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# Prototyping and the new spirit of policy-making

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## ABSTRACT

This conceptual paper discusses the use of Co-Design approaches in the public realm by examining the emergence of a design practice, prototyping, in public policy-making. We argue that changes in approaches to management and organisation over recent decades have led towards greater flexibility, provisionality and anticipation in responding to public issues. These developments have co-emerged with growing interest in prototyping. Synthesising literatures in design, management and computing, and informed by our participant observation of teams inside government, we propose the defining characteristics of prototyping in policy-making and review the implications of using this approach. We suggest that such activities engender a 'new spirit' of policy-making. However, this development is accompanied by the further encroachment of market logics into government, with the danger of absorbing critiques of capitalism and resulting in reinforced power structures.

## ARTICLE HISTORY

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High level concepts are essentially early stage policies. Does government provide this or not? Does government pay for this? Do we outsource this? Do we provide this to [everyone]? Who should our target audiences be? How do we segment our [users]? These are strategic and policy questions rather than development or delivery questions. These are the things that are flushed out during our ... prototyping and our concept testing. (Civil Servant 2016)

## 1. Introduction

In Dubai, an exhibition invites visitors to experience potential future government services.<sup>1</sup> In Brussels, people from European Commission directorates try out using design methods to explore problems and potential solutions in several policy domains. In a London studio, a group of policy-makers, design consultants, and potential service users from a charity review a proposal sketched out on paper on the walls. Such are some of the current manifestations of how policy solutions to public issues are being 'prototyped' within government.

Practices associated with design are increasingly visible within government, typically associated with public, often digital, service design (Bason 2014). For example, the award-winning UK Government Digital Service's guidelines advocate that projects begin by understanding 'user needs' (Government Digital Service 2016a) and proceed through 'agile'

approaches (2016b). Reports from organisations within or close to government have argued for an increasing role for design in the development of public services and policy (e.g. Design Commission 2013; Design Council 2013; European Commission 2013). Examples of such practice come from local, regional and central government (e.g. La Region 27 2016), health care (e.g. Robert and Macdonald 2017), social innovation (e.g. Ehn, Nilsson, and Topgaard 2014; Binder et al. 2015), and experiments with digital platforms, jams and hackathons (e.g. Lodato and DiSalvo 2016). Approaches, methods and techniques used include interviewing or doing field studies of users, creating personas, visually mapping customer journeys, making and reviewing mock-ups of future services, devices or artefacts, organising cycles of feedback and iteration, and stakeholder engagement. Although many such methods and techniques were developed within commercial contexts, there is an established dialogue with Participatory Design, informed by its historical political commitment to involving workers (Simonsen and Robertsen 2012), adapted to engage citizens—the targets of policy—as well as public servants and front-line staff who are involved in developing or implementing policy or who have expertise in an issue. Critics of these developments (e.g. von Busch and Palmås 2016) point to the danger of design diminishing dissent and uncritical support of elites.

It is important to distinguish between designing public *policy* and designing public *services*. The former can be understood as entailing a government's<sup>2</sup> intent and its activities directed towards achieving specific outcomes. Policy-making involves mediating between resources in response to a situation deemed to be a public policy issue, in relation to diverse publics with varying degrees of agency, legitimacy and motivation to address it (e.g. Sabatier 2006; Mulgan 2009). The ways government actors try to accomplish policy intent can include passing laws, publishing regulations, commissioning or running public services, and stimulating business or civil society to provide solutions (e.g. by providing funding or publishing data)—or doing nothing. In contrast, services might result from—or failures in their design or delivery might lead to—public policy.

Of the approaches associated with design, prototyping presents interesting challenges for practitioners to implement and for researchers to study (e.g. Bason 2014; Drew 2016). Whereas policy teams can commission 'user' research about citizens and stakeholders and get help in organising Co-Design workshops, the exploration of policy options through prototyping touches more directly on organisational capabilities in government, democratic commitments and political agendas. What are the possibilities afforded by prototyping in the development of public policy? What issues emerge in the migration of this practice into public administration and democratic deliberation? To answer these questions, we review several fields to analyse what prototyping might be expected to achieve in policy-making. While not using case studies, our research is informed by both authors' research and consultancy which is co-produced with civil servants active in making policy in the UK government.

We begin by noting how changes in management and organisation have shaped the emergence of prototyping. Reviewing these developments, Boltanski and Chiapello (2005) identified a 'new spirit of capitalism'. We then discuss literatures in design, management and computing to offer a genealogy of prototyping, identifying key characteristics. Finally, having explored literature on design in policy, we propose a framework for describing and assessing prototyping in policy-making, as a basis for further conceptual and empirical research. The result is a normative account of what prototyping might be expected to achieve in public policy-making and a discussion of the implications. We conclude by cautioning against the

co-option or neutralising of dissent associated with this ‘new spirit of policy-making’, while recognising the generative potential of these practices.

