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*Wicked problems in public policy - from theory to practice*

**Title of the paper**

*Unpacking the implications of labelling environmental issues as  
'wicked problems'*

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# Unpacking the implications of labelling environmental issues as 'wicked problems'

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## ***Abstract:***

Policy issues are frequently characterised as wicked problems. Conceptually, such a view is informed by Rittel and Webber's seminal work from 1973 'Dilemmas in a general theory of planning' which distinguished between 'tame' and 'wicked' policy problems. Wicked problems defy definition and definitive solution. However, the implications of labelling policy problems as wicked are often overlooked. This paper explores conceptual and practical implications associated with the concept and its application, with a particular focus on environmental policy discourse. It is argued that exploring how, when and why environmental issues come to be viewed as wicked, and with what effect, provides richer insights into the dynamics of policy making than does labelling environmental issues as 'wicked problems'.

**Keywords:** wicked problems, problem representation, interpretive policy analysis, environmental policy

## ***Introduction***

Policy issues are frequently perceived as having characteristics which make them difficult to address. For example, Professor Ross Garnaut (one of Australia's highest profile economists) characterised climate change as a 'wicked problem' (2008a): one that is 'harder [to deal with] than any other issue of high importance that has come before our polity in living memory' (2008b: xviii). Similarly, Davidson and Malano (2011) characterise the development of a plan for the Murray Darling Basin dealing with a as a wicked problem. Such framings are consistent with Rittel and Webber's (1973) view that some policy problems are 'wicked' and others 'tame'. With over 9,000 citations<sup>1</sup> Rittel and Webber's 1973 article 'Dilemmas in a general theory of planning' has had a significant influence on how policy issues are understood. Informed by interpretive policy analysis, with its focus on meaning (Yanow 2000), problem representation (Bacchi 2009) and problem puzzling (Hoppe 2011), this paper assesses the concept of wicked problems and its use, with a particular focus on environmental policy. The second section briefly introduces the concept and the context within which it was developed. The third section surveys how the concept is used in policy settings, as illustrated by recent Australian policy literature relevant to environmental issues. Informed by an interpretive perspective to policy analysis, the fourth section assesses some major conceptual and practical implications associated with the concept of wicked problems and its use. I argue that exploring how, when and why environmental issues come to be viewed as wicked, and with what effect, provides richer insights into the dynamics of policy making than does labelling environmental issues as 'wicked problems'.

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<sup>1</sup> Over 10,000 citations on Google Scholar as of 09/06/2017

<sup>2</sup> Rittel and Webber's 1973 paper is a modified version of a paper presented to a Panel on Policy Sciences as part of the American Association for the Advance of Science Conference (held in Boston in December 1969). Rittel had also been using the phrase at least since 1967 (Churchman 1967).

## ***Rittel and Webber's explanation of wicked problems***

Rittel and Webber (1973)<sup>2</sup> provide a powerful critique of rational, technocratic approaches to policy research and analysis. For them, 'the search for scientific bases for confronting problems of social policy is bound to fail, because of the nature of these problems' (1973: 155):

The kinds of problems that planners deal with – societal problems – are inherently different from the problems that scientists and perhaps some classes of engineers deal with. Planning problems are inherently wicked (1973: 160); and

As distinguished from problems in the natural science, which are definable and separable and may have solutions that are findable, the problems of governmental planning – and especially those of social or policy planning – are ill-defined; and they rely upon elusive political judgement for resolution (1973: 160).

In using the term 'wicked' Rittel and Webber emphasize that its meaning is 'akin to that of "malignant" (in contrast to "benign") or "vicious" (like a circle) or "tricky" (like a leprechaun) or "aggressive" (like a lion, in contrast to the docility of a lamb)' (1973: 160). Further, Rittel and Webber (1973: 161-166) propose 10 properties which distinguish 'wicked' from 'tame' problems:

1. There is no definitive formulation of a wicked problem;
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 and no ultimate test of a solution to a wicked problem;
5. Every solution to a wicked problem is a 'one-shot operation': because there is no opportunity to learn by trial-and-error, every attempt counts significantly;

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6. Wicked problems do not have an enumerable (or exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan;
7. Every wicked problem is essentially unique;
8. Every wicked problem can be considered to be a symptom of another problem;
9. The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution; and
10. The planner has no right to be wrong.

Brian Head (2008: 101) suggests Rittel and Webber provided 'the most challenging and wide-ranging critique of orthodox planning rationality [...] evident at the time'. In addition, I consider Rittel and Webber's characterisation of wicked problems encompasses some elements of what is now known as interpretive policy analysis (Bacchi 2009; Yanow 2000). Reasons for viewing Rittel and Webber's contribution in this way include that it highlights the failure of positivist social science and planning to solve pressing social problems, considers that social sciences are qualitatively different to the biophysical sciences, makes connections between problem definition and problem solution, and positions researchers as part of the politics rather than as objective observers.

