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What do designers bring to the table? Identifying key design competencies when designing for societal challenges in the public sector

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Abstract: There is an increasing interest in the public sector for the repertoire of designers and the value it can bring when working on complex societal challenges. However, what constitutes this repertoire is often not articulated clearly, or it is explained in such generic terms that it is hard to draw disciplinary boundaries. Drawing from literature, we identify four competencies—integrating, reframing, formgiving and orchestrating—as distinctive for the discipline of design. Through several examples we show how these competencies feature in the design process, and how these competencies drive different design practices. Although these competencies have to a certain extent always been part of the design discipline, they need to be adapted to the context of complex societal challenges. Hence, we conclude this paper by discussing how these competencies are to be developed and adapted to strengthen the value of the design repertoire when dealing with complex issues in the public sector.

Keywords: design practices; complexity; design competencies

1. Introduction

In the public sector there is an increasing interest in and recognition of the value of design practices when working on complex societal challenges (Bason, 2018; van Buuren et al., 2020). In light of the many complex societal challenges—such as climate change, housing shortage, ageing population, organised crime and growing inequality—there is an increasing belief that conventional approaches to policy-making do not suffice in adequately tackling these issues (Dorst, 2019b; Peters, 2018) and that design practices have characteristics that make them suitable for the complex, ambiguous, uncertain and networked nature of these issues (Buchanan, 1992; Dorst, 2015; Kimbell, 2019).

Since its inception, the design discipline has greatly developed. Although this development can be loosely depicted as a sequential evolution—moving from product to interface, interaction, experience, service and systemic design—it was primarily a process of expansion as opposed to replacement (Buchanan, 1992; Voûte et al., 2020) where all these various types of design still co-exist today. This broadening of design practice means that design has over the years manifested itself in a greater variety of form: from products and spatial interventions to services, product-service systems and contributions to policy and legislation—considering more 'things' as object of design, like work practices, social relationships, and system principles. With new objects of design, design approaches are now more and more applied in domains that acknowledge and deal with increased complexity (Jones & van Ael, 2022).

The expansion of the design practice has gone hand in hand with the trend that more professionals with other disciplinary backgrounds started to apply design methods in their practice. *Design thinking* is used as an overarching term to refer to various techniques and methods that are part of the typical repertoire of the designer. Popularised by Brown (2009) and Martin (2009) these techniques are also used by non-designers to achieve new innovations and solve problems. However, there is no overarching design process where, if you just go through the steps, you are guaranteed to achieve good results (Cross, 2023). Design is a practice, where design expertise plays an important role in matching the right approach, methods, and techniques with the specific problem situation at hand (Laursen & Haase, 2019). When design is conveyed through process models (e.g., IDEO 5-steps, double diamond) or specific methods (canvases)—it is does not articulate what designers *actually* do, and therefore have to offer.

Thus, designers have some expertise that they can bring to the table when design for complex societal issues, yet articulating what exactly it is that they bring to the table remains a challenge. Yet being able to do so is imperative to understand when to leverage design to realise an intended change, and when to consider an alternative strategy (Nelson & Stolterman, 2012), for instance when setting up a collaboration with an issue owner, decision maker or other stakeholder. As the design discipline expanded to encompass more and more approaches, methods and techniques—our understanding of how to intentionally use design to create change remains fragmented (Niedderer et al., 2017; Valtonen, 2020)

There are several ways used to describe what design does. One way to describe what design does is by demarcating its specific niche subdiscipline, using respective design labels (Stappers et al., 2023), such as product design, user experience design, service design, social design, etc. But as these subdisciplines shift towards becoming more impact-centred (Fokkinga et al., 2020) disciplinary boundaries once defined by the outcome of design begin to blur. The result of social design can be a product, service, or policy—but that does not mean social design practice is both product, service and policy design at the same time. While manifestation-oriented practices of design like graphic, fashion, or product design, speak to one's imagination in terms of what these designers do, impact-centred practices cannot be grasped that easily.

A better way to explain what impact-centred designers do, is by specifying the role they play in a process (Gaziulusoy & Ryan, 2017; Manzini, 2015; Minder & Lassen, 2018) or in a specific context (Geenen et al., 2022). Roles like facilitator, navigator, visualiser, mediator, jester, and provocateur give a much better depiction of *what* designers do. Nevertheless, it does not explain well *how* and *why* they do what they do. What is the specific expertise that is of particular value to fulfil such a role? And why is it the designer that takes on such a role, and not someone from another discipline? Hence in this paper we will direct our attention to the specific competencies that underly the repertoire of design practitioners in face of complexity, and thereby make it distinctive from other disciplines.