## 2. Setting the scene

Recent decades have seen many attempts to understand changes in the public realm, informed by economic, political, geographical, sociological and historical thinking (e.g. Lash and Urry 1988; Jasanoff 2004; Thrift 2005; Boltanski and Chiapello 2005; Harvey 2014). Some efforts have been prompted by an event, such as the financial crisis of 2008. No doubt others are on their way with growing support for populist policies, and following a number of unexpected election results.

Simple distinctions between ‘public’ and ‘private’ do not bear scrutiny when viewed against the backdrop of how public policy and services are actually developed, delivered and evaluated in market democracies (Dunleavy et al. 2005; Julier 2017). Commercial firms are sub-contracted to provide back office and customer-facing functions within the delivery of public services while independent voluntary organisations offer social services within a complex ecosystem of provision. It is difficult to disentangle public and private after decades in which governments have introduced market-based methods of organising into public administration. In what follows, we review the landscape within which design expertise has become more visible as a capability for public policy.

The first theme in this changing landscape is flexibility. In their discussion of contemporary capitalism, sociologists Lash and Urry (1988) emphasised its spatial re-organisation. They explored the links between what they saw as the increasing ‘disorganization’ of industrial capitalism and the diminution of resistance to it, such as the decline of unions. They noted the decentring of identity, the loosening of structures and an associated pluralist political culture. Capitalism operates flexibly, responding globally as well as locally to changing conditions (Harvey 2014).

A second theme in discussion about contemporary organisations, as new ways of ordering relations emerge, is provisionality. Boltanski and Chiapello (2005) studied how concepts from management literature were translated into business practice, highlighting project-based ways of organising, networks and flat hierarchies. They argued that capitalist accumulation proceeds through co-opting resistance to its ideology. Work practices adapted so that criticism of capitalism could be assimilated into, and become implicated in, accumulation.

A third theme is anticipation. In his description of a ‘cultural circuit’ of capitalism, Thrift (2005) suggested how, through new practices of creativity, things that were previously invisible were now visible. He argued that managers were no longer organisers but expected to be change agents, and that the activity of managing was produced across many new sites, at multiple scales and often rapidly. For Thrift, organisational practices, intertwined with technological developments, presented what he called ‘spaces of anticipation’: ‘a set of becomings which kept the possible possible and thereby initiated a new style of doing business’ (Thrift 2005, 128). Other accounts of innovation also emphasise the processes through which knowledge, identities and categories are configured (Jasanoff 2004).

Such developments have affected government and the public sector. A dominant narrative around policy-making highlights its failures in the face of complex societal challenges (e.g. Clarke 2014). Public servants, politicians and stakeholders seem to continually seek

new policy-making approaches. This has led to a range of developments, notably a shift to market-based modes of organising via ‘New Public Management’ (Dunleavy et al. 2005). The ‘Open Government’ agenda pushes public servants to use new methods to engage stakeholders, gather data, and experiment before implementing policy (Breckon 2015; Opening Governance 2016). Others (e.g. Stephens and Downe 2016) propose a role for government in providing platforms and data for citizens and business to co-produce services, alongside social innovation (Nicholls and Murdock 2011) and social entrepreneurship (Nicholls 2008). These developments both produce, and result from, flexibility, provisionality and new spaces of anticipation within public policy-making.

As a result, the characteristics of public and private are blurred by ongoing developments in approaches to management and organisation. This blurring has enabled the expansion of design into new domains, shaping the participation of citizens, voluntary groups and businesses in exploring public policy issues and developing solutions to them alongside, or instead of, governments. In this context, design has become more visible and legitimised as a distinctive professional capacity interacting with new organisational circuits—although accompanied, too, by the danger of the absorption of dissent.

### 3. Genealogies

To think through prototyping in policy-making, we first review accounts of the approach to identify its characteristics, which we discuss in terms of logics, uses, pace, objects and participants. The word prototype means the first or earliest form of its type. The ‘type’ is a means of classifying the world, as in archetypes, stereotypes and prototypes (Gero 1990). In cognitive science (e.g. Osherson and Smith 1981) the prototype is a mode of graded categorisation, where some members of a category are more central than others.

