

SPECIAL ISSUE ARTICLE

Systematic Review of the Governance of Complex Issues in Government Institutions

Hadi Khanmohammadi¹  and Mahboobeh Askari Bagherabadi² 

¹ Associate Professor, Department of Public Administration, Faculty of Management and Accounting, Allameh Tabataba'i University, Tehran, Iran.

² Assistant Professor, Department of Business and Public Administration, Faculty of Governance, Shahed University, Tehran, Iran

Corresponding author: Seyyed Mohammad Ghari Seyyedfatemi; Email: Ma.askari@shahed.ac.ir

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Extended Abstract

Problem Statement and Literature Review

Wicked problems represent a fundamental challenge to conventional governance, characterized by an inherent tension between known elements and profound uncertainties that embed complex social structures and multifaceted interdependent variables (Hoppe, 2010). Unlike “tame” problems, which follow predictable trajectories, wicked problems are notoriously resistant to resolution due to their ill-defined nature (Lönngren & van Poeck, 2021), shifting goalposts (Montes, 2021), and intense value conflicts (Geuijen et al., 2017). Historically, the conceptual foundation of “wickedness” was established by Rittel and Webber (1973), who argued that these issues lack clear objectives, defy singular causal explanations, and offer no stopping rule or measurable set of solutions. They are uniquely non-linear, where one problem often serves as a symptom of another, making them resistant to the incremental trial-and-error methods typical of engineering or technical fields (Lönngren, 2017).

The inadequacy of traditional rational-scientific approaches is rooted in their foundational assumption that goal clarity and information sufficiency can

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yield effective outcomes—an assumption that collapses in the face of the unpredictable nature of wicked problems (Abbott-Halpin & Rankin, 2020; Termeer & Dewulf, 2018). In the contemporary administrative landscape, the increasing prevalence and systemic impact of such problems have placed unprecedented pressure on public institutions. The persistence of these challenges within administrative systems serves as a critical indicator that existing governance mechanisms have been largely insufficient in “taming” wicked problems within the public sector.

Current scholarship has attempted to map the complexities of these phenomena through various lenses: Daviter (2017) categorizes governance strategies into confrontation, taming, and resolution; Hoppe (2010) delineates a governance map across policy, socio-political, and R&D dimensions; and Head (2022) identifies seven strategic responses ranging from avoidance and technocratic solutions to stakeholder collaboration. However, despite these significant contributions, the existing literature remains fragmented. There is a notable absence of a systematic synthesis that provides a holistic, multidimensional conceptualization of wicked problems alongside a consolidated overview of their governance strategies. This fragmentation creates a gap for policymakers and researchers seeking an integrated framework to navigate complexity.

Consequently, this study employs a systematic review methodology to bridge these conceptual gaps. By synthesizing disparate findings into a structured overview, this research aims to provide a comprehensive landscape of the dimensions of wickedness and the corresponding governance approaches, thereby offering an integrated foundation for future empirical research in public administration.

Research Objectives

The primary objective of this study is to conduct a systematic review to synthesize the fragmented literature regarding the conceptual dimensions and governance strategies of wicked problems. Specifically, the research aims to: (1) delineate the multifaceted conceptual framework of “wickedness”; (2) identify the core dimensions and inherent characteristics that distinguish these problems from conventional issues; and (3) critically map the prevailing governance approaches and strategic responses used to address such complexities.

Methodology

This study employs a qualitative systematic review methodology to synthesize existing scholarship on the conceptual dimensions and governance of wicked problems. The research process was conducted through a multi-stage screening procedure. Initially, a comprehensive search was executed across prominent international databases, including Web of Science, ScienceDirect, SpringerLink, and Google Scholar. The search strategy utilized specific Boolean combinations

of keywords, including “*Wicked problems*”, “*Unstructured problems*”, and “*Wicked problems governance*”. To ensure the conceptual depth and relevance of the reviewed literature, strict inclusion and exclusion criteria were applied. Articles were selected based on their capacity to provide foundational theories, delineate core characteristics, or propose governance frameworks. Following an initial screening of titles and abstracts, a purposive selection was performed, resulting in the identification of four seminal studies that constitute the core analytical framework of this research. These studies were subjected to a full-text thematic analysis to extract dimensions related to conceptualization, inherent characteristics, and strategic governance responses. The selected studies, categorized by their thematic contribution, are summarized in Table 1.