Policy-making can in a very general way be seen as the actions taken to solve societal problems. As such problems are increasingly of a persistent, complex and networked nature, we take the complexity of such problems as the starting point for our exploration. This means we first scope the field of complex issues—the specific application area of design practices that is of interest here—and why design can bring valuable complementary repertoire to these kinds of issues. Then we identify four core competencies that are distinctive for the design discipline when working on complex societal issues. We show how these competencies relate to each other through discussing several cases. Finally, we conclude this paper by discussing how these competencies should be further developed and adapted to the context of complex societal issues in the public sector.

2. Design as appropriate repertoire for dealing with complex issues

Complex issues arise from complex contexts that are dynamic and unpredictable (Snowden & Boone, 2007). Solutions to these problems that are based on linear causal thinking often have limited or even the opposite effect. For this type of problem, also known as *wicked problems* (Rittel & Webber, 1973), it is argued that systemic change is needed to transform to a desired situation, because many interconnected and interacting elements influence each other. For example, young people who become homeless often do so because of many different factors: individual factors such as mental health, addiction, poverty, and a lack of social network, but also societal factors such as the housing shortage, the way we organise youth care, and regulations that cut parents benefits when their children turn 18. For such complex issues it is not possible to make predictions of change based on linear cause-and-effect thinking alone. The ‘problem’ is often a symptom of an underlying systemic pattern (Jones, 2014; Murphy, 2022) and solutions that do not break this underlying pattern are just a 'band-aid' with short-term and limited effect.

This poses a challenge for public organisations that are used to working in silos and with a structured approach that aims to reduce risks (Dorst, 2019b). Often-times the reflex to do more research to better understand the problem, or to deliberate longer to reach consensus, does not lead to the desired result. In fact, it leads to paralysis—something that only makes urgent issues bigger. Complex situations require a different approach to problem-solving, one that revolves around informed and controlled probing of the situation as opposed to solely relying on analysis (Snowden & Boone, 2007). Addressing complex problem

situations well therefore requires both comprehensive analysis of all systemic (inter)relations and dependencies to uncover underlying systemic patterns as well as an alternate mode of problem-solving aimed at altering those patterns to drive meaningful systems change.

Design practices have potential to offer value in this complex, ambiguous and uncertain situations. First of all, design practices can meaningfully explore the future by developing visions (Dorrestijn et al., 2014; Kimbell, 2019) and artefacts, to question social or technological implications (Malpass, 2017), or to provide guidance in collaborative learning (van der Bijl-Brouwer et al., 2021). This requires both analytic and synthetic reasoning (Ackoff, 1994) to take a step back and question the current situation from various perspectives—slowing down before jumping to a conclusion or solution. Yet, as previously highlighted, extensive analysis alone will not provide a conclusive picture of the situation. Design practices can deal with situations that are ill-defined (Cross, 2006), moving forward without having all information. Abductive reasoning is central in this (Dorst, 2011; Roozenburg, 1993), for instance by developing artefact and its working principle in tandem. Understanding of the issue, potential interventions, collaborative practices, and relationships between actors then co-evolve (Crilly, 2021; van der Bijl-Brouwer et al., 2021). And this is not a purely cognitive process, as it involves making, doing and being in the world—thereby involving, engaging and empowering other stakeholders in the process (Kimbell, 2012).

The discussion above highlights several aspects that demonstrate the value designers can bring when working on societal challenges. In the next section we will dive deeper by identifying the four core competencies that underly these aspects.

3. Identifying core competencies…

In this paper we use *competencies* to describe what designers do in the context of complex societal challenges. Competencies are a term coming from the fields of strategic management and organisational theory, but it is also used in literature on education and learning. Competencies are capabilities or abilities that describe a set of various but related behaviours centred around a shared intent (Boyatzis, 2008). Yet in literature very little attention is given to what specific design competencies are relevant when designing for complexity.

To describe design, reference is often made to the definition of Simon (1996): all forms of activity that help transform the current situation into a more desired situation. Although this definition is not incorrect, it is very broad (as it can refer to many more disciplines) and thereby obscures the value of what design expertise can bring. Like many, we acknowledge that shaping our (social) environments is a capability that is innate to human beings and as such, design is an activity exercised by non-professional or trained designers in their day-to-day lives. In fact, this process is key to relate and engage with to achieve systemic change (Vink, 2023). However, while many scholars discuss how design can be staged or embedded, relating design to philosophies and theories of social change, no design theories exist that explain what design expertise specifically can offer in a societal context.