Prototyping developed in several fields, such as computing (Mayhew and Dearnley 1987), product design (Sanders and Stappers 2014b), and interaction design (Buchenau and Suri 2000). Practices analogous to prototyping exist in many domains: maquettes, scale models and blueprints in architecture; sketches and cartoons in painting; and pattern-cutting in fashion. These traditions have resulted in a proliferation of terminologies and classifications (e.g. Floyd 1984; Law 1985; Wood and Kang 1992).

Researchers stress the exploratory and provisional nature of prototyping. Within product design, prototypes are ‘artifacts that are holistic precursors of the final product’ (Sanders and Stappers 2014a, 1). Mayhew and Dearnley (1987, 22) define a prototype as ‘a working model, albeit crude and incomplete, speedily constructed’. Prototyping mediates existing knowledge and anticipates possible futures. Chow (2013, 165) says prototyping is a way of ‘knowing the abstract in a way not possible without it’. Stappers calls prototypes ‘things we make to find out things’ (Stappers 2013, 85). For some researchers, prototyping is ongoing, suggesting an erosion of the boundary between prototype and final object (Floyd 1984).

In engineering, prototyping via additive manufacturing (e.g. 3D printing) emphasises materialising designs to assess them before committing further investment. This avoids wasting resources but also reorganises supply chains (Kruth, Leu, and Nakagawa 1998). In social innovation, prototyping is conceived of as opening up production and consumption (Hillgren, Seravalli, and Emilson 2011). Schwartz (2013, 116) draws attention to a dualism between craft and industrial production, where craft plays the role of subordinate ‘other’ to mass manufacturing’s ideals of autonomous rationality within the logic of capitalist

modernity. This highlights a tension between a prototype being on the one hand original, provisional and anticipatory, but at the same time aspiring to being a replicable ideal. The potential for prototyping in policy-making therefore depends on whether policy-making is understood as creative, contingent and emergent or rational, linear and reproducible.

#### 4. The new experimentalism

Prototyping coexists with developments in other fields including strategy, operations management, innovation and entrepreneurship, which in different ways embody the abovementioned characteristics of capitalism through iteratively testing ideas early on with customers, users and staff. Schrage (2014) argues for ‘business experiments’ to test ideas during strategy development. Hatchuel (2001) describes organisations using ‘learning devices’ to develop strategic responses to changes in their environment. In operations management, cycles of continuous improvement associated with the Toyota Production System have been widely applied within manufacturing (Womack, Jones, and Roos 1990; Liker 2004). Learning cycles such as ‘PDSA’ (plan, do, study, act) from manufacturing have been taken up in services such as health care (IHI 2017). Variants of lean management adapted for entrepreneurs have popularised the idea of defining a ‘minimum viable product’ and testing it early with customers (Ries 2011). In organisational development, Coughlan, Suri, and Canales (2007) discuss using prototypes to spark behaviour change within a workforce.

Looking across these developments, some researchers argue that prototyping is emblematic of the contemporary condition. Corsín Jiménez (2014, 381) describes an ‘anthropology of prefiguration ... built on collaboration, provisionality, recycling, experimentation and creativity’. This, he argues, is a new mode of experimentalism. Instead of being a ‘closed system against which scientists sought a theory’s justification’ (385), it involves rearranging artefacts and ‘tinkering’ with social relationships in an open-ended way.

Such experimentalism is also evident in public administration, he argues: ‘In political organisation, the languages of openness and open-endedness, of provisionality and experimentation, are thus taking hold as models for cultural practice’ (Corsín Jiménez 2014, 382). For example these practices are more evident with the penetration of agile practices and terminology—‘discovery-alpha-beta-live’—into public administration routines (Norris and Rutter 2016, 9). The growing emphasis on experimentation prefigures and carves out a space for prototyping in policy development as a particular mode of enacting organisational flexibility, provisionality and anticipation.

#### 5. Design for and in policy

While there is little research to date on prototyping in the context of policy, there is a growing body of literature on design in policy-making which examines the use of ‘design’ approaches in policy teams and the deliberate building up of this capability, often in ‘policy labs’ (e.g. Kimbell 2015). As yet there are few intersections of research in studies of government and politics concerned with theorising policy design (e.g. Sabatier 2006; Howlett 2015). One of the pioneers, Bason (2014, 6), reflects:

One could argue that the political, ideological and sometimes abstract nature of public policies make them unfit for design practices which are concerned with that which is attractive, functional and meaningful to people in practice. While the ability to give shape to abstract



concepts and ideas is a core design skill, can designers come to terms with the sheer scale, interdependence and complexity of public problems? Can they contribute to the domains of law and governance?