Table 1. Summary of Selected Studies on Wicked Problems

Subject / Topic	Journal / Publisher	Year	Authors	Title
Concept	Palgrave Macmillan	2022	Brian Head	Wicked problems in public policy: Understanding and responding to complex challenges
Core Characteristics	Palgrave Macmillan	2022	Brian Head	Wicked problems in public policy: Understanding and responding to complex challenges
Approaches	Chalmers University of Technology	2017	Lönngren	Wicked Problems in Engineering Education - Preparing Future Engineers to Work for Sustainability
Governance Mechanisms	Policy Studies	2017	Daviter	Coping, taming or solving: alternative approaches to the governance of wicked problems
	Administration & Society	2015	Termeer et al	Governance Capabilities for Dealing Wisely With Wicked Problems
	Bristol University Press	2010	Hoppe	THE GOVERNANCE OF PROBLEMS Puzzling, powering, participation

Findings

The findings of this research are structured across three analytical levels:

First, regarding the nature of wicked problems, the study confirms a significant growth in bibliometric trends within Scopus-indexed literature. Wicked problems are characterized by uncertainty, multi-causality, and high interdependence, distinguishing them from “tame problems” solvable through traditional scientific approaches. The research establishes a four-fold framework for defining wicked problems based on ontological (uniqueness), epistemological (non-enumerable solutions), methodological (lack of a “stopping rule”), and ethical (solutions as “good” rather than “true/false”) criteria.

Second, concerning governance frameworks, the findings highlight that addressing wicked problems requires a multi-dimensional approach, grounded in five core pillars: precise problem definition, identification of stakeholders, active engagement, data-driven analysis, and solution sustainability (Hoppe’s model). Within this context, seven governmental response strategies were identified, categorized into “reductionist” (e.g., coercive controls, problem fragmentation) and “adaptive” (e.g., stakeholder collaboration, prevention) spectra.

Third, regarding operational governance, the analysis of Daviter’s three-fold approach (coping, taming, and solving) and Roberts’ power-distribution framework suggests that strategy selection is contingent upon both the structure of power and the problem’s nature. The findings strongly support “collaborative governance” as the most effective approach. This paradigm facilitates a deeper understanding of underlying causes through professional networks and promotes interim solutions and operational cohesion, rather than seeking definitive, permanent fixes—though it remains inherently challenged by the structural complexity of fragmented political sectors and multi-level administrative layers.

Conclusion

The findings of this research, through a systematic literature review, demonstrate that “wicked problems,” characterized by fundamental traits such as complexity, uncertainty, and stakeholder value divergence, have emerged as an evolving phenomenon in modern governance. The results indicate that traditional models rooted in hierarchical bureaucracy and singular rationalism are inadequate for addressing these issues, necessitating a transition toward contemporary governance theories. The present study asserts that in managing wicked problems, prioritizing the enhancement of “governance capacity and competence” is more critical than mere adjustments to the “size or structure of government.” In this regard, three primary governance strategies were identified: “knowledge-based development to identify causal factors,” “improving stakeholder collaboration and political mediation processes,” and “adopting preventive strategies for deeply institutionalized issues.”

By addressing the existing gap in the literature—specifically concerning policy analysis and governance frameworks tailored to wicked problems—this study opens new avenues for enhancing public administration systems. The

findings provide public managers with the necessary tools to identify the wicked nature of issues within administrative systems and to apply appropriate governance models to achieve goals such as sustainable development, transparency, and improved quality of public services. Ultimately, by establishing a coherent framework, this research provides a robust theoretical foundation for future scholars to explore the domain of governing complex issues more deeply.

Keywords: Capability, Institutional Virtue, Limited Neutrality, Moderate Perfectionism, Overlapping Consensus.

1. Introduction

A problem implies that while certain aspects of a situation are identifiable and known, others remain concealed. When such phenomena occur at a macro level, they inevitably embed complex social structures and numerous latent variables (Hoppe, 2010). Consequently, policymakers and managers initially resort to problem simplification, subsequently formulating appropriate solutions within policy packages, aligned with their strategic objectives and the priorities of the target population. Drawing on Kisholm, Mosleh and Salimi (2021) conceptualize a problem as an iceberg, where public attention is primarily directed toward its visible surface. Fundamentally, a problem represents the discrepancy between the current status and the perceived ideal state; scientifically, it is defined as an unacceptable divergence between existing realities and desired future states (Mosleh & Salimi, 2021). Wicked problems, in particular, are often perceived as incomprehensible and exhibit significant resistance to proposed interventions (Termeer & Dewulf, 2018). This resistance stems from their lack of precise definition (Lönngren & van Poeck, 2021) and their continuous state of flux. In other words, problems characterized by ambiguous objectives (Montes, 2021) and substantial value conflicts are categorized as “wicked” (Geuijen et al., 2017). Such issues are unique and stand in stark contrast to “tame” problems, which possess linear and multiple solutions (Deusinger & Deusinger, 2021). When profound uncertainty exists regarding potential solutions, and when significant disagreements arise concerning the values and norms of policymakers, such that any attempt at immediate resolution meets fierce opposition, these problems are classified as unstructured or, more accurately, “wicked.”