There are some attempts in literature to identify design competencies (though not all are explicitly referring to them as competencies). For instance, Morelli et al. (2021) identify several core capabilities for service design (such as vision building, modelling and engaging stakeholders). Kunrath et al. (2020) discern a set of personal attributes (such as confidence, creativity and empathy) and design skills (such as cognitive abilities, personal communication and project management) as the main constituents of designer's professional identity. Yet these definitions often fail to capture the essence of the discipline, as:

> "Some of them are far too general, like 'creativity'. All disciplines require creativity—design does not hold a disciplinary right to it. Other suggestions are often skill based, like 'the ability to draw.' Certainly designers need this skill, but drawing itself does not constitute design competence." (Conley, 2011)

Conley (2004, 2011) identifies seven competencies as core to the discipline of design in general: the ability to recognise potential in and (re)frame a problem; work across varying levels of abstraction; model and visualise solutions in ill-defined situations; solve problems through the simultaneous generation and evaluation of multiple alternatives; add and maintain value as elements are integrated as a whole; identify and respond to relationships between solution and its context; use form to embody ideas and communicate their value.

Yet, as design practices are applied to societal challenges design-driven approaches must also adapt to the needs and nature of that new application area (Dorst, 2018). Da Costa Junior et al. (2018) show that a systems design approach to complex societal challenges requires capacity building by introducing systems thinking into design competencies. In their framework and study the core competencies as proposed by Conley are enhanced with factors such as scale, complexity, and adaptability—but without altering or rephrasing this list of competencies.

To make the core of the discipline explicit we feel that these core competencies need revision too, to attune them to the domain of complex societal challenges as well as frame them in a way that facilitates in describing that core. We identify four core competencies that designers rely on when designing for complexity: *integrating*, *reframing*, *formgiving*, and *orchestrating*. We frame these competencies deliberately at a high abstraction level to account for competencies being integrations of various mindsets, knowledge, skills and tools (Nelson & Stolterman, 2012). We briefly explain each competency below, describe in which design activities and methods these core competencies are expressed, and describe why they are valuable for addressing complex societal challenges.

3.1 Integrating

For effectively working on societal issues, it is essential to weigh and bring together interests and perspectives into a whole: integration. Design is an integrative discipline (Max-Neef, 2005), as it synthesises knowledge from different (scientific) disciplines as well as experiential knowledge (van der Bijl-Brouwer, 2022a) such as perspectives of various human (Blomkamp, 2018) and non-human stakeholders (Veselova et al., 2022), short- and long-term perspectives (Tromp & Hekkert, 2019), and local, national and global perspectives.

Central in this holistic approach—especially in the context of complex issues—is the resolution, reconciliation or juxtaposition of various competing demands as in (social) dilemma's (Özkaramanlı, 2017; Tromp & Hekkert, 2019), concerns (Björgvinsson et al., 2012) and paradoxes (Dorst, 2006; Neuhoff et al., 2022) into wholes.

Participatory design practices play an important role here (Sanders, 2002). Over the years, designers have increasingly focused on and become skilled at investigating the interests and needs of people regarding a specific subject, whether as a 'user', 'consumer' or as a 'citizen'. Designers often conduct context research (Sleeswijk Visser et al., 2005; Stappers & Sanders, 2012) into people's lived experience and have various analytical and synthetic methods at their disposal to make experiences, worldviews, perspectives and interests tangible and understandable—to communicate them or unite them in surprising outcomes.

3.2 Reframing

In societal issues where existing approaches have not led to the desired change, reframing can help to arrive at new perspectives on the issue. Reframing is the targeted exploration of alternative interpretations of the issue, which provides insight into new courses of action and solutions (Dorst, 2015). In this process, designers often use metaphorical or analogical reasoning (Hekkert & van Dijk, 2011). Reframing also involves stretching and shifting the boundaries of the system for which and within which designs are made (Jones, 2014).

Imagination, systems thinking, and creativity are important supporting competencies in reframing. By developing future visions (Kimbell, 2019), frameworks (Hekkert & van Dijk, 2011; Tromp & Hekkert, 2019), or speculative designs (Dunne & Raby, 2013), designers help make new worlds relatable and stimulate thinking. Here design can also challenge beliefs and values, making conflicts and disagreements visible to support in critically engaging with each other's perspective as opposed to developing consensus (DiSalvo, 2012). In these various ways designers break open stalled debates or arrive at new, appropriate, and original courses of action.

3.3 Formgiving

Design focuses on shaping ideas and concepts of new futures. For this, designers alternate between different levels of abstraction, from theories and concepts to concrete solutions and details. This can involve the outcomes of a design process that help people do things differently—such as products, services, or systems—as well as generating knowledge through making and prototyping (Stappers & Giaccardi, 2017) to learn about the issue. Designers also direct their formgiving skills at developing interventions and working methods to make intangible matters such as viewpoints, perspectives and social structures tangible and open them up to scrutiny in a design process (DiSalvo, 2012; Vink et al., 2021).

