Faculty of Design

2020

Introducing Systemic Design into the Largest Australian Government Design Function

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Systemic design in the Australian Taxation Office Sub-Title (H2)

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Abstract (H4)

Researchers and practitioners alike are in general agreement that the public sector is increasingly tasked with managing 'complex problems'. Many authors have warned that the established practices in government are not sufficient to deal with such problems. The integration of systems thinking in design practice has been advocated as a promising approach to understand and more effectively deal with the increasing complexity of societal challenges. However, the literature on systemic design largely remains in the academic and theoretical discussions. In 2020, the Australian Taxation Office (ATO) has pioneered the development and implementation of systemic design as an enterprise design approach. This article outlines practice insights into the ATO's systemic design framework, including its applications to a range of initiatives, including the stimulus measures resulting from the COVID-19 pandemic. It discusses early insights into considerations of implementing systemic design at scale. Future research should focus on the implementation factors that may enable or inhibit its successful adoption.

Key Words: systemic design, public policy, complexity, systems thinking, design,

Introduction

Researchers and practitioners alike are in general agreement that the public sector is increasingly tasked with managing 'complex problems' (APSC, 2018; Bason, 2018; J Body & Terrey, 2019; Dorst, 2015; Geyer & Rihani, 2010; Malcolm, 2017; Murthy, 2000), that are situated in an increasingly complex, uncertain and unpredictable world (Arnold & Wade, 2015; Bullock, Mountford, & Stanley, 2001). There are diverse analyses of what a complex problem is, though most have common elements. The Australian Public Sector (APS) relies on the description of 'wicked problems' from Rittel and Webber (1973) as public sector problems that are difficult to define, may have interdependencies, are socially complex and for which interventions can lead to unforeseen consequences (APSC, 2018). Head and Alford (2015) further note that wicked problems are generally associated with multiple interests and stakeholders, complexity of the organisations involved and uncertainty, and state that traditional hierarchical. forms of public administration have not been conducive to effectively dealing with wicked problems. A design scholar, Dorst (2015) describes today's problems as being a new species of problem that are open, complex, dynamic and seem impervious to solutions. DeTombe's (2015) description of societal problems that governments face today is similar to that of wicked problems. DeTombe states that these problems are real-life challenges in socio-technical systems, that are often ill-defined, concern many domains, are situated in a dynamic system, and involve many individuals. Furthermore, solutions are not easily at hand and such solutions can have a large impact on society. These descriptions converge on an understanding of complex problems as problems that are difficult to define or understand, deal with complexity and complex systems, and for which that solutions are not readily available and can have unpredictable effects.

Many authors have warned that the established practices in government are not sufficient to deal with such problems (APSC, 2018; Bason, 2014; Bourgon, 2008; Eggers & Singh, 2009; Mulgan & Albury, 2003). Bourgan (2008) noted that traditional government practices were established when the public sector

was expected to perform predictable tasks. As the complexity of societal problems and the environment in which they are situated in increases, and the implications of this have become increasingly known, government practice has struggled to keep up (Bason, 2014). Scholars argue against traditional government practices that resemble traditional reductionist approaches (breaking down a system into its constituent parts in order to understand or study it) in favour of dealing with complex problems more holistically (Head, 2008; Heylighen, 2001). Geyer and Cairney (2015) suggest that reductionist approaches are not effective because public sector problems deal with complex systems that cannot be broken down as behaviours of the system only exist because of the interactions between the parts. Given these deliberations, it is argued by many scholars that for the public sector to operate effectively in an increasingly unpredictable and complex society, it needs to innovate and adopt new practices (Bason, 2014; Bourgon, 2008; Head, 2008; Moore & Hartley, 2010; Rosenhead, 1992).

