

Commentary

On Decision-Analytical Support for Wicked Policy Issues

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Lempert and Turner contribute importantly to the design of decision-analytical tools for wicked policy issues by acknowledging the centrality of socially determined and often irreconcilable worldviews. Their point of departure is application of the DMDU approach (decision making under deep uncertainty) *separately* for each contending worldview as postulated by cultural theory. This allows stakeholders to maintain solidarity with their social or organizational value communities, an important consideration or even prerequisite for robust policy compromises. Drawing from a codesign process in Italy, this commentary suggests that the Lempert and Turner multiworldview approach can be useful for aiding stakeholder deliberation by representing alternative problem framings or worldviews, displaying the implications of acting on one framing when viewed from the others, and identifying compromise solutions robust across the framings. The challenge is to operationalize the Lempert and Turner approach, a challenge well worth pursuing given the increasingly intractable and “wicked” nature of today’s policy issues.

1. INTRODUCTION

Lempert and Turner (2021) address a serious gap in the multicriteria decision science literature and practice, that of dealing with “wicked” problems characterized not only by “deep uncertainty” but also by “deep conflict.” As politicians know well, in highly contested issue arenas, policy making is a constant discursive struggle over the boundaries and conceptual framing of the problem and the values and beliefs that guide shared understandings. In contrast to only lightly contested issues, stakeholders in “wicked” policy settings can hold strongly conflicting definitions of what both the problem and the solution are, and importantly *these are not likely to converge as the deliberative process proceeds*. True, many researchers suggest that participants in stakeholder-

engagement processes may change their preferences and reach convergence in the course of the deliberations, but the preference change typically reverses when participants return to their institutional and social contexts. The reason is that individual preferences (values and beliefs) are far from being innate, but are deeply rooted in social and institutional interactions (Elster, 1985, 6). Fans of Kenneth Grahame’s *The Wind in the Willows* will recall how the overbearing Toad, when reproached by his fellow creatures of the riverbank for defaulting on his promise to change his ways—made when they had all been gathered in Toad Hall—replied “O, yes, yes, *in there*” (Grahame, 1908, p. 76, quoted in Scolobig, Thompson, & Linnerooth-Bayer, 2016).

Out there, policy actors are not typically stand-alone (like Toad), but rather they stand in solidarity with their institutional, political, and social networks, or what researchers have variously recognized as discourse communities (Dryzek, 1990; Hajer, 1993), advocacy coalitions (Jenkins-Smith and Sabatier 1993; Majone, 1989), policy networks (Ney 2009; Thompson, Rayner, & Ney, 1998), social solidarities (Douglas, 1970; Thompson, 2018), and now ecochambers

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(Nguyen 2018), each of which can be (and often is) grounded in shared interests and worldviews. As we witness in our increasingly polarized societies, people do not readily abandon their (sometimes diverse) worldview communities. When policy making becomes a worldview battle, the experience and assumptions behind deliberative stakeholder processes, notably that "...the problem formulations, understanding of system functioning, and the set of promising solutions emerge gradually through interactions among the involved parties" (p. 3), become problematic as do the decision-analytical tools that support them. It is becoming clear that highly contested, wicked policy problems (e.g., health care or climate change) cannot be solved by eliciting decision objectives or criteria, consensually weighting them, and finding Pareto solutions. The consequentialist rationality underlying multicriteria analysis needs a "rethink" for wicked policy issues.

Lempert and Turner's analysis contributes prominently to this rethink by acknowledging the centrality of worldviews as a defining characteristic of stakeholder deliberations in wicked policy settings: "*multiple worldviews as a fundamental attribute of the problem formulation itself*" (p. 4). Their point of departure is the application of the DMDU approach (decision making under deep uncertainty), which has been developed for settings characterized by multiple objectives, rival problem frames, and deep uncertainty, *separately* for each contending worldview. This is far from an incremental or marginal advancement. To the contrary, allowing policy actors or stakeholders to maintain solidarity with their allies (even outside of the deliberative process) and showing respect for heterogeneous values and beliefs have (in our experience) set the stage for robust policy compromises (clumsy solutions), or compromises that are lasting in that they do not require "consensus" on underlying values or beliefs (Thompson, 2018). Any abandonment of stakeholder worldviews *in there* can almost certainly lead to disavowal of the deliberative outcomes *out there*.

Still, questions remain about how to operationalize a worldview-based deliberative process, and particularly how it can be guided by quantitative decision analytical tools such as the methods and simulation model used in the Lempert–Turner study. It is worth noting that "operationalization" was not the intent of the authors, although they do provide links of their stylized analysis to real-world stake-

holder settings. In what follows, I elaborate on these links based on my collaborative experience in designing and carrying out worldview-based stakeholder processes in highly contested policy terrains.

As the authors themselves recognize, the starting point is understanding the interests and worldviews of stakeholders, which will inevitably require mapping the full stakeholder landscape, and subsequently eliciting (e.g., with focus groups, interviews, or surveys) the range of stakeholder views on "what the problem is" and "how to solve it." Drawing from experience of a three-year deliberative process on a "wicked" problem of landslide risk mitigation in a small town in Italy (Linnerooth-Bayer, Scolobig, Ferlisi, & Cascini, 2016; Scolobig et al., 2016), opinions and views expressed in 43 interviews were clustered into competing narratives. Greatly simplifying, they were (i) over industrialization of the mountain is the problem that is best solved by a shift to nature-based interventions, that is, hiking trails, parks, and organic gardens, (ii) increased rainfall severity is the underlying problem requiring at least some "gray" technical interventions to assure safety of the residents, that is, concrete holding ponds and barriers, and (iii) limited economic resources are the main problem, and the solution lies in cost-benefit analysis that may lead to relocating the few homes in high-risk areas. The three narratives correspond loosely (recognizing hybrids) to the egalitarian, hierarchical, and individualistic cultural biases (and views of nature) promulgated by cultural theory, respectively. Those participating in the deliberative process were asked to locate themselves in one of the three narratives (stylized only for this discussion), after which each group revised the narrative to better fit the group values, beliefs, and preferences (this they took very seriously). Subsequently, each worldview group worked separately with technical experts to co-design their preferred strategy independently consistent with their worldview. As a final step, and here the Lempert and Turner methodology could have been quite helpful, the groups negotiated a compromise portfolio of risk reduction measures.

In this and other cases (e.g., Preuner et al., 2017), the plural rationalities set out by cultural theory proved useful in grouping the narratives and, importantly, understanding the contention among their adherents, and ultimately reaching "clumsy" compromise (Verweij et al. 2006). Although in Lempert and Turner's stylized Lake Model, the focus was on three of four worldviews—egalitarian, hierarchical,

and individualistic—it is worth noting that in practice there are a large number of hybrids. This does not mean that other groupings, for example, based on Stern's value-belief-norm theory (Stern, 2000), could not serve this purpose, although social and institutional context is a key consideration if we are to avoid the “Toad default.”

Once participants are selected and self-grouped by their worldview solidarities (this is by no means trivial, as the Italian case illustrates, since it will require extensive preparatory work), there are many deliberative procedures for coproducing policy options and reaching compromise solutions. To this end, deliberation is often viewed as reaching a common agreement on “facts” and thus filling gaps in the scientific knowledge. But if this knowledge is “constructed” to support competing explanatory frameworks or worldviews, it can be futile and counterproductive to try to close gaps especially if the science is uncertain (Schoen & Rein, 1994). Lempert and Turner note that facilitators will need to grapple with how distant to current scientific understanding a worldview-based argument must be before it is legitimately excluded from a multiple worldview analysis. In our experience, the most fundamental principle for deliberation is across-the-table respect for the competing frames and supporting arguments, of course, recognizing “red lines” in scientific interpretations. The idea is not to reach a common understanding of the problem and solution through rational argument (as advocated, e.g., by Habermas, 1996 and Dewulf et al., 2005), but to seek compromise recognizing (often) irrevocable differences in problem frames and worldviews. Plural voices—as identified by cultural theory - are necessary for clumsy, constructively engaged, and politically feasible policy making in wicked policy settings (Thompson, 2018; Verweij et al. 2006).

For this purpose, Lempert and Turner adopt a “cross-frame reflection” approach (Koppenjan & Klijn, 2004) by representing alternative problem framings, displaying the implications of acting on one framing when viewed from the others, and identifying actions robust across the framing. While there are many comparative metrics that can be useful for cross-frame reflection, the authors formulate a utopia–dystopia matrix, which answers the question of how each preferred worldview strategy (policy portfolio) would be evaluated if the world unfolded according to another worldview's beliefs. This fits with the soft systems approach of Churchman (1968), who recognized that a systems approach to

policy processes actively “folds in” as many factors as possible and looks at the issues from different viewpoints or, in his words, “worldviews”—“A systems approach begins when first you see the world through the eyes of another” (Churchman, 1968, p. 231).

The overarching value of Lempert and Turner's pioneering study is, in this author's view, its potential for motivating research and experience that genuinely advances worldview-based deliberation in wicked policy settings. Research can profitably build on the authors' demonstration of “methods and tools that may help resolve the tension between quantitative decision support and multiworldview approaches for addressing wicked problems” (p.1). For future research and applications, we have to ask whether the theoretical and methodological sophistication of the authors' tools and analysis might rather prove to be a barrier to inclusive participation? Indeed, decision support tools and models have a scattered record in aiding policy negotiations and stakeholder engagement (Bruggen van, Nikolic, & Kwakkel, 2019), but at the same time one can argue that they will be essential for enabling legitimated policies in an increasingly complex world. Recent experience with applications of DMDU, and also smart games, policy exercises, and other interactive and model-based tools, show that the gap between complicated analytics and stakeholder needs can be innovatively bridged (e.g., (Mochizuki, Magnewzewski, & Linnerooth-Bayer, 2018). As an exciting next step, I hope to see the Lempert-Turner decision support methodology, or variations, implemented with creative user interfaces and effectively demonstrated in wicked policy setting.