The iterative nature of the design approach is important in this competency, to see whether design qualities of the design lead to desired behavioural or experiential effects (Tromp & Hekkert, 2019). Results of user research have an informing function: not to demonstrate, but to understand how it can be more effective, better, or more meaningful. In this way, with

relatively little investment, insight can be provided into the effectiveness of a specific intervention, or a better understanding of the issue can be obtained. This can also contribute to gain understanding of the systemic effects that result from intervening in a relatively safe way (Snowden & Boone, 2007).

3.4 Orchestrating

In order to develop interventions, it is important to bring together and help different parties to orchestrate change (Bason, 2018). The design process and design methods can provide structure for this. Therefore, orchestrating productive collaboration is also an important design competency, although it is a competency that is still developing and not yet fully defined. Complex issues require transdisciplinary, multi-stakeholder processes over a prolonged period of time. The intended change is the outcome of multiple interventions that need to be developed simultaneously in conjunction with other initiatives (van der Bijl-Brouwer et al., 2021). Therefore, *navigating* and *steering* this change (Raijmakers et al., 2015), also referred to as *stewardship* (Boyer et al., 2013), is a valuable competency.

Design practice offers methods to unite different stakeholders in a constructive way around an issue (Hyysalo et al., 2019). Central in this is the development of boundary objects (Akkerman & Bakker, 2011; Star, 2010) that help constructive conversation between various stakeholders. Although these artefacts, visualisations or other representations are interpreted differently by stakeholders, they can engage all those stakeholders in way that allows to develop shared understanding between them. By developing involvement and a shared vision among stakeholders (van der Bijl-Brouwer et al., 2021), expectations, values, and interests become visible and discussable. This allows for reflexivity, the continuous critical examination of choices made in identifying and integrating various values, priorities, worldviews, expertise and knowledge (Polk, 2015).

4. …driving a variety of practices

To illustrate how the identified competencies feature in practice, how they relate to each other, and how they drive different design practices, we will now present several example cases of design practices addressing complex issues in the (semi-)public sector (Figure 2 to 5) derived from prior executed research studies (van Arkel & Tromp, 2023; van Arkel & van der Bijl-Brouwer, 2022). Although we identify four core competencies that combined in practice distinguish the design approach from other approaches, it is not the case that there is only one way to approach societal challenges through design. Design encompasses a variety of different practices. Our observation is that in those various practices one of the competencies is *driving*, and thereby characterises the design process and the specific approaches, methods and tools used (Figure 1).

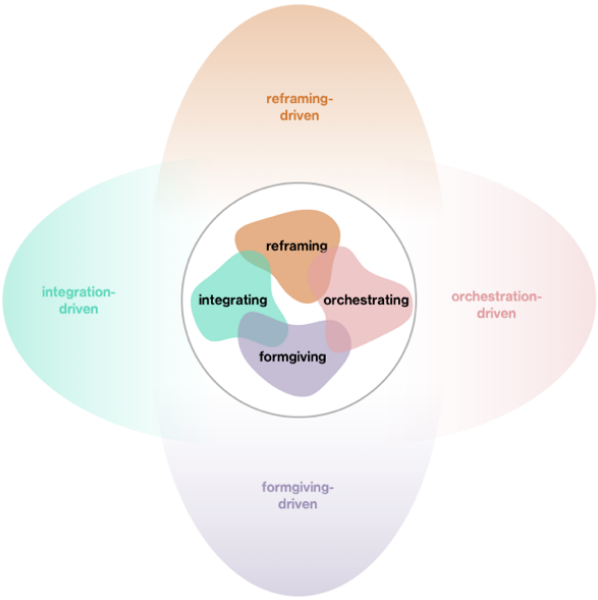

Figure 1 Overview of four archetypical design practices for complex societal issues, where one of the competencies is driving and the other are supportive.

In an *integration*-driven design practice, the investigation of a variety of perspectives on an issue is central to resolve them into a grounded yet surprising optimum. An example of this is *Redesigning Psychiatry* (Figure 2), a network of designers, philosophers, researchers and (mental) healthcare professionals who explore what a desired and meaningful mental healthcare system would look like if we could 'start over'.

