

Service Design for the Public Sector

Challenges and Opportunities to Design for the Complexity of Public Endeavour

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Abstract

This contribution examines the application of Service Design within the public sector, drawing on the challenges posed by the so-called wicked problems to understand its potential and limitations. By critically reflecting on the unique constraints and complexities of government services and the differences with their commercial counterparts, the scope is to identify possible trajectories for future research and practice. While Service Design integrates multiple perspectives and works at different scales, responding to external and internal disturbances, it requires a comprehensive knowledge base that considers wicked problems' properties such as demos, fragility and antifragility, degree of wickedness, public formation, plurality of values and approaches to Service Design for the public sector. Recognising these limitations and opportunities, the contribution invites a more nuanced understanding of Service Design in the public sector to decipher and address societal challenges.

Keywords

Public sector innovation
Wicked problems
Complex system change
Multi-stakeholder engagement
Cross-disciplinary research

Introduction

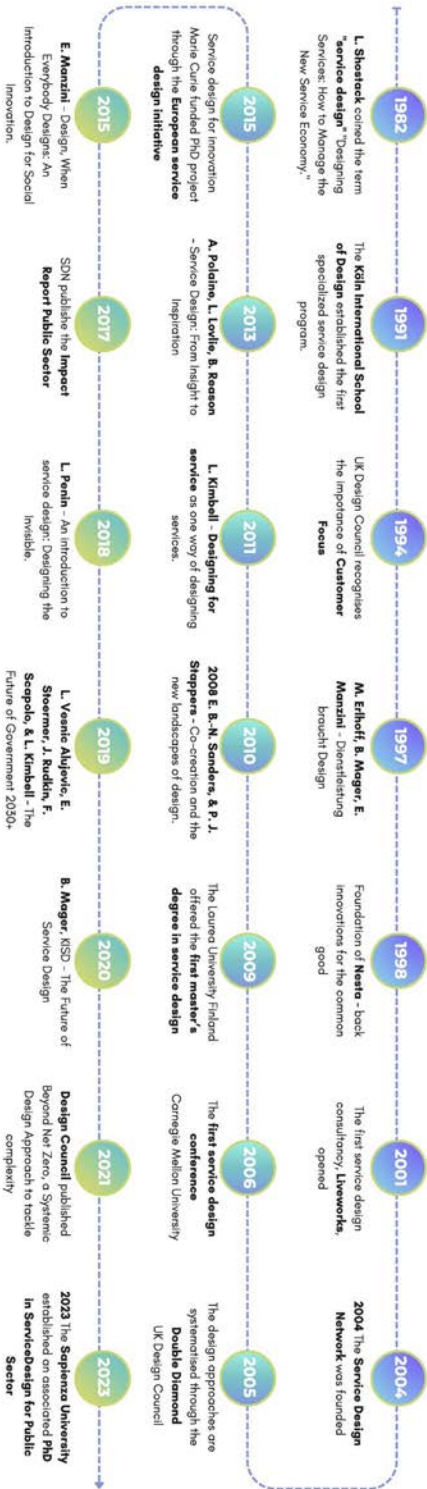
The rapid evolution of user interactions with products, environments, and systems has led to an increased complexity in service delivery. In search of innovative ways to address new needs and expectations from users, Service Design (SD) has gained particular attention both in the private and public contexts (Stickdorn & Schneider, 2012). Equally, scholarly research and practical applications in this domain are expanding into the design of public services (Penin, 2018; Sangiorgi & Prendiville, 2017), spanning from healthcare (Patrício et al., 2018) and government (Bason, 2017), to social innovation (Manzini, 2015). However, the interaction between the introduction of design as a new approach in public organisations and the management of their change is redefining the practice of designers and has implications for research and education efforts. The unique complexities of the Public Sector (PS) may require a more intricate frame that best suits its ever-changing challenges such as political, economic, and legal constraints (Whicher et al., 2016).

Whereas previous literature has identified positive impact areas in the PS such as policy making, cultural and organisational change, training and capacity building, citizen engagement, and digitalisation (Mager, 2016), the activity of designing public services happens within decision-making, institutional and legitimate bodies where design may be considered underrepresented (Lewis et al., 2020). Moreover, the application of design in public services is beneficial for dealing with the so-called “wicked problems” (Hermus et al., 2020). These complex challenges, such as poverty, marginalisation, climate change, gender inequality, and other societal issues, are difficult to locate with precision, and their effects can be pervasive within the system. This contribution examines the evolving landscape of SD, its positioning within the PS, and the specific properties of wicked problems to unfold the multifaceted characteristic of the unique public endeavour and draw suggestions for future research trajectories, while strengthening the robustness of public SD application. Through an integrative review approach (Snyder, 2019), this contribution explores the models and concepts emerged, developed and consolidated over time by SD for the PS.