Design as a practice for complex problems in the public sector

Design as a practice has been increasingly promoted as a novel approach to dealing with complex problems in the public sector (Bason, 2018; Brown & Wyatt, 2010; Clarke & Craft, 2019; Council, 2013). Simon (1957; 1996) describes design in this sense as the choice of actions to change existing situations into desired ones. and Nelson and Stolterman (2012) use a similar description: that design is an activity of creation to come up with an idea and implementing it. Design has been advocated as an alternative approach to reductionist thinking for problem solving (Baran & Lewandowski, 2017; Brown & Wyatt, 2010; Graham, 2013). While the practice of design is historically associated with the creation of visual or physical objects, this has evolved to include increasing levels of complexity and abstraction, including a recognition that designers now are tasked to deal with human interactions or complex systems (Di Russo, 2016; Krippendorff, 2011). In recent times, it has been is viewed as a genuine alternative to conventional complex problem solving (Buchanan, 2001; Dorst, 2015), and as such, interest in its application to deal with complex problems in the public sector has grown over the last two decades (Brown & Wyatt, 2010; Clarke & Clarke, 2019; Mintrol & Leutjens, 2016).

Has design hit its ceiling for dealing with the complexity of today's problems?

Even though design has been increasingly adopted as a practice to deal with public sector challenges, several criticisms have been made of both the practice, and designers' ability to deal with the complexity of public sector challenges. These criticisms centre on three themes: inability of design to equip designers to understand and deal with complexity (Dorst, 2019a, 2019b; Birger Sevaldson, 2013), overfocus on a user or user group at the expense of other users or system elements (Coulton & Lindley, 2019; Birger Sevaldson, 2018; Steen, 2011), and the tendency of design as a practice to degenerate into a formulaic process (Aguirre Ulloa, 2020). The overall implication of these criticisms is that design as it is practised today is unable to counter the criticisms of reductionist approaches in dealing with complex problems and thus, not being a valuable alternative approach that has been called for.
The first two of these criticisms, along with the broader discussion around the complexity of the challenges being dealt with in the public sector today, have prompted discussions on how the integration of systems thinking into design is useful (Buchanan, 2019b; Peter Jones & Kijima, 2018; B Sevaldson, Hensel, & Frostell, 2010; Birger Sevaldson & Ryan, 2014).

Emergence of systemic design

The integration of systems thinking in design practice has been advocated as a promising approach to understand and more effectively deal with the increasing complexity of societal challenges (Blizzard & Klotz, 2012; Gardner, Craven & Blackmen, 2019) Jones, 2014; Jones & VanPatter, 2009). Systems thinking is a practice that originates from systems sciences, which is an interdisciplinary field that studies

complex systems in nature and society (da Costa Junior, Diehl, & Snelders, 2019). Systems thinking is not a unified approach, rather emphasises the need to use a range of approaches and methodologies (Malcolm, 2017; Midgley, 2003) that derived from a range of systems theorists (see for example, Bertalanfy, 1969). Systems thinking has been promoted as a useful practice in making the complexity inherent in complex systems visible (Birger Sevaldson, 2013), synthesising the interactions within complex systems (Nelson, 2005) and incorporating differing perspectives (Zheng & Stahl, 2011). These systems span environmental, economic and social or organisational systems.

Resultingly, these discussions on the integration of systems thinking and design have led to the emergence of systemic design as a field of research and practice, the purpose of which is to integrate systems thinking and design to better support designers with complex design challenges of today's society (Lurås, 2016; Birger Sevaldson & Jones, 2019; Birger Sevaldson & Ryan, 2014). Systemic design is not meant to be a rigid framework. Instead, it offers a flexible, methodological pluralistic approach (Aguirre Ulloa, 2020; Ryan, 2014) that helps designers to:

- Understand complex systems, and the context of that which is being designed, utilising a range of tools and methods such as visualisation to help make sense of data

- Emphasise the connections and relationships within the system

- Include multiple perspectives

- Identify leverage points, which can help designers see opportunities and identify which interventions may have a significant impact (adapted from Lurås, 2016).

The implication of this is that by helping designers do these four things, systemic design helps designers focus on holism rather than reductionism. It does this by helping designers acknowledge and see the whole system in which complex problems are situated in, so they can design and connect interventions for this system.

However, in undertaking a review of the literature, this thesis was unable to identify any examples of studies focusing on if and how the implementation of systemic design helps designers achieve the above propositions. Instead, the systemic design community has so far concentrated on to advancing the theoretical framework for systemic design, and its anecdotal studies on the practical implementation in local contexts of service design, organisational design, architecture and interaction design (see for example Aguirre Ulloa, 2020; Barbero & Toso, 2010; Lurås, 2016; Ryan & Leung, 2014).

From forerunner to forerunner: Introducing systemic design into the Australian Taxation Office

The Australian Taxation Office (ATO) is regarded as the forerunner of pioneering design practices in the Australian public sector (Di Russo, 2015; Mintrom & Luetjens, 2016). The ATO is a large, government organisation responsible for the administration of taxation and superannuation policies. The Ralph Review in 1999 recommended a series of improvements to the way the ATO designed and delivered on its administration of tax policy. As a result, it became the first Australian government agency to incorporate design thinking practice as currently understood (Preston, 2004) and has since had a long-standing practice of using design, specifically, human centred design (John Body, 2008; Di Russo, 2016).

Rather than redesigning tax forms or improving communication, the ATO decided to begin redesigning the tax system at its foundations, using ease of use as part of its core design principles (Mintrom & Luetjens, 2016).

Buchanan's (1992) work on the four orders of design is a seminal body of work for practice discourse on design as it relates to the types of problems designers deal with (Cousins, 2018). This is because it builds a theoretical basis for linking design to different types of situations or problems (Johansson-Sköldberg, Woodilla, & Çetinkaya, 2013), demonstrating the evolution of design's application. While Buchanan developed these four orders over 30 years ago, his work is still a fundamental theory used by contemporary scholars as a way of discussing how design as a practice, and designers, are becoming increasingly associated with more complex problems (Aguirre Ulloa, 2020; Buchanan, 2019a; Di Russo, 2016; DUMAN & TİMUR, 2020; Holmlid, 2007; Magalhaes, 2018; Pérez, Hands, McKeever, & Whitham, 2019; Terrey, 2012; Westerlund & Wetter-Edman, 2017). Buchanan (2001) notes that design is universal in scope and can be applied to any setting, emphasising the need for designers to conceive and plan for what does not yet exist, which occurs in the indeterminacy of complex policy problems that possess "wickedness". He describes that the nature of problems that design is having to grapple with has changed, and continues to do so, moving through four orders (Buchanan, 2001). The first order is concerned with the design of signs and symbols often related to the discipline of graphic design while the second order is about the design of physical objects or artefacts, such as the work of industrial designers or architects. More recently, however, designers have begun to address problems with a wider scope, pushing into the third order (Nylén, Holmström, & Lyytinen, 2014). The third order of design focuses on interactions. This can include designing of specific interactions or processes which interact with people. This third order of design is important to highlight because it this an area of design where there is widespread literature focused on practical application to public sector challenges (see for example, cases in the following articles, Følstad & Kvale, 2018; Lin, Hu, & Rauterberg, 2015). The fourth order is focused on 'environments and systems', which includes "human systems, the integration of information and interactions in environments of living, working, playing and learning" (Buchanan, 2001). This order relates to whole systems, such as those being intervened when addressing wicked or complex societal problems.

 The ATO's design practice was well versed in Buchanan's third order, creating better products and interactions such as myGov, and ATO Online (see ATO.gov.au 2020). However, in 2019, senior executives within the ATO observed that there were ongoing difficulties with the outputs from the design function, which were considered to be at times over formulaic, and not fit for dealing with the increasing complexity of the taxation and superannuation systems and their challenges.   These issues were synergistic with the criticisms of design outlined earlier, namely, that ATO's design practice was not successfully equipping designers to understand and deal with complex system problems, it could remain too focused on the user without enough consideration on other stakeholders or what was viable or feasible in government and, finally, that it started to be reduced into a formulaic processes that was considered to be a practice anyone could do. Focusing design on individual interactions and services was not observed to help the ATO contend with the scale and complexity of the challenges that it faces today.

