



Fifty years after the wicked-problems conception: its practical and theoretical impacts on planning and design

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The year 2023 marks the 50th anniversary of “Dilemmas in a general theory of planning” (Rittel and Webber 1973), an original and influential article in which two erstwhile faculty members at the University of California at Berkeley, USA—the design science professor Horst Rittel (1930–1990) and planning professor Melvin Webber (1920–2006)—present a seminal conception of wicked problems. To commemorate this historical event, the journal *Socio-Ecological Practice Research* (SEPR) plans to publish a special theme issue in 2023 entitled “Fifty years after the wicked-problems conception: its practical and theoretical impacts on planning and design”. In this guest editorial, we as the co-editors of the theme issue outline its aims and scope and provide guidelines for the prospectus preparation and submission. But first, what is the theme about?

1 The 1973 wicked-problems conception

“Wicked problems” is a rather recent term in the English language, dating from the 1960s, although wicked problems existed long before they were identified and given that name (Xiang 2013, pp.1-2; Xiang 2019, p.8). Horst Rittel first identified wicked problems and presented his findings at

a 1967 seminar in Berkeley (Skaburskis 2008, p.277). In his audience was fellow Berkeley system scientist West Churchman (1913–2004) who organized and hosted the seminar.¹ Shortly after the seminar, West Churchman documented this instance through a guest editorial in the journal *Management Science* entitled “Wicked problems” (Churchman 1967). Making the concept known while giving Horst Rittel the due credit, he writes (p.B-141),

Professor Horst Rittel ... has suggested in a recent seminar that the term “wicked problem[s]” refer to that 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. The adjective “wicked” is supposed to describe the mischievous and even evil quality of these problems, where proposed “solutions” often turn out to be worse than the symptoms.

Six years after the seminar, Horst Rittel was finally convinced by Melvin Webber to publish his findings; they convened and wrote the now famous “Rittel and Webber (1973)” article together based on his 1967 presentation (Skaburskis 2008, p.277).

¹ [1] In a 2008 commentary, planning scholar Andrejs Skaburskis of Queen’s University, Canada, provides a detailed narrative about “the origin of ‘wicked problems’”. “West Churchman, then engaged in pioneering work on operations research and system analysis, received a grant from NASA [National Aeronautics and Space Administration, a federal agency of the United States, <https://www.nasa.gov/>] to explore the transfer of technology from the space program to the world of urban problems, and, in response, initiated a weekly seminar in 1967 at the University of California (UC–sic), Berkeley on these issues. Horst Rittel attended one session, and presented his list of differences between social and scientific or technical problems, outlining the ‘ten attributes’ that he later adjusted and summarized in the now-famous Rittel and Webber (1973) article. At the end of Rittel’s presentation, West Churchman responded with that pensive but expressive movement of voice that some may well remember, ‘Hmm, those sound like ‘wicked problems.’ And so a field was born.” (Skaburskis 2008, p.277) [2] Throughout this essay, parentheses and ellipses in

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Table 1 The ten attributes of wicked 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	Solutions to wicked problems trigger ripple effects that are neither reversible, nor stoppable
6	Wicked 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 can be a symptom of another problem
9	Every wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution
10	The planner (designer, policymaker) has no right to be wrong

Descriptions of attributes 1, 2, 3, 4, and 7 are the exact quotes from Rittel and Webber (1973); descriptions of other attributes are either paraphrases or edited quotes of Rittel and Webber (1973) by Buchanan (1992, p.16), Peters (2017, p.388) and Xiang (2013, p.1)

In “Dilemmas in a general theory of planning” (“Dilemmas”, henceforth), Horst Rittel and Melvin Webber enunciate a list of ten attributes that distinguishes wicked problems from what they call “tame problems” (Table 1) and argue that with all or a certain combination of these attributes, myriad problems in planning, design, and policymaking are inherently wicked, standing in sharp contrast to the problems in engineering and sciences.² They further assert that wicked problems are innately resistant to any neopositivist formulations of scientific analysis and rigid linear protocols for professional practice, defying the then prevalent approaches to and popular skill sets in planning, design, and policymaking [Buchanan 1992; Peters 2017; Rowe 1987, p.41; Skaburskis 2008; Xiang 2013, 2021a, p.83; for a succinct account of positivism and neopositivism, see Fathi (2013); for concise summaries of neopositivist influences on Anglo-American planning theories and modeling experience, see, respectively, Innes (1995, pp. 183–184) and Batty (1994, pp. 7–9)].