Retrospectives of Service Design

Having emerged at the intersection between design disciplines, particularly industrial design, and management and engineering sciences (Morelli, 2002), SD traces its origins back to 1982, with Shostack’s work suggesting that service development could be treated as a production system, and appropriately communicated through a specific terminology (Shostack, 1982). It has rapidly developed a distinct corpus and operational paradigm, as illustrated in Fig. 1.

Fig. 1
SD milestones since its
emergence in the early
1980s up to today
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within which value is co-created, rooted in a constructivist approach to design where all actors are involved in an ongoing inquiry and in an understanding of service as the fundamental basis for exchanges of value (Kimbell, 2011).

Services today are recognised as part of organisational systems, requiring both incremental changes — to reach deep into the organisational structures — and fundamental transformations to meet societal challenges (Polaine et al., 2013). The widespread adoption of SD across various industries has facilitated the establishment of this strategic approach within the PS. However, it can be argued that its implementation in this endeavour presents unique complexities and challenges due to the entanglements between the public, the market, and the state (Junginger, 2016).

Positioning Service Design in the Public Sector

The functioning of public services is at the heart of modern democracies: their success or failure enables people to access fundamental rights and respond to their obligations, ultimately influencing the health of just and fair societies. In the constant struggle to deliver better services with limited resources, governments have begun to adopt different approaches to innovation, including SD methodologies (Mager et al., 2020).

McNabola et al. (2013) proposed the “Public Sector Design Ladder”, a three-stage framework to assess the maturity level of design in the PS, distinguishing “design for discrete problems”, in which designers and design skills are employed for individual projects for example for the Anagrafe Nazionale Popolazione Residente (the new National Italian registry), from “design as a capability” integrated within the culture of public institutions and the way they work and make decisions, as exemplified by the courses designed by the Chilean Laboratorio de Gobierno which seeks to accelerate transformation in the Public Administration; and, finally, “design for policy”, in which design is used by policymakers to overcome common structural problems, as shown in the joint effort Farmers of the Future promoted by the EU Policy Lab. Despite the notable increase of innovation labs within the PS, spanning different levels of government from local to national and international bodies, it seems that the simple translation of design in the context of public services is not effortless (McGann et al., 2018). Government services differ from commercial ones in serving diverse populations, sharing ownership across institutions, and prioritizing intergenerational justice (Gall et al., 2021). Their provider-user relationships are often tense, as governments must balance meeting citizens’ needs with enforcing obligations like taxation (Brinkman et al., 2023). While the OECD’s Observatory for PS Innovation (OPSI) sees SD as a “relevant discipline and practice” for shaping public services, it also highlights the need to rethink and adapt the discipline’s principles, practices, and methodologies for the PS².

Public services, shaped by negotiation and public discourse, require a clear taxonomic approach to address the complexities of the PS and position SD as an agent of change. While design focuses on problem identification, idea generation, and prototyping, progress



must prioritize systemic change, scaling solutions, and evaluating initiatives (Lewis et al., 2020). Additionally, exploring SD's value in the PS demands ongoing research to address its multifaceted challenges, including wicked problems.

Value of Service Design in the Public Landscape

The SD Impact Report highlights five key impact areas: policy making, cultural and organisational change, training and capacity building, citizen engagement, and digitalisation. In policy making, SD fosters a human-centred approach, reduces failure risks, and facilitates stakeholder knowledge exchange (Mager, 2016), as exemplified by Idea Zaragoza, a 2021 citizen co-design platform in Zaragoza, Spain. For cultural and organisational change and capacity building, SD challenges traditional practices, driving transformation through user-focused exploration, training, and hands-on learning, as seen in the CoSIE project, in which public officials gained skills for service innovation (Yee & White, 2016). Citizen engagement is strengthened by cultural probes and simplified visualisation, enabling citizens to actively participate in co-creation (Sangiorgi, 2015). The ReSET (Restarting Economy in Support of Environment through Technology) project makes complex environmental data understandable, empowering citizens to make informed decisions to help shape new ways of agriculture and urban development across Europe. Finally, SD impacts positively on the digitalisation of public services. By working across organisational boundaries, SD methodologies ensure that the result — the new digital service — does not reflect the internal and siloed structure of government, promoting the realisation of seamless experiences for citizens and public officials (Welby & Tan, 2022).

