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of policy innovation labs

A Code Acts in Education working paper
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Testing governance: the laboratory lives and methods of policy innovation labs

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Abstract   Public and social innovation labs have proliferated globally. By combining resources and practices from politics, data analysis, media, design, and digital innovation, labs act as experimental R&D labs and practical ideas organizations for solving social and public problems, located in the borderlands between sectors, fields and disciplinary methodologies. Labs are making methods such as data analytics, design thinking and experimentation into a powerful set of governing resources. This working paper analyses the key methods and messages of the labs field, in particular by investigating the documentary history of Futurelab, a prototypical lab for education research and innovation that operated in Bristol, UK, between 2002 and 2010, and tracing methodological continuities through the current wave of lab development. Centrally, the working paper explores Futurelab's contribution to the production and stabilization of a 'sociotechnical imaginary' of the future of education specifically, and to the future of public services more generally, and analyses how such an imaginary was embedded in its 'laboratory life,' established through its organizational networks, and operationalized in its methods of research and development as well as its modes of communication. By taking a historical and genealogical perspective to the study of labs, it becomes clear how their current concerns, ideas and methods have been formed over time in concrete organizational sites and inter-organizational networks. The purpose of the working paper is not to evaluate labs' methods, but to explore the longer continuities of thinking that animate them, their inter-organizational and ideational connections, and in particular to examine the imaginaries or visions of the future of public and social services that they share. Innovation labs are proposing to introduce more experimental methods into strategies of contemporary governance, and testing out new practical ideas and techniques for managing relations between the state and its citizens. Conducting detailed genealogical case studies and situated ethnographic research of the laboratory life within specific labs, as well as documentary analyses of their products and resources, are necessary next steps in social scientific and policy studies of innovation labs.

Keywords   data, design for policy, governance, methods, methodology, public and social innovation labs

1 Introduction

Although 'social labs' have existed in some form for a century, the 'labification' of the policy field has rapidly accelerated since 2010, with policy innovation labs 'applying the principles of scientific labs—experiment, testing and measurement—to social issues' (Price 2014). To give some sense of the scale of labification, in the summer of 2015, a major conference entitled LabWorks was hosted in the UK, bringing together 350 people from labs all around the world. The conference was organized and hosted by the Innovation Lab at Nesta (the UK's National Endowment of Science, Technology and the Arts), which has become a key player in the global circulation of policy lab ideas (Mulgan 2014), and a connective node in a variety of lab networks (i-teams 2014). The Cabinet Office has established Policy Lab UK, a lab at the centre of government. Internationally, GovLab in New York, La 27e Région in France, MindLab in Denmark, MARS in Toronto, Human Experience Lab in Singapore, Kennisland in Amsterdam, and many others are now part of a global movement or constellation of organizations seeking to apply radically new methods to the practices of government. These methods include advanced digital methods derived from the field of technical R&D; data science methods such as social analytics; design-based research methods; and experimental 'test' and 'trial' methods from the fields of behavioural psychology and economics. Labs apply these methods to identify both problems and solutions to social and public problems. Focal concerns include healthcare, urban governance, education, citizen engagement in public services, and government innovation. The labification of public and social policy and governance is significant in bringing particular scientific forms of methodological and technical expertise into the policy process, whilst ostensibly avoiding the politics, values and ideology of conventional policymaking (Kieboom 2014).

Labs go by a number of related terms, such as 'public and social innovation labs' (or 'psilabs'), 'policy innovation labs,' 'social labs,' 'innovation teams' ('i-teams'), 'policy labs,' and 'government innovation labs.' On the social media platform Twitter they trend under the hashtags '#psilabs'. In brief, the policy innovation lab is an organizational hybrid combining elements of the political think tank, media production, disciplinary expertise in social and political science, design and digital R&D. It works by assembling various institutionalized resources from across the academic, political, and commercial domains, and juxtaposing those resources into unique policy packages. Ultimately, the policy innovation lab is perhaps best defined as an experimental R&D lab for solving the social and public problems that vex governments, located in the interstitial borderlands between sectors, fields and disciplinary methodologies. Their practices can be likened to those of think tanks and policy networks (see McGann & Sabatini 2011; Medvetz 2012) in terms of being ideas-producing 'ideational institutions' or 'ideas organizations' that criss-cross sectors (Williamson 2014a), but with added practical problem-solving powers in relation to the governance and management of social issues.

To date labs remain little explored (though see Christiansen 2014 and Kimbell 2015 for insider ethnographies of lab practices, and Williamson 2014b, 2015a, 2015b for documentary analyses of their role in policy debates and processes), and for researchers of public and social policy, such as healthcare, education, and urban governance, they are developing a potentially powerful role within government itself. In particular, they are making methods such as data analytics, design thinking and experimentation into a powerful set of governing resources. