem-solving capacity and effectively tackle wicked problems. To explain how and why coordination challenges emerge, they revert to classic public administration theories on the cultural and structure of bureaucracies. Similarly, Kirschke et al. (2019) use the concept of policy delivery to analyse if different types of water policy problems have an impact on policy delivery. Noordegraaf et al. (2019) bring in literatures from street level bureaucracy and coping strategies to analyse how people in their daily practices deal with wickedness. This agency perspective emphasizes how people within situated wickedness cannot find meta-positions overlooking or unifying perspectives but merely can give attention to actions and solutions they feel appropriate.

Finally, Termeer and Dewulf reflect on how wicked policy problems can be evaluated and whether this challenges the existing policy evaluation theories. They argue that evaluation of wicked problems inevitably involves a paradox of trying to judge solutions for problems that have 'no solutions' and for which 'additional efforts might increase the chances of finding a better solution' (Rittel & Webber, 1973, p. 162). When Rittel and Webber criticized current planning systems as inappropriate for dealing with wicked problems, evaluation was an inherent part of those criticized systems. The authors propose a small wins framework to contribute to evaluating progress in wicked problem areas in a way that energizes a variety of stakeholders instead of paralysing them and embraces complexity instead of reverting to taming and overestimation. In doing so, it provides a new perspective on Rittel and Webber's argument that 'one should not try to cure symptoms: and therefore one should try to settle the problem on as high a level as possible' (Rittel & Webber, 1973, p. 164).

The articles in this special issue argue that certain types of societal problems exist that are particularly thorny for governments to address but generally revert to classical policy studies theories to substantiate their arguments. Some have argued that the notion of wicked problems results in revision of existing theories (e.g. Termeer & Dewulf, 2019, on policy evaluation), but the majority of articles uses the concept as starting point for a particular type of problem for their analysis. The contributions from this special issue therefore seem to suggest that the concept of wicked problems has had a limited direct impact on policy theories. Well before Rittel and Webber's work did policy studies acknowledge the challenges certain type of policy problems pose to policy and decision makers. But the revival of the concept in different strands of literature does seem to suggest that policy studies theories have not sufficiently addressed the challenges these wicked problems pose to policy and decision makers.

5. Value for practitioners

The concept of wicked problems was not intended to be merely an academic ontology, but to support policy and decision makers in understanding and designing meaningful governance interventions to deal with them. Both Noordergraaf et al (2019) and Termeer and Dewulf (2019) emphasize that wickedness theory suffers from a paradox. Framing problems as wicked, academically, politically or publicly, in and of itself, generates obstacles for addressing wicked issues. Problems become so grand and removed from daily practice that actors are inclined to retreat instead of addressing the problems. According to Turnbull and Hoppe (2019), ‘wicked’ is a 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 which itself has political aims’ (p. 19).

Termeer and Dewulf (2019) explicitly address the uneasiness of policymakers who face wicked problems. Paralysis occurs when people experience or define the wickedness as so overwhelming that it discourages them and prevents them from doing anything about it. Roberts (2000, p. 2), for example, calls wicked problems therefore as ‘frustrating as hell’ and Roe (2016, p. 352) associates them with the ‘darkening sky of ... suboptimization ... second-best solutions ... and that deep wellspring of miserablism...’. Overestimation is the opposite response. Overestimation is the belief that wicked problems can be solved altogether through taming them, implying a focus on one aspect or a single standpoint (Roe, 2016, p. 360). This response is tempting for policymakers, who tend to make promises that are far beyond their ability to deliver, while dealing with high public demands or political pressure. Churchman (1967) qualified the overestimation response as morally wrong: the taming could ‘generate an aura of good feeling’ but finally it deceives citizen and undermines attempts to ‘enter into a deep, mutual understanding of the untamed aspects of the problem’ (p. B-142). A similar moral argument could be made for paralysis (Van Bueren et al, 2014). Despite a discouraging portrayal, wicked problems are part of our modern live and we ‘cannot throw up our hands’ but have to find ways ‘to end paralysis around important issues’ (Innes & Booher, 2016, p. 8). Also Noordergraaf et al. (2019) emphasize the need for modesty. No matter how hard people try and however important and fruitful local experiments might become, these can only be partial solutions to wicked problems like terrorism and forced migration. They cannot solve the fundamental geopolitical conflicts which cause wicked problems, but they can help tackling their local consequences.