### ***Wicked problems in environment oriented policy discourse***

The concept of wicked problems is frequently invoked within mainstream policy discourse in Australia, as is illustrated in Table 1. which summarises areas of policy viewed as having wicked problems. Mainstream public policy texts discuss wicked problems in ways that emphasize the difficulties of dealing with such problems. For example, *The Australian policy handbook* (Althaus et al. 2013: 54-55) explains 'wicked problems are those dilemmas that either cannot be defined or, at

best, are not open to easy formulation’. Similarly, Haigh (2012: 71) explains that ‘the term wicked was set in opposition to notions of tame problems. Wicked problems on the other hand are complex’. Wicked problems have also come to the attention of the Australian Public Service Commission (APSC), which considers that ‘the Australian public sector is increasingly being tasked with solving very complex policy problems’ which are so complex that they have been called ‘wicked’ (APSC 2007: xviii).

*Table 1. What problems are wicked*

Economic	Social	Environmental
Economic policy Putting ‘man’ on the moon Regional development	Social policy Obesity Indigenous disadvantage Child protection services Self-harming behaviours Sport Urban violence Social development in post-conflict societies Peace settlements in divided societies	Land degradation Sustainable use of natural resources and ecological assets Urban transport Management of Persistent Organic Pollutants Biodiversity loss Climate change

Note: compiled from: Althaus et al. 2013; APSC 2007; Brown et al. 2010; Christie and Rose 2009; Head 2008; Head 2014; Sam 2009.

Environmental issues are commonly characterised as wicked problems (Brown et al. 2010; Harding et al. 2009; Head 2014; Jones 2010; Patterson et al. 2013). For example, Harding et al. (2009: 21) argue that:

Addressing sustainability problems is fraught with difficulty. They display a number of characteristics of wicked problems ... Wicked problems involve complex interconnected systems linked by social processes, with little certainty as to where problems begin and end, leading to difficulty in knowing where and how constructive interventions should be made and where problem boundaries lie.

Further, Brown et al. (2010) view a wicked problem as:

... a complex issue that defies complete definition, for which there can be no final solution, since any resolution generates further issues, and where solutions are not true or false, or good or bad, but the best that can be done at the time. Such problems are not morally wicked, but diabolical in that they resist all the usual attempts to resolve them (Brown et al. 2010: 4).

They argue that transdisciplinarity, which they take to be 'the collective understanding of an issue, [which] is created by including the personal, the local and the strategic, as well as specialised contributions to knowledge' (2010: 4), is a useful way to deal with wicked problems.

Particular environmental issues that are considered to be wicked include climate change (Head 2014), renewable energy (Jones 2010) and non-point source water pollution (Patterson et al. 2013), with Stocker et al. (2012: 44) suggesting that addressing wicked problems requires:

- Accommodating multiple alternative perspectives rather than prescribe single solutions;
- Functioning through group interaction and iteration rather than back office calculations;
- Generating ownership of the problem formulation through stakeholder participation and transparency;
- Facilitating a graphical (visual) representation of the problem space for the systematic group exploration of a solution space;
- Focussing on the relationships between discrete alternatives rather than continuous variables;
- and
- Concentrating on possibility rather than probability'.

These examples illustrate that the complexity and uncertainty of environmental issues is often emphasized in environmental policy discourse. To me, what can follow from such an emphasis is that environmental issues are viewed as being particularly difficult to deal with, that more research is needed, and that collaboration is necessary, desirable and possible.

## ***Unpacking the conceptual and practical implications of ‘wicked problems’***

I now discuss various conceptual and practical implications associated with the concept and its use.

### ***A blunt concept***

Rittel and Webber’s contrasting of ‘wicked’ and ‘tame’ problems, means there are only two types of problems: wicked and tame. This is a constrained view of the ways in which policy problems can be conceived: in effect, climate change, indigenous disadvantage, local government area leadership, abortion and sport all represent the same type of challenge for policy makers. Head (2008) provides a useful modification to Rittel and Webber’s ‘tame/wicked’ view of problems by characterising problems in terms of low, moderate, and high levels of complexity, uncertainty, and divergence. This provides a finer grained reading of policy problems and gives greater insight into the kinds of interventions that might be useful in particular circumstances. Clearly, for Head, there are different dimensions and degrees of wickedness. Similarly, Head and Alford (2015: 716) argue that ‘it is useful to identify a spectrum of problem types’ in order to highlight the differential features and intensities of different problems’.