Scholars contend that wicked problems cannot be resolved through conventional scientific and rational approaches. This is because traditional decision-making and implementation frameworks are predicated on the assumption that goal clarity, information sufficiency, and the selection of appropriate methodologies will inevitably lead to efficient and effective goal attainment (Abbott-Halpin & Rankin, 2020). In the contemporary era, due to escalating social complexity, heightened uncertainty, and the profound depth and breadth of their impact, such problems have become central concerns for individuals, organizations, nations, and international assemblies (Karimi-Molla, 2018), increasingly permeating administrative systems. The very existence and persistence of these issues within administrative structures testify to the inadequacy of existing governance mechanisms in “taming” wicked problems within the public sector. Consequently, in such a state, the precise identification of

wicked problems is imperative to facilitate the application of appropriate governance frameworks within the administrative domain.

Recognizing that a systematic literature review (SLR) is an effective method for synthesizing findings from prior studies regarding the concepts and approaches to wicked problems, this study employs the SLR methodology. The primary advantage of a systematic review lies in its adherence to rigorous, predefined protocols, which explicitly determine the inclusion and exclusion criteria for research selection. In essence, a systematic review enables researchers to construct a comprehensive overview of the subject matter. Therefore, this article aims to advance the understanding of the concept of wicked problems and to systematically review the governance styles associated with them. In light of the aforementioned context, this research seeks to address the following questions:

1. What is the conceptual definition of “wicked problems”?
2. What are the core dimensions and characteristics of wicked problems?
3. What characterizes the governance of wicked problems?
4. What are the prevailing governance approaches for managing wicked problems?

2. Theoretical Framework and Literature Review

The seminal concept of “wicked problems” was first introduced by Rittel and Webber (1973) in their influential article, *“Dilemmas in a General Theory of Planning”*. They characterize a problem as “wicked” when it exhibits a specific set of complex attributes: ill-defined objectives, difficulty in defining the problem itself, and a lack of clarity in understanding despite potential resolution; furthermore, such problems offer no opportunity for trial-and-error or experimental testing, lack a measurable set of solutions or activities, are unique and non-repeatable, and are inherently interconnected, where one problem serves as a symptom of another and cannot be attributed to a single cause (Rittel & Webber, 1973). Recent scholarship has significantly expanded upon this foundation. Head (2022), in his comprehensive work *“Wicked Problems in Public Policy: Understanding and Responding to Complex Challenges,”* provides an exhaustive discourse on the historical evolution, conceptual nuances, and multifaceted characteristics of these issues. In the realm of engineering, Lönngren (2017) explores various approaches to tackling wicked problems, emphasizing the necessity of preparing future engineers for such complexities. Furthermore, Daviter (2017), in one of the most highly cited recent studies in this field, categorizes governance

strategies for wicked problems into three distinct modes: confrontation, taming, and resolution.

Expanding on strategic responses, Head (2022) identifies seven primary strategies employed by policymakers when responding to wicked problems: avoidance and denial, coercive controls, management of fragmented issues, technocratic resolution, incremental adjustment, stakeholder collaboration, and prevention. Complementing these strategic perspectives, Hoppe (2010), in *"Governing Problems,"* delineates a governance roadmap for wicked problems, structured around three critical pillars: policy, socio-political contexts, and research and development (R&D) frameworks. Despite the growing body of literature on this subject, recent scholarly inquiries have lacked a comprehensive systematic review that holistically examines the concept of wicked problems. Consequently, the present study endeavors to address this deficiency by providing an all-encompassing analysis of all dimensions of wicked problems. The inherent value of a systematic review lies in its ability to synthesize fragmented findings and foster synergistic insights through a highly structured methodology, thereby enabling researchers to construct a holistic overview of the subject matter. As evidenced by current literature, a robust and integrated conceptualization of both wicked problems and their subsequent governance remains elusive. This study, therefore, aims to bridge this critical research gap and provide a unified, integrated knowledge base to guide and inform future scholarly investigations in this field.

3. Methodology

A Systematic Literature Review (SLR) is a qualitative research methodology employed to examine phenomena through a rigorous synthesis of existing scholarly literature (Dehqanan & Mohammadi, 2021). Accordingly, the present study adopts an SLR approach to investigate research pertaining to "wicked problems". To ensure a comprehensive search, an initial retrieval was conducted across prominent academic databases, including Web of Science, Google Scholar, ScienceDirect, and Springer. The search strategy was centered on the core keyword "wicked problems". Subsequently, a refined selection process was implemented to identify studies explicitly addressing "wicked problems", "unstructured problems", and "wicked problems governance". Articles that did not align with these specific thematic domains were excluded from further analysis.

