Public Design Evidence Review: Literature Review Paper 1 – Public Design

July 2025

Commissioned by the Policy Design Community

Authors:

Lucy Kimbell, Professor of Contemporary Design Practices, Central Saint Martins, University of the Arts London and Director, Fieldstudio Design Ltd

Charlie Mealings, Doctoral Candidate and Adjunct Lecturer, Department of Political Economy, Kings College London

Catherine Durose, Professor of Public Policy and Co-Director of the Heseltine Institute for Public Policy, Practice and Place at the University of Liverpool

Liz Richardson, Professor of Public Administration in the Department of Politics, University of Manchester

Rainer Kattel, Deputy Director and Professor of Innovation and Governance, Institute for Innovation and Public Purpose, University College London

Iacopo Gronchi, Doctoral Candidate, Institute for Innovation and Public Purpose, University College London

How to cite:

Cabinet Office (2025) Public Design Evidence Review: Literature Review Paper 1 – Public Design.

Contents

Background

This document is the first of three literature reviews commissioned by the cross-government Policy Design Community, written by an interdisciplinary team of academics. It provides an overview of design: its competencies, outcomes, integration into government, policymaking and public services, and distinctions from commercial design. It also discusses the conditions required for effective implementation.

The wider project was commissioned as a non-exhaustive exploration of the relationship between public design and public value. It was conducted within rapid timeframes and prioritised cross-disciplinary working. The authors began drafting in September 2023, finalised the drafts in March 2024, and published in July 2025.

‘Literature Review Paper 2 - Public Value’[1] and ‘Literature Review 3 - Public Design and Public Value’[2] are published alongside ‘Literature Review Paper 1 – Public Design’ as part of the Public Design Evidence Review.

[1] Public Design Evidence Review: Literature Review Paper 2 – Public Value. Available here: Public Design Evidence Review: Literature Review Paper 2 - Public Value (PDF) and here: Public Design Evidence Review: Literature Review Paper 2 - Public Value (HTML)

[2] Public Design Evidence Review: Literature Review Paper 3 - Public Design and Public Value. Available here: Public Design Evidence Review: Literature Review Paper 3 - Public Design and Public Value (PDF) and here: Public Design Evidence Review: Literature Review Paper 3 - Public Design and Public Value (HTML)

Executive Summary

Context:

All governments face challenges of a changing social context, system complexities and barriers to delivery that requires innovation. There is growing evidence that practices, methods, skills and people associated with ‘design’ found across government, business and civil society have untapped potential to help address such challenges and contribute to the creation of public value. The term ‘design’ encompasses a range of activities and skills, including a human-centred focus, prototyping and co-creation. These inform diverse government activities: the creation of digital interfaces, the design of government services, the development and testing of policy proposals, and the implementation of interventions. However, the varied range of methods, skills and personnel involved in design, and differences in their use in government and public policy, make the term confusing. There is a need to distinguish design from other approaches, to understand when it adds value, to specify the outcomes it leads to in the public sector and government, and to clarify how public design differs from commercial design.

Method:

In response to questions set by the Civil Service, we reviewed and synthesised literature identified through a targeted, multi-vocal search including ‘grey’ and academic publications in studies of design, service design, design management, healthcare innovation, and public policy.

Results:

We noted long-standing debates about how design is defined. We identified seven characteristic ‘practices’ associated with design:

1. Understanding people’s experiences of and relations to systems.
2. Conceiving of and generating ideas.

3. Visualising, materialising and giving form to ideas.
4. Integrating and synthesising perspectives, ideas and information.
5. Enabling and facilitating co-creation and citizen involvement in design processes.
6. Enabling and facilitating multi-disciplinary and cross-organisational collaboration in design processes.
7. Practically exploring, iterating and experimenting with potential options.

In terms of outcomes achieved through applying design practices, we noted that the evidence is positive but varied, and rooted in different research traditions, which makes it hard to identify specific pathways through which practices lead to particular outcomes. We found that claims of outcomes achieved through applying design practices are often situated in particular framings (e.g. organisational innovation) or specific contexts (e.g. healthcare), from which it is hard to generalise. We found a lack of clarity about how 'public' design might be distinguished from 'commercial' design. We suggested seeing the former as a type of democratic practice, with different purposes and accountabilities, and less attachment to novelty, with respect to the latter.

Noting the spread of design practices within and across the UK government in the past two decades, we reviewed selected sub-fields or 'types' of design in government, highlighting how the practices of design take particular forms in relation to contexts, media and devices, with distinct histories and research debates. All maintain a focus on people's lived experience as they relate to or interact with designed things. For some areas of design, the 'system' or social context or relations to a place is an area of design inquiry that designers recognise may be changed (e.g. through introducing a new object or interaction into it), or indeed an area for transformative change (e.g. to design 'for' future sustainability). Further, all of these fields are impacted by technologies, both in terms of what is being designed (e.g. the design of a service journey might include in-person as well as digital touchpoints; packaging may include links to online media prompting or enabling action through embedded QR codes or hashtags) and how design is carried out, both individually

and collaboratively (e.g. through the use of digital tools, data analytics and automation).

In terms of competences for design, we found frameworks which sometimes did not distinguish carefully between skills, competences and capabilities, and some which focused on specific types of design, such as user experience or service design. We examined the integration of design in government. We found that although there are academic studies that account for or critically assess how, and under what conditions, design is integrated into public service delivery, there are few examining design in policy development, and very few specific to the UK. Among frameworks and models developed by government policy labs, design teams and consultancies from the UK and internationally, there are examples of efforts to conceptualise purposes, activities and types of design in government, at different scales, and across different systems or areas of policy. Such frameworks have shifted away from linear processes towards recognising complexity and interdependencies of systems, with which design practices can play useful practical roles.

We found that maturity and enabling conditions for building and maturing design capabilities are understood as dependent on organisational ‘absorptive’ capacities or underlying taken-for-granted ‘logics’ or narratives about how things are done. Such conditions include: awareness, availability of resources and expertise, existence of narratives and leadership to provide legitimacy, and formal structures. Recent studies suggest that, rather than a simple ‘additive’ model in which design capabilities simply join existing teams, functions and skills, building up design capacity is aligned with wider narratives about innovation or agendas for doing things differently.

1 Defining public design

What are the differences in outcomes and practice between commercial design and public design?

1.1 Introduction: Defining design

To the extent that they are both interested in innovation, improvement and value creation, both commercial and public organisations have an imperative to design. Fundamentally and in general, design can be understood as concerned with the creation of new ‘forms’ of value, or new forms that have value. But defining design is surprisingly hard. Some definitions focus on the orientation of design towards change, innovation or transformation. Some emphasise characteristics, qualities or activities, claiming that these are distinctive. Others focus on the objects produced by designers, such as services or products. And some focus on professionals who think of their work as ‘capital-D’ design, whereas other definitions seem more open to anyone designing anything: a workshop, a strategy, an organisation. In this brief overview, we bring together some of the main perspectives summarising design, from which we aim to understand what ‘public’ design might mean.

As an initial working definition, it might be said that public design is a type of professional expertise, with accompanying skills, processes, methods and tools oriented to public matters and public contexts – in particular, activities undertaken on behalf of citizens by government and other actors. In contrast, commercial design might be seen as oriented to achieving business purposes, such as increasing shareholder value, market share or brand identification – or, increasingly, goals connected to corporate social responsibility (CSR), such as achieving net zero. Evidently, commercial organisations are also constrained by a different calculus of risks than public organisations, which are funded, structured, staffed and legitimised in an entirely different manner.

It therefore follows that the practices, logics, methods and cultures of commercial and public design also diverge, even if the techniques might appear largely the same. Consider, for example, the design of two services: one related to assessing

benefits entitlement and another to ascertain a customer's suitability for taking up a mortgage. Insofar as both services seek to assess financial status and eligibility, there are clear similarities between the tasks.

However, each service has a different purpose, set of actors involved, and surrounding narratives and organisational capabilities. In the former case, a policy team in a government department might develop the specification, with the service delivered by a contractor; in the latter, the service might be developed and run by a financial services business, which is regularly scrutinised by investors about its profitability or stability or growth as a firm. Both services might aim to be 'human-centred' in their design and delivery, and both may result from iterative development, including understanding user perspectives and the use of prototyping. But the possibilities, constraints and consequences of the service design are different.

Nevertheless, commercial and public design are connected because the public and private sectors shape each other. Government policy, and public institutions more broadly, are tied up with commercial design, for example through regulation. In the case of the mortgage service, government directly shapes commercial design through oversight and regulation of financial institutions offering mortgages, and indirectly as financial institutions set mortgage interest rates in response to government activity and public debates about the desirability and affordability of mortgages. In a polity that puts value on economic stability and opportunities for people to own their own homes, commercial design in the financial services sector is unavoidably implicated with the design of public policy, services and institutions. A well-designed, customer-centric service for a mortgage application makes good commercial sense in a competitive and highly regulated sector. Similarly, if we take other sectors in which we can find commercial design, such as retail, construction or hospitality (on the high street, or via social media apps or websites), even a brief inspection of each reveals that 'commercial' priorities informing design are also linked to and shaped by government activity and wider public policy debates such as 'sustainability', 'levelling up' or 'open data'. In short, differences between public design and commercial design are not always clear cut.

The argument made here is that despite such difficulties there is value in making such a distinction. This review will argue that there are significant differences in

purposes and enabling conditions shaping capabilities and practices in public design and commercial design, which have implications for the effectiveness, operationalisation and accountabilities of each, and hence for resulting outcomes.

In what follows, this literature review aims to provide clarity about the processes and outcomes associated with public design (this section); specify different types of design in government (Section 2); characterise how design is understood to fit into policy and public service delivery (Section 3); define design skills, competences and capabilities (Section 4); and summarise ways to assess maturity in design and the enabling conditions that sustain and mobilise the distinctive practices and outcomes associated with design (Section 5). This structure uses headings associated with questions from the commission from the UK Civil Service Policy Design Community that led to this piece of work.

To do this, we combine and synthesise literatures from a range of sources. Further details on our methodology are provided in the Appendix, but in summary the approach taken is a targeted, multivocal literature review. This includes peer-reviewed academic publications in studies of design, service design, design management, healthcare innovation, organisation and public policy, as well as important contributions from practice and discussions among several UK and international professionals and organisations.

The result is the clarification of concepts and working definitions that aim to be coherent enough to be operationally useful in the context of the UK government, while also acknowledging ongoing debates about developments in government and public policy (e.g. Mazzucato, 2014; Hood and Dixon, 2015; Durose and Richardson, 2016; Saward, 2021; Collier and Gruendel, 2022; Kattel et al, 2023) illuminating the structuring conditions shaping and sustaining design as a professional capability in government and the public sector. Characterising public design will aid understanding about when, where and under what conditions to invest in building capabilities in government and the public sector, and what likely consequences might result. To achieve this, we start with more general definitions of design, from which we will build distinctions between public and commercial design.

There are long-standing and ongoing debates in studies of design that seek to define and characterise the field, including discussion about the extent of differences

between design in commercial contexts and design for public outcomes. Rather than reproducing those here, we seek to integrate a range of well-established sources as well as practitioner perspectives that articulate what makes design distinctive to underpin a working definition of public design (e.g. Buchanan, 1992; Michlewski, 2008; Lawson and Dorst, 2009; Bason, 2010; Cooper et al, 2011; Hill, 2012; Design Commission, 2013; Bason, 2017; Clark and Craft, 2018; Elsbach and Stigliani, 2018; Micheli et al, 2019; Resnick, 2019; Liedtka, 2020; Knight et al, 2020; Bason, 2021; Kimbell et al, 2023; Hill, 2022).

While keeping within the scope and purpose of this literature review, we briefly highlight discussion in research literatures about design that analyses the potential and consequences of the capacities of design. One way of reading this is to discern a debate between advocates of the view that design is ‘problem-solving’ versus those who see design as generative, going beyond existing understandings, framings and possibilities. A widely cited example of the former position is from Nobel laureate Herbert Simon (1996, p. 111), who argues: “Everyone designs who devises courses of action aimed at changing existing situations into preferred ones.” Similarly, the Design Council defines design as “what happens when you use creativity to solve problems” (Design Council, 2024a). This trajectory for design theory foregrounded design as a systematic procedure, in response to which Donald Schön (1983) and many others offered accounts of designing as situated, pragmatic and reflexive, a debate which has its own history and nuances (see for example Chua, 2009).

Other explanations highlight other aspects of design. For example, philosopher Glenn Parsons (2016, p11) offers a careful definition highlighting intentionality and originality: “Design is the intentional solution of a problem, by the creation of plans for a new sort of thing, where the plans would not be immediately seen, by a reasonable person, as an inadequate solution.” However, from the perspective of many people who understand their professional work as design, what is lost from these definitions is the form-giving materiality, aesthetics and visuality commonly associated with design practice – where the intentions and plans are manifest in the world in the form of products, digital interfaces or buildings. Other accounts or theories of design see it as generative, arguing that its practices serve to expand the

space of possibilities (e.g. Hatchuel, 2001; LeMasson et al, 2010), go beyond existing framings (e.g. Dorst 2015), or envision and enable transformation (e.g. Fry, 2009; Escobar, 2018; Akama et al, 2020). Such distinctions play out in this paper.

This summary acknowledges both the extensive variety of ways of understanding design and points to the broader context in which design – as a type of professional expertise with routinised 'practices'[3], including skills, methods, embodied knowledge and ways of working – has become increasingly visible and embedded into organisations across the public and private sectors, as well as in citizen-led initiatives. First, we identify seven distinctive practices associated with design, synthesised from grey and academic literatures, and then turn to discussing outcomes.

1.2 Design practice 1: Understanding people's experiences of and relations to systems

Design practices highlight the relations between people, things, organisations, places and communities, people's use of objects, and experiences of organisational and technological systems and infrastructures.

Because both commercial and public design are oriented to the production of forms that will be experienced by the people they are meant to serve – used, adapted, interacted with – design takes human experience as its primary analytical focus and source of evidence. Experience is a rich and heterogeneous source of data, and thus design often employs qualitative methods of research to generate rich depictions of

[3] We use the term 'practices' rather than simply 'methods', to include a combination of things including methods, tools, ways of working, and embodied knowledge and dispositions that are included in the distinctive set of activities associated with professional designers, drawing on social practice theory (Reckwitz,2022; Warde, 2005; Kimbell, 2011).

subjects and their situated experiences (e.g. ethnographic interviews or fieldwork). But, unlike other traditions of qualitative social inquiry, design leans more strongly into making conjectural representations of future experiences (e.g. role-playing, storytelling, workshops) to construct useful propositions, solutions and framings that will generate meaning for the people using or interacting with them (Krippendorff, 2006; Verganti, 2007). In the literature and in practice this focus on experience is sometimes termed ‘human-centred’, ‘experience-based’ or ‘empathic’ design.

But don’t other forms of social inquiry take an interest in experiences? A few do, and this accounts for design’s close relationship with anthropology and use of ethnographic techniques. When design practices focus on people’s experiences, it is in relation to ‘systems’ or social phenomena, whether these are digital platforms, government services, public administrations, environments or local communities, a perspective increasingly evident in practice and research (e.g. Conway et al, 2017; Ceschin and Gaziulusoy, 2020: Hill, 2022; Design Council, 2022; Dixon, 2023). It is the connecting of these former or current experiences with potential or future arrangements that design foregrounds. A great deal of early scholarship on the relationship between experience and design comes from human-computer interaction (HCI) (see more on types of design below in Section 3), but in a contemporary world so dense with artificial and interconnected things it is hard to find practices of design that do not pay significant attention to human experience. The design of airports (Harrison et al., 2012), for example, is essentially concerned with people’s experiences of them, including attending to the built environment, operational processes, technological systems and data infrastructures which are embedded in them.

Public designers are concerned with how citizens experience public services (e.g. Trischler and Scott, 2016), public spaces (e.g. Butler and Bowlby, 1997) and public policies (e.g. Bason, 2014) and the infrastructures they rely on. Examples include road users’ experiences of A&E departments (Franzen et al. 2008) or newly certified refugees’ experiences of their host countries (Almohamed et al. 2018). Starting with the lens of experience, rather than analysing a public policy issue or service from the perspective of a government department, leads to a shift in emphasis towards life

events as people go through and make sense of them and away from the processes prioritised by organisations.

While contemporary design in general foregrounds experiences, recent research and practice has begun to challenge, or de-centre, this emphasis on the subjectivity of humans qua ‘users’ or ‘citizens’ and propose a broader orientation to ‘relations’, as in people’s relations to other people, objects, places, organisations and ecologies. Rooted in calls for social justice and critical thinking, researchers and practitioners are raising questions about whose experience matters. For example, some researchers question the Eurocentric, extractive logics which obscure or marginalise some peoples and worlds during designing, instead proposing ‘pluriversal’ approaches to design (Escobar, 2018; Leitão, 2023). A second, related development is ‘more-than-human’ perspectives (Forlano, 2017; Akama et al, 2020), which open up understandings and transformation of ‘systems’ to a broad range of forms of life, including animals and plants, but also recognising the non-human agency of algorithms and robotic systems.

The operationalisation of this emphasis on experience and relations is often through two interrelated tasks within design. The design principles, methods and job families associated with the Government Digital Service are a good example of these. The first is researching ‘user’ experiences and people’s relations with other people, things, places and communities, to understand the situated or lived perspectives that people from the relevant target group have in relation to the current public policy issue or system. The second is mobilising insights about these experiences throughout the design process to result in experience-based designs, often resulting in changed relations between people, things, places and communities. Hence the pairing of two job roles common in digital design: ‘user experience researcher’ and ‘experience designer’. Social and ‘user experience’ researchers, including anthropologists and sociologists, have available a wide range of methods to research experience – alongside activist, community and advocacy organisations, which also foreground lived experience – through approaches that can be qualitative or quantitative. Within contemporary design practice, ethnographically inspired qualitative research approaches are commonly used to rapidly understand and articulate experience and make it available for designing services.

1.3 Design practice 2: Conceiving of and generating ideas

Design practices conceive of and generate proposals or visions for new products, interactions, services, environments and strategic changes.

Policymaking, problem-solving and decision-making practices in government and businesses rely on evidence in order to make proposals or take action. Policy aims to be justified with a strong basis in evidence. This is what it means to say policymaking is rationalistic: that decision-makers have good reasons for action, and this is normally taken to be a good thing. However, as situations increase in complexity – more actors, interests, constraints and types of expertise – it becomes less likely that good solutions will flow logically from the accrual and analysis of more and more evidence. Design abandons the hope that further analysis will render tricky problems logically soluble, and puts a stronger emphasis on generating and creating solutions, in order to continue exploring the situation or problem. Design practices are often described as ‘abductive’, that is, they rely more heavily on conjecture and more gently on inference to generate and assess actions, propositions and solutions. In practice, this is why the practices of design are so strongly oriented to producing novel framings and suggestions, challenging assumptions and orthodoxies, and opening up pluralist perspectives. This is where public design is often found in tension with its situated institution: governmental structures seek justification for policy action, whereas design practices are oriented to its discovery.

This emphasis on creativity and generation plays out through different methods and techniques during design processes. For example, in a comparative study of the use of design across 15 cases in a range of public institutions in five countries, Bason (2017, p.309) identified three core uses of design, the first of which was predominant: exploring the problem space; generating alternative scenarios; and enacting new practices. Creativity is a core competency and outcome in design, and one that has been the subject of extensive experimental research to demonstrate the efficacy of various design practices in improving creativity and quality of idea generation, including disciplinary diversity, divergent thinking, goal-setting, visualisation, sketching, prior group interaction, surprise, and non-functional design requirements (e.g. Flager et al, 2014; Lee and Ostwald, 2022; Ou et al, 2023). Here,

a futures-orientation is often implicitly, and sometimes explicitly, part of design practice. When made explicit, a futures orientation, for example in an EU project on blockchain (Pólvora and Nascimento, 2021), enabled the building of collective visions and stimulated ‘anticipatory’ governance. Such generative and creative capacities can sometimes serve to challenge existing assumptions, worldviews and ways of doing things, which can be uncomfortable within public contexts (Kimbell et al, 2023).

1.4 Design practice 3: Visualising, materialising and giving form to ideas

Design practices place a strong emphasis on making ideas visible and tangible and giving form to potential changes to products, interactions, services or places.

Different ways of representing understandings of the world around us offer different opportunities for discovery, and different opportunities for individuals and teams to venture, modify and play with different conjectures. Numbers allow for precise specification and comparison of quantities and values – graphs even more so. Written text provides structure and permanent storage for human meaning in a (mostly) standardised format, which is easily transferable, reproducible and analysable, and can be verbalised on demand. In contexts where standard assumptions and meanings are helpful and uncontroversial, where the precision and predictability of statements is paramount, where ambiguity leads to error, and where everything is recorded for posterity (accountability) textual and numerary languages are best.

There are many reasons for this emphasis on visualisation and materialisation, but in general these practices are helpful in the production of novel and emergent meanings, and provide equitable terms for giving form to ideas and for communication between diverse participants. Especially in the social domain, sometimes relationships, systems and scenarios are easier sketched, mapped or performed than explained. Visual media that appear unfinished open up

interpretation and allow for addition, expansion and synchronous collaboration in a way that a text in a report does not. Not everyone can read a regression table or use the conceptual vocabulary of urban planning, but pretty much everyone can tell stories, sketch (at least crudely), and discuss or organise photographs. Sketches are easily edited, revised and adapted. Not all feelings and perspectives are easily put into words, but storyboards and personas may serve to communicate important aspects of experience. Whilst they might involve symbols with standardised meanings, sketches, models, maps, diagrams, portraits and storyboards allow much greater scope for participants to generate their own meanings.

In this way, visualising and materialising are inclusive and equitable practices of communication in diverse settings, and are conducive to ambiguity, re-interpretation, rapid or simultaneous collaboration, and speculation or ideation. Objects such as sketches, mock-ups and prototypes play important roles in cross-disciplinary collaboration (Nicolini et al, 2011), enabling participants to work across different types of boundaries, and providing a way to engage across domains of expertise. Such practices can bring into view perspectives that are marginalised or ignored.

1.5 Design practice 4: Integrating and synthesising perspectives, ideas and information

Design practices facilitate the synthesising, integration and sense-making between varied forms of knowledge, positions and perspectives in relation to a situation.

One definition of design suggests it has no determinate subject matter of its own, such as the structure of human DNA (associated with the field of genomics) or the scarcity of resources and associated behaviour (as in the field of economics) (Buchanan, 1992). Instead, design might be introduced to either of these fields, for example, in the design of gene therapies or of government auctions for the commercial rights to a telecommunication bandwidth. Increasingly, public policy problems refuse to respect these disciplinary, as well as sectoral, jurisdictional, public-private, value-factual and domain- or issue-area boundaries. This is

articulated imperfectly but frequently through the notion of ‘wicked problems’ (Rittel and Webber, 1973). When saying design is integrative, this suggests it has the capability to bring these considerations into coherence. The modern concept of a professional designer emerged concurrently with industrialisation and the need for a new kind of professional who could manage the complex calculus of economic, technological, stylistic and organisational requirements involved in successfully bringing a new product to market (Heskett, 2005). Though the work of a public designer is quite different from a 19th century ‘draughtsman’, a practice of integrating varied knowledges, considerations and constraints remains integral.

Because design involves the integration of these diverse inputs, which are often incommensurate, synthesising is a related competency. In carrying out sense-making, designers typically use visual, creative and material approaches rooted in practical forms of knowledge production to synthesise different information and perspectives, and they engage others in so doing (Rylander Eklund et al, 2022). Analysis can be backward looking, examining and identifying ‘problems’ in how things are at present from different perspectives, to be addressed through (re)design. It can also be anticipatory, by defining ‘opportunities’ for design and speculating about future possibilities in visual or material form (e.g. Buehring and Liedtka, 2018; Comi and Whyte, 2018; Candy and Kornet, 2019). Different kinds of research are routinely carried out during a design process, such as: reviewing evidence; examining existing designs; exploring new materials; analysing errors, waste or intended outcomes not being achieved; and seeking to access the lived experiences of intended users or beneficiaries of a proposed design and their broader relations to other people, things, places, organisations and ecologies. But at the end of analytical activities, especially in the case of complex public problems, where the subjects and inputs under analysis are diverse and incommensurate, one possible result is incoherence. This is one reason for the growing interest in ‘evidence synthesis’ in public policy, with a network of organisations, initiatives, training and toolkits advocating, developing and assessing methods to carry out evidence synthesis to translate research into policy while also enabling intervention and addressing system complexity (e.g. Fleming et al, 2019; Boaz et al, 2024).

In this context, the everyday design practice of synthesising varied evidence and sources to produce new frames, problem statements, opportunities, proposals or prototypes in the context of a specific situation or issue is of interest in public design. Studies of expert designers emphasise the active synthesising work designers carry out in generating and iterating ‘frames’, through which an issue or situation is understood, and solutions are generated and developed. Dorst (2015) argued for framing associated with design as being an important requirement for innovation. The term ‘re-framing’ is widely used across contemporary practice, recognising the conceptual and cognitive work inherent in design. For example, in an analysis of five case studies of public and social innovation, Van der Bijl-Brouwer (2019) articulated framing as an important expertise in the public and government sectors, in order to reveal evolving, non-linear, emergent patterns and drivers of societal or public problems.

1.6 Design practice 5: Enabling and facilitating co-creation and citizen involvement in design processes

Design practices engage, facilitate or are led by stakeholders to understand situations, explore possibilities, and develop, test and assess options.

Because of the central role played by experiences in design, it follows that another key characteristic of public design is engaging and including bearers of those experiences in design processes. It is common in other forms of social inquiry (e.g. social science), and in policymaking and governance, to include or engage with external stakeholders, so it is worth explaining how design handles this differently.

To the extent that participatory design practices ask participants to generate, create, and synthesise, rather than just offer insight into processes and outcomes, participants in public design are directly implicated in the co-creation of potential outcomes and hence of (future) public value. This is both an epistemic and ethical commitment common in design in the tradition of Participatory Design (often now called ‘co-design’), which takes the politics of design processes as its central focus

(Simonsen and Robertson, 2012). Rooted in Scandinavian traditions of workplace democracy, researchers in Participatory Design made the political proposal that people who are the intended future users of a product, service or software tool are entitled to be meaningfully involved in designing it, and, concurrently, that for them to be so is conducive to better design.

The first wave of Participatory Design conceptualised a future designed thing as a discursive object, adopting the concept of ‘language games’ to account for the interactions involved in bringing a new software design into being (Ehn, 1988). More recent design-oriented research in this tradition borrowed terms from social studies of science and technology to recognise the politics of the social arrangements brought into being during design (Binder et al, 2011) and the use of design to enable the formation of publics for social ends (DiSalvo, 2022). However other researchers have critiqued such participatory designing as performative rather than actual (von Busch and Palmås, 2023). Other researchers have pointed to the lack of serious discussion of inequalities in design processes and outcomes (e.g. Sloane, 2017). Alongside participatory design, the field of inclusive design developed to make the case that designing, and the resulting designs, should include stakeholders whose needs and perspectives might be marginalised. While some researchers focus on abilities and ageing, others ask if ‘inclusive design’ is more appropriately tied to social justice than to models of disability (Kille-Spekter and Nickpour, 2022). A study of six examples of co-design in the public sector saw the benefit of using this approach as shifting public service design away from an expert-driven process towards enabling users as active and equal contributors of ideas (Trischler et al, 2019). This brief review of recent literature highlights the fact that, far from being a sticking plaster to address a perceived democratic deficit, co-design itself is a complex area of research and practice, requiring understanding and reflection in its application.