In a nutshell, through “Dilemmas”, Horst Rittel and Melvin Webber present a persuasive case that calls for practitioners, scholars, and the general public to attend to the daunting social reality of wicked problems. Along with

West Churchman (1967), they charge both the academic and professional communities in planning, design, and policymaking with the moral responsibility to work with wicked problems³; and to this end, they advocate what some later refer to as *a triple-A strategy* (Head and Xiang 2016a, b; Xiang 2013; Xiang 2021a, p.83). That is, *awareness*—to raise a general awareness about the ubiquity of wicked problems; *acceptance*—to commit to an honest acceptance of the intractability and insolubility of wicked problems; and *adaptation*—to stand up to the challenges of wicked problems with innovative adaptation strategies and approaches (Head and Xiang 2016a, b, p.4; Skaburskis 2008, p.279; Xiang 2013, 2021a, p.83).

2 The 2023 SEPR theme issue on the conception's impacts on planning and design

Over half of a century later, it is now widely recognized that wickedness, the ubiquity of wicked problems, is the norm in social systems of all kinds, including socio-ecological systems where human–human (social-economic-political-cultural- ...) relations and human–nature (ecological) relations are intertwined with each other; and that wicked problems are present in essentially all issue areas of socio-ecological practice that matter to the human society today, ranging from global climate change adaptation and mitigation, human sustainability, urbanization, to poverty, hunger, and the ongoing

Footnote 1 (continued)

direct quotations are added by us for clarity and brevity unless noted otherwise.

² “How is it that we can get to the moon when we can't get to the airport?” Asked Melvin Webber at the beginning of a 1973 lecture at the University of Reading, UK (Batty 2014, p.30). With that intriguing leading question, he went on to present the differences between tame problems and wicked problems: unlike their wicked counterpart, tame problems *inter alia* have exhaustive, crystal clear formulations, as exemplified by the ambitious yet well-defined goal to “get to the moon”; and their solutions can be tested and determined on the spot, as demonstrated through the Apollo program (Xiang 2021a, pp.76–77”). In short, “tame problems” is the antithesis of “wicked problems”, and synonymous with “non-wicked problems” (Potting et al. 2022).

³ In his 1967 guest editorial, West Churchman raises the plausibility of moral problems in design, planning, and policymaking pertaining to wicked problems. He points out that moral problems occur in either of the following circumstances: when planners (designers, policy analysts) mistakenly believe that they have effectively taken the wickedness out of wicked planning (design, policymaking) problems; when they essay to convince the people they work for to go along with the misbelief. He appeals, “It might make us look more mature

common threat posed by the COVID-19 pandemic (Chan 2014, pp.18–19; Xiang 2013, p.2; 2019, p.8; 2021a, p.77; 2021b, pp.239–240). There is also a good wealth of accumulated publications pertaining to “Dilemmas” and wicked problems. A Google Scholar search by us on January 27, 2022 reveals that “Dilemmas” has been cited 20,279 times in the English-language publications since 1973; and that there are 107,000 English-language publications that have “wicked problems” in their titles. Clearly, “Dilemmas” has helped advance people’s heightened awareness of this distinctive class of social system problems and prompted a fundamental change in the ambitions and approaches of many in practice as well as in academia who are charged to study and resolve them (Chan 2014, pp.18–19; Head and Xiang 2016a, b; Peters 2017, p.387; Skaburskis 2008, p.279; Termeer et al. 2019, p.2 of 13; Xiang 2013, pp.1–2; Xiang 2021a).

As such, it is now fitting to assess the cumulative impacts the central concept of wicked problems has had on planning, design, and policymaking in the past five decades. Since its impacts on policymaking have been ably examined through a 2019 special issue in the journal *Policy and Society* led by policy scientist Catrien J.A.M Termeer of the Wageningen University in the Netherlands (Termeer et al. 2019), this theme issue of *Socio-Ecological Practice Research* (SEPR) will focus on its impacts on planning and design.

Specifically, under the overarching theme “Fifty years after the wicked-problems conception: its practical and theoretical impacts on planning and design”, the theme issue solicits scholarly contributions in the following four thematic areas.