Given the research objective (to construct a conceptual framework encompassing the core concepts, theories, and characteristics of wicked

problems) a multi-stage screening process was conducted. Following the initial screening and thematic evaluation of the retrieved literature, four seminal studies meeting all predefined inclusion criteria were selected for in-depth analysis. The full text of these selected studies was then systematically reviewed to extract pertinent data. Table 1 presents a summary of the characteristics of the selected studies.

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Subject / Topic	Journal / Publisher	Year	Authors	Title
Concept	Palgrave Macmillan	2022	Brian Head	Wicked problems in public policy: Understanding and responding to complex challenges
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4. Findings

4.1. Descriptive Analysis of the Studies

Based on the bibliometric research conducted by Ho et al. (2022), the number of publications regarding wicked problems in the Scopus database has been steadily increasing, as illustrated in Figure 1. This trend indicates a growing scholarly interest in the concept of wicked problems, suggesting significant potential for further expansion in future research.

Figure 1. Annual growth trend of publications on wicked problems (2000–2019) (Adapted from Hou et al., 2022).

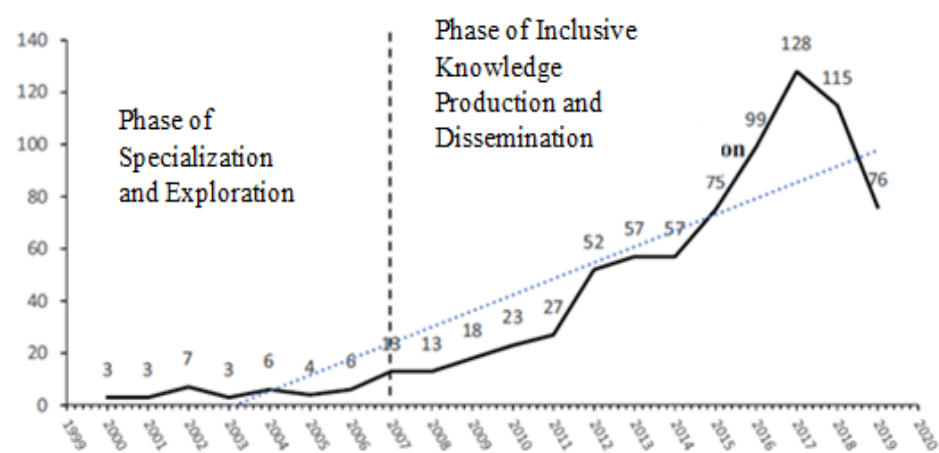
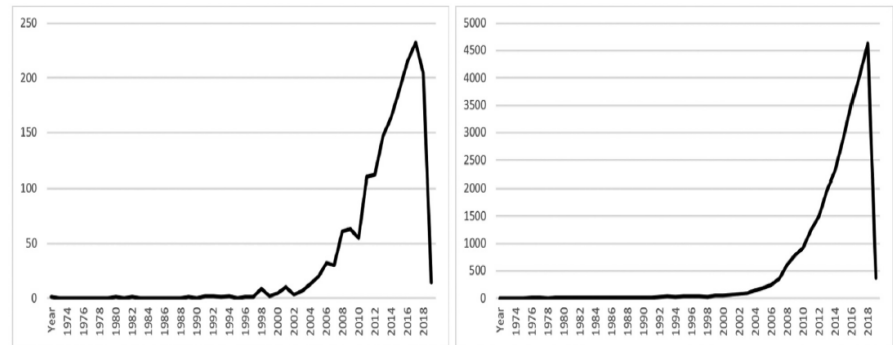


Figure 2 illustrates the exponential growth of research in this field up to 2017, reflecting a rising trend in citations for studies addressing “wicked problems” (Lönngren & van Poeck, 2021)

Figure2. Research domains in wicked problems literature (2000–2020). (Lönngren & van Poeck, 2021)



Furthermore, consistent with Figure 3, a significant proportion of global research on wicked problems has recently focused on the domain of “Public Administration” (Hou et al., 2022).

Figure 3. Annual number of publications and citations regarding “wicked problems” in (2000–2020).(Hou et al, 2022)



4.2 Content Analysis Results

The Australian Public Service Commission recently published a report on “tackling wicked problems”, identifying several key characteristics: difficulty of definition; high interconnectedness and multi-causality; unpredictable consequences of proposed actions; instability; the absence of clear or correct solutions; social complexity; diffused responsibility across multiple organizations; and the necessity for solutions to drive behavioral changes among citizens and stakeholder groups (Tatrai, 2021). Less than a decade after the seminal work by Rittel and Webber, the concept of wicked problems was systematized into a four-dimensional framework (Ruhl & Salzman, 2020):

a) Ontological Criteria: There is no definitive formula for a wicked problem; each problem is fundamentally unique, and every wicked problem can be viewed as a manifestation of another.

b) Epistemological Criteria: Wicked problems lack a finite set of potentially countable (and fully optimal) solutions; furthermore, the presence of a conflict can be interpreted through multiple, divergent explanatory frameworks.