While there are many forms of commercial design that hold an authentic commitment to the epistemic claim that meaningful user participation leads to good design processes, it is less clear whether, or perhaps when, commercial designers accept the corresponding ethical claim that users ought to participate meaningfully in the design of forms that affect their own lives. In a democratic context, the ethical basis

on which one might take citizen or stakeholder participation to be an integral part of public design is more obvious. Moreover, deliberative, participatory and citizen-centred approaches to democracy experienced a major renaissance in parallel to the development of Participatory Design and design theory more broadly (and as a consequence of similar intellectual currents) (Bächtiger et al. 2019; Bowman and Rehg, 1997; Dryzek, 2000; Guttman and Thompson, 1996; Pateman, 1970). Deliberative democracy is today the predominant school in contemporary democratic theory and under the label of ‘democratic innovation’ has become a self-standing industry and professional practice (Elstub and Escobar, 2019).

1.7 Design practice 6: Enabling and facilitating multi-disciplinary and cross-organisational collaboration in design processes

Design practices engage, facilitate or enable working across organisational and team boundaries to understand situations, explore possibilities, and develop, test and assess options.

Contemporary designers routinely play roles in facilitating and mediating discussions and collaboration across teams, disciplines or organisations (Napier and Wada, 2016). In contexts of multi-stakeholder collaboration, design expertise in facilitation can aid integration of expertise and perspectives and foster co-creative emergence among participants (Aguirre et al, 2017). Such facilitation work requires careful attunement to the politics of facilitation and integration. For example, in a study of design in relation to transitions to sustainable futures in Australia, Gaziulusoy and Ryan (2017) found that design expertise played a dialogical role, enabling the envisioning of desirable futures, as well as helping to articulate the diverse politics embedded in future societal visions. There is also experimental research that suggests disciplinary diversity and prior group interaction have a positive effect on peoples’ capacity for idea generation and creativity (Coelho and Vieira, 2018; Ou, Goldschmidt and Erez, 2023).

1.8 Design practice 7: Practically exploring, iterating and experimenting with potential options

Design practices proceed through iterative processes of exploring and assessing issues or problems, and generating and testing responses or solutions.

Building on the tradition of open-ended experimentation associated with contemporary Western design pedagogies, a design process will typically involve carrying out practical activities and exercises in workshops or studios to explore the ‘problem’ situation, and making moves that develop, test and review possible ‘solutions’ through prototyping (Schon, 1983; Dixon, 2023). Researchers have explained this by suggesting that, rather than a linear process of analysing a problem followed by synthesising results into a solution, ‘problems’ and ‘solutions’ co-evolve during designing (Crilly, 2021). In contrast to experimentation in the sciences, ‘design experiments’ often look small-scale, situated and participatory (Koskinen et al, 2012). In the sciences, experiments such as randomised control trials seek to increase the validity of results by isolating a small number of variables, underpinned by an epistemology (theory of knowledge) that sees the world as objectively assessed; whereas ‘experimentation’ in design takes a situation as evolving and rooted in an epistemology that emphasises the construction and interpretation of knowledge.

In design practices, exploration and experimentation imply, among other things, deliberately causing and exploring uncertain and unanticipated outcomes from which designers anticipate something novel and germane to understanding will be discovered. This approach is aligned with a broader shift in business practice and industrial organisation from a focus on efficiency, which requires predictable activities and outcomes, to a focus on innovation, which provokes and explores unexpected outcomes through experimentation (Martin, 2009). The emergence of the discourse of ‘public sector innovation’ (and New Public Management as a predecessor) represents a similar aspiration towards, and narrative of, transformation in policymaking and governance.

However, while policymaking and government more generally may benefit from greater experimentation, politics in general may not, and this tension must be managed. Tolerance of failure, tolerance of error, pursuing speculative propositions, putting resources into activities that are only weakly justified or provide uncertain returns are not normally ideas associated with good governance. Part of public design consists in challenging this orthodoxy, but only with a due recognition that experimenting on social and political problems can be both politically and morally risky. Rightly or wrongly, it can be difficult for officials to justify activities that do not provide predictable and safe returns, for fear of public objections or of failing to meet the demands or expectations of superiors (Bailey and Lloyd, 2016). Advocates of public design may think that such fears are often ill-advised incentives, but there is also a serious issue of public accountability (which is not incumbent on commercial design) that experimentation trades off against.

This section has identified seven practices associated with professional design that are evident in commercial and public contexts. While not claiming these practices are exclusive to designers, combining them in this way begins to mark out a distinctive capability that is generally understood to enable and support innovation processes.

1.9 Using design practices to achieve outcomes

As with any kind of professional expertise, there are varied ways of understanding how its application leads to outcomes and impacts over different timeframes, how to conceptualise and distinguish between these, and how to produce evidence and insight about the relations between them, including causality. In day-to-day life, people may use the phrase ‘theory of change’ to prompt articulation about how doing something results in outcomes or change (e.g. with public issues, applying design expertise and using approaches associated with design).

Academic research usually works differently. Rather than positing a unifying ‘theory of change’, academic researchers usually seek to understand, explain, analyse, account for, evaluate, contextualise or critically assess change, drawing on research traditions in their field. These traditions can look very different. Very briefly, doing academic research requires having a way of understanding the world (ontology), a

theory of knowledge (epistemology), and a methodology for answering research questions, which together are expected to produce new knowledge that is rigorous, significant and original, all understood within a particular academic community. This means there is no single way to analyse when, how, to what extent and under what conditions applying design practices leads to (public) outcomes. There are many academic approaches, rooted in different ways of theorising how individuals, organisations and institutions operate, what design approaches, methods and skills are, and what consequences result from their use or application.

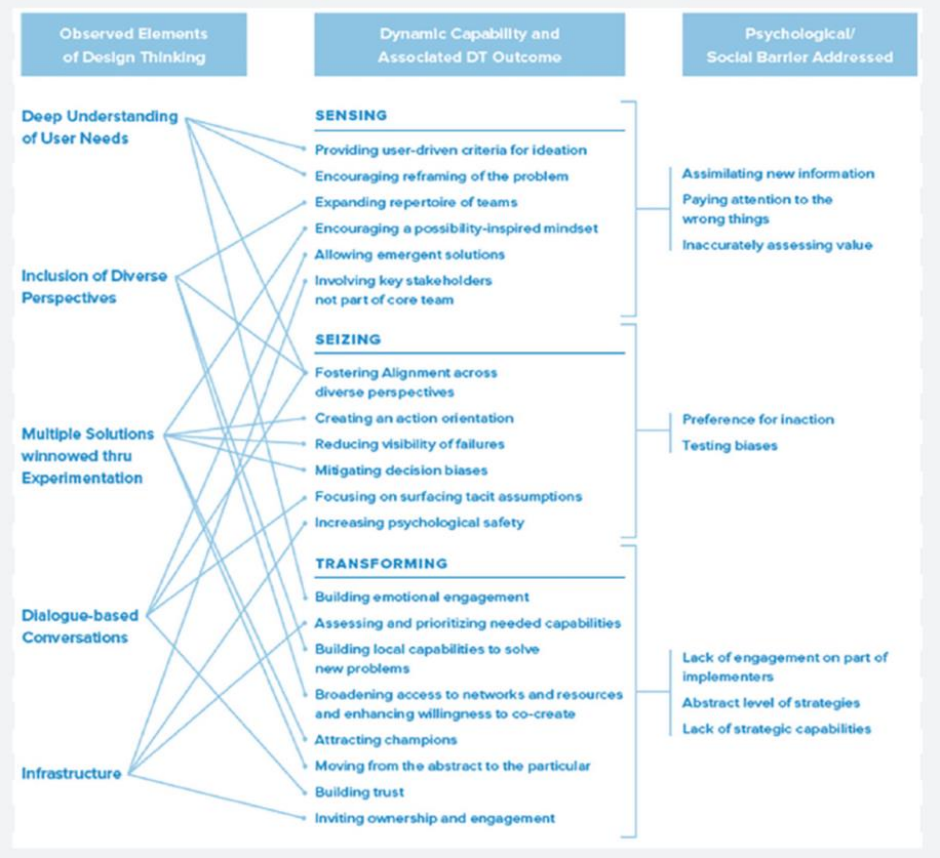
In this literature review, we take a middle way between the shorthand of ‘a theory of change’ and academic research rooted in design and the social sciences. Decades of research and reflection on practice have resulted in accounts of how the application of characteristics of design lead to outcomes in organisations and society. These can be grouped into three main types:

1. Economic and financial analysis. Efforts to quantify the impacts of design, often in economic or financial terms, such as McKinsey’s Design Value Index (Sheppard et al, 2018) and the Design Council’s Design Value Framework, which includes economic, social and environmental outcomes (Design Council, 2022a, 2022b; Bailey et al, 2021; Kimbell et al, 2022).
2. Practice-based analysis. Accounts of design relying on situated, local analysis often carried out by expert designers or design researchers (see examples cited in this paper).
3. Sociological analysis. Accounts of design that mobilise research in studies of organisation and management, and the social sciences more broadly, to underpin analysis. Such studies include numerous sub-fields with different traditions of knowledge production and theorisation.

Two examples serve to show the potential, and limitations, associated with the third group using studies of organising and managing to pin down the ‘outcomes’ achieved by applying design practices. The first example comes from studies in management about design thinking. Design thinking came to prominence through the efforts of a global design consultancy, IDEO (Brown, 2009), and other design professionals making claims that the approaches, methods and mindsets associated

with professional design led to innovation. Scholars then used different research approaches to examine the effects of using design thinking on organisational outcomes (see Section 2 for more on design thinking).

Figure 1: Design thinking characteristics as dynamic capabilities. A flowchart illustrating the relationship between observed elements of design thinking, dynamic capability, associated outcomes, and psychological and social barriers addressed. Source: Liedtka, 2020.



One management researcher, Liedtka (2020), carried out a large-scale study into design thinking with over 70 case studies of the implementation of design thinking in business, social enterprises and local government. To do the analysis she used well-established ideas from Teece (2007) proposing that organisations can be analysed in terms of ‘dynamic capabilities’ – understood as stable patterns of organisational behaviour. Teece distinguishes between capabilities for sensing, seizing and transforming, as organisations identify and respond to changes in the external

environment. Very briefly, sensing capabilities are those which sense, filter, shape and calibrate challenges and opportunities in the landscape; seizing capabilities are those involving structures, procedures, designs and incentives for responding to those opportunities; and transforming capabilities are those relating to organisational re-alignment of assets and resources to make change. Positioning design as a 'social technology', Liedtka showed how design thinking enables organisations to continuously build capabilities for ongoing strategic adaptation, summarised in Figure 1.

The contribution of Liedtka's study is to show how characteristics or practices of design (seen in the left-hand column) result in dynamic capabilities in the organisation (middle column) which lead to addressing barriers to innovation (right-hand column). This is an example of a cross-cutting analysis of what the application of design thinking results in, using an existing way of conceptualising how organisations innovate. Here the outcomes associated with applying design (thinking) are structured through the three dynamic capabilities (sensing, seizing and transforming).

While this is useful for broadly understanding the application of design thinking, what this study does not help directly with is understanding the outcomes of applying design that are other than innovation, or other than 'design thinking'. There are ongoing debates in research literatures about ways to understand and account for innovation and the relationship between design and innovation. For example, claims that 'human centred' design practices are particularly useful for either 'incremental' or 'radical' innovation are still being debated (Norman and Verganti, 2014; Biskjaer et al, 2019). Further, the term innovation has different narratives and histories when discussed in the public sector and government, compared to commercial settings. In contrast, if the core purpose of government or public service organisations is to deliver public value (see Section 2 for more on this), this emphasis on innovation may not be a fruitful lens to understand public design, if it downplays other important outcomes from applying design practices. A second limitation for the purposes of this literature review is understanding the differences between commercial and public design more precisely, once we recognise that such organisations have different narratives or 'logics' associated with how they operate, the ways things are done and

what is taken for granted. Differences between commercial and public implementations of design thinking are downplayed in the methodology, as distinguishing between them is not the central purpose of Liedtka's study.

Turning to a second body of research helps illuminate further the organisational conditions and narratives that can enable or hinder the extent to which applying design practices can lead to outcomes that are deemed as positive. An extensive international body of research that seeks to articulate the outcomes that result from applying design, underpinned by studies of organisations, appears in the multi-disciplinary field of healthcare improvement. Possibly linked to expectations of standards of evidence in clinical healthcare, this field has produced studies over 15 years examining the application of design expertise in healthcare organisations, at a time when other improvement methodologies are also being developed and tested.

Building on an initial study applying service design practices in a cancer service in the NHS in the UK, Bate and Robert (2007) and later researchers (e.g. Tsianakas et al, 2012; Locock et al, 2014; Donetto et al, 2015; Robert et al, 2022) developed, tested and evaluated what is now called 'Experience-Based Co-Design' (EBCD). This is now broadly understood as a collaborative way of improving healthcare services by establishing patients and healthcare staff as co-designers at the heart of initiatives and potential changes, with a strong emphasis on their experiences. Clarke et al.'s (2017) rapid evidence synthesis of outcomes associated predominantly with the use of co-production in acute healthcare settings identified three categories of reported outcomes, specifically: patient and staff involvement; the generation of ideas and suggestions for changes to processes, practices and clinical environments; and tangible changes in services and impact on patient or carer experiences – as well as (indirectly) the experiences of staff members. However, while there are now several such studies using mixed qualitative methods, an overview of EBCD (Robert et al, 2022) argued there was little quantitative data evidencing substantial improvements in patient or staff experience resulting from the use of this improvement methodology.

Much of this research focuses on the organisational conditions into which design expertise is being introduced. For example, in a study using EBCD as part of complex interventions in specialist stroke units in the NHS, Clarke et al (2021) found

that the approach helped with the analysis and interpretation of the organisational barriers to change. Like other interventions that engage participants to improve services, there are issues related to organisational capacity to absorb and build on these new practices. For example, in a 10-year review of a study of a quality improvement methodology applied widely in the NHS, Sarre et al (2019) found that while there was limited robust evidence of impact, there were positive legacies from the intervention that had informed ongoing organisational practices and strategies.

This wide-ranging body of academic work on EBCD, closely linked to practice, taking place internationally in the NHS and other healthcare systems, demonstrates that design-based approaches can lead to positive outcomes at the level of service experiences, organisation of services, and can generate ideas for implementation that lead to improved patient outcomes. Given the status of the NHS as a public institution funded by government, there is a useful congruence for this paper's attempt to understand how (public) design leads to (public) outcomes. However, as with any research, these findings tied to narratives of healthcare quality improvement are not immediately applicable outside of the specific conditions in which these outcomes were realised. The take up and implementation of EBCD in public health settings is not directly portable to other domains, even if they are public. This is because researchers recognise the specific contexts in which design is applied, such as organisational cultures, narratives, leadership, work practices, leadership, resources, and availability of design competences.

These necessarily brief summaries of two types of research demonstrate that claims of outcomes achieved through applying design practices are situated and based in particular framings (e.g. organisational innovation) or specific contexts (e.g. public healthcare). Further, such studies are rooted in and thus shaped by particular research traditions. At present there is no single overarching formula that offers justification to explain how design can lead to particular outcomes and the pathways or logics through which this happens. Different research traditions theorise the nature of the social or organisational world in different ways and pay attention to different things in their data collection and analysis. It is therefore worth being cautious about making claims that applying design practices that achieve an outcome in one setting are portable to another, or that the same linkages or

relationality can account for changes observed. However, for the purposes of this study, we bring together some of the relevant understandings that can be built on and further developed to underpin how public design leads to public value.

The academic research suggests that practices of design can achieve specific outcomes, while recognising these are highly dependent on enabling conditions. Having reviewed and clustered this research, we distinguish between outcomes associated with the process of designing, and the implementation of designs, summarised in Table 1a and 1b. By no means exhaustive, this table shows a range of outcomes demonstrated by the application of design and suggests their relevance to governments and public services. However, further research is needed to more precisely analyse these outcomes.

Table 1(a): Outcomes from design practices and implementation of designs: related to the process of designing

Outcomes	Examples from research literatures	Relevance to government and public issues
Generation of ways of framing situations or problems	Brun et al, 2016; Alipour et al, 2017; Coelho et al 2018, van der Bijl-Brouwer, 2019; Hvidstem and Amqvist, 2023	Where dissensus and contestation over framings has deadlocked policy action or rendered it ineffective
Anticipation of futures in the present	Bali et al, 2019; Engeler, 2017; Jones, 2017; Buehring and Liedtka, 2018; Kera, 2020; Pólvora and Nascimento, 2021; Vesnic-Alujevic and Rosa, 2022	Where there is a need to develop solutions that engage or create different ecosystems in a context of uncertainty
More effective cross-organisational or cross-disciplinary working	Nicolini et al, 2011; Ansell and Gash, 2018; Ou et al, 2023; Bowen et al, 2013	Where collaboration across multiple departments, forms of knowledge, stakeholders, perspectives and resources is required
Deeper shared understanding that is inclusive of perspectives and positions	McDonnell, 2009; van Dijk and Ubels, 2016; Nguyen, M., & Mougenot, 2022; Cash et al, 2020;	Where there are gaps between strategic intent and operational delivery

Strengthened ability to negotiate complexity, uncertainty and urgency for participants including staff	Junginger, 2008; Mitchell et al, 2016; Aguirre et al, 2017; Bason, 2017; Robert et al, 2022; Erikson et al, 2023;	Where there is a need to develop new ways of working in public administrations and public services
Increased legitimacy of responses	Conradie et al, 2021; Seravalli et al, 2017; Dixon, 2020; Bebbington et al, 2022;	Where there is a need to engage diverse forms of knowledge of the current issue or a problem engaging people with varied stakes

Table 1(b): Outcomes from design practices and implementation of designs: related to the implementation of designs

Outcomes	Examples from research literatures	Relevance to government and public issues
Operational efficiencies and increased effectiveness in implementation	Cockbill et al, 2019; Liedtka, 2020; Liedtka et al, 2020; Allen et al, 2020;	n/a
Outcomes specific to the policy issue or domain	Dahl et al, 2001; Collado-Ruiz and Ostad-Ahmad-Ghorabi, 2010; Corcoran et al, 2018; Choi et al, 2019;	n/a

1.10 Distinctions between commercial and public design

Thus far we have summarised practices associated with design in commercial and public settings, articulated outcomes and explained why how these are achieved is context specific. We turn now to aspects of design where the literature suggests that the characteristics of public design and commercial design are distinct. These are relations to democracy, purposes, accountabilities and novelty.

In making this assessment we draw on our cross-disciplinary knowledge of several academic literatures. We note ongoing and related debates that have emerged in the 21st century, resulting in terms and practices from design becoming more widespread, such as co-design, social design and legal design, including appearing outside industrial or commercial contexts, such as social and public innovation and legal services. For example, a recent publication from Demos on co-production with citizens (Levin et al, 2024) included ‘co-design’ as a method with specific relevance downstream in the policy cycle, not upstream or strategic, whereas literature on co-design suggests it can help achieve both. Similarly ‘social design’ is a term and a field with a variety of approaches and impacts, as illustrated in a collection of articles by academics in several fields at the University of the Arts London which reveals a strong orientation to applying design towards positive societal transformation across many spheres of life, from the justice system to textiles to health (University of the Arts London, 2020). Absent an established definition of ‘public’ design, we therefore suggest areas where public and commercial design might be distinguished.

Public design as democratic practice

Commercial and public design differ in the extent to which design practices seek to operate on a democratic basis.

Public designers who work in central or local government can be understood to be legitimised by and accountable to various sources of democratic authorisation. The most obvious and traditional of these is the representative system: civil servants derive their authority from ministers and government, via Parliament, and ultimately popular authorisation through general election. This account of public designers’

democratic legitimacy and accountability follows from a fairly traditional account of democratic authorisation. It remains important, but both political scholarship and UK politics in general have moved on from the belief that this is the sole mechanism through which policy and governance is authorised.

This is to do partly with how scholarly understanding of political representation has changed and partly with how representation itself has receded as the dominant mechanism of democratic practice. On the first count, it is no longer taken to be the case that representation is necessarily enacted through the election of representatives to act on citizens' behalf. Nobody elected Oxfam, but it might justly be said that Oxfam 'represents' people in the Global South who do not have access to the halls of power via traditional electoral representation (Montanaro, 2017). Lots of people are uncomfortable with this framing and might dispute how well or how qualified Western NGOs are for such tasks, but insofar as they seek to act in the best interests of otherwise unrepresented people, the basic point stands. Additionally, there is some debate over whether it is more appropriate to try and increase the representation of marginalised persons ('descriptive representation') or increase the representation marginalised points of view ('discursive representation') (Mansbridge, 1999; Dryzek and Niemeyer, 2008). The majoritarian character of the UK constitution does not especially favour either, and so it is increasingly accepted that representation may occur through other means: interest groups, charities, NGOs, petitions, public consultations, committees, quangos and commissions. A basic and general way in which public design is democratic is the commitment to various kinds of non-electoral representation that are increasingly taken to be a vital democratic functioning. Design discourse has its own conceptual vocabulary, but under labels like 'inclusive design', 'co-design' and 'social design', public design practices enact the representation of a diverse range persons, discourses, expertise and interests in ways not served by electoral representation.

On the second count, since the 1970s, forms of democratic governance based not in representation and electoral competition but in citizen deliberation and participation have been slowly gaining traction. This is in part a consequence of the 'crisis' that engulfed public administration and the professions in the 1970s (Rittel and Webber, 1973; Ostrom, 1974; Schön, 1983; Bohman and Rehg, 1997), which had a major

impact both on design studies and democratic theory. Concurrently, it should also be noted that the rise of participatory and 'open' governance practices coincides with the transition away from state-centric models and towards networked governance, which involve a larger number of actors and connections (Clarke and Craft, 2019; Wellstead et al., 2021). To a great extent, public design is the mature product of the rejection of technocratic and rationalistic approaches to governance in democratic settings, and decades of work to develop an alternative.

On the other side of the politics and policymaking coin is democratic theory, in which the traditions of deliberative and participatory democracy are now hegemonic. Broadly speaking, deliberative democracy is a school of thought that supposes the primary source of legitimacy for political action in a democracy is not vote-counting but reason-giving, less by representatives and more by affected citizens themselves (Dryzek 1990, 2000; Guttmann and Thompson, 1996; Parkinson and Mansbridge, 2012; Elstub, 2014; Warren et al. 2020). Citizens are not just sources of interests and preferences which must be 'counted up' in a majoritarian or pluralistic fashion, but sources of reason, knowledge and judgement which can be brought to bear on important political issues. Following this logic, policies, decisions and other political activities are legitimate to the extent to which they are the product of a process of free, respectful and reasonable exchange between affected persons oriented to the public good (Cohen, 1989; Benhabib, 1996; Chambers, 1996). This is the deliberative claim. Such ideas have long since outgrown political scholarship. Specialised forums for public deliberation and citizen participation (often called 'mini-publics') are now in widespread use in democratic (and some non-democratic) contexts the world over (see Elstub, 2014). In the UK especially, there is now a strong and self-sustaining industry dedicated to providing, promoting and building capacity for deliberative and participatory capacity, spearheaded in the third sector by organisations such as Involve, the Sortition Foundation and the Democratic Society. Aside from repeated calls for a citizens' assembly to break the deadlock over Brexit, recent high-profile deliberative activities in the UK include the Citizens' Assembly for Northern Ireland (2018), the CIimate Assembly UK (2019) and the Citizens' Convention on UK Democracy (Citizens' Convention on UK Democracy, n.d.).

These developments are important here because public design shares a parallel history and the same theoretical underpinnings, which helps explain why public design both promotes and is required by the prevailing conception of democratic legitimacy in UK politics. To illustrate this, it is necessary to explicate the important parallels and synergies between participatory and deliberative democracy and public design, which are both products of the same intellectual, political and organisational developments over the last fifty years (Bächtiger et al., 2020; Bohman and Rehg 1997; Chambers, 1996, 2003; Dryzek, 2000, Elstub et al., 2016).

First, deliberative and participatory democrats assume that citizens are experts in their own lives and interests, in the same way that designers take users and stakeholders to be so. Decisions are legitimised by citizen deliberation for the same reason that designs are legitimised by stakeholder and user inputs: because they are rooted in the real lives of persons affected by them, and because design and democratic practice typically permit those persons a degree of authorship in presenting those lives and experiences. Put another way, both public designers and participatory democrats view experiences as evidence of prime importance. Deliberation between actual citizens allows them to bring their experiences to bear on politics in a way that mass electoral politics does not, so in the same way as public design, participatory and deliberative democratic practices are about bringing rich, experiential evidence to the table – often in place of (but also assisted by) technical and specialised expertise.

Second, public design is often described as a ‘bridge-building’ discipline; in this paper we have called it ‘integrative’. Design is understood to have no special subject-domain of its own, but consists in a capability for bringing many others together: different actors, issues, expertise and knowledge domains, perspectives, interests, and, ultimately, meanings and understandings. What constitutes ‘wellness’ for a pensioner in assisted living might have a different meaning for health visitor, doctor or policymaker, and it is the task of public design to help them develop a shared understanding that can be the basis of a constructive solution. Deliberative democracy is likewise seen as powerful for its propensity to bring together persons of different backgrounds, interests and understandings – people who may profoundly disagree on sensitive matters – and have them develop shared understandings.

Naturally, one advantage of this is that it can be a basis for consensus, and thus political action. But, like public design, a strong theme of deliberative scholarship and practice is about democratic capacity-building. Confronting the experiences of differently-situated individuals and making a sincere effort to understand them transforms participants, fostering interpersonal, cognitive and political skills taken to be essential to democratic citizenship.

Public design and participatory democracy were born of the same intellectual and professional crisis, and both adopt a constructivist epistemology rooted in the transformation of ordinary people and the primacy of their experiences. Such experiences and expertise are increasingly seen less as helpful and supplementary additions to policymaking and more as necessary and obligatory ones. Insofar as they are distinct, public design places a greater emphasis generating, creating and synthesizing solutions, which is inherent to design but not to democracy. Deliberative democracy is oriented towards opinion formation, will formation (decision making) and building democratic capacity and citizenship. In general, democratic theory has focused on how political actions, policies and solutions are selected, rather than how they are synthesised. Relatedly, and partly for historical reasons, participatory and deliberative democracy emphasises verbal (ideally face-to-face) discussion and places little emphasis on visualising and materialising, as public design does.

In summary, it is public design’s foundation in democratic thinking, institutions and practices that results in an important distinction between it and commercial design. Whether viewed through the lens of representative democracy (for example institutionalised in the Civil Service code), or through deliberative understandings of democracy, design practices associated with government and policy have a distinctive set of considerations and implications.

Purposes for design

Commercial and public design differ in the purposes towards which design expertise is mobilised and how outcomes are assessed.

Given this differing basis in democratic practice, it is not surprising to make a further claim that the purposes to which public and commercial design are put are distinct. In commercial organisations the use of design is generally tied to enabling or supporting innovation in order to improve the performance of the financial bottom line, although environmental and social impacts of business are increasingly visible as intentions and outcomes. Measuring success is often required to be quantifiable and relatively clear, with existing processes, expertise and infrastructures in place to assess outcomes.

In contrast, as a result of its democratic underpinnings, public design is tied to varied agendas and narratives, and it can be harder to discern the specific goals to which design can reasonably be expected to contribute. Public sector organisations innovate in order to improve their performance with respect to a much wider range of social, political and organisational needs, which may be rival, contestable or more difficult to define and operationalise. For example, Bason (2010: 44-49) suggests four alternative ‘bottom lines’ against which to measure the performance of innovation in the public sector: productivity, service experience, results and democracy. There is growing evidence that design practices can be understood as a means of ‘doing’ politics. Reviewing the emergence of design-based approaches in urban planning and place-making, Collier and Gruendel (2022) noted that the focus of these practices was on the ‘design of politics’ rather than the aesthetic or functional qualities of material or urban environment. Instead of downplaying politics, design practices can be mobilised in relation to policymaking in different ways, including challenging how things are done (Kimbell et al, 2023).

Moreover, the task of setting and prioritising design objectives becomes more complicated where they are connected to democratic legitimacy, political discourses and agendas with more elusive meanings (e.g. ‘sustainability’ or ‘levelling up’). For example, there is a burgeoning discourse of ‘design justice’ and ‘decolonising

design' that seeks to critique and find alternatives to assumptions, dominant worldviews and biases built into contemporary practice (e.g. Abdulla et al, 2018; Costanza-Chock, 2020.). In the public sector specifically, there is a line of critique that suggests public design could contribute to creeping and self-justifying forms of social control (Swyngedow, 2005). Furthermore, the basis on which citizens interact with the state is not always analogous to the basis on which consumers interact with firms. Langham and Paulson (2017) observe how the commercial notion of service design, and attendant concepts like 'service quality', are not easily ported to a public context, such as doing one's tax return (which is, in an unintuitive way, a public service). Such services do not involve a voluntary relationship in which the customer is provided with some benefit, but are instead motivated by compliance and done out of duty or obligation.

Although such frameworks are important in framing and measuring the generalised value of public design, there is of course an extent to which ends and values in public design will be context or problem-specific and outcomes are realised contingently in institutional settings (Huybrechts et al, 2017). Moreover, a characteristic of all design is that ends and goals are often defined endogenously within the design project. But in commercial design, design objectives are always ultimately instrumental to that financial bottom line (or other financial imperatives like market share) and to social accountabilities, to the extent that a business organisation is aligned with them, whereas end goals in public design really are end goals. Financial sustainability is necessary but is ultimately subservient to debates about the production of public value.

Accountabilities

Commercial and public design differ in the societal accountabilities built into professional practice.

While commercial and public design practices may look similar at first glance – for example, using methods and tools that foreground people's experiences of services and systems – there are important differences in the ways that designers understand the societal accountability of their professional expertise. Unlike other design-based

professions such as architecture and engineering, people working in graphic, user experience and service design do not have a defined or regulated body of knowledge (Kimbell et al, 2021). Some designers choose to become a member of the Chartered Society of Designers, an independent body that defines design competences required for professional practice (see section 4). Any designer may apply and undertake the Pathway to Chartered Designer, a protected title and only awarded by the Register of Chartered Designers, which exists by Royal Charter. This is a voluntary arrangement. In contrast, to practise as an architect in the UK requires being registered by the Architects Registration Board, set up by Parliament in 1997 to regulate the profession. Hence, while many design fields are referred to as ‘professions’, they do not have the characteristics typically associated with ‘protected’ professions through which accountabilities are embedded in practice, such as statutory requirements and formal registration to demonstrate achieving levels of certified knowledge and ongoing professional development, in order to practice legally (Abbot, 2001).

While such formal accountabilities are lacking in both commercial and public design, the ad hoc or situated sets of relations and standards to which different types of designers are held to account are different. In unregulated commercial digital or multi-disciplinary design contexts reliant on consultancy income, learning and development are contingent on firm leadership and owners, while accountability to clients is paramount. Compared to the wider workforce, more designers work as freelancers (27.1% versus 14.7%) (Design Council, 2015), and this makes it less likely that resources and expertise are available to structure accountabilities outside immediate commercial priorities. In large consulting firms that sell expert professional knowledge, or in design teams in large organisations, such precarity may be reduced through the ongoing processes of talent management and professional development.

In contrast, in public design, as previously suggested, designers working in local government, the NHS or the Civil Service are guided, like other employees, by the ethical and epistemological norms and values of social inquiry, by accountability of ministers to Parliament and by institutionalised frameworks, such as the Civil Service Code; and they are supported and assessed by human resources capabilities

typically found in such organisations. However, even in organisations such as the Civil Service, there are varied accountabilities built into different kinds of professional work. For example, policy makers might be accountable to ministers leading departments, as well as Senior Civil Servants, in addition to their line managers; whereas civil servants with design roles may not see themselves as directly accountable to ministers (who set overarching policies) for their professional work and its outcomes. Further, narratives about serving user needs (an informal professional accountability in design) may come into conflict with ministerial priorities, raising the question of how accountabilities for service or policy designers working in government are structured, negotiated and managed. In short, the accountabilities of public designers are different to those working in commercial contexts, requiring different forms of negotiation and navigation.

Novelty

Commercial and public design differ in the importance they attach to novelty.

As a result of the different relations to democracy, purposes and accountabilities, commercial and public design have different relations to novelty. Commercial design is valued for practices that enable ideation, creativity and novelty, at the expense of other virtues of good design, such as criticality, reflection, attention to systemic impact of new designs, and being informed by, and respectful of the tenets of, social inquiry (Kimbell, 2011). Design historians tie this emphasis on novelty and creativity to the pressures of the market (e.g. Julier, 2017), although broader histories of design note an intertwining of attention for some designers on positive social outcomes alongside creativity and income generation in varied social and political contexts (Margolin, 2017). This is arguably a reflection of the commercial imperatives of managers and firms, who have extracted ‘design thinking’ and ethnographically-derived methods from the broader traditions of action-oriented social inquiry in which they are embedded. In contrast, government may not value novelty in the same way. In public organisations, and public policymaking, existing investments, infrastructures, legislation and policy commitments mean there is no empty space

requiring something new to be dreamed up. The context of public design may not leave much room for originality and novelty. Further, creativity associated with public design may result in proposals that do not fit with established ways of doing things and existing infrastructures, resulting in challenges that are political.

2 Types of design in the public sector

What are the different types of public design that are practised in the public sector (like strategic policy design, transactional service design, etc)? In practice, what are the common and the different features of these types of design, and how do the relate to each other?

We now turn to identifying particular specialisms or ‘types’ of public design. There are long-standing debates in research literatures about how to distinguish between types of design (e.g. Buchanan, 2001) which are not useful to dwell on here. While the argument presented below necessarily simplifies such discussions, it is useful to categorise types of design to clarify specific features and their current and potential contributions to public value.

This section summarises such ‘types’ at a high level, integrating academic and grey literature. It should not be understood as an exhaustive summary of the types of design found in government or public bodies. It summarises the authors’ knowledge of different ways that design has been included, adopted or adapted within government departments, local government and public services in the UK, alongside work by the Design Council, consultancies and universities. We note that over the past 20 years, the UK has developed a wide range of types of design and forms of capability building, institutionalised in different ways in government and public services, from the Government Digital Service, established in 2011 (e.g. Kattel and Takala, 2023) to Policy Lab, set up in the Cabinet Office in 2014 (e.g. Siodmok, 2014), to experience-based co-design in the NHS (e.g. Robert et al, 2022), service design in devolved administrations (e.g. Scottish Government, 2019) and policy design in local government (e.g. Salinas, 2022).

As Christian Bason demonstrates (2021) in a review of toolkits for public sector innovation using design, there are various ways of categorising the use of design, for example, focusing on scales or levels of government (e.g. local, regional, central or state or international), purposes (similar to our discussion above in section 1), and contexts, as well as disciplines or specialisms in design. The Organisation for Economic Co-operation and Development (OECD) Observatory for Public Sector

Innovation's Toolkit Navigator, for example, distinguishes between product design, service design, experience design, strategic design, organisational design and design management. In the Ontario government there are design-related roles with the title user researcher, service designer, user experience designer (alongside other roles such as product or portfolio manager).

In the UK Civil Service, the Digital, Data and Technology (DDAT) Profession Capability Framework defines skills, and skill levels, associated with roles in the UK government to inform recruitment and delivery of work, as well as monitoring and evaluation. Under the heading 'User-centred design roles', this framework includes eight roles, specifying skills and skill levels for: accessibility specialist, content designer, content strategist, graphic designer, interaction designer, service designer, technical writer and user researcher.

In this paper, we have a different focus, since the task of the literature review is to analyse and synthesise existing research, not propose an operational framework for government. We highlight areas of design that (a) have a substantive research base in academic literature, (b) connect closely with policymaking, (c) have most potential for closing the gap between policy and delivery, and (d) exist as defined roles in central and local government or are emerging but not yet institutionalised. We therefore distinguish between the following types of design in government: communication design, interaction design, service design, strategic design, policy design and urban design.

Creating any such list results in inclusions and exclusions. For example, based on our discussion of practices associated with design above, such as attention routinely paid by designers to people's experiences, we do not offer a definition of 'experience designer', although this is widely found in the professional design sector and in some government teams in the UK and internationally. Arguably, all types of design focus on people's experiences of things, whatever the medium or format. Much of the discussion in the section on 'interaction design' incorporates some of the characteristics associated with these two roles, usually with a focus on digital services, while recognising overlaps and distinctions between researching (for design) and designing (in a way that includes learning through iterative research). Nor do we include the term 'content designer' in use in editorial and marketing

services sectors, and in the UK government's digital and data capabilities, as there is little research on this topic. We acknowledge but do not engage deeply with the design specialist expertise associated with environments and places such as urban design, including planning, architecture and civil engineering, each of which is a substantive (and regulated) profession, with a strong orientation to public accountability, codified knowledge and formal definitions of practice.

To clarify the distinctions between the terms we will focus on, this literature review examines and integrates perspectives from academic research in design fields in relation to public issues and public administration. In each section we summarise recent academic literature and highlight some of the differences between these different types of design, which throw up some implications to consider when building design capabilities in government.

2.1 Communication design

Much government and public sector activity involves communications, across many types of media and device. One of the design traditions most closely associated with this is usually called 'graphic' design. A wide range of activities come under the term 'graphic' or 'communication' design including typography, documents and publications, way-finding, information layout, illustration, exhibitions, events, branding, packaging and corporate identity (Black et al, 2017; Walker, 2017; Triggs and Atzmon, 2019). In addition, digital forms of design such as interaction design, interface design, animation and gaming are sometimes included in the umbrella term (visual) communication design, since all emphasise the visual aspects of a design, regardless of medium or format (Triggs and Atzmon, 2019).

At first glance the emphasis on visuality might suggest that this form of design in government should be understood as 'downstream' from policymaking, integrated into delivery, for example, through government communications (e.g. posters, leaflets, advertisements) or through the design of material and digital 'touchpoints' that people interact with in public services (such as filling in forms required by local or central government, an area in which designers in international governments are sharing knowledge (Form Fest, 2023). However, the research literature suggests that attentiveness to visual communications is an important way into understanding

how citizens and others relate to communities, places, government and public services, offering communication design as a site for research into people's experiences of public issues and public value, alongside development and delivery (Triggs and Atzmon, 2019). For example, Hall et al, (2015) show how examining the graphic design of the institutional practices and organisations associated with 'security' can open up avenues for research and innovation.

Practices and methods in graphic communication are changing, with the intensification of digitalisation and data production and use across services in everyday life, including interactions with government and public services, as devices and infrastructures routinely gather and display data. One growing strand of practice and research is data visualisation, where designers play important roles in enabling exploration, interpretation and use of digital and other kinds of data (e.g. Hall and Dávila, 2022). Other developments associated with data and digital also have implications for communication design. For example, given extensive use of digital technologies in the practice as tools for communication design, there is concern that graphic communication design is one specialism being challenged and possibly replaced by emerging technologies that automate the production of imagery based on large datasets of images produced by others (not always with appropriate rights), throwing up difficult questions about the specific skills associated with graphic creativity and production (Meron, 2022).

2.2 Interaction design

Interaction design emerged as a term to articulate a specialism for designers working in the field of human-computer interaction (HCI), distinguishing this from the work of engineers, software architects and developers. Like other designers, those concerned with designing interactions take as the primary analytical focus how people experience software, whether in websites, smartphones or chatbots (Fallman, 2003; Winograd and Flores, 1986; Wright, Wallace and McCarthy, 2008). Interaction design is now a well-established specialist type of design informed by research, with large international conferences (e.g. Designing Interactive Systems and Conference on Human Factors in Computing Systems (CHI), both part of the Association for Computing Machinery (ACM)), peer-reviewed and practitioner publications, and

associated degree courses. Other similar terms co-exist, including user experience (UX) design and digital design. Digital design accounts for the largest number of people in the UK design economy, totalling 866,000 according to the Design Council (2021), in contexts such as user experience design, web design and app design.

The scope of interaction design typically covers the embodied, situated, psychological and social aspects of people's engagements with technologies (hence the use of the terms 'user-centred' or 'human-centred'); forms or styles of interaction; ways to research user 'requirements' or 'needs' of technologies and systems; usability and evaluation of system; and the roles of research and theory in design (Dalsgaard and Lindler, 2014; Stopher et al, 2021). Several traditions co-exist, including approaches to interaction which are more creative and speculative, and others which emphasise reproducibility and validity of proposed designs delivered digitally at scale. For example, prototyping interactions through the former approach might look like co-creating shared understandings about the possible future purposes and forms of a technological system, whereas in the latter approach prototyping might involve large scale 'a-b' testing of alternative designs for a user interface before wider implementation.

The use of data in interaction design can take several forms. This includes carrying out qualitative and quantitative research to better understand people's current ways of doing things, and how these might change when a new interaction or technological platform is introduced. It also includes testing proposed design solutions, resulting in an evidence base to justify decisions to implement one solution over another, and to enable ongoing monitoring and revision of designs that are delivered.

Capabilities in interaction design are well-established in government and public services. For example, the founding and development of the Government Digital Service established significant design capability across the UK government and public services (Greenaway et al, 2018). As with other types of design, emerging technologies are reshaping how interaction design is understood and what constitutes core practice. For example, interaction designers are interested in how users experience AI-based self-service systems and automation, a fast-growing feature of the customer service landscape in both the public and private sector

(Chen et al., 2021). But interaction is also understood to be ‘embodied’, which becomes increasingly relevant when shifting from clicking on a phone screen in response to an audio or visual prompt towards interactions with voice-based, robotic and augmented technologies.

The features of interaction design generally agreed to be distinctive include:

- a focus on designing people’s experiences with digital interfaces across one or more devices connected to information and communication networks and systems;
- a recognition of the requirement to integrate varied platforms, sources of data and organisational actors involved in delivering interactions, given the complexity and multiplicity of co-existing systems;
- the methodological challenges of researching, designing and prototyping ways to interact with interfaces over time, including in relation to engineering and science-based forms of knowledge; and
- the enablement of systems development through practices such as visualisation, materialisation, prototyping and facilitation.

2.3 Service design

In contrast to much older specialist sub-fields of design, such as graphics, service design is a recent type of design research and practice. Having emerged in the early 2000s, service design is now well established as a type of design, with its own publications, university degree programmes (usually at Master’s level), academic conferences (such as ServDes), professional communities (e.g. Service Design Network; Service Design in Government) and publications (e.g. Polaine et al, 2013; Sangiorgi and Prendiville, 2017; Penin, 2018; Mager et al, 2023). Investments in resources for service design, such as toolkits for local or central government and the work of the Design Council RED unit in the early 2000s (Burns et al, 2006), paved the way for influential resources such as the UK Government Service Manual (focusing on digital services) and numerous examples in the public sector Toolkit

Navigator, collected and curated by the OECD Observatory for Public Sector Innovation (OPSI).

In the early 2010s, practice and research articulating the case for a specialist type of design associated with services tended to focus on the task of holistically designing the experiences people had as they interacted with a range of ‘touchpoints’ across organisations. Here there was an emphasis on purposeful alignment of branding, data capture and organisational operations, to offer consistent experiences across the moments of interaction that people have with services over time. More recent studies of service design have integrated research in management, including services marketing and service innovation. With a growing emphasis on requirements for organisations to improve delivery of services, service design and service designers are seen as playing key roles in enabling mediation and integration across functions such as marketing, technology or operations teams, to prompt innovation through the lens of customer experience (e.g. Vink et al, 2019). Further, researchers in this area have a growing focus on ‘service ecosystem’ design, recognising the varied organisations involved in generating and delivering value associated with services and the role of design in supporting this (e.g. Yu and Sangiorgi, 2018; Vink et al, 2021). Hence, while, as in other strands of design, service designers are attentive to people’s experiences as they engage with and across services, this is balanced with attention to wider organisational and institutional or ‘systemic’ aspects of services (Marger et al, 2023). Recognising the range of roles that service design can play across the activity of designing services, Morelli et al (2021) offered a conceptualisation of three levels of interaction and three types of task, shown in Table 2.

Table 2: Types of service design capability. Source: Morelli et al., 2021, p.74

Levels of intervention	Category of tasks: analysing	Category of tasks: designing	Category of tasks: representing
Service as interaction	Addressing the context: • Identifying stakeholders • Identifying relevant issues • Analysing complex contexts or routinary behaviours Engaging stakeholders: • Supporting conversation	Controlling experimental aspects: • Prototyping • Experiments Engaging Stakeholders: • Supporting participation Modelling: • Co-designing solutions • Facilitating creative problem-solving	Vision building: • Inspiring participants • Generating scenarios
Service as infrastructure	Addressing the context: • Analysing stakeholders' networks • Analysing motivations	Building local architecture: • Proposing service architectures Open problem-solving:	Vision building: • Visualising organisational structures Building logical architecture:

		• Creating platforms for interaction	• Blueprinting services • Ecosystems maps
Service as systemic institution	Addressing the: context: • Understanding ecosystems and power relations	Modelling: • Proposing business models Working across different logical levels: • Articulating missions	Vision building: • Generating visions and scenarios

With growing clarification of the different tasks associated with designing services at different levels of abstraction of what a service is, there is interest in the development of capabilities inside organisations. Research on the adoption and integration of service design into organisational capabilities has suggested that barriers to building such capabilities can be understood as dominant 'organisational logics'. But at the same time, integrating design capabilities can help reveal and challenge dominant logics (Kurtmollaiev et al, 2018). In the context of local and central government, studies of service design increasingly highlight the potential of its practices to reveal issues, not just develop solutions (Light and Seravalli, 2019).

In industrialised countries such as the UK, where services are the dominant economic activity, sub-specialisms in service design have developed. For example, some practitioners and researchers focus on service design in healthcare (e.g. Patrício et al, 2020). Here there are close links with allied research, mentioned above, that critically assesses the extent to which design practices (such as Experience-Based Co-Design) enable healthcare improvement, among other methodologies, in the face of urgent needs to change the way healthcare is delivered towards an emphasis on co-production (e.g. Robert et al, 2021).

The features of service design generally agreed to be distinctive include: an emphasis on designing experiences or ‘journeys’ across multiple interactions over time and space; recognition of the requirement to integrate varied organisational actors involved in delivering services; methodological challenges of designing and prototyping services that can span varied forms of interaction or experience; and opportunities for innovation in services through mobilising practices of design such as visualisation, materialisation and facilitation. With the attentiveness to ecosystems through which value is co-created, there are overlaps with other types of design, such as strategic design, design thinking and systems design.

2.4 Strategic design (including systemic design and design thinking)

Arguably (expert) designers have always been cognisant of the strategic and systemic aspects of designing, attending to the wider context in which designs come to exist and are engaged with, used, ignored or adapted and the consequences that follow. Since around 2010, there has been an intensification of research and practice development in relation to design and systems (e.g. Calabretta and Gemser, 2017; Junior et al, 2019; Sevaldson and Jones, 2019; Buchanan, 2019; Dubberly and Pangaro, 2023) alongside the ‘strategic’ use of design approaches, techniques and expertise to address systemic issues and organisational challenges. In addition, the practice of ‘design thinking’ (e.g. Brown, 2009; Liedkta, 2020) has spread widely across organisations, including in strategy making, leading to new research. For example, a recent study focused on the frictions that result from bringing creative practices into business (Carlgren and BenMahmoud-Jouimi, 2021). All three areas have associated academic and practitioner conferences and events (e.g. international conferences of the Systemic Design Association), journals (e.g. Strategic Design Research Journal), publications, degree courses, training, toolkits, blogs and guidance. The OECD OPSI, for example, defines strategic design as an integrative and holistic practice that “involves developing a deep understanding of context and relationships to make decisions” rather than focusing on people’s interactions with products or services (OPSI, 2023). There is an important distinction to be made here between forms of design that intend to be ‘strategic’, and the design

of strategies more usually associated with management, organisation and leadership; here we focus on the former.

In some studies and practice of design relating to systems, there is an emphasis on understanding and visualising systems, as if taking the 'system' itself as the thing to be re-designed. For example, the technique of 'gigamapping' (Sevaldson, 2011) focuses on researching and visualising complex relationships between organisations and activities, in such a way as to make these relationships comprehensible and available to participants seeking to change something in the 'system'. Other researchers examining intersections between systems and design (Junior et al, 2019) distinguished different ways of combining the two domains as (a) approaches aiming towards whole systems design, (b) systems-oriented design, (c) conceptualising product-service systems, and (d) design for development, each with different mindsets, skills and tools. To varying extents these developments in systemic design integrate insights and perspectives from systems thinking (UK Government, nd; Stappers, 2021), studies of multi-level societal transitions (e.g. Ceschin and Gaziulusoy, 2020; Hill, 2022) and ideas of ecologies (e.g. Forlizzi, 2013), with a growing emphasis on data and computation (Dubberly and Pangaro, 2023; Cain and Pino, 2023).

Alongside purposeful 'systemic' design there are diverse examples of studies and practice adopting a strategic approach to innovation or transformation using design approaches such as enabling social innovation (e.g. Manzini, 2015; Hilgren et al, 2016) or designing public services and policies (e.g. Steinberg, 2014; Buchanan, 2020). Relatedly, researchers active in theorising and articulating 'design thinking' note shifts in how the term is understood. For example, there has been a shift from understanding design thinking as a cognitive style associated with professional designers towards an organisational capacity for innovation (Cross, 2010; Kimbell, 2011; Micheli et al, 2019; Cross, 2023). Alongside studies rooted in management (e.g. Liedkta, 2020 discussed in Section 1), there are numerous accounts and case studies of the application of practices associated with design thinking to organisational and social issues, including in public service settings, aiming to address issues through a holistic or systemic lens. However, on closer inspection the distinctions between design thinking, strategic design and systemic design are not

clear cut (see for example Dorst and Watson, 2023). Further, as the section on service design made clear, service design practices and research have also shifted to investigating and designing changes to ecosystems. As a result, there are overlaps between all these areas of inquiry, practice and expertise.

Integrating these three areas for the purposes of this literature review will inevitably mean we miss factors that might be deemed important, but results in the following simplified definitions:

- Strategic design engages the potential of design practices to address significant public and organisational challenges understood to be systemic.
- Systemic design mobilises the capacities of design to reveal, understand and change systems.
- Design thinking is a way of articulating the processes and practices of design as an organisational capacity applicable to addressing public and organisational challenges.

The features of strategic design (including systemic design and design thinking) generally agreed to be distinctive include: an emphasis on designing holistically, connecting people's experiences with organisational agendas, resources and behaviours over time and space, understood as complex, adaptive, societal, institutional or organisational ecologies; integration of varied forms of expertise and organisational actors involved across ecologies or systems; methodological challenges of designing for coherence and accountability, spanning varied forms of interaction and organisational relationships; opportunities for innovation through mobilising practices such as visualisation, materialisation, co-design and facilitation to bring aspects of systems or ecologies into view to enable inclusive discussion and deliberation.

2.5 Policy design

A still-emerging area of study and practice brings the capabilities of design into explicit relation to public policy development. An early publication that brought together perspectives from mostly European, North American and Australian

contexts introduced the term ‘design for policy’ (Bason, 2014), revealing often small-scale endeavours to develop new practices in local and national government contexts with the direct involvement of professional designers or use of design techniques, or both, to address public policy challenges. As with service design being shown to provide opportunities to go beyond current ways of thinking about how to deliver services, use of design approaches in relation to policymaking also throws up challenges to ‘business as usual’ in the practice of public administrations (e.g. Siodmok, 2014; Blomkamp, 2018) or democratic participation (e.g. Saward, 2021; Broadley and Dixon, 2022).

Research in this area is continuing to grow with dialogues between researchers in policy studies and design, evident in journal special issues, academic conference tracks and doctoral research (van Buuren et al, 2020; Kimbell et al, 2022; Kimbell et al, 2023). Such academic research reveals longer histories of studies of ‘policy design’ which – often – relied on more technocratic, deterministic understandings of design in which ‘policy design’ is a phase in the policy process (Howlett et al, 2015; Howlett and Mukherjee, 2018a, 2018b; Peters, 2018; Cairney, 2023). A systematic review of the literature on design and policy across 92 empirical studies distilled six design approaches to policy design (Hermus et al, 2020). These varied from traditional ‘scientific’ and informational approaches (which continue to dominate) alongside innovative, user-driven, more ‘inspirational’ approaches. Research continues, including recognising the variety of understandings of public policy and of design, suggesting a range of relationships between the two are possible[4].

In considering design-based approaches to policymaking, there is recognition of the co-emergence of design for policy with public sector innovation labs (e.g. McGann et al, 2018), often tasked with developing or trialling new approaches. One study found

[4] Available at: Richardson, L., Durose, C., Kimbell, L., & Mazé, R. (2025). How do policy and design intersect? Three relationships. Policy & Politics. Available at: How do policy and design intersect? Three relationships

that, while there were many labs using design techniques, there were research gaps in establishing the causality and value of public interventions they proposed, explaining mechanisms of change, and utilising research findings in public policy (Olejniczak et al, 2020). Another study saw potential in the application of design to issues in policy design (see Table 3) but argued that simplistic framing of policy design as responding to discrete policy challenges, as opposed to the more complex but true-to-life understanding of policy design as an output that both shapes and is shaped by a larger array of related policy designs at work at any given time (Clarke and Craft, 2018). One consideration here is the extent to which creative design practices associated with innovation narratives can be institutionalised and embedded, or whether they will mostly exist in isolation from routine forms of public administration practice (e.g. Wellstead et al, 2021).

Table 3: Policy design and design thinking compared. A table showing the applications of design in the areas of policy design and design thinking. Source: Clarke and Craft, 2018, p10.

Application of design	Policy Design	Design thinking
Allows for adaptation	Yes	Yes
Appreciates behavioural dynamics of designers and design targets	Yes	Yes
Acknowledges that design can be a multi-actor, networked activity	Yes	Yes
Accounts for political constraints on design	Yes	No
Accounts for policy capacity constraints	Yes	No
Can accommodate a range of policy styles	Yes	No
Accounts for reality of policy mixes	Yes	No

The features of design in relation to policy emerging in the literature include: an emphasis on attending to people's (including citizens') lived experiences of, and co-production within, policymaking and delivery of public services and other consequences of policy; recognising the requirement to integrate a range of organisational actors and perspectives to collaborate in making and delivering policy; methodological challenges of designing and prototyping policies that can span varied forms and sites; opportunities for innovation in the practices of public administration through visualisation, facilitation and co-design.

2.6 Urban design

Urban design is generally understood as an interdisciplinary field focusing on the design of places (Kamalipour et al, 2023), rather than a specific job role. For example, topics associated with urban design include agency of residents and

citizens, place-making, governance, infrastructures, alongside identity, memory and narrative and, increasingly, use of data in contexts such as narratives about ‘smart cities’. Given the scales and complexity of cities, and the multiple types of organisation and activity involved in urban designing, within which government is just one player, there are several types of role relevant to urban design, including planning, surveying, architecture and civil engineering, where civil servants and local government officers play important roles, alongside the expertise of architects, civil engineers, planners and others. Both architecture and civil engineering are regulated professions (e.g. Architects Registration Board) with oversight from professional bodies (e.g. Royal Institution of British Architects; Institution of Civil Engineers) and associated continuing professional development and accreditation. Intertwined with these are research activities that have a different scope and scale to many of the other examples in this paper.

2.7 Summary

This necessarily brief review of selected sub-fields of design highlights how the practices of design specified earlier take particular forms in relation to contexts, media and devices, with distinct histories and research debates. One way of distinguishing between them is to consider the ‘object’ with which they are associated - the tangible outputs of the creative design process. As this review has shown, while some types are very closely associated with a specific type of output (e.g. a poster communicating a public service or a digital app to enable access to healthcare services), there are many areas of overlap. For example, all these sub-fields include a focus on people’s lived experience as they relate to or interact with designed things and their relations to organisations, places and ecologies. However, for some sub-fields, the ‘system’ or social context is an area of design inquiry which designers recognise may be changed through introducing a new object or interaction into it, or indeed an area for transformative change, for example to design ‘for’ future sustainability.

Further, all of these fields are impacted by technologies, both in terms of what is being designed (for example, the design of a service journey might include in-person as well as digital touchpoints; packaging may include links to online media and

behaviours through embedded QR codes or hashtags) and how design is carried out, both individually and collaboratively (e.g. use of digital tools such as Photoshop or Miro) and in evaluating and reconfiguring designs (e.g. making modifications to digitally-enabled services). Given extensive use of technologies, there are more and more opportunities to use data analytics to shape (re)designing, and to iterate designs during development, thus blurring the historical distinctions between 'design', 'production' and 'use'. Further, the introduction and development of AI-based technologies such as large language models and machine learning, using public or commercial as well as individual datasets, has the potential to reshape the distinctions between these design fields, change characteristics and develop new features of practice, as well as requiring new skills for designers. Verganti et al (2020) note that algorithms have potential to play much greater roles in creative problem-solving in the future. They argue that AI has the potential to move 'upstream' from manufacturing and production to development, thus reshaping the practices, principles and theories of design itself. In such a context, they argue, design by humans increasingly will become concerned with understanding which problems should or could be addressed, or 'sensemaking'. As part of such future developments, the use of libraries of 'design patterns' for user interfaces of components of services, in particular those that rely on digital communications, might be automated. Here, the role of the designer might in future be re-oriented towards training, supervising or quality assuring automated software given the task of configuring a new service design, based on pattern libraries which are based on best practice. In short, any understanding of sub-fields associated with public design is contingent and likely to change.

3 Integrating design into policymaking and public service delivery

Where do the different types of design fit into the end-to-end process of making public policy and services? How does government's design function differ and relate to its system stewardship function?

In principle, design can intervene in any area of governance and public policy process. Understood as a set of practices associated with innovation or change, the activities of public designers do not typically limit them to a particular sectoral, topical or departmental remit.

The term public innovation 'lab' is apt, because it implies a space of freedom, experimentation and creativity, but one that is isolated from its external environment. The enduring challenge for those working in labs has been to try and get public design 'out of the lab' into government at large, albeit in a productive and safe way. While policy labs are increasingly popular – at all levels of government, from local council to multilateral organisations – they often operate at the edges of government institutions (Tõnurist, Kattel, Lember, 2017). However, importantly, the mainstream public policy and public administration scholarship is paying more attention to public design as a new and distinct way of shaping public policy processes (Peters et al, 2022), and they are becoming more visible to colleagues and bodies in government. Because they exist 'between' or 'on the edges' of government, and because their work is often determined by the needs of other actors, persons and bodies in government who seek their expertise, policy labs rely on a variety of design practices, from user research to policy instrument design.

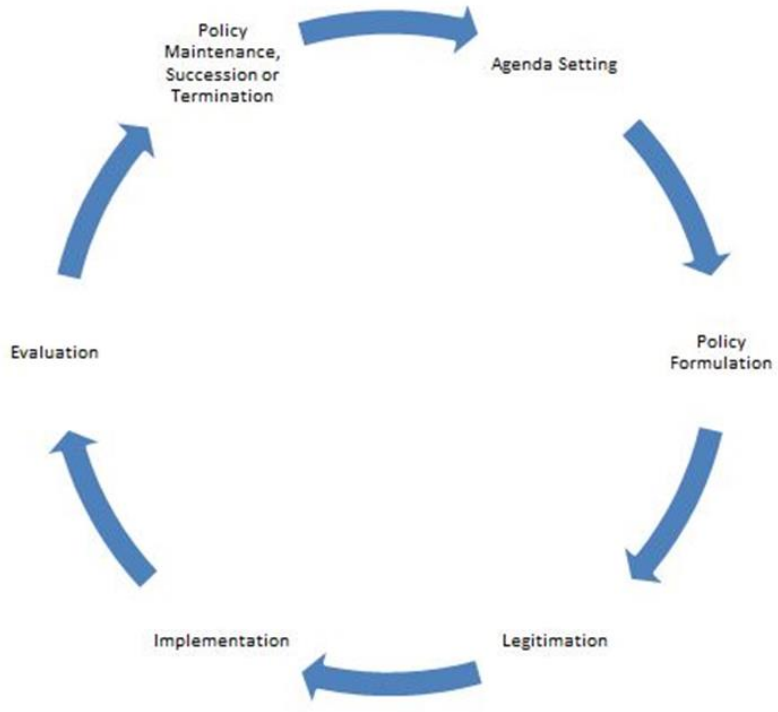
3.1 Understanding the processes of policymaking and public service delivery

Alongside the development of 'design for policy' and the emergence of public policy innovation units and teams is a pre-existing history of 'policy design'. Academic

literature offers a number of competing theories to understand the policy process. Paul Cairney (2023) defines public policy as ‘the sum total of government action, from signals of intent to the final outcomes’. Whilst there are simple ways of understanding how policy is made, we also need to understand how policymaking is influenced by a complex political environment.

One well-established way to explain policymaking, or to understand how public demands, or at least government agendas, can be translated into government action, is to break it down into a linear series of logical, orderly and neat stages. Peter John (2018) has referred to this ‘stagist’ portrayal of policymaking as the first ‘grand age’ of public policy scholarship. This approach has the advantage of simplifying a complex world by identifying its key elements (Cairney, 2023). This is often represented using the image of a cycle, which starts when policymakers begin to think about a policy problem, and concludes when a policy has been implemented and is being evaluated. The image is of a continuous process rather than a single event, as shown in Figure 2, which closely corresponds with the ROAMEF framework used in the UK government (building also on Howlett et al, 2009).

Figure 2: The policy cycle. A circular flowchart depicting the stages of the policymaking process: Agenda Setting, Policy Formulation, Legitimation, Implementation, Evaluation, and Policy Maintenance, Succession or Termination. Source: Cairney, 2023.



Various stages are highlighted, for example (Cairney, 2023):

- Agenda setting. Identifying problems that require government attention, deciding which issues deserve the most attention, and defining the nature of the problem.
- Policy formulation (or design). Setting objectives, assessing options and trade-offs, decisions about choices and adoption.
- Legitimation. Ensuring that the chosen policy instruments have support. It can involve legislative approval, executive approval, and seeking consent through consultation with interest groups.
- Implementation. Establishing or employing an organisation to take responsibility for implementation, ensuring that the organisation has the

resources (such as staffing, money and legal authority) to do so, and making sure that policy decisions are carried out as planned.

- Evaluation. Assessing the extent to which the policy was successful or the policy decision was the correct one; if it was implemented correctly and, if so, had the desired effect. Subsequently, the policy may be maintained, terminated, renewed or amended.

At their core, these models promote the idea that policymaking proceeds at a steady pace, in a logical, orderly fashion, informed by rational thought and reflection, and grounded in high-quality evidence and analysis (Durose and Richardson, 2016).

The policy cycle is useful in many ways: it is simple, understandable, universal and recognises fluidity. But it is also inaccurate (Cairney, 2023): it simply is not how real policy is made or works. The model could describe ‘what governments can do, should do, would like to do, or would like you to think they do!’ (Cairney, 2023). But it is unhelpful in suggesting an orderly policy process with a clearly defined debate on problem definition, a single moment of authoritative choice, and a clear chance to use scientific evidence to evaluate policy before deciding whether to continue. It is also disengaged from the political environment in which policymaking takes place, which can limit the understanding and control of policymakers. Indeed, over fifty years ago, Charles Lindblom (1959) described the ‘science of muddling through’ and argued that policy emerges from a complex set of forces. Kingdon (1995) relied on an organic metaphor to express the chance nature of how and why some policy ideas ‘catch hold’: “… people plant seeds every day … When you plant a seed you need rain, soil and luck” (1995, p.81). Others have argued that what exists instead of a linear process is ‘ad-hocery’ (Hallsworth, Parker and Rutter, 2011).

Following these theories, better, more complex, empirically accurate and thoroughly tested descriptions of the process have been put forward in what John (2018) calls the second ‘synthetic’ age of public policy studies. This second period saw new ways to understand and explain some of these odd features of policy, such as the combination of policy flux and policy stasis (Baumgartner and Jones, 1993; Sabatier and Jenkins-Smith, 1993). Empirically grounded descriptions of policymaking revealed ‘tooth and claw’ portrayals of a competitive melee of messy real-world processes. One highly influential analysis used the analogy of a ‘garbage can’

(Cohen, March, and Olsen, 1972), later adapted into Kingdon's 'policy window' model (1995). These theories did not argue that policy is a free-for-all of half-digested and out-of-date ideas decomposing together into a mush, but rather that ideas, their proponents and the environments they operate in all interact, out of which policies emerge, bruised but ripe for serving up on the implementation table. Particular confluences of factors coincide in the right 'window' of opportunity to make it more likely that one group or set of ideas or interests will win over the others. An idea suddenly catches hold of political imagination or popular debate – what is going on? Some perfect policy storm – a public crisis, a new minister, a canny policy wonk – creates a window for policy change as problems, policies and politics interact. Political receptiveness and congruence with dominant values are some of the selection mechanisms in the survival of the fittest in the primeval policy soup (Kingdon, 1995).

These ideas in the first and second ages of public policy studies offer competing conceptualisations of policymaking. Whilst the former seems unrealistic, the latter seems undesirable (Durose and Richardson, 2016). Neither seems well suited to addressing complex, seemingly intractable global public policy challenges. It is in this context that the potential scope of public design for policy becomes significant in helping to shape a more desirable 'third age' of understandings – and practices – of policy processes.

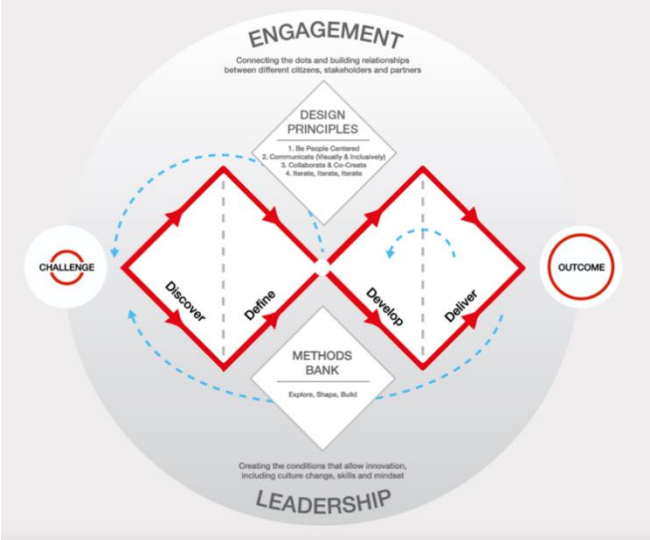
3.2 Where design integrates into policymaking and public service delivery

Given the relatively recent arrival of design practices into government in the past decade, it is not surprising that there are few academic studies thus far that account for, or critically assess how, and under what conditions, design is integrated into policymaking and service delivery – although the past three years have seen a significant increase in academic publications (e.g. Fleischer and Carstens, 2021; Lindquist and Buttazzoni, 2021; McGann et al., 2021; Olejniczak et al., 2020; Wellstead et al., 2021). Among frameworks and models disseminated by government labs, policy design and digital design teams, there are several examples that in different ways tackle the issue of how to conceptualise purposes and types of

design in government, at different scales, across different systems or areas of policy, and over different timeframes. In recent years such frameworks have shifted away from linear processes towards recognising complexity and interdependencies of systems, with which design practices can play useful practical roles.

The Design Council's 'double diamond' framework developed in 2003 is widely used to structure the application of methods associated with design over time to shift from 'challenge' to 'outcome'. It includes four phases: discover, define, develop, deliver. Figure 3 shows a recent version of this framework, which now includes additional feedback loops, and summarises four design principles and a 'methods bank' alongside the two diamonds.

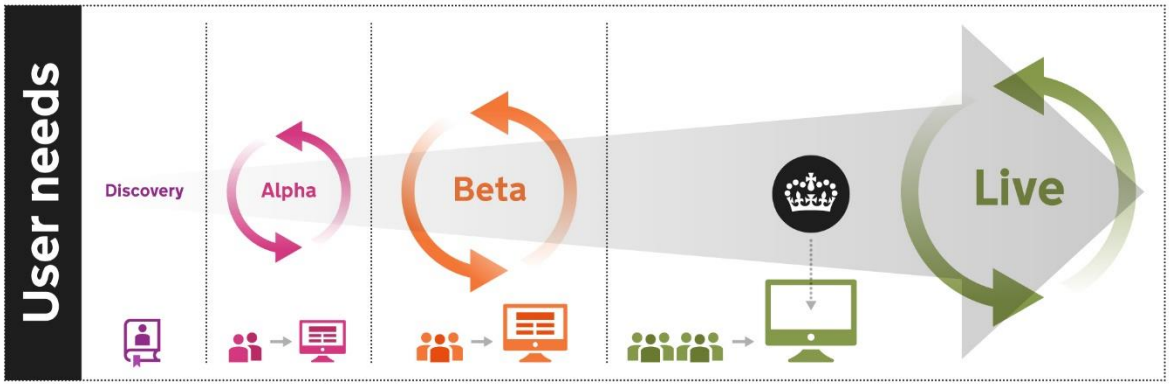
Figure 3: The Design Council's Double Diamond. A diagram showing four core elements of design: discover, define, develop, deliver. Source: Design Council (2024b)



But there is a much longer history of efforts to formalise and simplify 'models' of design processes. For example, Hugh Dubberly's curated selection of models of design (Dubberly, 2005) is an accessible collection that distinguishes between models that: emphasise analysis and synthesis; are produced by academic research; are produced by consultancies; are associated with software development; are complex linear models; and are cyclic models.

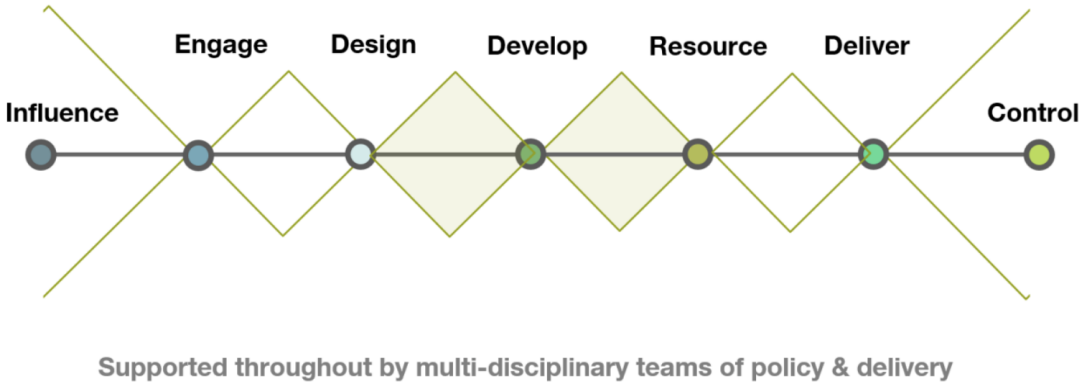
As with the idealised version of the policy design process summarised above, visualisations of the (product or service) design and development process are often presented as a linear set of phases. For example, a visualisation based on the Home Office's posters about the phases of agile development (UK Government, nd) used in the Government Service Standard shows its four phases: discovery, alpha, beta and live, and summarises the main activity of each of these, as shown in Figure 4 (Government Digital Service, 2014). In this framing, agile development is understood as the 'implementation' phase of the policy cycle shown above in Figure 2.

Figure 4: Digital service development process. A diagram showing four stages of the development process: discovery, alpha, beta, live. Source: Government Digital Service (2014)



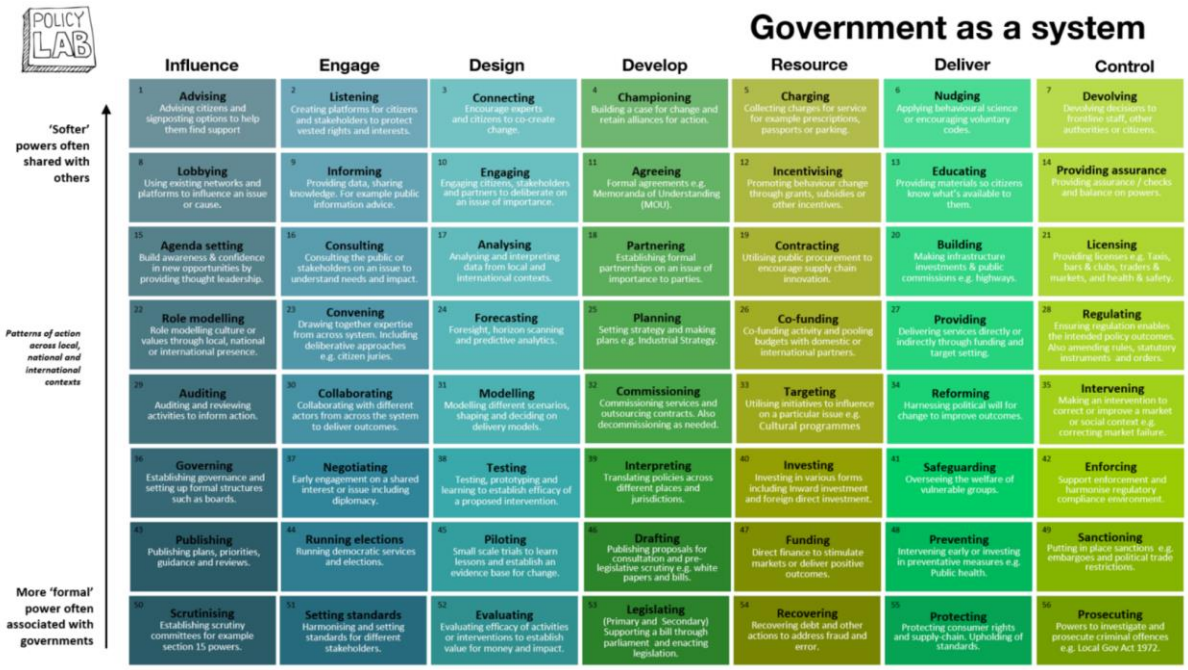
However, other ways of understanding design and its deployment in government suggest that the activities associated with design can take place before or after the implementation phase of the stage-based policy cycle. For example, Policy Lab's early articulation of its work used and extended the Design Council's widely used double diamond framework (Kimbell, 2015; Andrews, 2018). The team used this as a means of clarifying the phases they understood as being involved in designing policies or interventions by government into public policy issues. Figure 5 shows the phases that underpin the team's thinking on 'Government as a system', shared publicly in 2020 via the UK Government Open Policy Blog and within the UK Civil Service Policy Profession (Siodmok, 2020).

Figure 5: Government as a system: phases. A diagram showing design phases: engage, design, develop, resource, deliver. Show in order from ‘influence’ to ‘control’. Source: Siodmok, 2020.



In Policy Lab’s frameworks and methodology, these phases appear in the horizontal axis for the types of intervention made by government across various sites and scales. Figure 6 shows Policy Lab’s full ‘Government as a system’ framework presented as a table (Siodmok, 2020). The horizontal axis shows an expanded set of phases from ‘influence’ to ‘control’. The vertical axis shows ‘patterns of action across local, national and international contexts’ on a scale defined as ‘softer powers shared with others’ and ‘more formal power often associated with government’. The result is a wide range of responses or interventions by government, or by other actors in a policy ecosystem, emphasising types of power.

Figure 6: Government as a system. A color-coded chart titled ‘Government as a system’ organising government functions into seven columns: influence, engage, design, develop, resource, deliver, and control. Each column contains multiple descriptive task boxes. Source: Siodmok, 2020



The word ‘design’ does not appear other than as one of the phases in the horizontal axis. But by invoking the Design Council’s widely used ‘double diamond’ framework, the implication is that the whole ‘system’ – from policy intent to operational delivery – can be understood as something to be (re)designed.

In more recent work Policy Lab has disseminated recent thinking that indicates a move towards thinking about systems (Lefton and Fleming, 2023). Figure 8 shows Policy Lab’s matrix for practical systems change, with a shift in emphasis from co-designing services to co-designing shifts in systems.

Figure 7: A matrix for practical systems change in policy. A structured infographic titled ‘Shifting systems in policy’ showing a dual framework. Shows ‘The how’ with three strategic approaches and ‘The what’ with three methodological steps. Each of the three approaches and steps is supported by icons and detailed actions for transforming entrenched policy systems. Source: Lefton and Fleming, 2023.

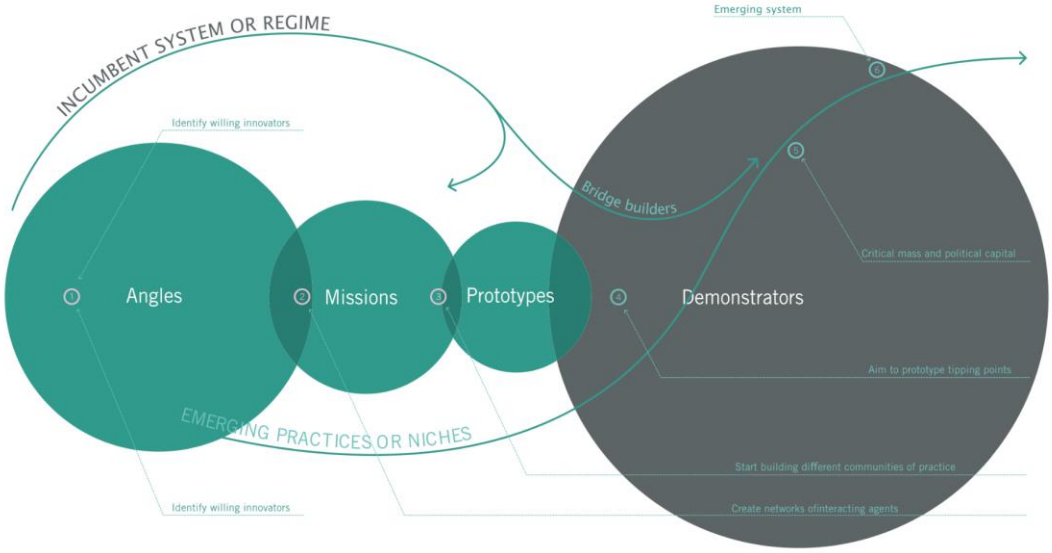
Work by other teams and organisations points to other ways to think about the nature and phases of such systemic change. For example, academic studies in transitions management (e.g. Geels 2010) rely on an understanding of multiple co-existing ‘socio-technical systems’ with feedback loops and opportunities to connect systems as part of transitions.

Adapting this, the Swedish innovation agency Vinnova’s framework for ‘mission-driven innovation’ (Hill, 2022) uses ideas of ‘emerging practices or niches’ to

challenge the ‘incumbent system or regime’ through bridge building and connecting communities of practices, resulting in an emerging (new) system (see Figure 8).

This framework includes attention to the politics of such work, including identifying the achievement of ‘critical mass and political capital’ as part of the path towards the change. The Vinnova framework emphasises the role of prototyping in developing (towards) new systems, by creating conditions to explore different elements of systems and to work towards deeper learning with partners through demonstrators. Although the language of this report is oriented towards ‘missions’ rather than policy development and public services, the examples that underpin it focus on government, with two cases that require new policy thinking in ways that are cross-cutting: healthy, sustainable school food and healthy, sustainable mobility in cities.

Figure 8: Missions design process. A diagram illustrating the transition from ‘Emerging Practices or Niches’ to ‘Incumbent System or Regime’, with labelled stages: angles, missions, prototypes, demonstrators. Annotations describe actions like building networks, bridging, and reaching tipping points. Source: Hill, 2022.



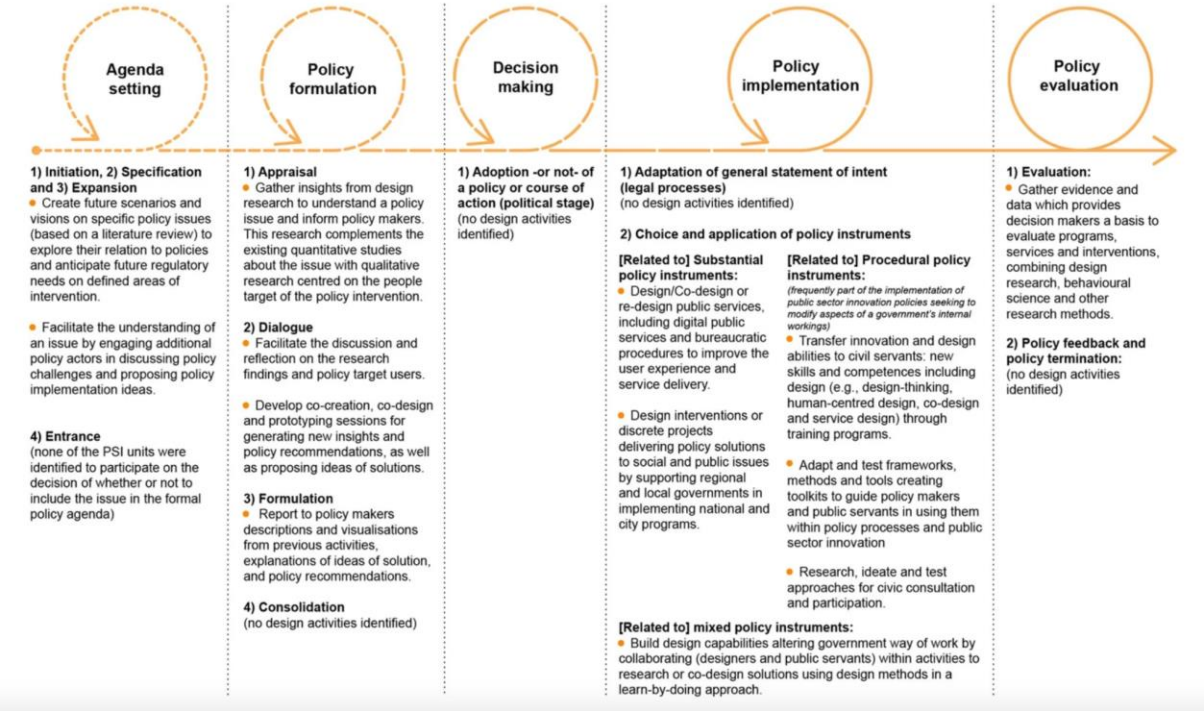
Each of these examples combines different ways of understanding design and understanding the ‘object(s)’ to which design practices are applied. Such practitioner-developed frameworks articulate and often visualise the spaces and

moments for design in government, including policy development and public service delivery, and the relations between various actors involved. They can play an important role in shaping understanding and practice.

In terms of objects, there is a shift away from understanding the objects of design as developing and delivering material or digital artefacts, and towards systems. In terms of the process of design, there is a shift away from seeing design as a phase in a purposeful process through which policy leads to delivery, and towards a collaborative, integrative capability proceeding through an inquiry into current conditions and possibilities that leads to transformation.