Bason's (2014) view is that design practice offers a different way of understanding policy problems, due to its hybrid blend of research methods from other disciplines such as anthropology, systems thinking and data science, by engendering collaboration between different parties and by making policy tangible and graspable. Christiansen and Bunt (2014, 42) characterise the usefulness of design as reducing the distance between policy and implementation; generating new ideas; understanding better the 'architecture' of a problem; and providing legitimacy for experimentation. Other authors make a similar claim that design's capacity to handle complexity and non-rational problem solving (Mintrom and Luetjens 2016, 3) might enable policy-makers to 'muddle through in a step-by-step manner' (Hobday, Boddington, and Grantham 2012, 278).

In contrast, Kimbell (2016) notes the opportunity for design expertise to operate in a 'challenge mode' in relation to policy practice. Rather than always servicing policy-making, it problematises current practice. Bailey and Lloyd (2016) find that the promise of design is not so clear-cut, but is modulated by organisational ways of knowing and performing competence and intelligence. Rosenqvist and Mitchell (2016) argues design can only work towards making governance visible if designers understand the nature and orders of governance.

In conclusion, the adoption of design practices into policy settings has received mixed assessments. On the one hand, designerly methodologies are seen as having the potential to improve public policy-making. On the other hand, design's traditional focus on experiences and serendipitous creativity neglects deep understanding of government systems, and may be at odds with prevailing organisational cultures and practices. These tensions inform any assessment of the potential for using prototyping in policy-making.

## 6. Prototyping in policy-making

Building on this discussions and our participant observation with policy teams, we now propose a tentative account of the opportunities afforded by prototyping policy (see Table 1). Based on a thematic review of studies of prototyping, we review its logics, uses, pace, objects and participants. We then discuss the issues that emerge through the adoption of this practice inside government.

### 6.1 Logics

Differences in experimental logics and organisational conditions shape the possibilities of prototyping (Huppertz 2015). For example, a design science perspective sees prototyping as validating a set of requirements within a systematic process, helping evaluate and eliminate options (Gero 1990). In contrast, an exploratory version of prototyping sees it as an inventive 'moment of synthesis' (Wilkie and Farias 2015) punctuating a design process which [re]-assembles current and future actors, artefacts, practices, identities and outcomes. A design science perspective can create evidence to inform and evaluate proposed policies. In so doing it may compete with or complement other kinds of evidence-production. In contrast, exploratory prototyping can open up engagement with and deliberation around issues and solutions, revealing how they are structured and anticipating new configurations. But, this

**Table 1.** Opportunities and implications of prototyping public policy.

Theme	Opportunities	Implications
Experimental logic	Enabling selection between options	Coexists with other approaches to produce evidence
Uses	Opening up issues and reconfiguring constituent elements	Requires an extended encounter with ambiguity
	Exploring uncertain or ill-defined issues	Can be used during different phases of the policy cycle
Pace	Validating requirements	
	Generating understanding of operational and delivery implications	
	Communicating with and engaging stakeholders	
Objects	Fast: validating the user experience of a proposal	Suits often short timescales of policy development
	Slow: exploring adaptation and fit within a complex ecosystem	Challenges current ways of working
Participants	Emphasising interactions with artefacts associated with policy issues and solutions, through which citizens, staff and stakeholders experience a policy intervention	Requires local knowledge of policy ecosystems, implementation and delivery and of formal policy development
	Engaging citizens, beneficiaries, staff, volunteers and professionals including those with perspectives on an issue, delivery and acceptability	Visual, material and performative methods may struggle for legitimacy
		Requires clear intersections with formal decision-making routines and governance structures

may challenge governments' organisational routines because of the extended encounter with ambiguity involved.

## 6.2 Uses

Sanders and Stappers (2014b) argue prototyping is more relevant at the later stages of the design process, after a design opportunity has been identified. Others have found uses for prototyping throughout a change process. Prototyping can be used to: elicit, explore and establish requirements (Wood and Kang 1992); to probe uncertain or complex contexts where an analytical approach cannot reveal the solution (Chow 2013); to understand existing user experiences (Buchenau and Suri 2000); and to support idea generation (Halse 2014).

In the later stages of a design process, prototypes are used to: test, validate and improve ideas by allowing for 'micro-failures' (Coughlan, Suri, and Canales 2007); to evaluate function, structure and behaviour; to assess performance, hardware, ergonomics and organisational fit; or to assess designs before committing to organisational changes (Mayhew and Dearnley 1987; Gero 1990; Houde and Hill 1997). Prototypes can help communicate an idea or proposed solution (Halse 2014) or stimulate discussion and debate and engage stakeholders (Franzato 2011).

These uses fit within the typical policy development phases of agenda setting, policy design and implementation (Howlett and Ramesh 2003). Prototyping might be used in all phases: to produce insights about issues from different perspectives and about problem structures; to engage a broad constituency in generating and evaluating options and their implications; and to explore future directions. As long as advocates of prototyping can



demonstrate positive impacts and effective use of resources in terms that make sense to participants, prototyping has the potential to contribute at multiple points in the policy cycle.

### 6.3 Pace

While some accounts of prototyping stress its ability to quicken the pace of development, in some contexts ‘slow’ prototyping is valued. An account of participatory design in response to social issues (Björgvinsson, Ehn, and Hillgren 2010, 41) makes a distinction between ‘fast’ and ‘slow’ prototyping. For these researchers, fast prototyping aims to validate the proposed user experience of a future service. In contrast, slow prototyping enables exploration of the adaptability and fit of an idea to a particular place and group of people, giving time to establish social infrastructures and explore issues collectively. Hillgren, Seravalli, and Emilson (2011, 2) conceive of prototyping as creating an agonistic space: ‘a vehicle that raises questions and reveals both opportunities and dilemmas’.

Speeding things up is likely to appeal to policy-makers more than slowing things down, even if the latter results in building constituencies of support, generating buy-in and avoiding going in directions that will not work. A challenge is whether multiple, iterative cycles of prototyping can fit with the intensities and rhythms associated with policy processes and politics. For example it is probably quicker to write a short brief for a minister than to prototype a concept, although prototyping might save time over the course of a whole cycle. Further, although rapid prototyping may provide a compelling proof of concept, it may overpromise or actively mislead as to the deliverability of an idea in a complex environment, understating the degree of social ‘infrastructuring’ required.

### 6.4 Objects

The traditional object of prototyping is a physical or digital artefact. But attention has shifted towards the prototyping of experiences or services, which unfold over time and involve multiple actors (Sangiorgi and Prendiville 2017). In social design, Sanders (2013) describes using prototyping to explore different routes to achieving a particular intention—for example systems or behaviour change. Hillgren, Seravalli, and Emilson define the object as ‘socio-material relations where matters of concern can be dealt with’ (2011, 6). Wilkie (2013) describes the ‘object’ of prototyping as assemblages of issues, artefacts, users and solutions.

Acknowledging the entanglement of objects and interfaces in systems and processes helps reveal the contingency that is central to policy-making. In public administrations, the focus on materialising concepts, especially the interactions that people have with systems, enables participants in prototyping to understand and assess how a policy might be experienced and implications of policy delivery. However, while prototyping can be attentive to the social practices that a policy intervenes into, a policy is a complex assemblage. A challenge for policy designers is to be able to work at different scales and engage effectively with the politics, complexity and systemic nature of policy development.

### 6.5 Participants

In product or digital development, designers typically organise prototyping and consult with a range of users, organisational functions, suppliers and customers (Houde and Hill

1997). Prototyping in the context of social innovation, services or systems assumes a broad constituency of participants. In government contexts, prototyping's emphasis on making and materialising concepts can support and extend traditional consultation activities and enable them to be more generative. Prototyping enables public servants to engage the wider policy ecosystem including users, citizens and beneficiaries, experts in a particular domain, and those involved in delivering a policy solution such as service providers, businesses or front-line staff. This expertise is not common in governments where the traditional mode of communicating policy is through writing briefs, analysis, reports, laws and specifications. Other modes of generating and communicating ideas using visual, performative and material means, while opening up participation, may struggle for legitimacy. These modes can challenge traditional policy-making, which may limit engagement with publics to avoid unwanted attention, contestation or politicisation. This is a contradiction at the heart of open policy-making likely to be particularly acute during prototyping, which engages publics in a very accessible way with unresolved, provisional solutions.

In summary, we propose that prototyping in the context of public policy-making can be a flexible practice within the policy cycle, which closes the gap between policy intent and delivery. Prototyping enables organisational learning by anticipating responses to public policy issues through making models of, and materialising, aspects of provisional solutions, enabling assessment of their delivery, acceptability and legitimacy. Prototyping can assemble and bring into relation a diverse constituency of actors involved in a policy issue, with distinct expertise, perspectives and knowledge. It can co-constitute a situated understanding of issues and how future policies might play out, foregrounding people's experiences of a policy intervention via their material engagement with devices, objects and sites of action, making the practical and political implications of a policy graspable and meaningful.

## 7. Discussion

We now examine the broader implications of prototyping public policy. Prototyping can be seen as a further encroachment of capitalist logic into government manifested in a contemporary condition of organisational flexibility, which anticipates responses to public policy issues and provisional solutions to them. We might see civil servants prototyping policy as evidence of a shift in experimental government, from testing a theory to 'tinkering'—as Corsín Jimenez puts it—with interfaces, social relationships, socio-material arrangements and their politics.

However, prototyping presents as-yet unresolved questions about how a processual, materialised and local understanding of problems and solutions intersects with formal democratic structures and processes. It is unclear how small-scale prototyping can relate to concurrent forms of democratic participation producing 'mass' policies that can be delivered at scale. Further, prototyping practices intersect with other kinds of analysis and experimentation, such as randomised control trials which rely on different logics and routes to legitimacy. Further, as Boltanski and Chiapello argue, the flexibility and provisionality associated with contemporary organising has the potential to absorb critiques of capitalism. Adopted as an organisational practice in government, prototyping can downplay challenges to the dominant neo-liberal consensus, dilute differences in political agency, and mask the politics inherent in deciding who, or what, co-emerges within a prototyping assemblage. Prototyping enacts a local—and possibly temporary—agency for participants in a

policy-making process. But, as von Busch and Palmås argue in their discussion of applying design thinking to public problems, prototyping may also serve to reinforce existing power structures and elites.

A final aspect of this discussion is to acknowledge its limitations. Our analysis is shaped by research about capitalism, public administration and design in Western Europe and North America, which may not be generalisable to other contexts. Further research is needed to review prototyping in other policy ecosystems.

## 8. Conclusion

Prototyping enables public servants making policy to mediate between actualities and potentialities but is not [yet] a legitimate evidence-producing activity, and is uncomfortable because outside of the normal range of practice. It enables flexibility in policy development, keeping things open as provisional solutions are anticipated, developed or rejected. However, policy solutions are inescapably bound up with ideological and political narratives. By revealing the genealogies shaping prototyping practice, we have shown that its characteristics can be reconfigured inside government within a new spirit of policy-making—yet this may not be able to live up to the hopes associated with such participatory, creative endeavours.

## Notes

1. These examples come from activities the authors have been involved in or from interviews.
2. Although political parties are key actors in the policy ecosystem, we focus here on staff in public administrations (i.e. public servants) accountable to ministers (i.e. politicians).

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## References

- Bailey, J., and P. Lloyd. 2016. “The Introduction of Design to Policymaking.” Paper presented at DRS2016: Design Research Society Conference, Brighton, June 27–30.
- Bason, C., ed. 2014. *Design for Policy*. Aldershot: Gower.
- Binder, T., E. Brandt, P. Ehn, and J. Halse. 2015. “Democratic Design Experiments: Between Parliament and Laboratory.” *CoDesign* 11 (3–4): 152–165.

- Björgvinsson, E., P. Ehn, and P.-A. Hillgren. 2010. "Participatory Design and 'Democratizing Innovation.'" Paper presented at 11th Participatory Design Conference (PDC 2010), Sydney, November 29–December 3.
- Boltanski, L., and E. Chiapello. 2005. *The New Spirit of Capitalism*. London: Verso.
- Breckon, J. 2015. *Better Public Services Through Experimental Government*. London: Alliance for Useful Evidence.
- Buchenau, M., and J. F. Suri. 2000. "Experience Prototyping." Proceedings of DIS '00. Brooklyn, New York, August 17–19.
- von Busch, O., and K. Palmås. 2016. "Designing Consent: Can Design Thinking Manufacture Democratic Capitalism?" *Organizational Aesthetics* 5 (2): 10–24.
- Chow, R. 2013. "The RIP + MIX Method and Reflection on its Prototypes." In *Prototype: Design and Craft in the 21st Century*, edited by L. Valentine, 155–168. London: Bloomsbury.
- Christiansen, J., and L. Bunt. 2014. "Innovating Public Policy: Allowing for Social Complexity and Uncertainty in the Design of Public Outcomes." In *Design for Policy*, edited by C. Bason, 41–56. Aldershot: Gower.
- Civil Servant. 2016. Unpublished interview with Lucy Kimbell.
- Clarke, C. 2014. *The 'Too Difficult' Box: The Big Issues Politicians Can't Crack*. New York: Biteback Publishing.
- Corsín Jiménez, A. 2014. "The Prototype: More Than Many and Less Than One." *Journal of Cultural Economy* 7 (4): 381–398.
- Coughlan, P., J. F. Suri, and K. Canales. 2007. "Prototypes as (Design) Tools for Behavioral and Organizational Change." *The Journal of Applied Behavioral Science* 43 (1): 1–13.
- Design Commission. 2013. *Restarting Britain 2. Design and Public Services*. London: Policy Connect.
- Design Council. 2013. *Design for Public Good*. Accessed April 4, 2016. <http://www.designcouncil.org.uk/resources/report/design-public-good>
- Drew, C. 2016. Prototyping a New Health and Work Service. Published February 17, 2016. <https://openpolicy.blog.gov.uk/2016/02/17/prototyping-a-new-health-and-work-service/>
- Dunleavy, P., H. Margetts, S. Bastow, and J. Tinkler. 2005. "New Public Management Is Dead: Long Live Digital-era Governance." *Journal of Public Administration Research and Theory* 16 (3): 467–494.
- Ehn, P., E. M. Nilsson, and R. Topgaard. 2014. *Making Futures: Marginal Notes on Innovation, Design, and Democracy*. Boston, MA: MIT Press.
- European Commission. 2013. *Implementing an Action Plan for Design-Driven Innovation*. Brussels: European Commission.
- Floyd, C. 1984. "A Systematic Look at Prototyping." In *Approaches to Prototyping*, edited by R. Budde, K. Kuhlenkamp, L. Mathiassen, and H. Zullighoven, 1–18. Heidelberg: Springer-Verlag.
- Franzato, C. 2011. "Design as Speculation." *Design Philosophy Papers* 9 (1): 23–39.
- Gero, J. S. 1990. "Design Prototypes: A Knowledge Representation Schema for Design." *AI Magazine* 11 (4): 26–36.
- Government Digital Service. 2016a. Agile Delivery. Accessed December 4, 2016. <https://www.gov.uk/service-manual/agile-delivery>
- Government Digital Service. 2016b. Start by Learning User Needs. Published April 4, 2016. <https://www.gov.uk/service-manual/user-research/start-by-learning-user-needs>
- Halse, J. 2014. "Tools for Ideation: Evocative Visualization and Playful Modelling as Drivers of the Policy Process." In *Design for Policy*, edited by C. Bason, 199–209. Aldershot: Gower.
- Harvey, D. 2014. *Seventeen Contradictions and the End of Capitalism*. London: Profile Books.
- 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.
- Hillgren, P.-A., A. Seravalli, and A. Emilson. 2011. "Prototyping and Infrastructuring in Design for Social Innovation." *CoDesign* 7 (3–4): 169–183.
- Hobday, M., A. Boddington, and A. Grantham. 2012. "Policies for Design and Policies for Innovation: Contrasting Perspectives and Remaining Challenges." *Technovation* 32: 272–281.
- Houde, S., and C. Hill. 1997. "What Do Prototypes Prototype?" In *Handbook of Human–Computer Interaction*. 2nd ed., edited by M. Helander, T. Landauer, and P. Prabhu, 367–381. Amsterdam: Elsevier Science B. V.