6. Next steps

Papers in the special issue reflect on the several ontological, theoretical and methodological issues that emerge when adopting a wicked problems perspective. The authors of these papers agree that the concept of wicked problems can be considered generative, because it has inspired research in many research fields, but at the same time it has created confusion, because it lacks analytical precision and has been used in very different ways. Leaving aside references to the concept that entail little more than namedropping a buzzword to attract attention, the concept of wicked problems has important rhetorical effects in research and practice. We have discussed how framing

something as a wicked problem in policy practice can justify retreat and neglect but can also be an antidote against oversimplification and unrealistic assumptions about policy interventions. In scientific practice, its rhetorical uses include critiquing other concepts or studies for not addressing major uncertainty, system complexity or political conflict, for proposing magic solutions or panaceas for societal problems, or, in interdisciplinary research, for overlooking the social side of technologies or natural processes.

Where to go from here? We discern three possible and sensible ways forward. A first option is to reject the concept, as proposed by Turnbull and Hoppe (2019), and rely on other existing concepts (such as problem structuring, problem framing) and new concepts (such as problematicity) to guide the study of the nature of policy problems and the implications for policy design and implementation.

A second option is to reconsider the attempts at pinning down the ultimate defining criteria of wicked problems. Wicked problems tend to resist clear definition and demarcation in practise and perhaps in an academic sense as well. Does this mean that the concept is unusable as a scientific perspective? Perhaps the value of the wicked problem concept does not lie primarily in establishing strict analytic boundaries between wicked and non-wicked problems, but in functioning as a warning sign, instigating reflection on the nature of the problems we are facing, particularly when standard approaches seem to fail. Similar to reading Rittel and Webber (1973) as a set of arguments against rational planning, the wicked problems literature provides a renewed set of arguments to critically assess assumptions of policy and governance theories and approaches that are currently *en vogue*. Why do new public management approaches work fine in some cases and fail badly in other cases? Why do network governance, collaborative governance or deliberative governance networks run into unsurmountable problems in some circumstances and not in others? The wicked problem concept seems to be useful when policy analysts and policymakers try to make sense of why a particular approach does not deliver the expected results. Questioning the underlying assumptions of these approaches about the nature of the problem, by building on the wicked problems literature, is likely to prove insightful.

A third option is to develop and use the wicked problem concept in a more analytically precise way. Considering the critiques at the long list of criteria of Rittel and Webber (1973), and building on Head (2019) and Kirschke et al. (2019), the dimensions of conflict, complexity and uncertainty look like promising candidates for specifying wickedness. This would be compatible with the special issue papers by Bannink and Trommel (2019) and Termeer and Dewulf (2019), and perhaps not entirely incompatible with Turnbull and Hoppe (2019) when political distance is related more closely to the conflict dimension of wicked problems. This third option would also allow for sharpening the explanatory capacity of wicked problem theorizing, by drawing more deeply on contemporary developments in the policy sciences, which include 'a strong focus on considering problems from several perspectives, designing instruments or programs that accommodate complexity and ambiguity, accounting for crises and surprises, improving policy and evaluation capabilities and strengthening the collaborative capacities of the policy system' (Head, 2019, p. 13). As noted by Kirschke et al. (2019), the quest for better understanding empirically different types of problems and how they can be solved through governance interventions is at the core of policy studies. Upscaling and comparing

how certain types of problems are governed (in)effectively and whether there are similarities across problem types and policy systems continues to be of critical importance.

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No potential conflict of interest was reported by the authors.

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