Academic research often lags practice. But there are some useful contributions that reveal the extent of design across some government activities. For example, a study by Trippe (2021) looked for opportunities to make use of capacities of service design in policymaking. She identified three types of ‘objects’ in the policy cycle – a policy, policy instruments, a public service – where there was potential for the application of design. Large scale empirical research is rarer. A study of 46 public sector innovation hubs from different continents mapped the use of design activities using a policy cycle model based on several sources, including Howlett, Ramesh and Perl (2009) (Villa Alvarez et al, 2022). Figure 9 shows the idealised stages of the policy cycle and where different design activities were identified across the cases examined. This study found that most design activities were applied in the implementation stage or in the evaluation of policy, rather than earlier stages of the policy development process, and were not clearly linked to decision making.

Figure 9: Mapping design activities across the policy development cycle. A detailed diagram mapping design's role across the policy cycle, from agenda setting and formulation to implementation and evaluation. It highlights where design methods like co-creation, prototyping and user-centred approaches are applied. Source: Villa Alvarez et al, 2022, p.100

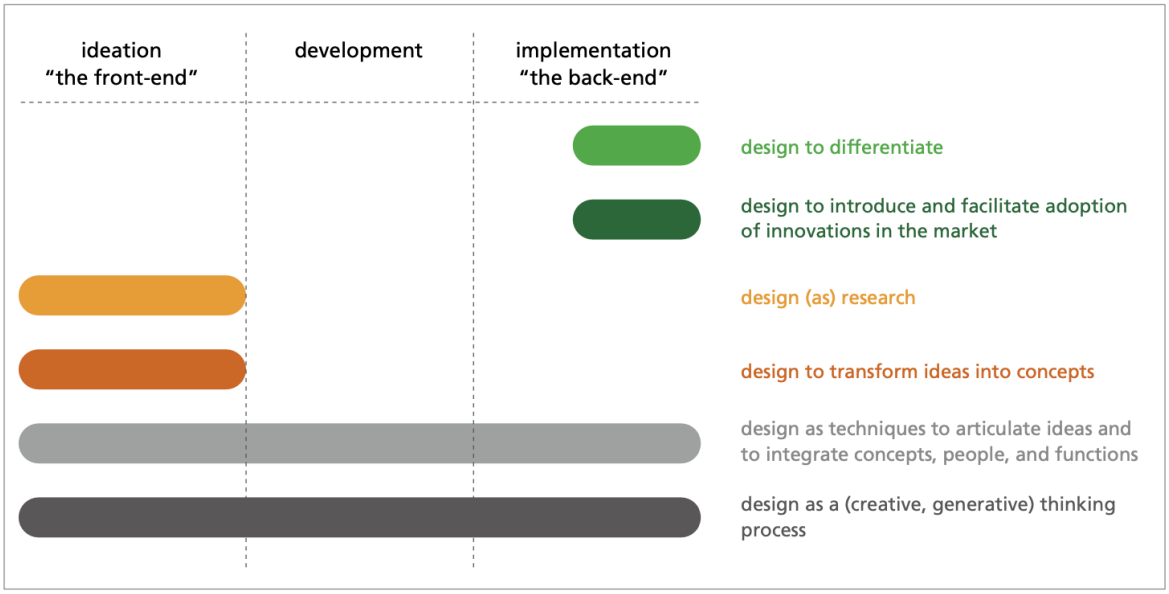


Also noting the emphasis on using design practices in the early stages of policy development, Dosi et al (2022) experimented with using design during the later stages. In a single practical project in an Italian region, design activities such as prototyping had positive impacts on services, and also resulted in a changed 'mindset' among the public servants involved.

While such frameworks are accessible and portable between contexts, on closer inspection these visualisations of design processes are also resonant with related new product development or innovation processes. Hence it is not always easy to understand the specificities of design. Further, and more problematically, presenting the design process as an end-to-end set of activities outside an organisational or social context downplays the practical and operational challenges of using design practices to achieve outcomes. A study that investigated the relationships between

design and innovation by closely reviewing 123 articles in leading journals identified clusters that emphasised different relationships between design and innovation. As summarised in Figure 10, these findings suggest that ‘design’ can play different roles in an innovation process.

Figure 10: Roles of design in the innovation process. A diagram showing three phases of design: ideation, development and implementation. Each phase is shown with coloured bars representing roles of design such as thinking process, concept integration, research and innovation adoption. Source: Herandez et al (2018)



To conclude, a variety of visual frameworks now exist seeking to explain how activities associated with design generate outcomes, including public value. In creating or sharing these, design practitioners and scholars have found themselves caught between two competing pressures. On the one hand, design can be deliberately nomadic, disruptive, change-seeking and reflexive, so trying to capture and constrain its practices into flowcharts, diagrams and procedural schematics is often felt to compromise its innovative and generative qualities. On the other hand, it is difficult to say much at all about the usefulness of design if you refuse to represent it in visual and determinate ways that make it sensical for others. Like the useful but

inaccurate ‘stagist’ models of policy cycles outlined at the start of this section, models of public design give it clarity but are best read as illustrative, impressionistic and, crucially, open to revision.

3.3 Where policy labs and design teams fit in the institutions of government including local government

The rapid proliferation of policy labs or teams – nearly all of them relying on (public) design as the main way of working – has met a sobering realisation that work associated with ‘design’ in government can remain ineffectual and may not penetrate the machinery of government. One exception is digital teams and units that rely heavily on user research and agile practices, and which have at times been highly impactful, from the UK’s Government Digital Service to Bangladesh’s a2i. Design-driven digital transformation units show evidence of efficiency gains from radically re-imagining existing services. In the UK, a number of local councils have been spearheading the creation of design-based units (e.g. London boroughs such as Camden and Hackney), and globally major donors such as the United Nations Development Program and Bloomberg Philanthropies have been supporting, in particular, local leaders in creating design-based or supported innovation teams. As we argued earlier, such models present a policy cycle that is much simpler and more orderly than the reality of policymaking, but the notion of the policy cycle is nonetheless a powerful animating idea across government and partly explains why policy processes are on so focused on the production of documents rather than outcomes (Whicher and Crick, 2019).

Digital design teams are usually built into the operating costs and capabilities for government: they have become institutionalised as core business. In contrast, some ‘policy design’ or public innovation labs operate on a cost-recovery basis. Being required to cover operational costs (such as staff salaries) comes with benefits and drawbacks. It can prompt a diversification of expertise, experience and relationships in government through the range of work teams undertake. Simultaneously, however, the scope and nature of their work is determined by the interests and priorities of their ‘clients’ or ‘partners’, which may not be the most effective way to improve government. Having a position on the edge of government provides public

innovation labs with a unique perspective on the problems of government, one that might be invisible to departments and teams concerned with their own situated imperatives and workflows. But under a cost-recovery model, there is less scope for public designers to independently initiate work that responds to such problems.

In their review of scholarship on public innovation labs, Wellstead et al. (2021) note that it is commonplace for scholars to use traditional ‘stages’ models of the policy cycle – described above – as a starting point for thinking about where policy labs intervene in the policy process. Agenda-setting, typically the first stage in such models, is rarely mentioned – a reflection of the reactive and client-centric character of lab-based public design discussed earlier. The role of labs in policy formulation receives significantly more scholarly attention, although such teams remain unconventional actors to be found in this space (Fleischer and Carstens, 2021). There is comparable mention of policy labs associated with policy implementation, which could be explained by their perceived efficacy in finding cost-savings and improving other kinds of efficiency, but little evidence of a role played by labs in policy evaluation (Wellstead et al., 2021). Olejniczak et al. (2020) argue that much of the work that labs do consists of integrating smaller loops and workflows, ones more typical of the iterative, experimental and agile character of public design, into the overarching policy cycle.

Elsewhere, the synthetic second age of policy studies has been called its ‘new design orientation’ (Clarke and Craft, 2018). This does not refer to design as ‘public design’ in the sense that is the subject of this review. Rather, it simply recognises that policy is something that can be designed, that is consciously and reflexively crafted with respect to goals, rather than something thrown out by messy confluence of political forces and processes. The ways that policymakers go about this may reflect more traditional methods of policymaking or the kinds of design-based practices described in Section 1. The distinction between the first and second ages has more to do with the assumed ‘designability’ of policy, rather than practices and values that underwrite policy design.

Since at least the start of the 2010s however, there has been an increasing interest in this latter distinction, and an arrival of design-inspired practices and values in both policy practice and policy scholarship (Clarke and Craft, 2019; Howlett, 2020). The

exact provenance of this is debatable, but this review notes the emergence of a similar paradigm of ‘design thinking’ in business and management (Boland and Collopy, 2004; Brown, 2009; Martin, 2009), and the work of Christian Bason and MindLab Denmark in developing the first influential design-led practice innovation practice for the public sector (Bason, 2010, 2014, 2017a, 2021). Enabling factors include the transition from state-centric to networked and collaborative models of governance; the role of New Public Management as a driver of the idea that the public sector can and should ‘innovate’ just like the private sector; and the pressure of austerity to produce cost-saving efficiencies through ‘smarter’ policymaking. It is in this context that we must try to understand the emergence of public innovation labs, and how they fit into policymaking processes.

The emergence of the UK Policy Design Community within the Civil Service can perhaps be understood as an attempt to break with the atomised and siloed structure of public design that flows from a lab-centric model and from the division between policymaking (policy design) and operational delivery (service and digital design). The notion of a ‘community’ of designers in government retains the non-hierarchical, dynamic associations associated with policy labs, but is suggestive of a better integration across teams, lab, units and departments, and with government at large. Certainly, that a community with porous boundaries and a shared ‘commons’ of methods, insights, patterns and evidence is more capable of performing the capacity-building and culture-transforming ambitions of labs is a reasonable proposition.

4 Defining and assessing competencies and skills for design

What are the competence and skills frameworks that could be usefully deployed for defining both public design and ROI work?

As this review has shown, design is used in many different settings and is associated with a variety of purposes, agendas, contexts of application and outcomes, often overlapping with related activities such as ‘co-production’ and ‘innovation’. This can lead to confusion about what is at design’s ‘core’.

Some types of design such as interaction design are closely tied to the consideration and production of material or digital objects and the experiences they afford; other types of design described in Section 1, and some practices commonly associated with it, are not tied to specific objects, materials or contexts. Further, definitions and practices of design often absorb other kinds of expertise such as computational thinking in human-computer interaction or marketing in service design. This openness and porosity might be seen as one way this loosely defined, market-driven field has been able to adapt and innovate in response to uncertain and dynamic socio-economic conditions (Julier, 2017). This lack of determinacy can, however, hamper efforts to define the competences required for the profession or for building organisational capabilities: if there is no definitive core, how can designers be recruited, trained, supported, rewarded and assessed?

While acknowledging such uncertainties, this section presents key concepts related to skills, competences and capabilities associated with design from recent academic and grey literature, including ongoing debates about the future of design education. We start by distinguishing between skills, competences and capabilities, terms which are sometimes used interchangeably. We then summarise literature that focuses on design competences and capabilities, highlighting in the following section considerations for the development of capabilities in design in government.

4.1 Distinguishing between skills, competences and capabilities

Put simply, ‘skills’ are understood as the ability to apply knowledge and understanding at the individual level, repeatably. These can be divided into: technical skills specific to a sector or role; essential transferable skills that support the application of specialist knowledge and technical skills; and basic skills such as literacy and numeracy (Ravenscroft and Baker, 2020). However, over recent years there has been a shift towards understanding people not as ‘having’ skills but as being able to demonstrate ‘competences’ in using their skills, knowledge and understanding to achieve performance in the context of their role and organisation.

For example, the Chartered Institute of Personnel Development (CIDP) makes the following distinctions:

> “The terms 'competency' and ‘competencies’ focus on someone’s personal attributes or inputs. They can be defined as the behaviours (and technical attributes where appropriate) that individuals must have, or must acquire, to perform effectively at work. … 'Competence' and ‘competences’ are broader concepts that cover demonstrable performance outputs as well as behavioural inputs. They may relate to a system or set of minimum standards needed to perform effectively at work.” (CIPD, 2022)

Further, there is growing realisation that such attributes are to some extent determined by infrastructures and conditions, which is to say being able to demonstrate or deploy competences to achieve performance is not solely associated with the individual. Hence the term ‘capabilities’ has become more widely used, which in academic studies of organisations is associated with resources required for organisations to achieve competitive advantage (Teece et al, 1997; Melián-González et al, 2010). In this section we focus first on skills and competences at the individual level and then turn to capabilities in design, integrating literatures and frameworks from several sources.

4.2 Skills and competences for design

Alongside the expansion of design (thinking) to address organisational, social and policy issues, there is growing literature that aims to specify the kinds of skills, competences and capabilities required for people who think of themselves as designers to operate effectively. These studies and frameworks co-exist with other efforts to define competences and capabilities for the public sector and business, such as those produced by governments, public bodies and researchers (e.g. World Economic Forum, 2016; OECD, 2017a; 2017b; 2018; McLaren and Kattel, 2022).

There are few public definitions for skills in design. Of note is the Design Council's overview of design skills for the UK economy (Design Council, 2018). This found that: skills in design (such as technical skills, cognitive abilities and interpersonal competencies) were relevant to a changing economy; design skills were used across the economy not just in design firms or teams; and that there was a close relationship between skills for design and for innovation. This analysis, carried out in 2018, identified 13 core skills differentiating the design economy from the wider economy, understood as rated to be of above average importance for design occupations compared with other UK occupations. The study drew on a previous classification derived from the US Department of Labor's O*NET database as a source of information on skills used in design roles. Table 4 shows these skills identified in the Design Council's analysis of key skills in the UK design economy.

Similarly, other national bodies have produced definitions of design skills, such as Singapore's national Skills Framework for Design (SkillsFuture, 2019), co-developed by government, business, higher education, union and training providers. This framework includes attributes, knowledge and skills related to 25 job roles across four domains – design, business, innovation and technology – echoing the idea found throughout this paper that design expertise is relevant in a range of contexts of application. Singapore's framework identifies 18 generic and 48 technical skills and competencies, such as business model innovation, user experience design and design thinking practice (Design Singapore Council, 2019). It also provides detailed templates for use by employers (and designers) to assess levels of skill in key areas.

Table 4: 13 skills that differentiate design. Source: Design Council, 2018.

Skill	O*NET 'domain'	Importance premium	O*NET definition
Design	Knowledge	40%	Knowledge of design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings and models.
Operations analysis	Skills	23%	Analysing needs and product requitements to create a design
Programming	Skills	22%	Writing computer programs for various purposes
Drafting, laying out and specifying technical devices, parts and equipment	Work Activities	20%	Providing documentation, detailed instructions, drawings, or specifications to tell others about how devices, parts, equipment, or structures are to be fabricated, constructed, assembled, modified, maintained or used.
Engineering and technology	Knowledge	18%	Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures and equipment to the design and production of various goods and services.
Fine arts	Knowledge	15%	Knowledge of the theory and techniques required to compose, produce and perform works of

			music, dance, visual arts, drama and sculpture.
Technology design	Skills	10%	Generating or adapting equipment and technology to serve user needs.
Building and construction	Knowledge	9%	Knowledge of materials, methods and the tolls involved in the construction or repair of houses, buildings, or other structures such as highways and roads.
Computers and electronics	Knowledge	5%	Knowledge of circuit boards, processors, chips, electronic equipment and computer hardware and software, including applications and programming.
Geography	Knowledge	4%	Knowledge of principles and methods for describing the features of land, sea and air masses, including their physical characteristics, locations, interrelationships and distribution on plant, animal and human life.
Visualisation	Abilities	3%	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.
Thinking creatively	Work Activities	2%	Developing, designing or creating new applications, ideas, relationships, systems or products, including artistic contributions.

Interacting with computers	Work Activities	1%	Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data or process information.

There are few academic studies that focus specifically on design skills in organisations. Researchers from design fields (including engineering design) often focus on assessing the design skills of university students, who are easily accessible as research subjects compared to employees of firms. Alongside analysis of design skills there is growing interest in competences and capabilities. Researchers note that the terms ‘competence’ and ‘capability’ are not used consistently in academic studies (Acklin, 2013; Mortati et al, 2014; Malmberg, 2017). This lack of alignment in terminology intersects with the difficulties identified above in clarifying practices and types of design.

In defining and categorising competences, one approach is to develop conceptualisations which draw from experience, developed in dialogue with a particular community. For example, design educator Conley (2011) defined seven core competences for design, as shown in Table 5, based on experience of teaching and practice in the US, a definition which is widely cited. On the one hand these characteristics are recognisable to many designers, and further – with echoes of the claims made for ‘design thinking’ – align well with the anticipated future skills needed to address challenges of sustainability and complexity (e.g. World Economic Forum, 2016; OECD, 2017b; OECD, 2018). On the other hand, it is unclear how distinctive these competences are when compared to those of other professions, such as policymaking, or contexts such as public sector innovation, or how the competences identified relate to research.

Table 5: A table showing the core competencies of design. Source: Conley, 2011

1. The ability to recognise a broad range of potential in a given problem statement.
2. The ability to work at varying levels of abstraction.
3. The ability to model and visualise solutions before all the information is available.
4. An approach to problem solving that involves the creation and evaluation of multiple alternatives.
5. The ability to add or maintain value as elements are integrated into a whole.
6. The ability to identify and respond to relationships between a solution and its context.
7. The ability to use form to embody ideas and communicate their value.

Other organisations and researchers have developed and tested design competence frameworks with an orientation to their use. Sometimes the purpose of a competence framework is to underpin professional practice or to aid teaching and learning. An example of the former is the competence framework developed and used by the UK Chartered Society of Designers, which underpins pathways towards practice for its members and partners. This framework has 16 competences across four categories (creativity, professionalism, skills and knowledge), some of which are generic, some associated with being a designer, as well as contextual competences relating to particular domains of design (CSD, 2015). These are summarised in Tables 6a, 6b, 6c and 6d.

Table 6(a): Creativity, Professionalism, Skills, Knowledge (CPSK) Framework. Showing the first of the four key criteria: creativity. Source: Chartered Society of Designers, (n.d.)

Attribute	Detail
Creativity	The ability to imagine, conceive and conjure alternative scenarios and to be intuitive and inspired, to generate insights and to question and be curious, calling on both cognitive and non-cognitive skills to allow for the development of unique and novel ideas.
Generating	The ability to generate creative ideas through various methods, techniques and approaches whether individually or collaboratively and being able to negotiate the inhibitors of creative thought such as risk and complacency. Displaying an ability to be inquisitive and recognising the need for convergence or divergence whilst at the same time remaining open to serendipitous interventions.
Managing	The ability to scope, analyse, evaluate and select generated ideas for further development whilst proving those ideas are relevant for use in a specific context. To be able to manage ideas in both a creative and business environment throughout the design process to bring them to fruition.
Innovate	The ability to adopt and harness generated ideas and creativity to address specific problems or needs, and to deliver original solutions in existing or new markets or environments. At the same time to be able to identify new opportunities where new thinking and ideas can add value to either a commercial, social or environmental endeavour, and achieve this by the application of design.

Table 6(b): Creativity, Professionalism, Skills, Knowledge (CPSK) Framework. Showing the second of the four key criteria: professionalism. Source: Chartered Society of Designers, (n.d.)

Attribute	Detail
Values	Possessing and exercising values that are common to the environment in which designers practice. Maintaining integrity when undertaking work and showing due regard for the practice of design whilst practising in such a manner that respects others, including clients, the environment, nature and society.
Process	Operating in keeping with best practice and applying appropriate and adopted methodologies. Having a commitment to maintain an awareness and knowledge of the processes used by others in a particular field of practice, whether clients, colleagues or suppliers.
Communication	The ability to communicate with stakeholders at all stages of the design process, whether by written, verbal or other means. An understanding of the interpersonal and psychological communications employed, as well as the relationships involved and the appropriate use of communication techniques.
Contextual	An understanding and knowledge of the appropriate regulations and requirements within a specific field and ensuring both adoptive and statutory standards are maintained whilst practising. Being conversant with relevant intellectual property rights in the field of practice, and understanding the means of protection and issues of infringement.

Table 6(c): Creativity, Professionalism, Skills, Knowledge (CPSK) Framework. Showing the fourth of the four key criteria: knowledge. Source: Chartered Society of Designers, (n.d.)

Attribute	Detail
Generic	Possessing those skills of which some or all are essential to a designer across all design disciplines. The ability to communicate ideas and concepts by the use of storytelling techniques that may include colour, expression of form, spatial manipulation, and any form of visual, audial or sensory communication.
Specific	Possessing the specific skills required to operate in a particular commercial or social environment and at the appropriate level, whether a sole trader, an employee or in a managerial position. To ensure, as appropriate, an awareness, knowledge and understanding of the operating skills required to complement those of design in achieving success, i.e. management, financial, business and commercial skills.
Personal	Possessing a range of interpersonal and people skills that are required to engage with others in whatever capacity, and that enables the successful implementation and delivery of design projects. Developing skills that complement those gained as a designer whilst identifying transferable skills.
Contextual	The ability to apply generic design skills within the remit of a particular design discipline and to ensure they are employed to the mutual benefit of design practice. To ensure competency in those skills that are necessary to practice professionally in a particular design discipline.

Table 6(d). Creativity, Professionalism, Skills, Knowledge (CPSK) Framework. Showing the fourth of the four key criteria: knowledge. Source: Chartered Society of Designers, (n.d.)

Attribute	Detail
Explicit	Knowledge that is acquired from others being derived from research, experimentation and theory and is generally accepted and/or adopted, and which forms the basis for an understanding of the environment or field in which the designer practises.
Tacit	Knowledge gained from prior experience and relationships which may be called upon during the creative process, influences professional practice, and informs skills development for the benefit of both the designer and client.
Management	The ability to acquire knowledge, by research or other means, as and when needed as part of the design process. Managing such knowledge and imparting it to relevant stakeholders in order to achieve a successful design outcome. In doing so, to be able to record the knowledge gained for future benefit.
Contextual	Possessing an awareness, understanding and knowledge of the context in which design is practised, both historical and contemporary, and the sector in which the designer operates, such as the market, technical and legislative conditions and in addition cultural awareness and knowledge.

An example of a framework oriented to learning in higher education was developed by Fass et al (2018). It was iteratively tested with design students in two universities (see Figure 12). The framework identified 16 competences for design at four levels: two focused on working effectively in design projects and abstraction, and two focused on producing and manipulating images and media. In another example

researchers mapped out different competences they saw as required for design and which needed to be assessed in higher education in Singapore (Thandlam Sudhindra and Blessing, 2021). In this example, the researchers mapped the competences across activities of design: defining, identifying, suggesting, guiding, validating and generating.

Figure 12: Design competency framework. A diagram showing a grid of circular icons grouped into four categories: core, images, media, and thoughts. Each contains four design-related concepts such as: design process, visual communication, branding and identity, and conceptual thinking. Source: Fass et al, 2018.

These examples demonstrate that terms are not used consistently amongst those developing skills and competency frameworks for design. Further, different perspectives on design – its relationship to material and digital creativity, craft and production, for example – intersect with varied understandings of cognitive skills that are not tied specifically to media or craft, and may also be claimed by other practices associated with creativity and innovation. For example, skills and competences for design are seen to include those that are required for working as part of a project,

team or organisation, or in relation to strategic objectives that are more general and not specific to design and which may change rapidly with the emergence and take-up of AI-enabled tools. Further research is needed to distinguish more precisely between skills and competences for design, including different types of design.

4.3 Capabilities in design

The term ‘capabilities’ is used in several ways in the literatures and frameworks that explicitly discuss design. For example, one area of research is national capabilities associated with design and their contribution to economic performance (e.g. Luo et al, 2014), whereas other researchers use the term to mean qualities such as the imagination needed to develop design competences (Gribbin et al, 2016); still others focus on organisation-level capabilities. We adopt the latter approach and briefly highlight some of the main contributions.

Sahakian and BenMahmoud Jouini (2023) carried out a study making the case that design is an example of dynamic capabilities (Teece et al, 1997), understood as the ability of an organisation to renew itself to achieve enhanced performance. Based on a single detailed case study of an insurance company, the authors showed how capability was built through successive stages which allowed the firm to renew itself and respond to challenges in the external environment. In this case a capability was built by acquiring resources, deploying them on projects, learning across projects and sharing and diffusing knowledge. This study distinguished between operations (doing design, spreading design and managing design) and operations that enabled design (building expertise and transforming the organisation).

Looking beyond the boundaries of organisations, for Alexiou et al (2022) the term design capability is also available as a way of understanding community groups, relevant to government when they are called upon to ‘co-produce’ or engage with policy development or public service innovation. As an example, Tang et al (2020) found that informal, structured events such as ‘design jams’ including the international Global Service Jams, Sustainability Jams and GovJams enabled development in skills in critical thinking, creativity and problem solving.

By way of comparison, work by the OECD to define capabilities required for public sector innovation included three types of activity, spanning individual competences (or ‘professional expertise’) and organisational capabilities in innovation and strategic orientation. As shown in Figure 13, these span the following tasks for civil servants: developing policy, working with citizens, collaborating in networks and commissioning and contracting.

Figure 13: Skills for a high performing civil service. A circular diagram titled ‘Civil servants’ surrounded by six sections highlighting strategic orientation and innovation capabilities, including: foresight, digital tools, co-creation and market use. These are linked to roles like policy development, citizen engagement and network collaboration. Source: OECD, 2017b.

In summary, this brief review demonstrates that there have been activities at national level, in professional practice and alongside academic research, that aim to define and create taxonomies of skills and competences for professional design. Such developments are tied to specific agendas, purposes and expectations of outcomes or performance at the organisational level, sometimes referred to as capabilities.

All have to grapple with defining what is ‘core’ to design and characterising the skills, knowledge and understanding that are understood to be routinely part of practices associated with design. Some relate to the doing of design, attentive to (digital) materials, media or craft, with a strong emphasis on cognition and embodied knowledge, whereas others can more easily be understood as abstract characteristics or activities. Some focus on the organising of design and its integration with other aspects of work. Many rely on concepts which are also found in related areas of expertise or professional practice, for example those associated with innovation or co-production. While there is not a widely agreed public set of competences available that meets the needs of the variety of practices and types of activity relevant to public design, these taxonomies can be further built on to characterise competences and capabilities required in government.

5 Maturity and conditions in developing design capabilities

How mature are institutions in their use of public design? What conditions enable or limit the potential of design in organisational settings?

There is long-standing researcher and practitioner interest in understanding and assessing the extent, quality and impacts of design in organisational settings. Design practitioners and academic researchers in the field of design management have developed definitions and models that to some extent have been tested in practice. Alongside academic research, design consultancies and bodies with responsibility for building design capability at national level have also carried out research, developed ‘maturity’ frameworks and produced evidence, often in close dialogue with stakeholders. This section reviews commonly used concepts that have been developed, such as the ‘design ladder’, and summarises academic literature about the enabling conditions that support, or hinder, the development of design capabilities.

5.1 Ways of understanding maturity in design capabilities

There is growing interest in frameworks that aim to capture the maturity or the extent and impact of design in organisation settings. For example, Giri and Stolterman (2022) surveyed practice and academic research and distinguished between three types: those produced by design consultancies or industry; those focusing on organisational structures; and those focusing on UX and gaming.

Two widely cited frameworks developed specifically to articulate maturity in design capabilities are the Danish Design Ladder (2001) and the Design Council’s Public Design Ladder (2013) (see Figure 14). These have been used to underpin empirical studies of the use of design in business, for example in the EU-wide Innovation Barometer study of European businesses (Björklund et al, 2018) and in a study of the use of design in public sector innovation labs and local government (Avila et al,

2022). Variants of these ladders have also shaped commercial practice in UX design, for example in a publicly available model developed and disseminated by the Nielsen Norman Group (nd), shown in Figure 15, and public versions of this such as in the NHS (NHS Digital, 2021) and Department for Education (nd).