As such, a decision was made to shift the design approach to a more systemic approach in 2019, specifically, to pioneer the adoption of systemic design as the way it designs and embeds change in the organisation. The ATO developed its transdisciplinary systemic design practice, named systems-led design, and released its systems-led guide in July 2020 (Kaur, 2020).

The ATO's Systems-led design framework

The ATO's systems-led design framework draws on the synthesis of the systemic design academic literature, however, extends on this by ensuring that significant focus is placed on the purpose and embedding a design. It comprises (ATO, 2020):

- a model that outlines the general phases to guide practitioners in developing tailored approaches for dealing with complex problems. The model emphasises the purpose of any challenge to help practitioners move away from process-driven practices towards more purpose-driven practices.

- a set of principles that help practitioners recognise and build the appropriate mindset and patterns of thinking to allow them to adopt and practise systemic ways of thinking. The principles include a set of prompts expressed as actions to further help practitioners consider what practising that principle might mean and look like.

- a series of tools, that enables practitioners to draw on techniques from design and systems thinking and integrate them in different ways to understand and communicate the complexity of the tax and superannuation systems, and design and embed changes to them.

The ATO's states that systems-led design starts with a focus on the system and the need to see the bigger picture to ensure connections are made and implications of intended changes are fully considered.

The model

The model is a circular representation of the key phases the ATO has adopted as part of its systems-led design framework. These phases are (ATO, 2020):

1. **Purpose**– This phase focuses on inquiry and creation of shared understanding of the purpose of a problem or initiative, along with the purpose of the system of interest. This could be the organisation, a subpart of the taxation or superannuation systems or a specific audience.
2. **Understand the system** – This phase focuses on ensuring shared understanding of the system and explore the key forces and patterns driving behaviours within the system. This includes drawing the boundary of the system of interest and thinking about why certain behaviours might be present before identifying and prioritising key levers to affect change.
3. **Design the change** – This phase focuses on using the understanding of the system and its constituent parts to identify leverage points and options for designing advancing interventions. It prompts practitioners to maintain focus on the various perspectives within a system and to adopt behavioural insight methodologies in order to identify drivers for behaviours.
4. **Experiment and iterate** – This phase focuses on collaborative testing and iterating to understand an intervention's viability, feasibility and desirability in the real-world system.
5. **Embed and influence**– This phase focuses on the broader shifts that is required to embed an intervention in its broader system to ensure it is achieving its desired shifts. This may include transitioning out old mindsets, processes or other mechanisms that may prevent it from being embedded successfully.
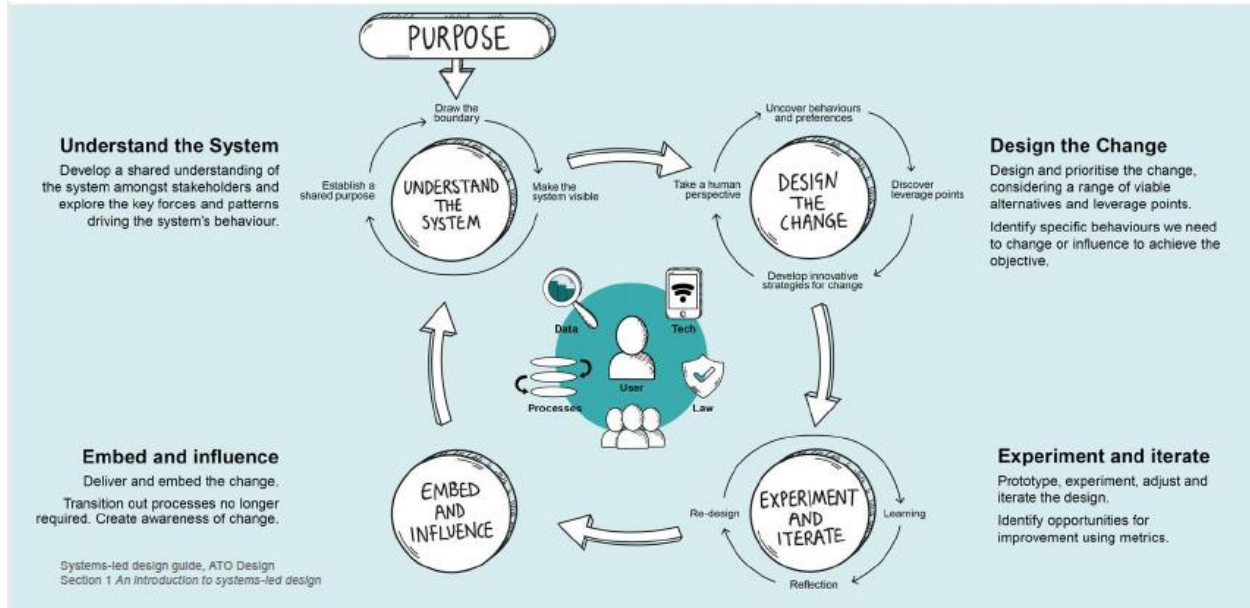
Figure 1 Systems-Led Design Model