2.1 Practical impacts on planning and design

The theme issue welcomes articles that present and examine concrete examples in which the wicked-problems conception had practical impacts on planning and design. The examples can be in any subject area of planning and design—land use, green infrastructure, urban redevelopment, housing, transportation, community development, to list just a few. By digging into the carefully selected real-world examples, these articles are expected to address the following questions:

- (1) Did the wicked-problems conception provide practitioners with new insights into the real-world planning and design problems they dealt with?

- (2) Did the new insights inspire practitioners to think and act differently in their planning and/or design practice?
- (3) Did their actions generate different and more effective, satisfactory results?

Contributions of the sort will help narrow a research gap in the wicked problems literature. That is, the paucity of empirical evidence on what and how much impact the wicked-problems conception had on the way practitioners think and act.

2.2 Theoretical impacts on planning and design

To embrace the intellectual diversity in planning and design theory, as ably documented by planning scholar John Friedmann (1926–2017) (1987, pp.51–85), the theme issue welcomes contributions that assess theoretical impacts of the wicked-problems conception from all scholarly perspectives and intellectual traditions in planning and design. That said, articles that fall into the following three topical areas are particularly sought.

2.2.1 The second generation of systems approaches to planning and design

In “Dilemmas”, Horst Rittel and Melvin Webber call for a second generation of systems approaches to planning and design because “[t]he systems-approach ‘of the first generation’ is inadequate for dealing with wicked-problems.” (Rittel and Webber 1973, p.162) By the first generation of systems approaches they refer to those that were first developed in the 1940s and 1950s in the field of operations research for military purpose. In the several decades after World War II when social system problems in planning, design, and policymaking were naively thought to be resolvable through science and technology, these “wicked-blind” approaches (Xiang 2021a, p.83) gained some nontrivial traction in planning and design among practitioners, scholars, and educators (Batty 1994, pp.7–9; Buchanan 1992; Friedmann 1987, pp.78–81; Glazer 1974, p.346; Innes 1995, pp. 183–184; Schön 1987/2001, pp.187–189; te Brömmelstroet et al. 2014, p.381; Xiang 2017, pp. 2243–2244).⁴ To be “wickedness-savvy” (Xiang 2021a, p.83), Horst Rittel and Melvin Webber posit, “Approaches of the ‘second generation’ should be based on a model of planning as an argumentative process in the course of which an image of the problem and of the solution emerges gradually among the participants, as a product

Footnote 3 (continued)

if we began to discuss it [the moral problem].” (Churchman 1967, p.B-142) Since then, his call has gained moderate yet persistent traction primarily in planning and design communities (e.g., Buchanan 1992, p.16; Chan 2014, p.19; Chan 2016, p.124; Rowe 1987, p.102; Wood 2000, p.51).

⁴ Ironically, it was at a seminar aiming “to explore the transfer of technology from the space program to the world of urban problems” where Horst Rittel presented his original findings on wicked problems (Skaburskis 2008, p. 277; see footnote 1 of this essay).

of incessant judgment, subjected to critical argument.” (Rittel and Webber 1973, p.162)

In the past 50 years, many have responded to this call and proposed models, theoretical and/or analytical, for the second generation of systems approaches. One such example is the collaboratively-rational-planning model by the erstwhile Berkeley planning professor Judith Innes (1942–2020) and planning scholar-practitioner David Booher (Innes 1995; Innes and Booher 2016, 2018). The collaborative rationality underlying the model, they claim, is “a strategy for working with wicked problems” (Innes and Booher 2016, p.8). For the theme issue, contributions are invited that report other comparable theoretical and/or analytical models.

2.2.2 Parallel development in planning and design theory

Unlike Judith Innes, David Booher and others who responded publicly to the call by Horst Rittel and Melvin Webber for the second generation of systems approaches, many academic theoreticians did not, and still do not, use the term “wicked problems” when exploring the wickedness in planning and design problems, nor when proposing new theories and solutions. For example, in his 1987 essay on the crisis of professional knowledge in planning and management, Donald Schön (1930–1997), a planning professor at Massachusetts Institute of Technology, USA, adumbrates two classes of social system problems which he figuratively refers to, respectively, as the problems of “the high ground” and problems of “the swampy lowlands” (Schön 1987/2001, p.191). Although his account appears to be incidental and show no direct influence of the then 14-year-old “Dilemmas”, readers of both essays may readily discover its deep affinity with the wicked-problems conception—the problems of “the high ground” parallel the tame problems, and the problems of “the swampy lowlands” wicked problems (Xiang 2021a, p.76).