On the one hand such frameworks are practically useful. By enabling simplification of complex organisational realities, they can enable conversations about where design practices do fit, or could fit, in an organisation. However, on the other hand, oversimplification can hamper nuanced discussions about where best to use and justify design in a context of limited resources (Björklund et al, 2018).

There are several problems. First, presenting these stages visually as a ladder suggests an implicit value orientation: higher up the ladder is ‘better’, as if the day-to-day work of graphic communication or interaction design, sometimes closely tied to styling or to addressing specific issues or user needs, is less significant than work that is higher up the ladder. Second, the ladders do not distinguish between different types or practices of design, instead homogenising what might be important differences between, say, prototyping and co-design, or between communication design and strategic design (although this is partially solved by having some variants of these ladders focus on a specific area, such as UX design). A third problem with ladders is that there is a lack of reliable impact metrics and data associated with them, especially higher up the ladder, which make it hard to validate the framework (Björklund et al, 2018). Finally, they say very little about organisational conditions and behaviours: what gets specific types of design further ‘up’ the ladder towards increased embeddedness or greater institutionalisation?

Figure 14: The Danish Design Ladder and Public Sector Design Ladder. A side-by-side comparison of the Danish Design Ladder and the Public Sector Design Ladder, each with four ascending stages showing increasing integration of design from no use to strategic application. Source: Nusem et al, 2017, p.64.

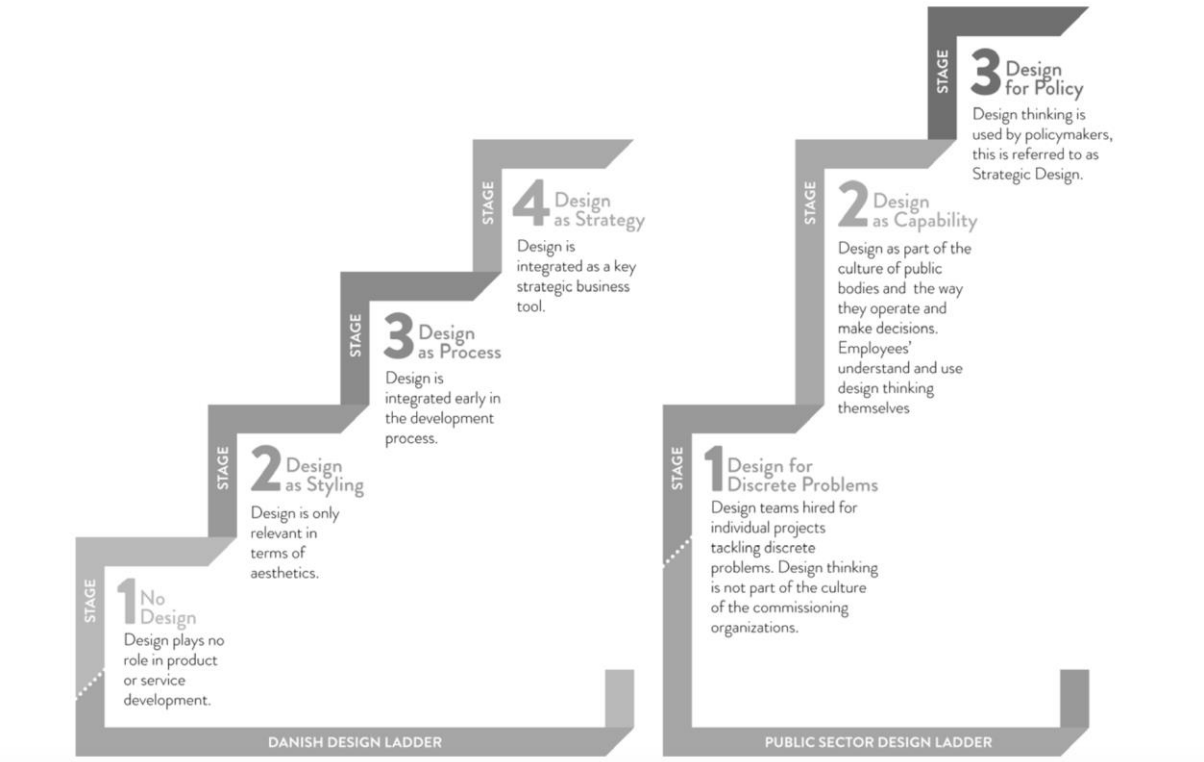
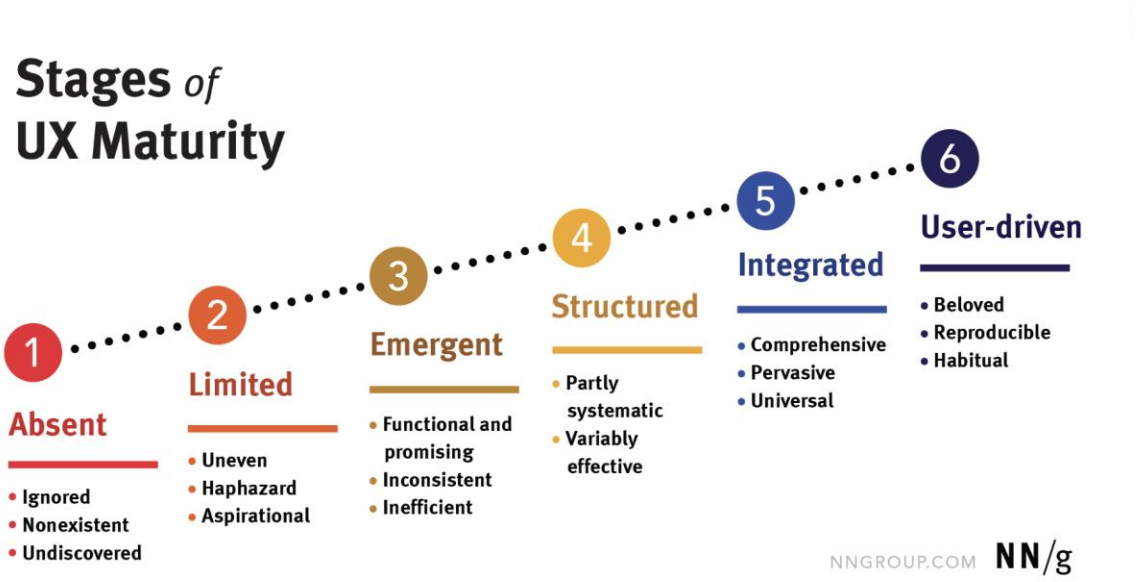


Figure 15: Stages of UX maturity. A diagram titled ‘Stages of UX maturity’ showing six progressive stages, from Absent to User-driven. Each stage is described with traits, such as: ignored, aspirational, inconsistent, systematic, universal and beloved. Source: Nielsen Norman group (n.d.)



Other ways of understanding the extent and impacts of applying design across an organisation’s activities continue to evolve. For example, in academic research Junginger (2009) produced a model to allow analysis of the extent of design activity in organisations. Figure 16 proposes four different ways of understanding integration of design into an organisation, which orients the conversation towards the extent to which design capabilities are embedded into strategies, operations, investments and culture.

Figure 16. Ways that organisations engage design. A diagram illustrating four stages of organisational design integration, from design as an external resource to design being integral. Each stage shows increasing presence and strategic use of design thinking and methods. Source: Junginger, 2009.

A version of Junginger's model is used by consultancy TPXImpact in their work with HM Land Registry (Burt-Morris and Yarrow, n.d.). The TPX model specified several layers in each of the four types of maturity, specifically how the organisation: (a) sets priorities, (b) understands users, (c) uses evidence to drive decisions, (d) designs and delivers services, and (e) manages uncertainty. These factors point to a varied range of strategic and operational factors shaping the extent of design capability in an organisation, which can be hard to integrate into a simplified framework.

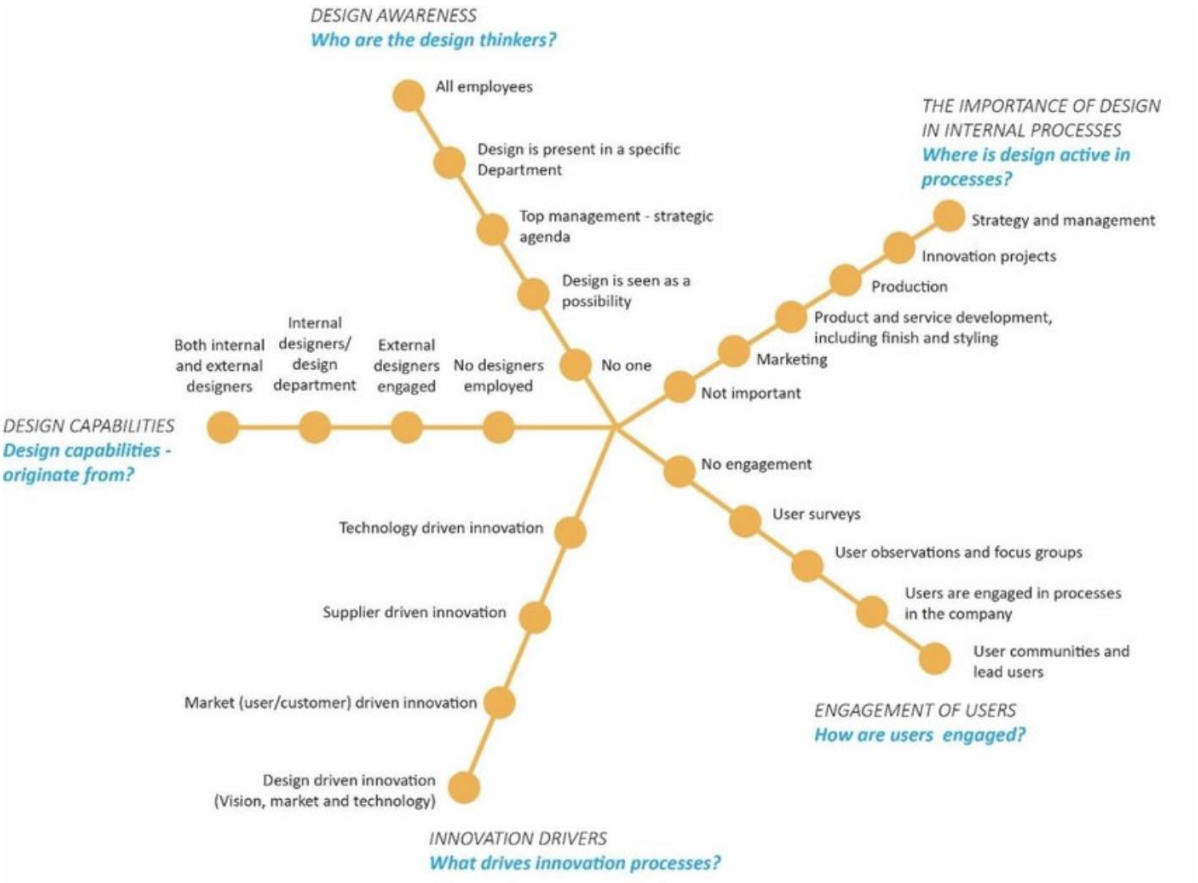
A maturity model developed by the Scottish Government emphasised practices, processes and conditions enabling a 'Scottish Approach to Service Design', described as "a shared, participatory approach to designing public services in Scotland with, and not only for, the people of Scotland" (Scottish Government, 2019). The matrix developed by the Scottish Government assesses five factors: (a) engagement with principles, tools, methods and community associated with the Scottish Approach to Service Design, (b) capacity and capability, (c) the extent of a focus on 'users' and the life events or problems they need the service to solve, (d)

user participation in project research and design activities, and (e) user inclusion and accessibility needs for participation in design (Scottish Government, 2019).

5.2 Understanding conditions shaping use of design in organisations

Experienced design practitioners recognise that for design to be effective and have impact requires appropriate organisational conditions. For example, Nielsen Norman Group (nd) identifies four conditions that shape the maturity of UX. The consultancy defines these as: (a) strategy, understood as leadership, planning, and resource prioritisation related to UX design, (b) culture, specifically knowledge about and attitudes towards UX, as well as cultivating UX careers and practitioners' growth, (c) process, understood as a systematic, efficient use of UX research and design methods, and (d) outcomes and intentional definition of goals and measurement of the results produced by UX work. Noting that technology development is often linked to investments in design capacity, Storvang et al (2014) developed a framework that showed how several external factors combined to create the conditions for design (see Figure 17), specifically: user involvement, importance of design in internal processes in the organisation, the extent of design-driven or other forms of innovation, awareness of design, and existence and sources of design capabilities.

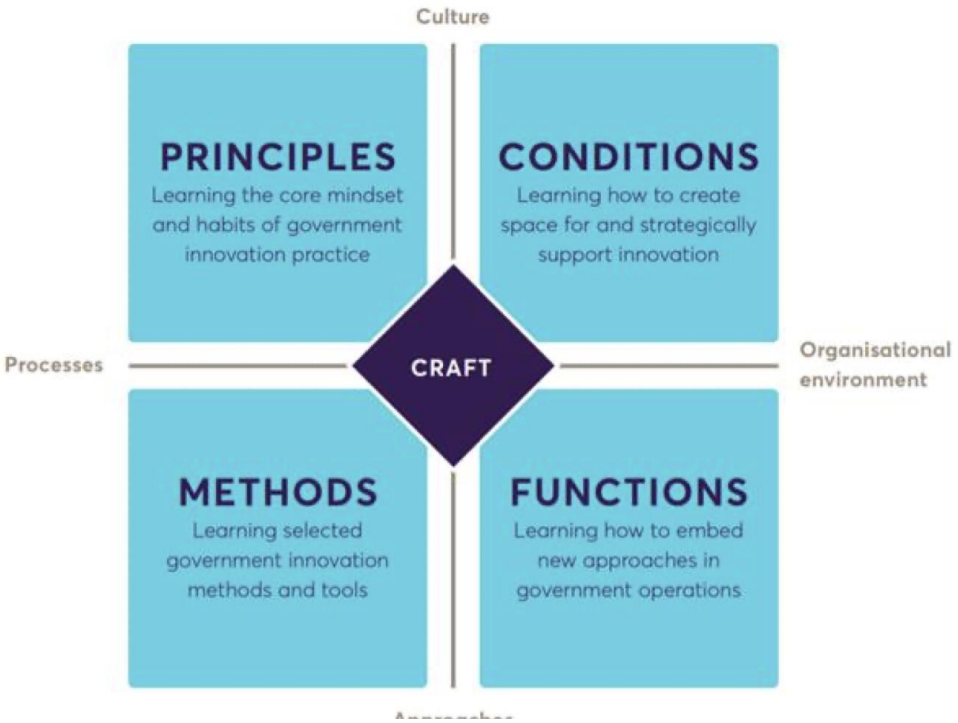
Figure 17: Design capacity model. A diagram showing ‘design’ across five branching categories: design awareness, internal processes, user engagement, innovation drivers and design capabilities. The branches detail how design is integrated and practised within an organisation. Source: Storvang et al, 2014.



Alongside this, there is growing interest in academic research about the question of embedding design into organisations, which enables discussion of maturity and also reveals some of the enabling conditions and barriers to building design capabilities. For example, Bason (2010) identified four requirements for public sector innovation: courage (leadership), co-creation (process), capacity (structure) and consciousness (awareness). Wrigley et al (2020) identified four organisational conditions required for design to be operationally effective: (a) a strategic vision, goals and intent, (b)

dedicated resources such as facilities and physical spaces, (c) understanding, knowledge, and capability among the staff, and (d) the need for legitimacy such as from directives that call for the use of design and which hold staff accountable. Jesper Christiansen, previously part of the Danish public innovation team MindLab, and then involved in leading Nesta's public sector innovation programme States of Change (Mortati et al, 2018), identified four elements required for innovation in government practices, shown in Figure 18, which are: principles, conditions, methods and functions. While this is not specifically focused on design, it illuminates the systemic or organisational conditions required for innovation in government, co-developed with a community of experienced practitioners in several countries through the States of Change network.

Figure 18: Framework underpinning States of Change government innovation curriculum, developed by Nesta. A quadrant diagram centred on 'craft', with surrounding sections labelled: principles, conditions, methods, and functions. Each quadrant represents aspects of government innovation, framed by outer themes: culture, organisational environment, accountability and processes. Source: Mortati et al, 2018.



While such frameworks have useful explanatory power and are often accessible to practitioners, there are opportunities to use research from studies of organisations to provide more nuanced descriptions and explanations about how design capabilities are embedded, what consequences they lead to, and what conditions are required for the capacities of design to be leveraged. Recent literature uses concepts from studies of organisations, specifically (a) absorptive capacity and (b) institutional logics. These offer useful lenses to understand what happens when design practices or teams are introduced to, or established in, organisations, attending to existing knowledges and associated ways of working. The former approach emphasises the extent to which an organisation has prior learning relevant to the new domain being developed, whereas the latter focuses on the embedded and institutionalised narratives such as ‘ways of doing things’ that are taken for granted in an organisation.

In the first group, the concept of absorptive capacity is understood as an organisation’s ability to recognise the value of new external information, assimilate it, and apply it towards achieving organisational priorities, distinguishing between four capabilities: knowledge acquisition, assimilation, transformation and exploitation (Zahra and George, 2002). Using this lens, Acklin (2013) examined the take-up and embedding of design in SMEs, with a focus on organisations’ abilities to manage design. This study, which included empirical development and testing of a new framework for design in SMEs, found that developing capabilities in design management was likely to enhance the leveraging of knowledge of design, for example working with external specialists (which is particularly relevant to SMEs, given lack of resources). Also, using the concept of absorptive capacity, Malmberg (2017) identified three elements for a design capability to exist: awareness of design, availability of design resources (e.g. people with competences) and structures enabling design practice (e.g. job roles, division of responsibilities and co-ordination mechanisms). In a study of a single case of a large organisation delivering adult social care in Australia, Nusem et al (2017) found that for a design capability to develop in a non-profit, it had to be developed in small stages, be commissioned by an external authority and have clear accountabilities to gain legitimacy.

The second approach is to analyse institutional logics. This is a way of examining the practices, beliefs, rules and systems by which organisations and individuals make collective sense of things and which shape action. Put simply, institutional logics helps clarify ‘the way things are done around here’, which are taken for granted. Examples of logics identified by researchers Thornton, Ocasio and Lounsbury (2012) include ‘the market’, ‘the state’, ‘the corporation’, ‘the professions’, ‘religion’, ‘the community’ and ‘the family’. These are high-level categories some researchers use to understand what goes on in organisations. Without going into debates about this kind of framing, the takeaway here is to recognise that ‘how things are done round here’, e.g. ‘standard operating practice’, relies on very deep formal and informal, written and tacit, acknowledged and implied understandings and routines that are accepted as just what happens in an institution. And while this can make things work, it is also one of the reasons why practices are so hard to shift.

Institutional logics is a substantive sub-field in studies of organisations. Researchers ask how such logics operate, how they change over time and how some logics become dominant. Using this lens helps account for the extent of transformation or change in organisations. For example, a study led by Kurtmollaiev et al (2018) focused on a large telecoms firm which over several years built up service design. This organisation organised training in service design, through which staff rapidly absorbed language such as ‘customer journey’ and ‘empathy’. But while staff adopted the terms, they were slower to adopt the practices. However, there were some teams that diligently implemented a service design approach and had impressive results. The researchers concluded that service designing had the potential to transform the organisation, not just offer some tools or be a phase in a predetermined service innovation process – but it depended on how the firm responded to these activities. They used the ‘institutional logics’ lens to explain why. They found a ‘market’ logic alongside a ‘corporation’ logic in this firm but noticed that the use of design revealed the inherent inconsistencies in the organisational logics and advanced a process towards change. The implication here is that introducing design competences and processes into an organisation may not necessarily result in significant positive benefits because there are dominant logics that hold things together in that organisation.

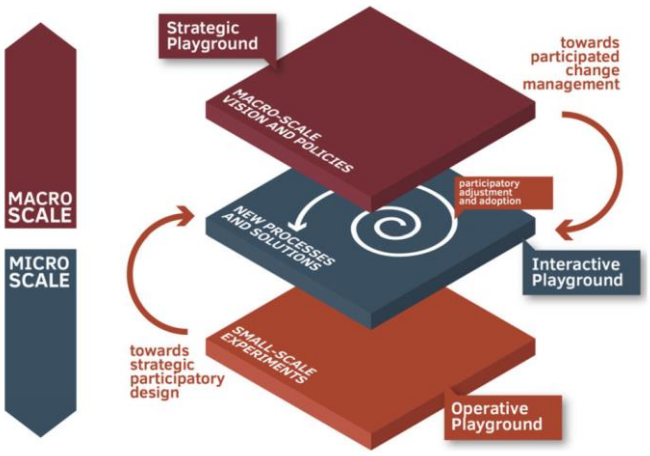
Staying with institutional logics, and turning to a different sector, in a recent study by Daniella Sangiorgi and colleagues about the use of service design in healthcare, a team of researchers paid attention to the ‘institutional logics’ and how they might hinder or enable designers and designing. They noted that healthcare is made up of many different kinds of organisational actor, from clinicians to businesses to front line administrative staff, as well as government bodies, each of which is caught up in narratives, infrastructure and forms of knowledge. As a result, in healthcare there are several ‘institutional logics’ co-existing at once, such as those identified in previous research by McMullin (2020), specifically: state, market, community and professional. In Sangiorgi et al’s study, the authors developed practical tools to help people carrying out design activities illuminate what kinds of logics were perceived as being in play. For example, the team identified which logics were perceived by participants in a project as being dominant and studied how they changed over the duration of the project, during which various design activities took place, and sometimes design capabilities were strengthened. The implication of this study is that, through the skilled application of design expertise in a project, perceptions about institutional logics can be revealed – which can be useful in itself – and logics can potentially be changed.

To summarise, these studies, based on empirical analysis of organisations, offer insights into the conditions required for design maturity, absent from many current frameworks and models which serve to promote design. Studies which emphasise learning highlight the factors through which organisations respond to new information, while research that attends to organisational ‘logics’ reveals deep-seated, possibly hidden factors that may block change, or enable some kinds of change. Such studies reveal the need for recognition of expertise in managing design and highlight the background conditions required to build up capabilities in design. These conditions include: awareness, availability of resources and expertise, existence of narratives and leadership to provide legitimacy, as well as formal structures (such as job roles and processes) through which design activities engage with other activities in the organisation.

5.3 Considerations for developing design capabilities in government

Discussions in research literatures specifically about design capabilities in government and the public sector are rare. Deserti and Rizzo (2014) found increased use of design (thinking) approaches in the public sector was tied to narratives of change and transformation in contexts of uncertainty and upheaval. As shown in Figure 19, they argued that design activities allowed the making of connections across different scales of public sector action, from (micro) small-scale experimentation to (macro) visions and policies.

Figure 19: Framework for organisational change through design in the public sector. A layered diagram illustrating the flow between macro and micro scales through strategic, interactive and operative playgrounds. The diagram links vision and policies, new processes and small-scale experiments via participatory design and change management. Source: Deserti and Rizzo, 2014, p.94.

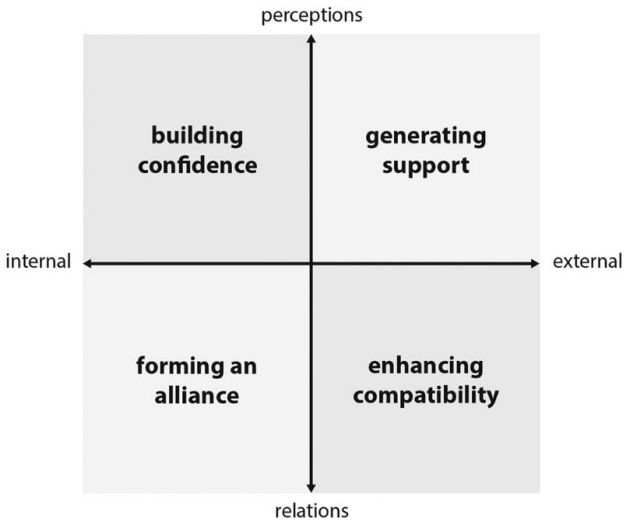


Lin (2014) found that to develop a design capability in a government context required changing mindsets and mapping out the implicit and explicit goals and processes. Seravalli et al (2017) argued that if public administration bodies are seen as oriented

to collective learning, then co-design processes can help reveal institutional constraints and possibilities by involving people across and along organisational structures and positions. Yeo et al (2023) developed a tool to enable reflection among public servants in three ministries in Singapore about the use of design competences in their work. This found that there were different factors across these ministries that resulted in the potential and extent of design in their work to include different understandings, job roles and processes.

Studies of the use of design are emerging in public administration literature. In one recent example, Brinkman et al (2023) reviewed 11 examples of the use of design thinking in the public sector, illuminating why design thinking may be an “uncomfortable fit” with established design practices and organisational structures and cultures commonly found in public administrations. They identified four strategies used in these case studies of public sector organisations deploying design thinking (see Figure 20).

Figure 20: Strategies to support the application of design thinking in the public sector. A two-by-two matrix diagram with axes labelled ‘internal–external’ and ‘perceptions–relations’, dividing the space into four quadrants: building confidence, generating support, forming an alliance and enhancing compatibility. Source: Brinkman et al, 2023, p.250.



The introduction, adoption or development of design into government and public sector organisations is contingent on several factors. One of these is narratives about public sector innovation. For example Bason (2010) identified four changes required for public sector innovation: (a) a shift from random innovation to a conscious and systematic approach to public sector renewal, (b) a shift from managing human resources to building innovation capacity at all levels of government, (c) a shift from running tasks and projects to orchestrating processes of co-creation, creating new solutions with people, not for them, and (d) a shift from a lens of ‘administration’ of public organisations to leading innovation across and beyond the public sector.

To conclude, understanding the conditions that enable or hinder the building up of capabilities in design is at an early stage of development in academic research. Recent studies suggest, however, that rather than a simple ‘additive’ model in which design capabilities join existing teams, functions and skills, building up design capacity is aligned with wider narratives about innovation or agendas for doing things differently.

6 Appendix A: Objectives and methodology

Objectives

The objectives of this Literature Review commissioned by the Civil Service as part of the Public Design Evidence Review are to:

- provide a summary of academic research and practice related to public design and public value and the relations between them that is relevant, significant and has validity;
- analyse and critically evaluate the literature;
- provide clarity about key concepts and their relations;
- identify considerations related to building a design capability across government in the UK; and
- highlight gaps in knowledge.

Methodology

The approach taken to produce this paper was a purposive, targeted, multi-vocal literature review. As a targeted review of literature, the authors offer an in-depth but not systematic approach to identifying and integrating research on the topic in which resources were found from existing knowledge and snowballing. As a multi-vocal literature review (Ogawa and Malen, 1991), it includes grey literature, such as publicly available reports, blog posts, videos and professional conferences, in addition to published academic literature that is peer-reviewed, such as academic journals, conference papers, books and doctoral theses. This approach therefore integrates the ‘state of the art’ in research alongside practice. The co-authors are based in the disciplines of design research, political science, public innovation management and democratic theory. We worked abductively (Tavory and Timmermans, 2014) between our respective literatures, combining our knowledge with our experiences of and interactions with those involved in design, policy and

government, going ‘back and forward’ between different literatures and examples, including from stakeholders.

This approach is different to a ‘systematic literature review’, as widely used in the clinical sciences. The purpose of a systematic literature review is to identify all the research published in the area of interest to ensure that no existing understanding or knowledge is missed. This study does include ‘all’ the research related to the topic of public design. Instead, the authors used their combined expertise, in dialogue with the commissioner and stakeholders, to identify, select and discuss relevant literature to answer the questions set by the commissioner.