The literature on problem structuring offers similar insights through emphasizing four types of policy problem: structured; unstructured; moderately structured (goals); and moderately structured (means) (Hisschemoller and Hoppe 1996; Hoppe 2011). First, structured problems are, like Rittel and Webber’s ‘tame’ problems, those where there is ‘unanimity or near consensus on the normative issues at stake’ and considerable certainty about ‘the validity and applicability of claims to relevant knowledge (Hoppe 2011: 72). Second, unstructured problems are like wicked problems. Third, moderately structured problems (ends) are those where there may be ‘a great deal of agreement on the norms, principles, ends, and goals of defining a desirable future state, but simultaneously considerable levels of uncertainty about the reliability of knowledge claims



about how to bring it about' (Hoppe 2011: 74). Fourth, moderately structured problems (means) are those with high levels of agreement on the relevant and required knowledge, but ongoing dissent over the normative claims at stake (Hoppe 2011: 74). Relatedly, Auld et al. (2007: 3) identify 'super wicked problems' which they see as having three additional features which distinguish them from wicked problems, namely: urgency (time is running out); the lack of an adequate central authority to address the issue; and those seeking to end the problem are also causing it.

Collectively, these contributions provide for a finer grained understanding of the nature of policy problems than does Rittel and Webber's either/ or framing of 'tame' and 'wicked' problems: they do not rely on characterising policy issues using a dichotomous categorical variable (Kumar 2014). However, despite these refinements there remains a tendency to assume that policy issues can be objectively categorised.

#### Political dimensions

Rittel and Webber emphasized the political dimensions of wicked problems. However, the politics of wicked problems is frequently a blind spot in environmental research drawing on the concept. Wesselink and Hoppe's (2011) analysis of post-normal science (PNS), provides useful insights into the politics of wicked problems, as PNS can be viewed as a way to address wicked problems. For Wesselink and Hoppe (2011: 391-392) PNS is a 'new way of doing science' in which those with a stake in issues 'participate in peer review', often via deliberative processes to deal with questions about values and uncertainties. This is inherently political, favouring deliberative over representative decision making. As a consequence it redefines problems in ways that are favourable to some interests over others. Conceptually, Wesselink and Hoppe consider that advocates of PNS are involved in problem structuring, such that any effort to redefine a problem 'challenges accepted problem solving strategies and thereby the division of labour in the policy network in question' (2011: 400). I argue that the same logic applies with efforts to label issues as

wicked: it can serve to create a seat at the table for particular types of expertise – those with scientific skills for dealing with complexity, uncertainty, and deliberation. Wesselink and Hoppe's (2011) analysis illustrate how political issues can be rendered 'technical' (Rose 1999). Put simply, in bringing various forms of technical expertise to bear on issues, the political dimensions of the issue are obscured or marginalised. This is particularly evident in the way in which Brown et al. (2010) embrace the concept of wicked problems, as the politics of environmental issues are backgrounded through the embrace of a transdisciplinary imagination, which assumes that consensus based collaboration is possible.

#### How stakeholders respond to issues being characterised as 'wicked'

How people respond to an issue being labelled as 'wicked' also attracts limited consideration. The implications of this blind spot are illustrated by cultural grid-group theory (Hoppe 2011; Thompson 1997; Thompson et al. 1990) and social functional psychology (Tetlock 2002). Not only do people view the world in different ways, but they may respond in different ways to the same stimulus. Under cultural grid-group theory, there are four different cultural dispositions that people may hold - fatalists, hierarchists, individualists, and egalitarians (Thompson 1997) – with the consequence being that, the more effort to persuade a particular stakeholder that a problem is wicked, the less likely that stakeholder will be to agree, because of the different cultural orientations that different people hold: some may seek to develop a collective response, while others may adopt an individualistic response. Relatedly, social functional psychology highlights that people differ in how they respond to the same challenge. Tetlock identifies five frameworks which inform how people assess information, which Alexander et al. (2012: 414-416) define as:

- *Intuitive scientists* are driven by epistemic goals and the need to discover causal relationships in the pursuit of truth;

- *Intuitive economists* are driven by goals of maximising the benefits of resource use for themselves and/or the community, and hold a utilitarian ethic, where rational human decision making is conceived as the result of comparing costs and benefits;
- *Intuitive politicians* describe individuals who are attempting to cope with accountability demands from key constituencies in their lives, and need to establish, or preserve, a desired social identity and possess a reasonably reliable mental compass for navigating the self through role-rule structures;
- *Intuitive prosecutors* seek to enforce social norms, by directing accountability demands on those tempted to derive the benefits of collective interdependence without contributing their fair share or without respecting the role-rule regime; and
- *Intuitive theologians* try to protect sacred values from secular encroachments, and have a need to believe that the prevailing accountability and social control regime is not arbitrary, but rather flows naturally from an authority that transcends accidents of history or whims of dominant groups.

Clearly, not all people think alike, and neither do they respond to particular problem definitions as others would like them to.