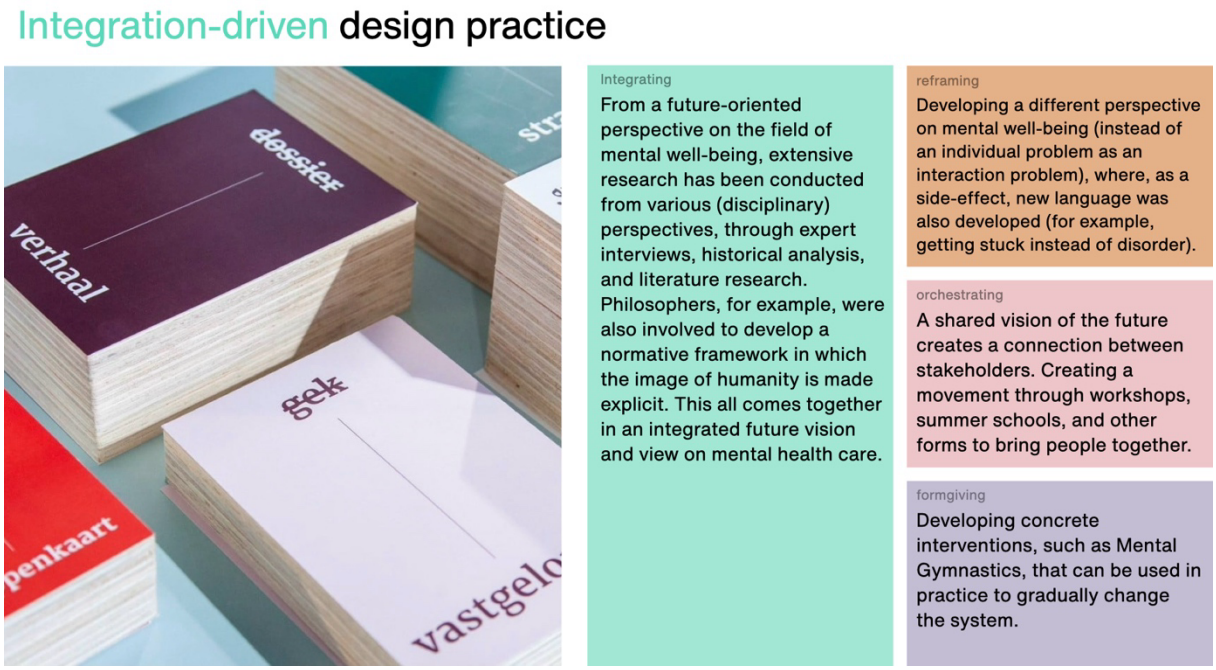

Figure 2 Redesigning Psychiatry (a project by Reframing Studio, TU Delft, 16 mental health institutions in the Netherlands, and others) developed a new vision on mental well-being of future generations by working on a reliable, accessible and flexible mental health network (based on Adriaans, 2023).

They developed a vision through research and integrating various disciplinary theories and perspectives. This vision communicates a different perspective on what mental well-being means, and serves as the foundation for the development of interventions to foster a transition towards such a new system.

A *reframing*-driven design practice is more focused on questioning the status quo, exploring alternative perspectives and respective directions for solutions. *House of the Future: BoTu on Human Power* (Figure 3) illustrates this well. In a diverse and multicultural district in Rotterdam they explore alternative ways to approach the energy transition, challenging the conventional technology-focused approach. They did this by tapping into the experiential and indigenous knowledge from other cultures and societies already present in the neighbourhood on how to live without the use of electric power.

Figure 3 House of the Future: BoTu on Human Power (a project by Human Power Plant, Bakkerij de Eenvoud, Academie voor Beeldvorming, and others) is a community center in the Bospolder-Tussendijken district in Rotterdam where neighbourhood residents and artist together prototype a future society driven by human power (based on van Arkel & van der Bijl-Brouwer, 2022).

A *formgiving*-driven design practice is mainly focused on the concurrent development of knowledge about the issue and a direction for solutions through iterative rounds of development and evaluation of interventions. *Seev* (Figure 4) is a project that was developed in such practice, to develop a service for young people to pay off their bills before they turn into problematic debts. They did this by working iteratively in co-creation with the target group as well as with stakeholders, mediating between them to grow the initiative into a functioning service with real creditor organisations.