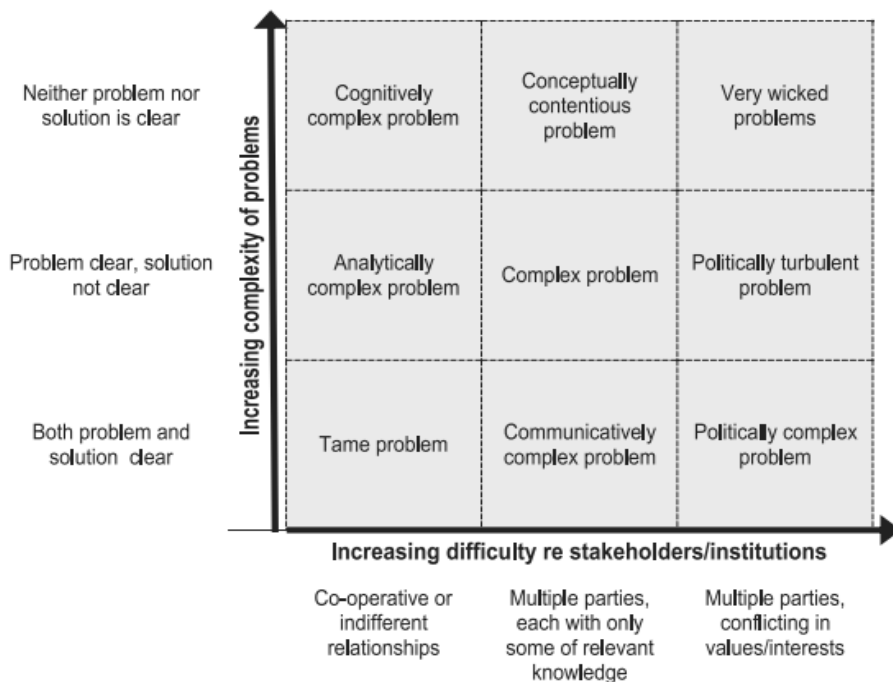
c) Methodological Criteria: Wicked problems do not possess a “stopping rule”; there is no immediate or definitive test to validate a solution. In this context, terms such as “messy”, “fuzzy”, or “complex” are frequently employed as synonyms for “wicked” (Turnbull & Hoppe, 2018). Despite the increasing usage of this term, the research community remains polarized regarding its definition and utility. Some scholars argue that “wicked problems” is a valuable construct, as it highlights the limitations of reductionist approaches when addressing complex socio-environmental issues. Conversely, others contend that the term is ambiguous and is often deployed rhetorically rather than analytically (Lönngren & van Poeck, 2021).

d) Ethical Criteria: Solutions to wicked problems are not categorized as “right” or “wrong”, but rather as “good” or “bad”. Every solution attempted is akin to a “single shot”, meaning there is no opportunity for iterative learning through trial and error. Every intervention in a wicked problem carries significant weight; thus, the planner bears a profound responsibility where error is not an option.

In existing literature, wicked problems, often used synonymously with “social difficulties”, are characterized as interconnected, uncontrollable, and highly complex issues that are socially constructed in a manner that precludes consensus (Karimi-Malleh, 2018). More precisely, a spectrum exists between “wicked problems” at one end and “tame problems” at the other; while the latter may be addressed more predictably, achieving solutions to fulfill systemic objectives in wicked problems remains elusive (Mosleh & Salimi, 2021). Due to their ill-defined nature and continuous evolution, wicked problems are often perceived as inscrutable and exhibit significant resistance to proposed interventions (Termeer & Dewulf, 2018). As Monts (2021) posits, tame problems are those that can be resolved through rational and scientific approaches, whereas wicked problems defy such straightforward resolution. Although the term “wicked problems” is widely utilized across diverse disciplines, a theoretical consensus regarding its foundational principles and research applications remains absent. The term’s allure lies in its ability to evoke natural curiosity regarding the most formidable policy challenges. Its versatility allows for application by both practitioners and academics across various policy domains. Indeed, wicked problems pose profound challenges for public administrators;

because these issues lack a “stopping rule”, policymakers often encounter a sense of futility, which can lead to diminished engagement in problem-solving efforts (Termeer et al., 2015). Farrell and Hooker (2013) emphasize three critical dimensions of a problem’s situational context: limited knowledge and resources, the complexity of interconnections, and the normative framing of the issues. Furthermore, Alford and Head (2017) propose a two-dimensional matrix, focusing on the interplay between the problem and its stakeholders, to facilitate a more nuanced understanding of complex and wicked problems (see Figure 4).