The new FSE (Fascicolo Sanitario Elettronico) released by the Italian government demonstrates the ability of SD to engage different stakeholders, such as the Ministry of Health, the Regions, the Provinces, and the Agency for Digital Italy, providing a single platform for citizens to access their health records. The five impact areas underscore the inherent value of SD in enhancing processes, fostering stakeholder engagement, and streamlining communication within organisations (Stickdorn & Schneider, 2012). These are equally applicable to governmental bodies, which can leverage SD to optimise and innovate service delivery amidst a complex network of actors, stakeholders, and users. Nevertheless, criticalities may arise in response to the emergence of the so-called 'wicked problems' arising from the contemporary development of human society, namely, high complexity, high interactivity, high ambiguity, and high developmental speed (Banerjee, 2014). SD research and practice in the PS, therefore, should recognise those complexities to cater for emerging and unpredictable criticalities, learning from the diverse enactments of wicked problems.

Deciphering Wicked Problems for Public Service Design

Wicked problems are described as modern social problems that are poorly defined and cannot be solved by a traditional engineering approach (Buchanan, 1992; Rittel & Webber, 1973). Although difficult to capture, it is possible to extrapolate some of their key characteristics to strengthen the understanding of SD as a means to tackle complexity in the PS. For this purpose, an integrative review revolving around complexity theory and related PS wicked problems has been adopted.

As Head & Alford (2015) propose, it is possible to categorise wicked problems based on their degree of wickedness: those for which both the definition of the problem and the solution are clear to decision makers and that require specific technical work; some in which the problem is clear but the solution is not, so learning and discussion is required by all concerned; and others for which both the problem and the solution are unclear, requiring additional learning and discussion by all stakeholders. Additionally, Zonneveld et al. (2024) recognises that wicked problems are defined by the plurality of values attributed to their nature and their possible solution (e.g., what is defined as welfare services may vary according to different stakeholders). Rather than viewing this value differentiation as a barrier, they advocate embracing it as an opportunity to develop a successful set of interventions to address wicked problems. Dantec & DiSalvo (2013) introduce the concepts of infrastructure and attachments in participatory design as crucial elements in forming “publics” (Dewey, 1954) around critical social issues. These strategies are essential for responding to the inevitable challenges that arise from interactions with socio-material things, offering a platform for collective expression and action.

The 5R Governance Capabilities framework developed by Termeer et al. (2015) provides a useful lens for understanding the characteristics of wicked problems, listing reflexivity, resilience, responsiveness, revitalization, and rescaling as key attributes. Reflexivity is defined as the ability to recognise and deal with problems and multiple perspectives. Second, resilience is the ability to adapt to unpredictable and frequently occurring and changing circumstances without losing identity and reliability. Third, responsiveness refers to the nature of wicked problems that are composed of an almost infinite number of aspects that require shifting attention to the social and political agenda. Fourth, revitalising is described as the ability to unlock and reinvigorate stalled policy processes, thereby changing established behavioural patterns, which are often the outcomes of previous power dynamics. Finally, rescaling is the ability to address the mismatch between the scale of a problem and the scale at which it is managed.

Gandolfi (2008) couples the management of complex systems change with a thorough understanding of unpredictable positive feedback, or “demons,” that challenge established routines, increasing systems’ instability. However, critical “resolutive” feedback can help navigate the complexity, leading the systems toward a higher level of evolutionary stability as natural and social systems

evolve in nonlinear and unpredictable behaviours. Thus, a comprehensive understanding of uncontrolled complexity necessitates an instrumental approach that leverages properties of wicked problems as a valuable opportunity for innovation. For instance, inherent properties of complex systems with regard to external and internal threats and opportunities are the concepts of fragility and antifragility introduced by (Taleb, 2012). Fragility is the susceptibility of a system to suffer from variable external forces beyond a certain threshold, leading to breakage, failure, or loss of value. Whilst antifragility is the ability of a system to increase its capacity in response to predetermined thresholds and to benefit from external stresses. The concept of antifragility is particularly relevant in the context of public services. It underscores the importance of designing for volatile and uncertain environments, thereby increasing the relative survivability of public services and eliminating those that are highly dependent on rigid and predefined conditions, such as a specific political party or fixed resource allocation.