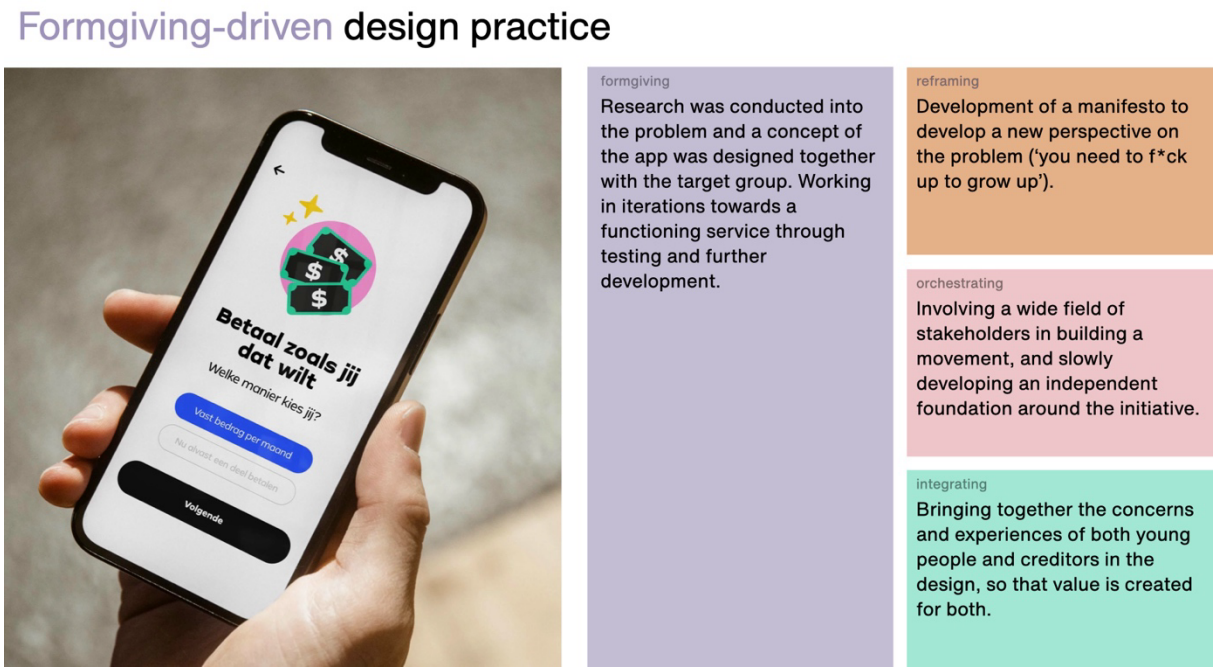

Figure 4 Seev (a project by Afdeling Buitengewone Zaken and Garage2020) is a service that supports young people in gradually paying off bills to prevent problematic debts (based on van Arkel & van der Bijl-Brouwer, 2022)

And in an *orchestration*-driven design practice, connecting different partners and stakeholders in a joint process is central. Social Design Police (Figure 5) orchestrated change on various levels. Primarily, it coupled a police officer to a designer or artist to work on an issue in the neighbourhood to learn from each other's way of working. Furthermore, this helped to develop new perspectives on the role of police work in the neighbourhood in general. The project served as an initial exploration of what design practices can bring in the police organisation, helping the initiators to employ more creative practices to orchestrate desired organisational change.

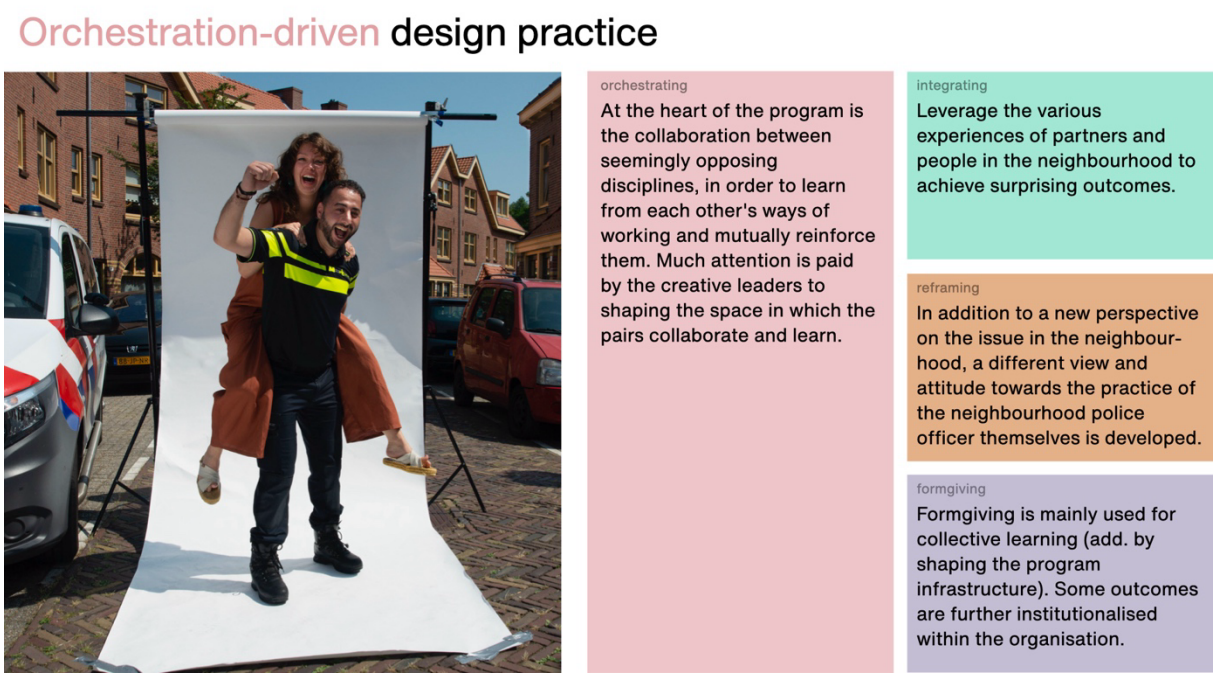

Figure 5 Social Design Police (a project by the Dutch National Police, Studio Goudswaard and others) is a programme where local police officers and social designers/artists collaborate as 'strange friends' on social issues in a neighbourhood (based on van Arkel & Tromp, 2023).