Figure 2. Alternative typologies of complex problems (Adapted from Alford & Head, 2017)



The aforementioned matrix illustrates that “tame problems” occur when the dimensions of the problem are more easily attainable or manageable, whereas “wicked problems” occupy the opposite extreme of the spectrum. Given the diverse descriptions of complexity that may fall within different quadrants of such matrices, several drivers facilitate the transition of problems along this spectrum, including: structural complexity, cognizability, knowledge fragmentation, epistemic frameworks, divergence of interests, and power distribution. The utility of the Alford

and Head matrix lies in its ability to transcend the binary analytical framework of “wicked versus tame” problems (Ruhl & Salzman, 2020). In recent years, various scholars have explored the multifaceted dimensions of wicked problems, a summary of which is presented in Table 2.

Table 2. Dimensions of wickedness in existing literature (Naime, 2020)

Authors	Dimensions
Head (2008)	• Complexity of elements, subsystems, and interdependencies - Uncertainty regarding risks, consequences of action, and changing patterns • Divergence and fragmentation in viewpoints, values, and strategic intentions
Salwasser (2004)	• Complexity of the problem and objectives • Stakeholder influence and factors affecting objectives • Uncertainty and relative risks • Role of science, coping strategies, and decision analysis
Alford and Head (2017)	• Complexity of the problem • Institutional and stakeholder-related difficulties
Meza and Corona (2018)	• Cognitive dimensions • Political dimensions
Roberts (2000)	• Conflict over problems and solutions • Dispersed and contested power
Danken (2017)	• Non-resolvability • Involvement of multiple actors • Difficulty of problem definition

Furthermore, wicked problems necessitate diverse methodological responses. A summary of the primary approaches to addressing these challenges is presented below (Lönngren, 2017):

- **Theoretical Approaches:** These advocate for non-traditional paradigms of science to tackle the inherent complexity of wicked problems.
- **Analytical Approaches:** Focused on uncertainty management, these include modeling tools and multi-criteria decision analysis (MCDA).
- **Atomistic Approaches:** Characterized by decomposing problems into smaller, manageable components and attempting to establish fixed problem formulas.
- **Interdisciplinary and Transdisciplinary Approaches:** Emphasizing cross-boundary collaboration and supra-academic integration.
- **Systems Thinking Approaches:** Utilizing tools such as causal loop diagrams and mind mapping.

- Visualization Approaches: Employing techniques such as scenario building and foresight.
- Participatory and Consultative Approaches: Involving dialogue mapping, problem-based information systems, and public engagement.
- Iterative Approaches: Centered on redesign and adaptive management.

Scholars observe an increasing convergence between wicked problems and specific emerging paradigms, namely: adaptive management, resilience thinking, collaborative networks, and experimental governance. Consequently, it is argued that wicked problems can only be effectively addressed when public authorities integrate a broad spectrum of social stakeholders and non-state actors into the decision-making process. This integration is essential to reflect the diversity of perspectives and the underlying value conflicts inherent in these issues (Daviter, 2017).

5. Governance of Wicked Problems

The governance of wicked problems is situated within the broader domain of problem-solving governance. Given the nature of these issues, understanding their “wickedness” is crucial for establishing governance structures that enable actors to respond effectively. Traditional governance modalities are often inadequate; since no single capability suffices to confront wicked problems, multiple governance capacities must be deployed in concert. Wicked problem governance is a management paradigm designed to resolve complex, multi-faceted issues within public administration. It is recognized as an emergent approach that emphasizes collaboration, coordination, and the active engagement of diverse individuals and organizations.

According to Hoppe (2010), wicked problem governance is constructed upon five core elements:

1. Problem Scoping and Definition: Precise identification and bounding of the problem, utilizing available data and information.
2. Stakeholder Identification: Determining relevant actors and elucidating their influence on the problem dynamics.
3. Active Engagement: Ensuring the meaningful participation of diverse individuals and organizations in the resolution process.
4. Data-Driven Analysis: Leveraging existing information and data to analyze the problem and evaluate potential solutions.
5. Resolution and Sustainability: Implementing collective solutions with a strategic emphasis on long-term sustainability and continuity.

Therefore, addressing wicked problems rationally necessitates a robust set of capabilities. Table 3 illustrates the four primary dimensions of wicked problems based on the characteristics described by Rittel and Webber (1973), which can be conceptualized as essential “wicked problem governance capabilities” (Termeer et al., 2015).