Stakeholder engagement took the following forms: (1) distribution of drafts of sections of this paper to stakeholders involved in Public Design Evidence Review via email for review and input in October and November 2023, (2) discussion of drafts at stakeholder events organised as part of the Public Design Evidence Review, including one 60-minute session in person in October 2023 and a 20-minute session online in November 2023, (3) discussion of definitions and sections of the paper, with participation of two authors, in a workshop hosted by the Public Design Evidence Review team at the Department for Education in January 2024, (4) participation of two authors in an academic roundtable convened by the Public Design Evidence Review team and chaired by Professor Lady Rachel Cooper OBE, held at the Department for Education in February 2024 with 23 invited academics, the majority of whom were from design fields, who reviewed and discussed an executive summary of the broader Public Design Evidence Review project and some definitions from this paper, (5) several authors took part in meetings with those leading other work packages forming part of the Public Design Evidence Review including the return on investment modelling, interviews, case studies and survey between October 2023 and February 2024, with the literature review being delivered in March 2024. Minor edits for clarification were made in autumn 2024 when the authors were involved in writing the report synthesising and commenting the Public Design Evidence Review materials.

To answer the research questions set in the original brief from the cross-government Policy Design Community, the authors combined three main strategies.

1. We drew on our expert knowledge as academic researchers of current research and practice, authors of significant peer-reviewed works on the relevant topics, and peer reviewers of work by others, including as invited respondents or keynotes at academic conferences, and as supervisors and examiners of doctoral work. This included snowballing to identify and review other resources.
2. In addition, we carried out specific searches to identify additional resources such as papers in journals, books and conference proceedings. Table 7 summarises the additional search strategies used to produce this paper.
3. We met weekly in autumn 2023, when the majority of the work was carried out, to review findings, identify themes and co-author the paper.

Table 7. Additional search strategies used for each section in Paper 1.

Section	Search strategy to identify additional resources[5]	Databases and resources searched
1.1	Search (‘outcome’ OR ‘impact’) AND (‘public’ OR ‘government’) AND ‘design’	Google Scholar
1.2	Search ‘design’ AND ‘policy’ OR ‘strategic’ OR ‘systemic’ OR ‘systems’ OR ‘government’	Science Direct

[5] Differential search terms added to queries in section.1 in order to increase search results and to differentiate by theme. For example, the clause ‘(“shared understanding” OR “consensus” OR “empathy”)’ was added to the query designed to search for literature on the role of developing shared understanding in design. In section 1, unique queries were run for each themed section of table 1.

1.3	Search ‘design’ AND ‘process’ AND ‘policy’ OR ‘public service’ OR ‘government’	Science Direct
1.4	Search ‘design’ AND ‘skills’ OR ‘capability’ OR ‘competence’	Science Direct
1.5	Search ‘design’ AND ‘maturity’ OR ‘capability’	Science Direct

As with any research task, there are limitations. First, the resources reviewed were in English, therefore neglecting contributions in other languages which may be relevant, such as Spanish-language or Portuguese-language publications relating to, or produced by, policy labs and design teams working in the Latin American context. Second, in selecting journals and books we mostly drew on publications published in English since 2000 associated with research in design, political science, policy studies and public administration. This means we will have missed resources published in other fields such as organisation studies, geography, sociology or the humanities. Third, researchers drew on their existing understanding and expertise, which therefore introduced bias and blind spots, which we attempted to address by reading and editing sections written by one another, and through cycles of stakeholder engagement. Fourth, ways of working associated with professional design continue to evolve, so any analysis exists at a moment in time.

7 Appendix B: Bibliography

Abbott, A. (2001) Chaos of disciplines. Chicago: University of Chicago Press.

Acklin, C. (2013). Design management absorption model: A framework to describe and measure the absorption process of design knowledge by SMEs with little or no prior design experience. Creativity and Innovation Management, 22(2), 147-160. Available at: Design management absorption model: A framework to describe and measure the absorption process of design knowledge by SMEs with little or no prior design experience

Aguirre, M., Agudelo, N., and Romm, J. (2017). Design facilitation as emerging practice: Analyzing how designers support multi-stakeholder co-creation. She Ji, 3(3), 198-209. Available at: Design facilitation as emerging practice: Analyzing how designers support multi-stakeholder co-creation

Akama, Y., Light, A., and Kamihira, T. (2020). Expanding participation to design with more-than-human concerns. In: Proceedings of the 16th Participatory Design Conference 2020. Participation(s) Otherwise, Volume 1. New York, NY, USA. Association for Computing Machinery, 1-11. Available at: Expanding participation to design with more-than-human concerns

Alexander, C. A. (1977). A pattern language: Towns, buildings, construction. USA: Oxford University Press.

Alexiou, K., Hale, V., and Zamenopoulos, T. (2022). Design capital: Unearthing the design capabilities of community groups. International Journal of Design, 16(2), 33-46. Available at: Design capital: Unearthing the design capabilities of community groups

Almohamed, A., Vyas, D., and Zhang, J. (2018). Designing for refugees: insights from design workshop. In: Proceedings of the 30th Australian Conference on Computer-Human Interaction, 92-96. Available at: Designing for refugees: insights from design workshop

Bächtiger, A., Dryzek, J. S., Mansbridge, J., and Warren, M. (2018). Deliberative democracy: An introduction. The Oxford handbook of deliberative democracy, 1-34. Available at: Deliberative democracy: An introduction (PDF file. Size 464KB)

Bailey, J. and Lloyd, P. (2016). The introduction of design to policymaking. In: Proceedings of DRS 2016, Design Research Society 50th Anniversary Conference. Brighton, UK, June 27th to 30th. Available at: The introduction of design to policymaking (PDF file. Size 484KB)

Bailey, J., Kimbell, L., Kaszynska, P., Mazzarella, F., Todd, J., and Nold, C. (2021). Design economy 2021 scoping project: environmental and social value of design. Design Economy 2021, 1-46. Available at: Design economy 2021 scoping project: environmental and social value of design (PDF file. Size 360KB)

Bason, C. (2010). Leading public sector innovation: Co-creating for a better society. Bristol Policy Press.

Bason, C. (2014). Introduction: The design for policy nexus. In: C. Bason (Ed.), Design for Policy, 1-8. New York: Routledge.

Bason, C. (2017a). Leading public design: Discovering human-centred governance. Bristol: Policy Press.

Bason, C. (2017b). Leading public design: How managers engage with design to transform public governance. PhD Thesis. Frederiksberg: Copenhagen Business School (CBS). Available at: Leading public design: How managers engage with design to transform public governance

Bason, C. (2021). The diversity of design toolkits in the public sector. Observatory of Public Sector Innovation. Available at: The diversity of design toolkits in the public sector

Bate, S.P. and Robert, G. (2007). Bringing user experience to healthcare improvement: the concepts, methods and practices of experience-based design. CRC Press.

Baumgartner, F. and Jones, B. (1993). Agendas and instability in American politics. Chicago: University of Chicago Press.

Biskjaer, M.M., Dalsgaard, P., and Halskov, K. (2019). The same, but better: Understanding the practice of designing for incremental innovation in web design. International Journal of Design, 13(3), 89-104. Available at: The same, but better: Understanding the practice of designing for incremental innovation in web design

Björklund, T., Hannukainen, P., and Manninen, T. (2018). Measuring the impact of design, service design and design thinking in organizations on different maturity levels. In: Meroni, A., Ospina Medina, A. M., and Villari, B. (Eds.). Proceedings of the ServDes2018 Conference, 500-511. Linköping Electronic Conference Proceeding (No. 150). Linköping University Electronic Press. Available at: Measuring the impact of design, service design and design thinking in organizations on different maturity levels

Black, A., Luna, P., Lund, O., and Walker, S. (2017). Information design: Research and practice. Abingdon: Routledge.

Blomkamp, E. (2018). The promise of co-design for public policy. Australian Journal of Public Administration, 77(4), 729-743. Available at: The Promise of Co-Design for Public Policy

Boaz, A., Baeza, J., Fraser, A., and Persson, E. (2024). 'It depends': What 86 systematic reviews tell us about what strategies to use to support the use of research in clinical practice. Implement Science, 19(1), 15. Available at: 'It depends': What 86 systematic reviews tell us about what strategies to use to support the use of research in clinical practice

Boland, R. and Collopy, F. (Eds.). (2004). Managing as designing. Stanford, CA: Stanford Business Books.

Brinkman, G., van Buuren, A., Voorberg, W., and van der Bijl-Brouwer, M. (2023). Making way for design thinking in the public sector: a taxonomy of strategies. Policy Design and Practice, 6:3, 241-265. Available at: Making way for design thinking in the public sector: a taxonomy of strategies

Broadley, C. and B. K. Dixon. (2022). Participatory design for democratic innovation: participation requests and community empowerment in Scotland. Policy Design and Practice (4): 5. Available at: Participatory design for democratic innovation: participation requests and community empowerment in Scotland

Brown, T. (2009). Change by design: How design thinking transforms organizations and inspires innovation. New York: HarperCollins Publishers.

Buchanan, R. (1992). Wicked problems in design thinking. Design Issues, 8(2), 5-21. Available at: Wicked problems in design thinking

Buchanan, R. (2001). Design research and the new learning. Design Issues, 17(4), 3-23. Available at: Design research and the new learning

Buchanan, R. (2019). Systems thinking and design thinking: The search for principles in the world we are making. She Ji: The Journal of Design, Economics, and Innovation, 5(2), 85-104. Available at: Systems thinking and design thinking: The search for principles in the world we are making

Buchanan, C. (2020). What is strategic design? An examination of new design activity in the public and civic sectors. PhD thesis. Lancaster University. Available at: What is strategic design? An examination of new design activity in the public and civic sectors

Burns, C., Cottam, H., Vanstone, C., and Winhall, J. (2006). RED paper 02: Transformation design. London, Design Council. Available at: RED paper 02: Transformation design (PDF file. Size 196KB)

Butler, R. and Bowlby, S. (1997). Bodies and spaces: An exploration of disabled people's experiences of public space. Environment and Planning D: Society and Space, 15(4), 411-433. Available at: Bodies and spaces: An exploration of disabled people's experiences of public space

Burt-Morris, B. (n.d.). Design maturity assessment model. TPX Impact. Available at: Design maturity assessment model

Cain, J. and Pino, Z. (2023). Navigating design, data, and decision in an age of uncertainty. She Ji: The Journal of Design, Economics, and Innovation, 9(2), 197-212. Available at: Navigating design, data, and decision in an age of uncertainty

Calabretta, G. and Gemser, G. (2017). Building blocks for effective strategic design. Journal of Design, Business & Society, 3(2), 109–124. Available at: Building blocks for effective strategic design

Cairney, P. (2023). Understanding public policy: theories and issues. Third edition. London: Bloomsbury.

Carlgren, L. and BenMahmoud-Jouini, S. (2021). When cultures collide: What can we learn from frictions in the implementation of design thinking? Journal of Product Innovation Management, 39(1), 44–65. Available at: When cultures collide: What can we learn from frictions in the implementation of design thinking?

Chambers, S. (1996). Reasonable democracy: Jürgen Habermas and the politics of discourse. Cornell University Press.

Chambers, S. (2003). Deliberative democratic theory. Annual Review of Political Science, 6(1), 307-326. Available at: Deliberative democratic theory

Chen, T., Guo, W., Gao, X., and Liang, Z. (2021). AI-based self-service technology in public service delivery: User experience and influencing factors. Government Information Quarterly, 38(4), 101520. Available at: AI-based self-service technology in public service delivery: User experience and influencing factors

Clark, A. and Craft, J. (2018). The twin faces of public sector design. Governance, 32(1), 5-21. Available at: The twin faces of public sector design

Coelho, D. A. and Vieira, F. L. (2018). The effect of previous group interaction on individual ideation novelty and variety. International Journal of Design Creativity and Innovation, 6(1-2), 80-92. Available at: The effect of previous group interaction on individual ideation novelty and variety

Collier, S. and Gruendel, A. (2022). Design in government: City planning, space-making, and urban politics. Political Geography, 97, 102644. Available at: Design in government: City planning, space-making, and urban politics

Comi, A. and Whyte, J. (2018). Future making and visual artefacts: An ethnographic study of a design project. Organization Studies, 39(8), 1055–1083. Available at: Future making and visual artefacts: An ethnographic study of a design project

Conway, R., Masters, J., and Thorold, J. (2017). From design thinking to systems change. London: Royal Society of Arts.

Ceschin, F. and Gaziulusoy, I. (2020). Design for sustainability: A multi-level framework from products to socio-technical systems. Routledge.

Chartered Institute of Personnel and Development (2022). Competence and competency frameworks. Available at: Competence and competency frameworks

Chartered Society of Designers (2015). Guide to demonstrating CPSK. Available at: Guide to demonstrating CPSK (PDF file. Size 168KB)

Chua, S. M. J. (2009). Donald Schön, Herbert Simon and the sciences of the artificial. Design Studies, 30(1), 60–68. Available at: Donald Schön, Herbert Simon and the sciences of the artificial

Clarke, D., Jones, F., Harris, R., and Robert, G. (2017). What outcomes are associated with developing and implementing coproduced interventions in acute healthcare settings? A rapid evidence synthesis. British Medical Journal Open, 7(7), e014650. Available at: What outcomes are associated with developing and implementing coproduced interventions in acute healthcare settings? A rapid evidence synthesis

Climate Assembly UK (2021). The path to net zero: Climate Assembly UK full report. Available at: The path to net zero: Climate Assembly UK full report (PDF file. Size 11.1MB)

Citizen's Assembly for Northern Ireland (2018). Recommendations for reforming social care for older people from the first Citizens' Assembly for Northern Ireland. Available at: Recommendations for reforming social care for older people from the first Citizens' Assembly for Northern Ireland

Citizens' Convention on UK Democracy (n.d.). Citizens' Convention on UK Democracy. Available at: Citizens' Convention on UK Democracy

Cohen, M. D., March, J. G., and Olsen, J. P. (1972). A garbage can model of organizational choice. Administrative Science Quarterly, 17(1), 1-25. Available at: A garbage can model of organizational choice

Conley, C. (2011). The core competencies of design: The basis of a broadly applicable discipline. Industrial Designers Society of America. Available at: The core

competencies of design: The basis of a broadly applicable discipline (PDF file. Size 60KB)

Cooper, R., Junginger, S., and Lockwood, T. (Eds.) (2011). The handbook of design management. Oxford: Berg Publishers.

Crilly, N. (2021). The evolution of “co-evolution” (Part one): Problem solving, problem finding, and their interaction in design and other creative practices. She Ji: The Journal of Design, Economics, and Innovation, 7(3), 309–332. Available at: The evolution of “co-evolution” (Part one): Problem solving, problem finding, and their interaction in design and other creative practices

Cross, N. (2010). Design thinking as a form of intelligence. In: Interpreting design thinking, Design Thinking Research Symposium 8. Sydney, Australia. Faculty of Design, Architecture and Building, University of Technology.

Cross, N. (2023). Design thinking: What just happened? Design Studies, 86, 101187. Available at: Design thinking: What just happened?

Dalsgaard, P. and Dindler, C. (2014). Between theory and practice: bridging concepts in HCI research. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. Association for Computing Machinery, New York, USA, 1635-1644. Available at: Between theory and practice: bridging concepts in HCI research

Dawes, M.J. and Ostwald, M.J. (2017). Christopher Alexander’s A-pattern language: analysing, mapping and classifying the critical response. City, Territory and Architecture 4, 1-14. Available at: Christopher Alexander’s A-pattern language: analysing, mapping and classifying the critical response

Dawson, M. (2023). Differences designing in the public and private sector. Snook. Available at: Differences designing in the public and private sectors

Department for Education (n.d.). Design Maturity Model.

Deserti, A. and Rizzo, F. (2014). Design and organizational change in the public sector. Design Management Journal, 9(1), 85-97. Available at: Design and organizational change in the public sector

Design Commission. (2013). Restarting Britain 2: Design and public services. Available at: Restarting Britain 2: Design and public services

Design Council (2013). Design for public good. London: Design Council. Available at: Design for public good

Design Council (2015). The Design economy: The value of design to the UK. London: Design Council. Available at: The Design economy: The value of design to the UK

Design Council (2018). Design skills report. London: Design Council. Available at: Design skills report (PDF file. Size 15.2MB)

Design Council (2021). Beyond net zero: A systemic design approach. London: Design Council. Available at: Beyond net zero: A systemic design approach (PDF file. Size 3.28MB)

Design Council (2022a). Design economy: People, places and economic value. London: Design Council. Available at: Design economy: People, places and economic value (PDF file. Size 15.8MB)

Design Council (2022b). Design value framework. London: Design Council. Available at: Design value framework

Design Council (2024a). What is design? Available at: What is design?

Design Council (2024b). Double diamond. Available at: Double diamond

Design Singapore Council (2019). Skills framework for design to nurture design-empowered workforce to meet demands of future economy. Press release, July 24th. Available at: Skills framework for design to nurture design-empowered workforce to meet demands of future economy

Dimopoulos-Bick, T., Dawda, P., Maher, L., Verma, R., and Palmer, V. (2018). Experience-based co-design: tackling common challenges. The Journal of Health Design, 3(1). Available at: Experience-based co-design: Tackling common challenges

Dixon, B. (2023). Design, philosophy and making things happen. London: Routledge.

Dorst, K. (2011). The core of ‘design thinking’ and its application. Design Studies, 32(6), 521-532. Available at: The core of ‘design thinking’ and its application

Dorst, K. (2015). Frame innovation: Create new thinking by design. Cambridge: MIT Press.

Dorst, K. and Watson, R. (2023). There is no such thing as strategic design. Design Studies, 86, 101185. Available at: There is no such thing as strategic design

Dryzek, J. (2000). Deliberative democracy and beyond: Liberals, critics, contestations. Oxford University Press.

Dryzek, J. S. and Niemeyer, S. (2008). Discursive representation. American Political Science Review, 102(4), 481-493. Available at: Discursive representation

Dubberly, H. (2005). How do you design? A compendium of models. San Francisco: Dubberly Design Office.

Dubberly, H. and Pangaro, P. (2023). How might we help designers understand systems? She Ji: The Journal of Design, Economics, and Innovation, 9(2), 135-156. Available at: How might we help designers understand systems?

Durose, C. and Richardson, L. (2016). Designing public policy for co-production: Theory, practice and challenges. Bristol: The Policy Press.

Durose, C. and Lowndes, V. (2021). Why are institutional design for urban governance so often incomplete? A conceptual framework for understanding and harnessing institutional incompleteness. Environment and Planning C: Politics and Space 39(8), 1773-1790. Available at: Why are institutional design for urban governance so often incomplete? A conceptual framework for understanding and harnessing institutional incompleteness

Elsbach, K.D. and Stigliani, I. (2018). Design thinking and organizational culture: A review and framework for future research. Journal of Management, 44(6), 2274-2306. Available at: Design thinking and organizational culture: A review and framework for future research

Elstub, S., Ercan, S., and Mendonça, R. F. (2016). The fourth generation of deliberative democracy. Critical Policy Studies, 10(2), 139-151. Available at: The fourth generation of deliberative democracy

Eriksson, E., Williams, S. and Hellström, A. (2023). Dis/value in co-production, co-design and co-innovation for individuals, groups and society. Public Money and Management, 43(1), 17-25. Available at: Dis/value in co-production, co-design and co-innovation for individuals, groups and society

Falconer, P. K. and Ross, K. (1999). Citizen's charters and public service provision: Lessons from the UK experience. International Review of Administrative Sciences, 65(3), 339-351. Available at: Citizen's charters and public service provision: Lessons from the UK experience

Fallman, D. (2003). Design-oriented human-computer interaction. In: Proceedings of the SIGCHI conference on Human factors in computing systems, 225-232. Available at: Design-oriented human-computer interaction

Fass, J., Rutgers, J., and Chui, M. (2018). Using design competencies to define curricula and support learners. In: Storni, C., Leahy, K., McMahon, M., Lloyd, P. and Bohemia, E. (Eds.). Design as a catalyst for change. DRS International Conference 2018, June 25th to 28th, Limerick, Ireland. Available at: Using design competencies to define curricula and support learners (PDF file. 2.97MB)

Fleischer, J. and Carstens, N. (2021). Policy labs as arenas for boundary spanning: Inside the digital transformation in Germany. Public Management Review, 1-18, 1208-1225. Available at: Policy labs as arenas for boundary spanning: Inside the digital transformation in Germany

Flemming, K., Booth, A., Garside, R., et al. (2019). Qualitative evidence synthesis for complex interventions and guideline development: clarification of the purpose, designs and relevant methods. British Medical Journal Global Health, 4 (Supplement 1). Available at: Qualitative evidence synthesis for complex interventions and guideline development: clarification of the purpose, designs and relevant methods

Foglieni, F. and Holmlid, S. (2017). Determination of service value: Exploring the link between value creation and service evaluation. Service Science, 9(1), 74-90.

Available at: Determination of service value: Exploring the links between value creation and service evaluation

Forlano, L. (2017). Posthumanism and design. She Ji, 3(1), 16-29. Available at: Posthumanism and design

Forlizzi, J. (2013). The product service ecology: Using a systems approach in design. In: Relating Systems Thinking and Design 2013 Symposium Proceedings, Oslo, Norway, October 9th to 11th, 2013. Available at: The product service ecology: Using a systems approach in design

FormFest (2023). FormFest. YouTube. Available at: FormFest

Franzén, C., Björnstig, U., Jansson, L., Stenlund, H. and Brulin, C. (2008). Injured road users' experience of care in the emergency department. Journal of Clinical Nursing, 17, 726-734. Available at: Injured road users' experience of care in the emergency department

Gaziulusoy, I. and Ryan, C. (2017). Shifting conversations for sustainability transitions using participatory design visioning. The Design Journal, 20 (supplement 1), S1916-S1926. Available at: Shifting conversations for sustainability transitions using participatory design visioning

Geels, F. (2002). Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case study. Research Policy, 31, 1257-1274. Available at: Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case study

Geels, F. (2010). Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective. Research Policy, 39(4), 495-510. Available at: Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective

Giordano, F. B. (2019). Design capability building in city government. In: International Association of Societies of Design Research Conference 2019. Manchester Metropolitan University Discourse Unit. Available at: Design capability building in city government (PDF file. Size 432KB)

Giri, N. and Stolterman, E. (2022). An analysis of design maturity models used in design organizations. In: Lockton, D., Lenzi, S., Hekkert, P., Oak, A., Sádaba, J.,

Lloyd, P. (Eds.). DRS2022: Bilbao, 25nd June to 3rd July, Bilbao, Spain. Available at: An analysis of design maturity models used in design organizations

Greenaway, A., Terrett, B., Bracken, M., and Loosemore, T. (2018). Digital transformation at scale: Why the strategy is delivery. London: London Publishing Partnership.

Gribbin, J., Young, R., and Aftab, M. (2016). Towards a holistic framework of design competence. In 19th Academic Design Management Conference, July 28th to 29th, Boston, USA. Available at: Towards a holistic framework of design competence (PDF file. Size 488KB)

Griffioen, I., Melles, M., Stiggelbout, A., and Snelders, D. (2017). The potential of service design for improving the implementation of shared decision-making. Design for Health, 1(2), 194-209. Available at: The potential of service design for improving the implementation of shared decision-making

Government Digital Service (2014). Digital by default service standard. Available at: A year in the making – the Digital by Default Service Standard

Hall, P. A., and Dávila, P. (2022). Critical visualization: Rethinking the representation of data. Bloomsbury, London.

Hall, P. A., Coles-Kemp, L., and Heath, C. (2015). Critical visualization: a case for rethinking how we visualize risk and security. Journal of Cyber Security, 1(1), 93-108. Available at: Critical visualization: a case for rethinking how we visualize risk and security

Hallsworth, M., Parker, S., and Rutter, J. (2011). Policy making in the real world, evidence and analysis. London: Institute for Government.

Harrison, A., Popovic, V., Kraal, B., and Kleinschmidt, T. (2012). Challenges in passenger terminal design: A conceptual model of passenger experience. In: Israsena, P., Tangsantikul, J. and Durling, D. (Eds.). Research: Uncertainty Contradiction Value. DRS International Conference 2012, July 1st to 4th, Bangkok, Thailand. Available at: Challenges in passenger terminal design: A conceptual model of passenger experience

Hatchuel, A. (2001). Towards design theory and expandable rationality: The unfinished programme of Herbert Simon. Journal of Management and Governance, 5(3-4), 260-273. Available at: Towards design theory and expandable rationality: The unfinished programme of Herbert Simon (PDF file. Size 64KB)

Hargadon, A.B. and Sutton, R.I. (1997). Technology brokering and innovation in a product development firm. Administrative Science Quarterly, 42(4), 716-749. Available at: Technology brokering and innovation in a product development firm

Hemus, M., van Buuren, A. and Bekkers, V. (2020). Applying design in public administration: a literature review to explore the state of the art. Policy and Politics, 48(1), 21–48. Available at: Applying design in public administration: a literature review to explore the state of the art

Hernández, R.J., Cooper, R., Tether, B., and Murphy, E. (2018). Design, the language of innovation: A review of the design studies literature. She Ji, 4(3), 249-274. Available at: Design, the language of innovation: A review of the design studies literature

Hill, D. (2012). Dark matter and trojan horses: A strategic design vocabulary. Strelka Press.

Hill, D. (2022). Designing missions: Mission-oriented innovation in Sweden. Stockholm: Vinnova.

Hillgren, P. A., Seravalli, A., and Agger Eriksen, M. (2016). Counter-hegemonic practices; dynamic interplay between agonism, commoning and strategic design. Strategic Design Research Journal, 9(2), 89-99. Available at: Counter-hegemonic practices; dynamic interplay between agonism, commoning and strategic design

HM Government. (2016). The civil service code. Available at: The civil service code

HM Government (n.d.). Agile delivery. Service Manual. Available at: Agile delivery

HM Government (n.d.). The civil servant's systems thinking journey: Weaving systems thinking throughout the policy design process. Government Office for Science. Available at: The civil servant's systems thinking journey: Weaving systems thinking throughout the policy design process (PDF file. Size 312KB)

Hood, C. and Dixon, R. (2015). Government that worked better and cost less? Evaluating three decades of reform and change in UK central government. Oxford University Press.

Howlett, M. (2020). Challenges in applying design thinking to public policy: Dealing with the varieties of policy formulation and their vicissitudes. Policy and Politics, 48(1), 49-65. Available at: Challenges in applying design thinking to public policy: Dealing with the varieties of policy formulation and their vicissitudes

Howlett, M., Ramesh, M., and Perl, A. (2009). Studying public policy: Policy cycles and policy subsystems (Vol. 3). Oxford University Press.

Howlett, M., Mukherjee, I., and Woo, J. J. (2015). From tools to toolkits in policy design studies: The new design orientation towards policy formulation research. Policy and Politics, 43(2), 291-311. Available at: From tools to toolkits in policy design studies: The new design orientation towards policy formulation research

Howlett, M. and Mukherjee, I. (2018a). Routledge handbook of policy design. Abingdon-on-Thames, UK: Routledge.

Howlett, M. and Mukherjee, I. (2018b). The contribution of comparative policy analysis to policy design: Articulating principles of effectiveness and clarifying design spaces. Journal of Comparative Policy Analysis: Research and Practice, 20(1), 72-87. Available at: The contribution of comparative policy analysis to policy design: Articulating principles of effectiveness and clarifying design spaces

Heskett, J. (2005). Design: A very short introduction (Vol. 136). Oxford University Press, USA.