Our discussion of the cases show that the other three competencies serve the driving competency. Some competencies even have strong links between them, such as integrating and reframing are often dependent on each other. For instance, in Redesigning Psychiatry (Figure 2) the extensive use of integration lays the groundwork for developing a new perspective on the mental healthcare system (and thus reframing). However, contrary to how most process models describe what designers do, there are no steps or linear order how the competencies are used as they feature continuously within the process.

Conceptually it makes sense to separate these competencies, but in practice it is hard to clearly differentiate them from each other. That is in part because competencies are used concurrently, such as in Social Design Police where formgiving is used to high degree to both create the infrastructure for productive collaboration as well as to orchestrate the collaborations. Nonetheless, the distinction helps to do justice to the various different design approaches that exist on the one hand, while they do support our understanding of why these practices are *design* practices. Additionally, their conceptual distinction can serve design education and stimulate considerations of how to develop these competencies throughout courses and projects.

5. Discussion

In this article, we identify four competencies that form the core of the distinctive repertoire that designers can bring to bear when working on societal issues. Distinctive is an important characteristic of the competencies we identified here: we do not argue that these are the

only competencies that designers rely on when working on these types of issues. We paid particular attention to the naming of the competencies to accentuate the disciplinary strengths in face of complexity. For example, we see the unique contribution of design being its integrative capabilities as opposed to stating that design is *empathic* (not unique to the discipline) or *user-centred* (ignores balancing of concerns and other relevant perspectives). Focusing on competencies allows for a more inclusive understanding to who does design: not only people who have formal training in design but also any other changemaker that exhibits the same set of competencies.

These competencies are certainly not new and have to a certain extent always been an important part of the (industrial) design discipline. For example, knowledge about *reframing* and co-evolution emerged from analysis of design processes of train trash cans (Dorst & Cross, 2001) and child seats (Dorst, 2019a), and *integrating* various competing demands such as usability, aesthetics, and cost price is an important skill in product design. At the same time, these competencies take on a different meaning in the context of working on societal issues, and because they are used in the broader domain of designing for systems, they lead to new or different tensions in collaboration with other disciplines. They therefore require (1) further development in relation to the complex nature of societal challenges, and (2) adaptation to the public sector context, and (3) further study to understand the complementary value of design repertoire in the public sector.

5.1 Developing competencies to the complex nature of societal challenges

Firstly, working on complex issues requires a systemic approach. Therefore, we need a better understanding of the appropriate embedding of these four competencies in such a systemic approach. For example, systemic design might be more about shaping the conditions under which things can happen (e.g. designing for self-organisation, van der Bijl-Brouwer, 2022b). This deviates from more conventional design practices, which are more focused on shaping a particular interaction or use. Furthermore, this requires a deepening of both knowledge and practice. For instance, to understand how to orchestrate *deliberate* shifts in a system, we need to bridge the gap between historical accounts on how system transitions occur (Geels, 2005) and how to foster such transitions intentionally in practice.

A systemic approach thus will require design to shift its attention to additional ‘objects’ of design: next to the products and services that will support new types of behaviour, the supporting conditions and transitional activities that help a system to shift need to be designed as well (Drew et al., 2021). For instance, changes in relationships and networks are needed to facilitate new behaviours (Hillgren et al., 2011; Manzini, 2014); as well as underlying structures, such as power (Goodwill et al., 2021), social and institutional structures (Vink et al., 2021), mental models (Senge, 1990) and paradigms (Fischer & Riechers, 2019). How the identified competencies can contribute to affect change on these aspects is something that needs to be further studied.

To do so requires strengthening the foundation of the discipline itself (Cash, 2020; Fokkinga et al., 2020). The promise that a design approach can lead to impact on social issues is

largely based on (practical) case studies and anecdotal evidence as opposed to forms of design research that aim for theory-building (Cash, 2018). The same can be said about the work presented in this paper, which requires more empirical research into the competencies presented and the links between them to work towards theories of design expertise in complexity.

5.2 Adapting design competencies to the public sector context

Although we see the competencies as rooted in the (industrial) design discipline with clear relations between competencies and the characteristics of complex issues, that does not imply that methods used in traditional human-centred design practices can be directly applied in the public sector with great success. In part that is because public sector organisations need to adapt in order to support the fundamental different way of working that design offers (Brinkman et al., 2023; Kim, 2023; Peters, 2020).