Table 3. Governance Capabilities for Wicked Problems (Termeer et al., 2015)

Governance Capability	Definition	Targeted Aspect of the Wicked Problem	Potential Risks of Capability Deficit
Reflexivity	The capacity to critically evaluate and navigate unstructured problems and multiple perceived realities.	Unstructured Problems: Addressing multiple frames, diverse perspectives, and ontological shifts.	Risk of tunnel vision or the emergence of intractable, long-term controversies.
Resilience	The capacity to flexibly adapt strategic trajectories in response to frequent, unpredictable changes without compromising institutional identity.	Interconnectedness & Uncertainty: Managing unpredictable consequences and systemic volatility.	Risk of systemic failure or the inability to fulfill core institutional functions.
Responsiveness	The capacity to respond legitimately to an unbounded array of stakeholder demands and societal concerns.	Unlimited Demands: Addressing the absence of a “stopping rule” and the infinite nature of social issues.	Risk of policy overreaction and the erosion of public trust and institutional legitimacy.
Revitalizing	The capacity to unblock institutional stagnation and reanimate unproductive or dormant policy processes.	Stagnant Interaction Patterns: Addressing unproductive or repetitive policy-making cycles.	Risk of policy regression or merely reinforcing existing unproductive patterns (“more of the same”).

Head (2022) identifies seven primary strategies employed by policymakers in response to wicked problems: avoidance and denial, coercive controls, atomistic management, technocratic problem-solving, incremental adjustment, stakeholder collaboration, and prevention. He

posits that these strategies are not necessarily discrete or mutually exclusive; rather, they often coexist within a single policy context.

- **Avoidance and Denial:** The capacity to divert attention from a potentially critical issue represents a significant exercise of power. In this strategy, state and private actors utilize “strategic ignorance” and exploit inherent uncertainties to evade accountability regarding the problem.
- **Coercive Controls:** In multi-party political systems, government leaders may impose decisive solutions through executive actions, a practice termed coercive control. This strategy is typically deployed to manage crises that demand robust and immediate interventions.
- **Atomistic Management:** Rather than analyzing large-scale problems within their complex systemic totality, this strategy involves decomposing them into smaller, discrete units. The objective is to isolate specific sub-problems to allow for more granular analysis and perceived ease of management.
- **Technocratic Problem-Solving:** This approach acknowledges the limitations of managing wicked problems solely through scientific or professional expertise, asserting that such issues necessitate profound political scrutiny and deliberation.
- **Incremental Adjustment:** Lindblom argued that policy analysis often gravitates toward partisanship rather than achieving objective assessment and clarification. He maintained a skeptical view regarding large-scale transformative changes, arguing that reforms must contend with institutional inertia and path dependency. Consequently, “adaptive” approaches have gained prominence in policy design and management. Researchers have found that adaptive governance facilitates management through iterative adjustments at a manageable scale, which differs fundamentally from attempts at radical policy shifts.
- **Stakeholder Collaboration:** Engaging stakeholders is essential for knowledge sharing and evaluating the implications of various policy options. Stakeholders often harbor concerns and divergent views regarding the fairness and efficacy of chosen policy directions, particularly concerning culturally sensitive issues (e.g., indigenous knowledge and values). Accordingly, public leaders may adopt consultative approaches to incorporate stakeholder perspectives into the decision-making process.

- **Prevention:** Prevention is a policy paradigm that directs attention toward the underlying causal factors of potential harm, necessitating coordinated action. It is crucial not to conflate prevention with aggressive suppression or eradication (akin to an aggressive vaccine). Prevention typically operates across three levels, with the primary focus on the first two tiers, collectively known as “primary prevention”, which addresses both risk factors and protective factors. In contrast, the third level overlaps with intensive service systems to address more acute conditions. When governments intervene to mitigate the onset of problems, they are effectively operating at this third level of prevention.

6. Governance Approaches to Wicked Problems

Daviter (2017) categorizes the governance of wicked problems into three distinct strategic orientations: confronting, taming, and solving. These approaches function to reflect, reduce, or resolve the complexities of wicked problems, respectively. The confronting approach is deeply rooted in policy research and analysis; it eschews the attempt to “lock in” the problem-solution nexus. Instead, its objective is to frame the policymaking process as an “endless dialogue with reality”, a continuous process of uncovering new dimensions, expanding the scope of action, and identifying further opportunities for improvement. This form of constructive policy analysis views tools and objectives not as static end-states, but as integral components of ongoing inquiry and exploration. The goal of taming is to transform an unstructured, messy problem into a more structured and manageable one to facilitate decision-making. By treating disordered problems as if they were “tame,” policymakers can constrain participatory debate and clearly delineate administrative responsibilities (Daviter, 2017). To this end, researchers have identified six specific “taming” tactics (Lönngren, 2017):

1. Fixing the problem definition to preclude iterative redefinition;
2. Establishing rigid target parameters to measure the success of a solution;
3. Framing the problem as being “just like” a previously resolved issue;
4. Relinquishing the pursuit of an “optimal” solution; and
5. Postulating a finite set of options, whereby the task is reduced to merely selecting the “best” among them.