The principles

In order to support practitioners in thinking differently and applying systems-led design in the intended way, a range of principles have been established. Specifically, these are:

1. Engage diversity of thinking
    a. Work with the right people at the right time to:
    b. Understand, represent, and consider diverse perspectives
    c. Promote discussion and feedback
    d. Be collaborative and tailored in your approach
    e. Ensure transparency of emerging systemic and design issues
2. Build and maintain a shared understanding
    a. Articulate the collective vision of the change and its outcomes continously, by asking and working through:
    b. What is the purpose? What is the system? The problem? The intent?
    c. Who is impacted?
    d. What is the current state of the system?
3. Understand the whole, not just the parts
    a. Consider the broader context to:
    b. Understand the values, needs, goals and behaviours and expectations of people at the centre of the change
    c. Build a comprehensive understanding of the relevant context, including the environmental, systemic, and political
    d. Identify behaviours you need to change or influence
    e. Recognise and harness complexity and interconnections to identify opportunities
    f. Identify systemic factors to build, deliver, and embed change
4. Make connections between the user and the ecosystem
    a. Make connections between the user and the ecosystem to:
    b. Identify connections that may influence a change
    c. Consider other connections and their consequences

      d. Maintain connections that positively influence the designed change and its intended outcomes

5. Embrace experimentation
      a. Test ideas, embrace risk and be adaptable
      b. Be open and transparent
      c. Move on from understanding the system by being action-oriented
      d. Gather information, reflect, and learn, to change course
      e. Learn and adjust existing progress to shape and iterate.
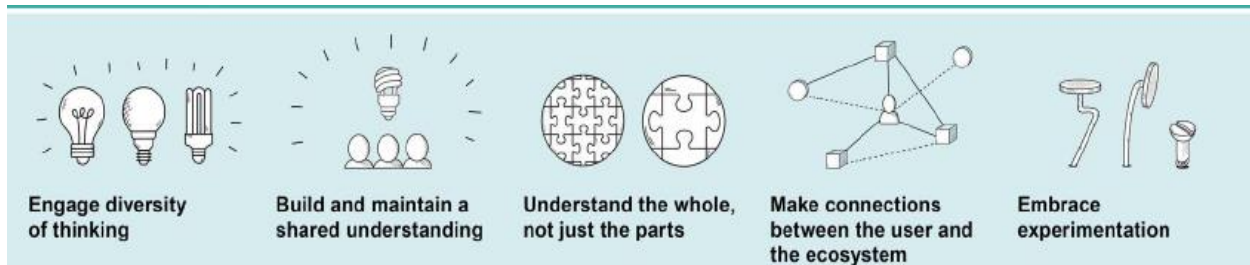

| Engage diversity of thinking | Build and maintain a shared understanding | Understand the whole, not just the parts | Make connections between the user and the ecosystem | Embrace experimentation |

Figure 2 Systems-Led Design Principles

How has it been applied so far?