However, if a design approach is used to work on societal challenges in the public sector—then this approach must adapt to the needs and nature of that new application area (Dorst, 2018). Methods such as Frame Innovation (Dorst, 2015) and Vision in Design (Hekkert & van Dijk, 2011) focus primarily on the generation and development of meaningful concepts, and less on their implementation. Consequently, design processes often focus on the creation of something new, and less on building on, or even breaking down or removing, what already exists. Furthermore, design has a limited understanding of power and political structures (Avelino, 2021; Goodwill et al., 2021), and the layering of different institutional logics and cultures (Sangiorgi et al., 2022; Seravalli et al., 2022), exactly the kind of structures we deem essential to consider in a systemic approach, as discussed in the previous section. As a result, too often the impact of design projects on societal challenges is still minimal, or mainly contributes to reproducing existing structures (Seravalli & Witmer, 2021), for instance by optimising existing services or not substantially changing the relationship between citizens and government.

Next to adapting methods and practices to the needs of the public sector, another important factor is transdisciplinary collaboration, as societal challenges cannot be addressed from a single discipline. Although design is an integrative discipline (Max-Neef, 2005) that does not mean design is the binding glue between disciplines as it is just a piece of the puzzle (van der Bijl-Brouwer, 2022a). Transdisciplinary work is needed: an approach that cuts across disciplines and sectors, and where academic knowledge is integrated with contextual knowledge from the living world of stakeholders. In this, design practices can have an orchestrating effect, but we need to better understand how it works with (key competencies of) other disciplines (e.g. public administration, law, transition management) and how the other competencies (i.e., integrating, reframing and formgiving) contribute to it.

5.3 Understanding the complementary value of design repertoire in the public sector

In this paper we zoomed in on the distinctive and relevant competencies design brings to complex issues, as this is the most pertinent area where traditional policy-making strategies in the public sector are failing. But then when zooming back out again: what is the relevance for the domain of policy and governance?

Our framework of archetypical design practices (Figure 1) could be a first step towards a landscape of design approaches for complex issues in the public sector (cf. Sanders & Stappers, 2008). By moving away from the 'object' of design towards the impact of design we show various approaches to problem-solving. Such a typology can facilitate discussions between designers and public sector organisations who seek design expertise for a particular issue, or for design students to articulate their strengths to find/craft (new) appropriate job descriptions (cf. Stappers et al., 2023). We can see different practices being more appropriate for certain types of problems: we can see reframing-driven and integration-driven practices fit during agenda-setting and policy formulation, whereas formgiving-driven and orchestration-driven practices may be more relevant for implementing and executing policy in government service organisations.

However, design may also provide value that goes beyond design *for* policy (Kimbell et al., 2023). Following the impact-centred approach we adopted in this paper we can also see other types of relationships between design and policy where we shift away from the primary 'objects of design' in the public sector: policies and services. Tackling the complex societal challenges of these times requires more than those primary outputs as it may involve deep structural changes in how public sector organisations organise themselves, cultural and mindset shifts in how civil servants relate to citizens, or novel ways how an organisation is situated in a neighbourhood. In such cases design can bring complementary repertoire to the traditional toolkit of policy-makers, as is evidenced by the examples presented in this paper which may contribute to or inform policy-making yet primarily provide other outcomes and effects.

There are still many areas to further investigate. What makes certain archetypical design practices more effective and appropriate and under which circumstances? Are there specific issues or objectives for which a certain practice is better suited? And how can design and policy-making toolboxes complement each other?

This requires further understanding of what unites and distinguishes these practices from each other. For instance, reframing- and formgiving-driven practices are more reliant on design expertise, where integration- and orchestration-driven practices give a more central role to stakeholders. And given our abstract conceptualisation of the competencies this may require unpacking these practices into the underlying mindsets, knowledge, skills and tools.

4. Conclusion

This paper contributes to our understanding of what design practices have to offer in complex situations in two ways. First, it articulates what it is that designers bring when designing for complexity by identifying four distinctive competencies. Second, we use the competencies to identify different archetypical design practices.

To truly increase the impact of design practices in societal challenges, it is necessary to adapt and develop these specific competencies to dealing with complex issues in the public sector, to understand the complementary value design repertoire can bring. This is essential for understanding what a design approach cannot do, where the boundaries of the discipline lie, what design can learn from other disciplines, and where other disciplines may be much better or can complement design repertoire.

Nelson and Stolterman (2012, p. 219) argue that 'becoming a designer involves becoming a thoughtful advocate for design when it is the appropriate approach to take, and an honest advocate against design when it is not'. We see both the contributions of this article as helpful by better articulating what design can do when working on complex issues—so that we can continue to explore the possibilities of design practices to act as a catalyst in addressing societal challenges in the public sector.

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