REFERENCES

- vanBruggen, A., Nikolic, I., & Kwakkel, J. (2019). Modeling with stakeholders for transformative change. *Sustainability*, *11*, 825.
- Churchman, C. W. (1968). *The systems approach*. New York: Dell Publishing.
- Dewulf, A., Gray, B., Putman, L., Aarts, N., Lewicki, R., & van Woerkum, C. (2005). Disentangling approaches to framing: Mapping the terrain. *Human Relations*, *62*, 155. <https://doi.org/10.2139/ssrn.728203>
- Douglas, M. (1970). *Natural symbols*. London, UK: Barrie and Rockcliff.
- Dryzek, J. (1990). *Discursive democracy: Politics, policy, and political science*. Cambridge, UK: Cambridge University Press. <https://doi.org/10.1017/9781139173810>
- Elster, J. (1985). *Making sense of Marx*. Cambridge: Cambridge University Press.
- Grahame, K. (1908). *The wind in the willows* (1975 edition). London, UK: Methuen Publishing.
- Habermas, J. (1996). [1992] *Between facts and norms: Contributions to a discourse theory of law and democracy*. Cambridge MA: MIT Press.

- Hajer, M. (1993). Discourse coalitions and the institutionalization of practice. In F. Fischer & J. Forester (Eds.), *The argumentative turn in policy analysis and planning* (pp. 43–76). Durham, NC: Duke University Press.
- Koppenjan, J. F. M., & Klijn, E. H. (2004). *Managing Uncertainties in networks. A network approach to problem solving and decision making*. London, UK: Routledge.
- Lempert, R. J., & Turner, S. (2021). Engaging multiple worldviews with quantitative decision support: A robust decision-making demonstration using the lake model. *Risk Analysis*. <https://doi.org/10.1111/risa.13579>
- Linnerooth-Bayer, J., Scolobig, A., Ferlisi, S., & Cascini, L. (2016). Expert engagement in participatory processes: Translating stakeholder discourses into policy options, *Natural Hazards*, 81, 69–88.
- Majone, G. (1989). *Evidence, argument, and persuasion in the policy process*. London, UK: Yale University Press.
- Mochizuki, J., Magnewzewski, P., & Linnerooth-Bayer, J. (2018). Games for aiding stakeholder deliberation on nexus policy issues. In S. Hulsmann & R. Ardakanian (Eds.), *Managing water, soil and waste resources to achieve sustainable development goals* (pp. 93–124). Cham, Switzerland: Springer Verlag. https://doi.org/10.1007/978-3-319-75163-4_5
- Ney, S. M. (2009). Globalization and Health Care Provision: A Systems Approach to Comparing Institutions of Health Care Provision. Paper presented at the Conference on Asian Social Protection in Comparative Perspective, Singapore.
- Nguyen, C. T. (2018). Cognitive islands and runaway echo chambers: problems for epistemic dependence on experts. *Synthese*, 1–19.
- Preuner, P., Scolobig, A., Linnerooth-Bayer, J., Ottowitz, D., Hoyer, S., & Jochum, B. (2017). A participatory process to develop a landslide warning system: Paradoxes of responsibility sharing in a case study in Upper Austria. *Resources*, 6(4), 54. <https://doi.org/10.3390/resources6040054>.
- Sabatier P., & Jenkins-Smith H. (Eds.). (1993). *Policy change and learning: An advocacy coalition approach*. Boulder, CO: Westview Press.
- Schoen, D., & Rein, M. (1994). *Reframing: Towards the resolution of intractable policy controversies*. New York: Basic Books.
- Scolobig, A., Thompson, M., & Linnerooth-Bayer, J. (2016). Compromise not consensus: Designing a participatory process for landslide risk mitigation. *Natural Hazards*, 81, 45–68.
- Stern, P. C. (2000). Towards a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56, 407–424.
- Thompson, M. (2018). Wicked environmental problems. In N. C. M. Hulme & J. D. Proctor (Eds.), *Companion to environmental studies* (pp. 258–262). Abingdon, UK: Routledge.
- Thompson, M., Rayner, S., & Ney, S. (1998). Risk and governance part 2: Policy in a complex and plurally perceived world. *Government and Opposition*, 33(3), 331–354.
- Verweij, M., Douglas, M., Ellis, R., Engel, C., Hendriks, F., Lohmann, S., ... & Thompson, M. (2006). Clumsy solutions for a complex world: The case of climate change. *Public Administration*, 84(4), 817–843.