- Howlett, M. 2015. "From Tools to Toolkits in Policy Design Studies: The New Design Orientation Towards Policy Formulation Research." *Policy and Politics* 43 (2): 291–311.
- Howlett, M., and M. Ramesh. 2003. *Studying Public Policy: Policy Cycles and Policy Subsystems*. Toronto: OUP.
- Huppertz, D. 2015. "Revisiting Herbert Simon's 'Science of Design'." *Design Issues* 31 (2): 29–40.
- IHI. 2017. How to Improve. Accessed February 3, 2017. <http://www.ihl.org/resources/Pages/HowtoImprove/default.aspx>
- Jasanoff, S. 2004. *States of Knowledge: The Co-production of Science and the Social Order*. London: Routledge.
- Julier, G. 2017. *Economies of Design*. London: Sage.
- Kimbell, L. 2015. *Applying Design Approaches to Policymaking: Discovering Policy Lab*. Brighton: University of Brighton.
- Kimbell, L. 2016. "Design in the Time of Policy Problems." Paper presented at DRS2016: Design Research Society Conference, Brighton, June 27–30.
- Kruth, J. P., M. C. Leu, and T. Nakagawa. 1998. "Progress in Additive Manufacturing and Rapid Prototyping." *CIRP Annals – Manufacturing Technology* 47 (2): 525–540.
- La Region 27. 2016. A Lab to Transform Public Policies. Accessed December 3, 2016. <http://www.la27eregion.fr/en/>
- Lash, S., and J. Urry. 1988. *The End of Organized Capitalism*. Cambridge: Polity Press.
- Law, D. 1985. *Prototyping: A State of the Art Report*. Manchester: NCC.
- Liker, J. 2004. *The Toyota Way*. New York: McGraw Hill.
- Lodato, T., and C. DiSalvo. 2016. "Issue-oriented Hackathons as Material Participation." *New Media and Society* 18 (4): 539–557.
- Mayhew, P. J., and P. A. Dearnley. 1987. "An Alternative Prototyping Classification." *The Computer Journal* 30 (6): 481–484.
- Mintrom, M., and J. Luetjens. 2016. "Design Thinking in Policymaking Processes: Opportunities and Challenges." *Australian Journal of Public Administration* 75: 391–402.
- Mulgan, G. 2009. *The Art of Public Strategy*. Oxford: Oxford University Press.
- Nicholls, A. 2008. *Social Entrepreneurship: New Models of Sustainable Social Change*. Oxford: Oxford University Press.
- Nicholls, A., and A. Murdock, eds. 2011. *Social Innovation: Blurring Boundaries to Reconfigure Markets*. Basingstoke: Palgrave MacMillan.
- Norris, E., and J. Rutter. 2016. *Learning the Lessons from Universal Credit*. Institute for Government. Accessed December 3, 2016. <http://www.instituteforgovernment.org.uk/publications/learning-lessons-universal-credit>
- Opening Governance. 2016. MacArthur Foundation Research Network on Opening Governance. Accessed December 3, 2016. <http://www.opening-governance.org>
- Osherson, D. N., and E. E. Smith. 1981. "On the adequacy of Prototype Theory as a Theory of Concepts." *Cognition* 9 (1): 35–58.
- Ries, E. 2011. *The Lean Start Up. How Relentless Change Creates Radically Successful Businesses*. New York: Crown Business.
- Robert, G., and A. Macdonald. 2017. "Co-Design, Organisational Creativity and Quality Improvement in the Healthcare Sector: 'Designerly' or 'Design-like'?" In *Designing for Service: Key Issues and Directions*, edited by D. Sangiorgi and A. Prendiville, 117–129. London: Bloomsbury.
- Rosenqvist, T., and C. Mitchell. 2016. "Redesigning Governance – A Call for Design Across Three Orders of Governance." Paper presented at DRS2016: Design Research Society Conference, Brighton, June 27–30.
- Sabatier, P. A., ed. 2006. *Theories of the Policy Process*. 2nd ed. Boulder: Westview Press.
- Sanders, Elizabeth B.-N. 2013. "Prototyping for the Design Spaces of the Future." In *Prototype: Design and Craft in the 21st Century*, edited by L. Valentine, 59–74. London: Bloomsbury.
- Sanders, Elizabeth B.-N., and Pieter Jan Stappers. 2014a. "Editorial." *CoDesign* 10 (1): 1–4.
- Sanders, Elizabeth B.-N., and Pieter Jan Stappers. 2014b. "Probes, Toolkits and Prototypes: Three Approaches to Making in Co-Designing." *CoDesign* 10 (1): 5–14.

- Sangiorgi, D., and A. Prendiville. 2017. *Designing for Service: Key Issues and Directions*. London: Bloomsbury.
- Schrage, M. 2014. *The Innovator's Hypothesis: How Cheap Experiments are Worth More Than Good Ideas*. Cambridge: MIT Press.
- Schwartz, F. J. 2013. "Prototopia: Craft, Type and Utopia in Historical Perspective." In *Prototype: Design and Craft in the 21st Century*, edited by L. Valentine, 115–124. London: Bloomsbury.
- Simonsen, J., and T. Robertsen, eds. 2012. *International Handbook of Participatory Design*. New York: Routledge.
- Stappers, Pieter Jan. 2013. "Prototypes as a Central Vein for Knowledge Development." In *Prototype: Design and Craft in the 21st Century*, edited by L. Valentine, 85–98. London: Bloomsbury.
- Stephens, A., and L. Downe. 2016. "Government as a Platform." Government Digital Service Blog. Published July 22, 2016. <https://gds.blog.gov.uk/category/government-as-a-platform/>
- Thrift, N. 2005. *Knowing Capitalism*. London: Sage.
- Wilkie, A. 2013. "Prototyping as Event: Designing the Future of Obesity." *Journal of Cultural Economy* 7 (4): 476–492.
- Wilkie, A., and I. Farias, eds. 2015. *Studio Studies: Operations, Topologies & Displacements*. London: Routledge.
- Wood, D., and K. Kang. 1992. *A Classification and Bibliography of Software Prototyping*. Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University.
- Womack, J. P., D. T. Jones, and D. Roos. 1990. *The Machine that Changed the World*. New York: MacMillan Press.