Does this observation suggest a parallel yet independent development in planning theory and design thinking about this daunting reality? If so, then a documentation would be worthwhile. For the theme issue, articles are invited that provide evidence of this possible parallel development in any specific field of planning and design (e.g., land use, transportation, housing, green infrastructure, community development, ethics, to name a few).

2.2.3 Impacts on theory education in planning and design

In a 2011 article entitled “Planning theory education: a thirty-year review”, planning scholar Richard Klosterman of the University of Akron, USA reports that “Dilemmas” was found in three curriculum surveys to be listed as a required reading in many master’s planning/design courses

(Klosterman 2011, p.328). The surveys were conducted in 1979, 1989, and 2009, respectively, among 46 planning schools in countries where English is the official language (*Ibid.*, p.320). This enduring interest in the article among educators and students is an indication that the key concerns in “Dilemmas” about the rational model and alternative approaches remain highly relevant to contemporary planning and design education. Nonetheless, the exact impacts of the wicked-problems conception on planning and design education in the past 50 years remain largely uncharted and as such beg for a systematic and thorough investigation.

2.3 The intellectual history of the wicked-problems conception

Horst Rittel, Melvin Webber, and West Churchman are among those thinkers in the twentieth century who were initially imbued with neopositivist ideas but, when confronted with the concrete circumstances of planning and design practice, essaying to develop new approaches to social dilemmas (Buchanan 1992, p.16; Skaburskis 2008, p.277). The wicked-problems conception is but a tangible and publicized legacy from this transformation; there may well be other intellectual heritages that are less tangible but equally valuable. These include, but are not limited to, the intellectual processes they went through to reinvent themselves, the sources of inspiration for their wicked-problems conception, and the emergence and evolution of the wicked-problems ideas. Fifty years after the wicked-problems conception, however, most of these otherwise valuable assets in planning and design thinking are still not in the public knowledge domain. It’s therefore high time to unearth and document them and share with the international community of scholars and practitioners in planning and design. For this purpose, reminiscences and intellectual biographical essays of the three thinkers, written by their former students and colleagues, are especially fitting.

Articles in this thematic area about the intellectual history of the wicked-problems conception necessarily contribute to the continuous building of what the Harvard planning professor Ann Forsyth refers to as “planning’s intellectual history” or “history of ideas in planning” (Forsyth 2021, pp.156–157).

2.4 An open forum

The theme issue also welcomes contributions that cover topics beyond the scope of above 3 thematic areas provided their topics are relevant to “Dilemmas” and the wicked-problems conception. Examples for potentially suitable topics include, *inter alia*, Horst Rittel’s other but pertinent contributions to (1) the understanding of different types of design failure (Protzen and Harris 2010, p.188), (2)

the pathologies (or fallibilities) of planning (*Ibid.*, p.216), and (3) the question of what to plan and not to plan (*Ibid.*, p.223); similarly, West Churchman's later explorations on how one should plan or design a social system that, despite the ubiquity of wickedness, can continuously secure improvements in the human condition over time (Ulrich 1994, p.29); and on to what extent ethics is an important pathway for securing these improvements (van Gigh et al. 1997, pp.742–743).

3 Prospectus preparation, submission, and selection

Prospective authors should send a prospectus (a text of 350–450 words) in a word document before or on May 25, 2022, to the editor in chief of SEPR Wei-Ning Xiang at wxiang@unc.edu. The prospectus should outline

- (1) What the article is about—the aim(s), thesis, and expected findings (if applicable);
- (2) Which thematic area outlined in the Sect. 2 of this editorial the article falls within;
- (3) How the article contributes to the aims of the theme issue (as presented in Sects. 2);
- (4) Whether a manuscript can be submitted by October 25, 2022, should the prospectus be accepted;
- (5) A list of 7 key references (not counted toward the 350–450-word limit).

The prospectuses will be selected on a rolling basis against the following criteria:

- (1) Relevance to the overarching theme of the theme issue;
- (2) Compliance with the aims and scope outlined in Sect. 2;
- (3) Writing ABC (accuracy, brevity, clarity);
- (4) Sole authorship is preferred, coauthorship (two authors) welcome, multi-authorship considered;
- (5) Commitment to meeting the manuscript submission deadline.

All questions should be directed to Wei-Ning Xiang at wxiang@unc.edu; information about the journal and the articles it published can be found at <https://www.springer.com/journal/42532>.

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