*Wicked problems as the 'norm' rather than the 'exception'*

Wexler (2009: 532) suggests that 'the kinds of problems faced by policy analysts, public administrators and socially minded planners are now less tame [and] more wicked and intractable'. The APSC shares this view in stating 'The public service is increasingly being tasked with solving very complex policy problems' (2007: xviii). In this context of an increasing prevalence of wicked problems (or at least an increased propensity to characterise issues as wicked), Coyne argues 'wickedness is the norm. It is the tame formulations of professional analysis that stand out as a deviation' (2005: 12). This means some issues are defined in ways that make them appear as tame, because particular aspects of them have been partitioned off (Wexler 2009; Xiang 2013). For

example, the challenges associated with building a bridge can take on a very different complexion, depending upon whether political issues are partitioned off, or included within the problem definition. The construction of a bridge to Hindmarsh Island in South Australia aptly demonstrates this point: for proponents the challenges were essentially technical - how to build a safe and cost effective bridge - whereas for some indigenous communities the issue was about respect for cultural value. These critiques suggest that many, if not all, policy issues are 'wicked', which if this is the case, raises the question as to whether there is any merit in labelling them as wicked. This point is well made by Harris (2012) who argues that:

Being clearer about the dimensions and characteristics of a particular policy problem or question can surely help in identifying effective responses. It can also help researchers to understand how their work can inform the policy process. But why does everyone insist on bundling up these characteristics and labelling them 'wicked'?

Instead, for Harris (2012) it is important to re-engage with the politics of issues: 'it's the way we get things done in pluralist world'.

### *The politics of labelling*

Interpretive policy analysis offers insight into the politics of wicked problems by highlighting the implications of the way in which we think, write, and talk about policy issues (Bacchi 2009; Fairclough 1992; Yanow 2000). This is clear in Bacchi's comment that:

It makes no sense to consider the 'objects' or targets of policy as existing independently of the way in which they are spoken about or represented either in political debate or policy proposals. Any description of an issue or a 'problem' is an interpretation, and interpretations involve judgment and choices (1999: 1).

Interpretive policy analysis is therefore useful because it focuses attention on the ways in which the label 'wicked' is used in policy discourse. Given a word's meaning is determined by the context within which it is used, the term 'wicked' therefore means different things in different situations.

This is playfully illustrated in Haigh's comment that 'Wicked refers to the 'untamed' capacity of an issue; wicked could also mean evil and, from my memory in the 1990s in parts of Australia 'wicked' for many young people meant 'great' or 'fun'' (2012: 66). There is also need to consider what issues come to be viewed as wicked. For example, Bacchi (1999) questions how abortion comes to be categorised as a moral issue, whereas other issues are not. Clearly, what circumstances come to be represented as wicked problems, and which do not, is political. Arguably, notwithstanding the list provided in Table 1., 'social' and 'environmental' issues are more likely to viewed as wicked than are 'economic' issues, and if so, the reasons for this need to be investigated.

## ***Conclusion***

Rittel and Webber's concept of 'wicked problems' is widely accepted as providing a powerful critique of technocratic planning. Beyond this, I have demonstrated that it has elements of what is now known as interpretive policy analysis. This is because it illustrates the limitations of positivist social science and planning and considers the social sciences as qualitatively different to the biophysical sciences. In addition, it makes connections between the ways problems are defined what might be done about them, and positions researchers as part of the politics, rather than as objective observers.

I also have also demonstrated how Rittel and Webber's concept, and the way it has been embraced in subsequent environmental policy discourse, provides limited insights into the political dimensions of policy making, for a number of reasons. In particular it is demonstrated to be analytically blunt (problems are either wicked or tame), and is often applied in ways which mask the politics of policy. Within this context, it is useful to reflect on Garnaut's (2008a; 2008b) characterisation of climate change. Viewing climate change as a wicked policy issue may inadvertently serve to make taking action appear more difficult than need be, because it

emphasises the complexity, uncertainty, and divergence of views associated with the issue.

Further, the inherent politics may be masked through issues being rendered as technical, and hence only accessible to experts. The point is that using terms such as 'wicked' to characterise climate change may inadvertently invoke the responses it opposes. In relation to climate change this means the frame invoked may be one of complexity, uncertainty and divergence, whereas effective action is what is being sought. Lakoff (2010) discusses this in relation to how frames inform policy debate: negating a frame, such as saying 'this is not a government take over' may actually invoke the frame of 'this is a government take-over'.

More broadly, while the concept may have some value as a 'sensitising concept' in that it offers a short-hand characterisation of environmental (and other policy) issues in some circumstances it is better to acknowledge some issues as wicked than to treat them all as tame, it is more important that researchers and practitioners focus on the specific dimensions and characteristics of issues that are being debated. This will provide insight into how some issues come to be viewed as 'wicked', what this wickedness entails, and what effects this may have. Doing so will provide a better understanding of the dynamics of policy and planning, which arguably is what Rittel and Webber were seeking, and what is needed.

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