The ATO has started applying this as its primary technique for design change. For example, as a result of the COVID-19, the announcement of economic recovery measures and the 2019 Tax Time in July 2020, the ATO applied systems-led design to understand the cumulative view of experience issues and impacts for the agency's clients. This understanding would be used to communicate systemic issues and identify and execute on additional readiness and preparedness strategies to support clients more effectively during this period. Over a 4-week period, the cross-disciplinary team in the ATO undertook a range of activities, commencing with creating shared understanding of the economic recovery system and the system surrounding our clients, including elements the ATO were responsible for as well as other elements affecting clients lives. This was done through a range of research mechanisms, including primary research with users. The project unleased a range of insights into the broad system, including how various measures, rules or issues interacted and compounded each other. Following this, the team highlighted key issues in the system, and identified a range of levers that the ATO could undertake to better support clients through this uncertain period. This was presented into a powerful storytelling artefact of systemic personas that have been used to communicate issues and discuss opportunities with other government agencies and the OCED community of interest forums. As insights and connections emerge and changes were implemented into the system, this additional information was captured to help us understand how the whole system moved. This is because designing the tax system will never end, because we are designing for dynamic and moving targets, rather than static targets.

The reason this work is so important to the ATO and its clients is threefold; first, it allows an understanding of the clients' lives and context which has been impacted significantly during COVID-19; it ensures that the ATO handles tax time and other tax administration and compliance activities that reflects behavioural changes that might be seen in the community due to impacts such as financial hardship and overload of information; and finally, understand what broader systemic interventions might be needed in order to embed new stimulus measures or other levers properly, such as people, process, practices or data implications.

A second example is the application of systems-led design on the organisation's workforce capability strategy. Previously, the HR function would design good services for staff members within the ATO, however, there was less regard for the horizontal integration of various services in HR, meaning it was difficult to understand whether they were working synonymously. By envisioning and understanding the relationships within the system, the systems-led design initiative started to create shared understanding of how functions such as learning and development, talent program, rewards, workforce planning and performance management worked together or in conflict to support the overarching welfare of the system, employee capability and performance.

Finally, a systems-led design approach is also being taken to the implementation of the practice itself. By considering the whole branch and organisational system, the ATO Design Branch is considering strategies to help the organisation be more systemic, such as shifts to the governance and accountability structures, establishing system reflective practice, undertaking proactive work to envision whole systems and embedding experts into our business areas (ATO, 2020).

Considerations

This paper contributes to the literature on the practical application of systemic design and offer other researchers and practitioners' insight into embedding such a practice into a large, design function within government. While the ATO has now implemented systems-led design as part of its design practice and governance for designing and embedding large change in the organisation, it is still a new practice. Thus, practitioners are still learning and building their capability and confidence in applying systems-led design in its intended form (as a philosophy, mindset and practice, not just a set of tools) to a range of contexts. There are few other empirical studies on the adoption of systemic design into an Australian government agency, with the body of research on the theoretical foundations or localised application of it on a key project. This limited understanding can lead to implementing design thinking for the wrong reasons, or with unrealistic expectations of what systemic design can do for dealing with complex problems.
The effectiveness of systems-led design will depend on the practitioners' understanding of it, the context of its implementation, and the intent of where it is being applied to. Further studies need to be undertaken to consider factors related to these three issues and how that may inhibit or enable the success of systems-led design in helping practitioners better understand and deal with complex problems.

Furthermore, it can be an intensive process and therefore should not be undertaken solely for efficiency gains, rather, it should be applied to complex problems that are hard to define, have multiple options for interventions and involves a range of stakeholders. As Sevaldson (2020) notes, systemic design practitioners find the approach can be intensive at the start of their practice, however, this time spent is often reducing risk and duplicated effort or prosecution of decisions later in the process.
Future research will focus on the way systemic design in the ATO has shifted designers' practices. By doing so, contribute to the evidence about the extent to which the implementation of systemic design supports designers to better deal with complex problems through its claims outlined above, and the conditions that might be required to enable this.   This will serve as a significant empirical contribution to the scholarly field.

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