The final orientation, solving, remains a complex proposition. Daviter (2017) observes that much of the existing literature on wicked problems implicitly or explicitly suggests that such issues cannot be “solved” in the

traditional sense; rather, what is observed in practice are interventions that resolve only specific fragments or dimensions of the overarching problem. Further complicating this landscape, Ruhl and Salzman (2020) propose a typology based on the distribution and contestation of power. They suggest that:

- If power is concentrated around a solution (a condition that Levin et al. argue is often invalidated by the inherent nature of wicked problems), legitimate strategies for confrontation can be developed.
- If power is diffuse but uncontested, collaborative strategies can be employed to reach consensus.
- If power is both diffuse and contested, competitive strategies, such as market-based or political maneuvering, become the primary modalities of governance.

Moreover, effective collaboration can facilitate the management of wicked problems through three primary mechanisms. First, collaborative scientific networks enhance the understanding of the problem's nature and its underlying causal drivers. Second, collaboration fosters the emergence of interim or provisional solutions. Third, it catalyzes the development of new leadership roles that foster greater cohesion in action and response, a process encapsulated within the framework of collaborative governance. Nevertheless, it must be acknowledged that governing such problems is fraught with inherent challenges, most notably the fragmentation of political sectors and the multiplicity of governmental levels involved in the response (Daviter, 2017).

7. Discussion and Conclusion

Through a systematic literature review, this study has interrogated the ontological nature, dimensions, approaches, and governance modalities of "wicked problems". Bibliometric analysis of recent scholarship reveals an ascending trend in wicked problem research since 2017, suggesting that the concept is an evolving paradigm rather than a static phenomenon. The findings indicate that the only consistent commonalities across diverse scholarly perspectives are complexity, uncertainty, and value divergence among stakeholders. These attributes highlight the inherent difficulty in defining the boundaries of such problems. Indeed, the very nature of a wicked problem is characterized by fluidity; as one approaches a definition, the problem undergoes a metamorphosis, encroaching upon new domains. Crucially, the problem definition is inextricably linked to the proposed solution: the act of intervening often shifts the problem's configuration, necessitating a redefinition of the issue itself.

Contemporary challenges are becoming increasingly convoluted due to the intensification of social interdependencies, heightened public expectations regarding state sovereignty, and the profound entanglement of cross-sectoral issues. Traditional governance structures, predicated on bureaucratic hierarchies and centralized state authority, are increasingly inadequate to address these multifaceted realities, a deficiency that further exacerbates the complexity of the problems themselves. In this context, policy approaches anchored in singular, reductive rationality are unlikely to succeed. Instead, there is a pressing need to adopt actionable, contemporary governance theories. Effective governance in this realm depends less on the size or scope of the state and more on its adaptive capacity, institutional competencies, and the conceptual framework of its governance environment. To navigate these complexities, this study identifies several strategic pathways. One trajectory involves enhancing the knowledge base surrounding a specific problem; through robust R&D and a deeper understanding of its causal drivers, policymakers can foster improved problem-mitigation capabilities. Another pathway lies in strengthening stakeholder collaboration and refining the processes of political mediation and consensus-building. Finally, when a problem becomes deeply embedded in social norms and behaviors (rendering rapid, high-benefit solutions elusive) a preventative strategy becomes imperative.

This research identifies a significant gap in existing scholarship: while the theoretical totality of wicked problems has been extensively debated, there remains a paucity of research addressing the specificities of tailored policy analysis and corresponding governance modalities. Furthermore, the application of these concepts within the sphere of Public Administration remains underdeveloped. Addressing this gap holds profound implications for national administrative systems, including the promotion of sustainable development, the enhancement of public service quality, the reduction of systemic costs, and the advancement of procedural transparency. Moreover, appropriate governance of wicked problems can significantly optimize public service delivery and strengthen political, governmental, and managerial communications. In conclusion, the findings of this study offer a new conceptual lens for addressing complex phenomena. For public administrators operating amidst heightened uncertainty, this research provides the necessary diagnostic tools to identify wicked problems within administrative systems and equips them with an understanding of diverse engagement and governance strategies. For the academic community, this study serves as a foundational framework, clarifying the core concepts and literature

essential for advancing future inquiry into the domain of wicked problems.

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