While SD offers valuable approaches for incorporating multiple perspectives and working at different scales, it may be less antifragile to external shocks, less adaptive to changing political and social agendas, and less effective to work with stagnant policy efforts. Therefore, accompanying the PS with SD means understanding and considering the special requirements that lie in developing services that tackle the constraints and peculiarities associated with wicked problems, as synthesized in [Tab. 1](#). Qualities such as the ability to recognise the varying degrees of wickedness, the acknowledgment of the diverse perspectives and values associated with wicked problems, the capacity to foster a safe environment to share key knowledge among stakeholders, to consider wicked problems' governance capabilities, and to identify fragile and antifragile public services in relation to external and internal shocks, should be at the core of ongoing exploration and the adaptation of SD approaches to address the complexity of PS entanglements.

Authors	Wicked Problem properties	Wicked Problem deciphering	Strategies to tackle Wicked problem
Gandolfi (2008)	Positive feedback (or "Demons")	<ul style="list-style-type: none"> Unpredictable positive feedback that challenges established routines, increasing systems' instability. 	<ul style="list-style-type: none"> Work with "resolutive" feedback to navigate the complexity, leading the systems toward a higher level of evolutionary stability
Taleb (2012)	Fragility and antifragility	<ul style="list-style-type: none"> The susceptibility of a system to suffer from variable external forces beyond a certain threshold; The ability of a system to increase its capacity in response to predetermined thresholds and to benefit from external stresses. 	<ul style="list-style-type: none"> Enhance the antifragility quality of complex systems to external shocks and leverage opportunities that arise from disruptions.
Head and Alford (2013)	Degree of wickedness	<ul style="list-style-type: none"> Type 1: The definition of the problem and the solution are clear to decision makers; Type 2: The problem is clear but the solution is not; Type 3: The problem and the solution are unclear. 	<ul style="list-style-type: none"> Type 1: Require specific technical work; Type 2: Learning and discussion is required by all concerned; Type 3: Additional learning and discussion by all stakeholders is required.
Dantec and DiSalvo (2013)	Public formation	<ul style="list-style-type: none"> Constitution of publics as the definition of Dewey (1954) around critical social challenges in participatory design 	<ul style="list-style-type: none"> Infrastructuring is the creation of the underlying networks that enable collective action. Attachments are the emotional and social connections that individuals form with the socio-material things they interact with.
Termeer et al. (2015)	Plurality of approaches	<ul style="list-style-type: none"> Existence of various governance strategies to cope with wicked problems, and the hindering or enabling conditions of the governance institutions that constrain or encourage these strategies, as well as their mutual interplay. 	<ul style="list-style-type: none"> 5 R Governance Capability Framework
Zonneveld et al. (2024)	Plurality of values	<ul style="list-style-type: none"> The nature and value attributed to wicked problems vary according to the type of stakeholder involved 	<ul style="list-style-type: none"> Consider value differentiation as a positive attribute to design successful interventions

Tab. I
The table represents a summary of the main products that delve into complexity within systems and provide valuable examples of SD approaches in the PS.

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New Trajectories and Research Perspectives of Service Design for Public Sector

This contribution reveals that while SD is well-equipped to engage multiple stakeholders and operate at different scales of social problems, it may be less resistant to external shocks and less responsive to both changing political and social agendas and stalled policy processes. The recognition of these limitations advocates for a more nuanced understanding of SD in the PS, and for the necessity of an ever-evolving framework for the future of SD, that is both shaped by the emerging and complex PS scenario and constantly informed by interdisciplinary research. By acknowledging the importance of integrating different properties of wicked problems to foster innovation in public service, a multidisciplinary approach to SD research and practice is essential. Joint research efforts to respond to the diffusion of SD in the ever-changing and complex PS have started to emerge, synergically engaging different societal actors. This has resulted in the establishment of doctoral research programmes, including the associated PhD programme in *Service Design for the Public Sector*. Initiatives such as these play a pivotal role in building tailored research lenses to examine the discipline and uncover future research trajectories, developing a new body of knowledge that encompasses tools, methodologies, and processes to effectively address the public dimensions of the practice.

This contribution lays the ground for a knowledge base for the intersection between the properties of wicked problems and SD for PS. Challenges posed within healthcare, education, policy, inclusion, social innovation, green transition, marginalisation, and other pressing social challenges represent the opportunity to further expand the knowledge base related to wicked problems and public SD and their intertwined nature. The recognition of these entanglements is crucial to establishing SD for the PS into a more coherent, valuable, and robust discipline that recognises the plurality of voices, perspectives, and experiences of democratic societies worldwide.

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She is co-founder and President of the International Service Design Network. Since 1995, she has held the first European professorship for 'Service Design' at the University of Applied Sciences in Cologne, Germany. Since 2024 she is a member of the Advisory Board at the Sapienza Università di Roma in the Ph.D. programme Service Design for the Public Sector.

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