Hurley, P., Lyon, L., Hall, J., Little, R., Tsouvalis, J., and Rose, D.C. (2020). Co-designing the Environmental Land Management Scheme in England: The why, who and how of engaging 'harder to reach' stakeholders. Journal pre-print. Available at: Co-designing the Environmental Land Management Scheme in England: The why, who and how of engaging 'harder to reach' stakeholders

Huybrechts, L., Benesch, H., and Geib, J. (2017). Co-design and the public realm. CoDesign: International Journal of CoCreation in Design and the Arts, 13(3), 145-147. Available at: Co-design and the public realm

John, P. (2018). Theories of policy change and variation reconsidered: A prospectus for the political economy of public policy. Policy Sciences, 51, 1-16. Available at: Theories of policy change and variation reconsidered: A prospectus for the political economy of public policy

Julier, G. (2017). Economies of Design. Sage.

Junginger, S. (2008). Product development as a vehicle for organizational change. Design Issues, 24(1), 26-35. Available at: Product development as a vehicle for organizational change

Junginger, S. (2009). Parts and wholes: Places of design thinking in organizational life. Strategic Design Research Journal, 2, 23-29.

Junginger, S. (2015). Organizational design legacies and service design. The Design Journal, 18(2), 209-226. Available at: Organizational design legacies and service design

Junior, J.d.C., Diehl, J.C., and Snelders, D. (2019). A framework for a systems design approach to complex societal problems. Design Science, 5. Available at: A framework for a systems design approach to complex societal problems

Kamalipour, H., Aelbrecht, P., and Peilmani, N. (2023). The Routledge handbook of urban design research methods. New York: Routledge.

Karpen, I. O., Gemser, G., and Calabretta, G. (2017). A multilevel consideration of service design conditions: Towards a portfolio of organisational capabilities, interactive practices and individual abilities. Journal of Service Theory and Practice, 27(2), 384-407. Available at: A multilevel consideration of service design conditions: Towards a portfolio of organisational capabilities, interactive practices and individual abilities

Kattel, R. and Takala, V. (2023). The case of the UK's Government Digital Service: The professionalisation of a paradigmatic public digital agency. Digital Government: Research and Practice, 4(4), 1-15. Available at: The case of the UK's Government Digital Service: The professionalisation of a paradigmatic public digital agency

Kille-Speckter, L. and Nickpour, F. (2022). The evolution of inclusive design: A first timeline review of narratives and milestones of design for disability. In: Lockton, D.,

Lenzi, S., Hekkert, P., Oak, A., Sádaba, J. and Lloyd, P. (Eds.), DRS2022: Bilbao, June 25th to 3rd July, Bilbao, Spain. Available at: The evolution of inclusive design: A first timeline review of narratives and milestones of design for disability

Kimbell, L. (2011). Rethinking design thinking: Part one. Design and Culture, 3(3), 285-306. Available at: Rethinking design thinking: Part one

Kimbell, L. (2015). Applying design approaches to policy making: Discovering Policy Lab. University of Brighton.

Kimbell, L. and Bailey, J. (2017). Prototyping and the new spirit of policy-making. Co-Design, 13(3), 214-226. Available at: Prototyping and the new spirit of policy-making

Kimbell, L., Bailey, J., Nold, C., Kaszynska, P., Todd, J., and Mazzarella, F. (2021). Design Economy 2021 Scoping Project: Introductory paper. London: Design Council. Available at: Design Economy 2021 Scoping Project: Introductory paper (PDF file. Size 360KB)

Kimbell, L., Richardson, L., Mazé, R., and Durose, C. (2022). Design for public policy: Embracing uncertainty and hybridity in mapping future research. In: Lockton, D., Lenzi, S., Hekkert, P., Oak, A., Sádaba, J. and Lloyd, P. (Eds.), DRS2022: Bilbao, 25th June to 3rd July, Bilbao, Spain. Available at: Design for public policy: Embracing uncertainty and hybridity in mapping future research

Kimbell, L., Durose, C., Mazé, R., and Richardson, L. (2023). Design and policy: current debates and future directions for research in the UK: Report of the AHRC Design Policy Research Network. London: University of the Arts London. Available at: Design and policy: current debates and future directions for research in the UK: Report of the AHRC Design Policy Research Network (PDF file. Size 4.2MB)

Kingdon, J. W. (1995). Agendas, alternatives and public policies. New York: Longman.

Knight, E., Daymond, J., and Paroutis, S. (2020). Design-led strategy: How to bring design thinking into the art of strategic management. California Management Review, 62(2), 30-52. Available at: Design-led strategy: How to bring design thinking into the art of strategic management

Koskinen, I., Zimmerman, J., Binder, T., Redstrom, J., and Wensveen, S. (2012). Design research through practice: From the lab, field, and showroom. Morgan Kaufman.

Kurtmollaiev, S., Fjuk, A., Pedersen, P. E., Clatworthy, S., and Kvale, K. (2018). Organizational transformation through service design: The Institutional logics perspective. Journal of Service Research, 21(1), 59-74. Available at: Organizational transformation through service design: The Institutional logics perspective

Langham, J. A. and Paulsen, N. (2017). Invisible taxation: Fantasy or just good service design? Austl. Tax F., 32, 129. Available at: Invisible taxation: Fantasy or just good service design?

Lawson, B. and Dorst, K. (2009). Design expertise. Oxford: Architectural Press.

Le Masson, Pascal, Weil, B., and Hatchuel, A. (2010). Strategic management of innovation and design. Cambridge University Press.

Leitão, R. M. (2023). Pluriversal worlding: design, narratives, and metaphors for societal transformation. AM Journal of Art and Media Studies, 30, 17-35. Available at: Pluriversal worlding: design, narratives, and metaphors for societal transformation

Levin, M., Curtis, P., Castell, S., and Kepatanovic, H. (2024). Citizens' White Paper. Demos/Involve. Available at: Citizens' White Paper (PDF file. Size 4.51MB)

Liedtka, J. (2018). Innovation, strategy, and design: design thinking as a dynamic capability. Academy of Management Proceedings, 1, 13004. Available at: Innovation, strategy, and design: design thinking as a dynamic capability

Liedtka, J. (2020). Putting technology in its place: Design thinking's social technology at work. California Management Review, 62(2), 53-83. Available at: Putting technology in its place: Design thinking's social technology at work

Light, A. and Seravalli, A. (2019). The breakdown of the municipality as caring platform: Lessons for co-design and co-learning in the age of platform capitalism. International Journal of Co-Design, 192-211. Available at: The breakdown of the municipality as caring platform: Lessons for co-design and co-learning in the age of platform capitalism

Lin, T. (2016). Redesigning public organizational change with care. Design Management Journal, 11(1), 32-42. Available at: Redesigning public organizational change with care

Lindblom, C. E. (1959). The science of “muddling through”. Public Administration Review, 19(2), 79-88. Available at: The science of “muddling through”

Lindquist, E. A. and Buttazzoni, M. (2021). The ecology of open innovation units: adhocracy and competing values in public service systems. Policy Design and Practice, 4(2), 212-227. Available at: The ecology of open innovation units: adhocracy and competing values in public service systems

Locock, L., Robert, G., Boaz, A., Vougioukalou, S., Shuldham, C., Fielden, J., Ziebland, S., Gager, M., Tollyfield, R., and Pearcey, J. (2014). Testing accelerated experience-based co-design: a qualitative study of using a national archive of patient experience narrative interviews to promote rapid patient-centred service improvement. Health Services and Delivery Research 2(4). Available at: Testing accelerated experience-based co-design: a qualitative study of using a national archive of patient experience narrative interviews to promote rapid patient-centred service improvement

Luo, X., Olechowski, A., and Magee, C. (2014). Technology-based design and sustainable economic growth. Technovation, 34(11), 663-677. Available at: Technology-based design and sustainable economic growth

Margolin, V. (2017). World history of design. London: Bloomsbury.

Malmberg, L. and Wetter-Edman, K. (2016). Design in public sector: exploring antecedents of sustained design capability. In: Proceedings of 20th DMI. Academic Design Management Conference Inflection Point: Design Research Meets Design Practice. Boston, July 22nd to 29th 2016. Available at: Design in public sector: exploring antecedents of sustained design capability. In: Proceedings of 20th DMI. Academic Design Management Conference Inflection Point: Design Research Meets Design Practice (PDF file. Size 504KB)

Malmberg, L. (2017). Building design capability in the public sector: Expanding the horizons of development (Vol. 1831). Linköping University Electronic Press.

Mansbridge, J. (1999). Should blacks represent blacks and women represent women? A contingent "yes". The Journal of Politics, 61(3), 628-657. Available at: Should blacks represent blacks and women represent women? A contingent "yes"

Manzini, E. (2015). Design, when everybody designs. Cambridge: MIT Press.

Martin, R. L. (2009). The design of business: Why design thinking is the next competitive advantage. Harvard Business Press.

Napier, P. and Wada, T. (2016). Defining design facilitation: Exploring and advocating for new, strategic leadership roles for designers and what these mean for the future of design education. Dialectic, 1(1), 154-178. Available at: Defining design facilitation: Exploring and advocating for new, strategic leadership roles for designers and what these mean for the future of design education

Mazzucato, M. (2013). The entrepreneurial state: debunking public vs. private sector myths. London: Anthem Press.

McGann, M., Blomkamp, E., and Lewis, J. M. (2018). The rise of public sector innovation labs: experiments in design thinking for policy. Policy Sci, 51, 249-267. Available at: The rise of public sector innovation labs: experiments in design thinking for policy

McKay, S. and Meyboom, A. (2022). Design capital: the hidden value of design in infrastructure. London: Taylor and Francis.

McLaren, J. and Kattel, R. (2022). Policy capacities for transformative innovation policy: A case study of UK research and innovation. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2020-04). Available at: Policy capacities for transformative innovation policy: A case study of UK research and innovation

Melián-González, A., Batista-Canino, R. M., and Sánchez-Medina, A. (2010). Identifying and assessing valuable resources and core capabilities in public organizations. International Review of Administrative Sciences, 76(1), 97-114. Available at: Identifying and assessing valuable resources and core capabilities in public organizations

Meron, Y. (2022). Graphic design and artificial intelligence: Interdisciplinary challenges for designers in the search for research collaboration. In: Lockton, D., Lenzi, S., Hekkert, P., Oak, A., Sádaba, J. and Lloyd, P. (Eds.), DRS2022: Bilbao, 25th June - 3rd July, Bilbao, Spain. Available at: Graphic design and artificial intelligence: Interdisciplinary challenges for designers in the search for research collaboration

Micheli, P., Wilner, S.J.S., Bhatti, D.H., Mura, M., and Beverland, M.B. (2019). Doing design thinking: conceptual review, synthesis, and research agenda. Journal of Product Innovation Management, 36(2), 124-148. Available at: Doing design thinking: conceptual review, synthesis, and research agenda

Michlewski, K. (2008). Uncovering design attitude: Inside the culture of designers. Organization Studies, 29(2), 229-248. Available at: Uncovering design attitude: Inside the culture of designers

Montanaro, L. (2017). Who elected Oxfam?: A democratic defense of self-appointed representatives. Cambridge University Press. Available at: Who elected Oxfam?: A democratic defense of self-appointed representatives

Mortati, M., Villari, B., and Maffei, S. (2014). Design capabilities for value creation. In: Proceedings of the 19th DMI: academic design management conference, DMI academic conference, London, September 2nd to 4th. Available at: Design capabilities for value creation (PDF file. Size 972KB)

Mortati, M., Christiansen, J., and Maffei, S. (2018). Design craft in government. In: Service Design Proof of Concept. Proceedings of the ServsDes, 2018 Conference, 561-562. Linköping University Electronic Press. Available at: Design craft in government (PDF file. Size 280KB)

Mulgan, G. (2014). Design in public and social innovation: What works and what could work better? London: Nesta. Available at: Design In public and social innovation: What works and what could work better?

NHS Digital (2021). How NHS Digital is developing user-centred design maturity. NHS Digital. Available at: How NHS Digital is developing user-centred design maturity. NHS Digital

Nielsen Norman Group (n.d., a). The 6 Levels of UX Maturity. Available at: The 6 Levels of UX Maturity

Nielsen Norman Group (n.d., b). Four factors in UX maturity. Available at: Four factors in UX maturity

Norman, D. and Verganti, R. (2014). Incremental and radical innovation: Design research versus technology and meaning change. Design Issues, 30(1), 78-96. Available at: Incremental and radical innovation: Design research versus technology and meaning change

Nusem, E., Wrigley, C., and Matthews, J. (2017). Developing design capability in nonprofit organizations. Design Issues, 33(1), 61-75. Available at: Developing design capability in nonprofit organizations

Ogawa, R.T. and Malen, B (1991). Towards rigor in reviews of multivocal literatures: Applying the exploratory case study method. Review of Educational Research, 61 (3), 265-286. Available at: Towards rigor in reviews of multivocal literatures: Applying the exploratory case study method

Olejniczak, K., Borkowska-Waszak, S., Domaradzka-Widła, A., and Park, Y. (2020). Policy labs: The next frontier of policy design and evaluation? Policy and Politics 48 (1): 89-110. Available at: Policy labs: The next frontier of policy design and evaluation?

OECD (2017a). Fostering innovation in the public sector. Paris: OECD Publishing. Available at: Fostering innovation in the public sector

OECD (2017b). Skills for a high performing civil service. OECD Public Governance Reviews. Paris: OECD. Available at: Skills for a high performing civil service

OECD (2018). The future of education and skills: Education 2030. OECD Education Policy Perspectives Series. Paris: OECD. Available at: The future of education and skills: Education 2030

OECD Observatory of Public Sector Innovation (2022). Innovative capacity of governments: A systemic framework. Paris: OECD. Available at: Innovative capacity of governments: A systemic framework (PDF file. Size 2.66MB)

OECD Observatory of Public Sector Innovation (2023). Strategic design. Available at: Strategic design

Osborne, S., Radnor, Z., and Strokosch, K. (2016). Co-production and the co-creation of value in public services: a suitable case for treatment? Public Management Review; 18(5): 639-653. Available at: Co-production and the co-creation of value in public services: a suitable case for treatment?

Ou, X., Goldschmidt, G., and Erez, M. (2023). The effect of disciplinary diversity on design idea generation in dyadic teams. Design Studies, 86, 101184. Available at: The effect of disciplinary diversity on design idea generation in dyadic teams

Parsons, G. (2016). The philosophy of design. Polity Press.

Patrício, L., Sangiorgi, D., Mahr, D., Čaić, M., Kalantari, S. and Sundar, S. (2020). Leveraging service design for healthcare transformation: toward people-centered, integrated, and technology-enabled healthcare systems. Journal of Service Management. Vol. 31 No. 5, pp. 889-909. Available at: Leveraging service design for healthcare transformation: toward people-centered, integrated, and technology-enabled healthcare systems

Polaine, A., Lovlie, L., and Reason, B. (2013). Service design: From insight to implementation. Rosenfeld Media.

Morelli, N., De Goertzen, A., and Simeone, L. (2021). Service design capabilities. Springer. Available at: Service design capabilities (PDF file. Size 2.23MB)

Pólvora, A. and Nascimento, S. (2021). Foresight and design fictions meet at a policy lab: An experimentation approach in public sector innovation. Futures, 128, 102709. Available at: Foresight and design fictions meet at a policy lab: An experimentation approach in public sector innovation

Rauth, I., Carlgren, L., and Elmquist, M. (2014). Making it happen: Legitimizing design thinking in large organizations. Design Management Journal, 47-60. Available at: Making It Happen: Legitimizing Design Thinking in Large Organizations (PDF file. Size 228KB)

Ravenscroft, T. and Baker, L. (2020). Towards a universal framework for essential skills. Final Report for the Essential Skills Taskforce: May 2020. Available at: Towards a universal framework for essential skills

Resnick, E. (Ed.). (2019). The social design reader. London: Bloomsbury.

Robert, G., Cornwell, J., and Locock, L. et al. (2015). Patients and staff as co-designers of healthcare services. British Medical Journal 350. Available at: Patients and staff as co-designers of healthcare services

Robert, G., Donetto, S., and Williams, O. (2021). Co-designing healthcare services with patients. In: Loeffler, E. and Bovaird, T. (Eds.). The Palgrave handbook of co-production of public services and outcomes, 313-333. Springer. Available at: Co-designing healthcare services with patients (PDF file. Size 436KB)

Robert, G., Locock, L., Williams, O., Cornwell, J., Donetto, S., and Goodrich, J. (2022). Co-Producing and co-designing. In: Elements of improving quality and safety in Healthcare Cambridge University Press, Cambridge. Available at: Co-Producing and co-designing

Rylander Eklund, A., Navarro Aguiar, U., and Amacker, A. (2022). Design thinking as sensemaking: Developing a pragmatist theory of practice to (re)introduce sensibility. Journal of Product Innovation Management, 39(1), 24-43. Available at: Design thinking as sensemaking: Developing a pragmatist theory of practice to (re)introduce sensibility

Sabatier, P. A. and Jenkins-Smith, H. C. (Eds.). (1993). Policy change and learning: an advocacy coalition approach. Boulder, CO: Westview Press.

Sahakian, J. and BenMahmoud-Jouini, S. (2023). Building design as a dynamic capability: A model for design integration. Journal of Product Innovation Management, 40(5), 733-758. Available at: Building design as a dynamic capability: A model for design integration

Salinas, L. (2022). Designing for local policy: exploring preferable futures in the UK. Policy Design and Practice, 5(4), 516-528. Available at: Designing for local policy: exploring preferable futures in the UK

Sangiorgi, D. and Prendiville, A. (Eds.). (2017). Designing for service: Key issues and directions. London: Bloomsbury.

Sangiorgi, D., Lima, F., Patrício, L., Joly, M.P., and Favini, C. (2019). A human-centred, multidisciplinary, and transformative approach to service science: A service design perspective. In: Maglio, P.P., Kieliszewski, C.A., Spohrer, J.C., Lyons, K., Patrício, L., and Sawatani, Y. (Eds.). Handbook of Service Science, Volume II. Service Science: Research and Innovations in the Service Economy. Springer, Cham. Available at: A human-centred, multidisciplinary, and transformative approach to service science: A service design perspective

Sangiorgi, D., Vink, J., Farr, M., Mulvale, G., and Warwick, L. (2022). Designing as negotiating across logic multiplicity: The case of mental healthcare transformation toward co-design and co-production. International Journal of Design, 16(1), 35-54. Available at: Designing as negotiating across logic multiplicity: The case of mental healthcare transformation toward co-design and co-production (PDF file. Size 1.77MB)

Sarre, S., Maben, J., Griffiths, P., Chable, R., and Robert, G. (2019). The 10-year impact of a ward-level quality improvement intervention in acute hospitals: a multiple methods study. Health and Social Care Delivery Research 7(28), 1-172. Available at: The 10-year impact of a ward-level quality improvement intervention in acute hospitals: a multiple methods study

Saward, M. (2021). Democratic design. Oxford, UK: Oxford University Press.

Scottish Government (2019). The Scottish approach to service design. Available at: The Scottish Approach to Service Design

Schön, D. A. (1983). The reflective practitioner. New York: Basic Books.

Seravalli, A., Eriksen, M. A., and Hillgren, P. A. (2017). Co-Design in co-production processes: jointly articulating and appropriating infrastructuring and commoning with civil servants. CoDesign, 13(3), 187-201. Available at: Co-Design in co-production processes: jointly articulating and appropriating infrastructuring and commoning with civil servants

Sevaldson, B. (2011). GIGA-Mapping: Visualisation for complexity and systems thinking in design. Nordes 2011. Making Design Matter, May 29th to 31st, School of Art and Design, Aalto University, Helsinki, Finland. Available at: GIGA-Mapping: Visualisation for complexity and systems thinking in design

Sevaldson, B. and Jones, P. (2019). An interdiscipline emerges: Pathways to systemic design. She Ji: The Journal of Design, Economics, and Innovation, 5(2), 75-84. Available at: An interdiscipline emerges: Pathways to systemic design

Simon, H. (1996). The Sciences of the Artificial. 3rd edition. Cambridge: MIT Press.

Siodmok, A. (2014). Designer policies. RSA Journal, 4, 24-29. Available at: Designer policies

Sloane, M. (2019). On the need for mapping design inequalities. Design Issues, 35(4), 3-11. Available at: On the need for mapping design inequalities

Stappers, P. J. (2021). Map of systems thinking in science, engineering and design. Available at: Map of systems thinking in science, engineering and design (PDF file. Size 20.8MB)

Starostka, J., De Goetzen, A., and Morelli, N. (2022). Design thinking in the public sector: a case study of three Danish municipalities. Policy Design and Practice, 5(4), 1–12. Available at: Design thinking in the public sector: a case study of three Danish municipalities

Steen, M., Manschot, M., and De Koning, N. (2011). Benefits of co-design in service design projects. International Journal of Design, 5(2). Available at: Benefits of co-design in service design projects (PDF file. Size 592KB)

Steinberg, M. (2016). Strategic design and the art of public sector innovation. In: Bason, C. (Eds.). Design for Policy, 87-100. Gower Publishing. Available at: Strategic design and the art of public sector innovation

Stopher, B., Fass, J., Verhoeven, E., and Revell, T. (2021). Design and digital interfaces: Designing with aesthetic and ethical awareness. London: Bloomsbury.

Storvang, P., Jensen, S., and Christensen, P. R. (2014). Innovation through design: A framework for design capacity in a Danish context. Design Management Journal,

9(1), 9-22. Available at: Innovation through design: A framework for design capacity in a Danish context

Tang, T., Vezzani, V., and Eriksson, V. (2020). Developing critical thinking, collective creativity skills and problem solving through playful design jams. Thinking Skills and Creativity, 37, 100696. Available at: Developing critical thinking, collective creativity skills and problem solving through playful design jams

Tavory, I., and Timmermans, S. (2014). Abductive analysis: Theorizing qualitative research. Chicago: University of Chicago Press.

Teece, D.J., Pisano, G., and Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509-533. Available at: Dynamic capabilities and strategic management

Teinaki, V. (2022). A brief history of the Service Standard. Blog post, 2nd November. Available at: A brief history of the Service Standard

Thandlam Sudhindra, S. and Blessing, T.M. (2021). A framework for design competency assessment. In: Proceedings of the International Conference on Engineering Design (ICED21), Gothenburg, Sweden, August 16th to 20th. Available at: A framework for design competency assessment

Thorpe, A. and Rhodes, S. (2018). The public collaboration lab: Infrastructuring redundancy with communities-in-place. She Ji: The Journal of Design, Economics, and Innovation, 4(1), 60-74. Available at: The public collaboration lab: Infrastructuring redundancy with communities-in-place

Tõnurist, P., Kattel, R., and Lember, V. (2017). Innovation labs in the public sector: what they are and what they do? Public Management Review, 19(10), 1455-1479. Available at: Innovation labs in the public sector: what they are and what they do?

Triggs, T. and Atzmon, L. (2019). The graphic design reader. London: Bloomsbury.

Trippe, H.P. (2021). Policy instrumentation: The object of service design in policymaking. Design Issues, 37(3), 89-100. Available at: Policy instrumentation: The object of service design in policymaking

Trischler, J. and Scott, D.R. (2016). Designing public services: The usefulness of three service design methods for identifying user experiences. Public Management Review, 18(5), 718-739. Available at: Designing public services: The usefulness of three service design methods for identifying user experiences

Trischler, J., Dietrich, T., and Rundle-Thiele, S. (2019). Co-design: from expert-to user-driven ideas in public service design. Public Management Review, 21(11), 1595-1619. Available at: Co-design: from expert-to user-driven ideas in public service design

University of the Arts London (2020). Valuing practice and practitioners in fashion research. Social Design Institute. Available at: Valuing practice and practitioners in fashion research (PDF file. Size 4.24MB)

Vaajakallio, K., Lee, J.J., Kronqvist, J., and Mattelmäki, T. (2013). Service co-design with the public sector: Challenges and opportunities in a healthcare context. In: 7th Conference of Include Asia (Vol. 30). Available at: Service co-design with the public sector: Challenges and opportunities in a healthcare context

Valtonen, A. and Nikkinen, P. (Eds.). (2022). Designing change: New opportunities for organisations. Espoo: Aalto University.

van Buuren, A., Lewis, J.M., Peters, B.G., and Voorberg, W. (2020). Improving public policy and administration: exploring the potential of design. Policy and Politics, 48(1), 3–19. Available at: Improving public policy and administration: exploring the potential of design

Verganti, R., Vendraminelli, L., and Iansiti, M. (2020). Innovation and design in the age of artificial intelligence. Journal of Product Innovation Management, 37(3), 212-227. Available at: Innovation and design in the age of artificial intelligence

Villa Alvarez, D.P., Auricchio, V., and Mortati, M. (2022). Mapping design activities and methods of public sector innovation units through the policy cycle model. Policy Sci, 55, 89-136. Available at: Mapping design activities and methods of public sector innovation units through the policy cycle model

Vink, J., Edvardsson, B., Wetter-Edman, K., and Tronvoll, B. (2019). Reshaping mental models: Enabling innovation through service design. Journal of Service

Management, 30(1), 75-104. Available at: Reshaping mental models: Enabling innovation through service design

Vink, J., Koskela-Huotari, K., Tronvoll, B., Edvardsson, B., and Wetter-Edman, K. (2021). Service ecosystem design: propositions, process model, and future research agenda. Journal of Service Research, 24(2), 168-186. Available at: Service ecosystem design: propositions, process model, and future research agenda

von Busch, O. and Palmås, K. (2023). The corruption of co-design. Political and social conflicts in participatory design thinking. New York: Routledge. Available at: The corruption of co-design. Political and social conflicts in participatory design thinking

Wilkie, A. and Michael, M. (2015). The design studio as a centre of synthesis. In: I. Farías and A. Wilkie (Eds.), Studio Studies. London: Routledge.

Walker, S. (2017). Research in graphic design. The Design Journal, 20(5), 549-559. Available at: Research in graphic design

Wellstead, A.M., Gofen, A., and Carter, A. (2021). Policy innovation lab scholarship: past, present, and the future. Introduction to the special issue on policy innovation labs. Policy Design and Practice, 4(2), 1-16. Available at: Policy innovation lab scholarship: past, present, and the future

Williams, O., Lindenfalk, B., and Robert, G. (2023). New development: Mitigating and negotiating the co-creation of dis/value. Elinor Ostrom's design principles and co-creating public value. Public Money and Management, 43(1), 45-50. Available at: New development: Mitigating and negotiating the co-creation of dis/value

Winograd, T. and Flores, F. (1986). Understanding computers and cognition: A new foundation for design. Intellect Books.

World Economic Forum (2016). The future of jobs. Employment, skills and workforce strategy for the fourth industrial revolution. Global Challenge Insight Report. Davos: WEF. The future of jobs (PDF file. Size 9.6MB)

Wright, P., Wallace, J., and McCarthy, J. (2008). Aesthetics and experience-centered design. ACM Transactions on Computer-Human Interaction, 15(4). Available at: Aesthetics and experience-centered design

Wrigley, C., Nusem, E., and Straker, K. (2020). Implementing design thinking: understanding organizational conditions. California Management Review, 62(2), 125-143. Available at: Implementing design thinking: understanding organizational conditions

Yeo, Y., Lee, J.J., and Yen, C.C. (2023). Mapping design capability of governments: A tool for government employees' collective reflection. International Journal of Design, 17(1), 17-35. Available at: Mapping design capability of governments: A tool for government employees' collective reflection

Yu, E. and Sangiorgi, D. (2018). Service design as an approach to implement the value cocreation perspective in new service development. Journal of Service Research, 21(1), 40-58. Available at: Service design as an approach to implement the value cocreation perspective in new service development

Zahra, S.A. and George, G. (2002). Absorptive capacity: A review, reconceptualization and extension. Academy of Management Review, 27, 185-203. Available at: Absorptive capacity: A review, reconceptualization, and extension (PDF file. Size 16.2MB)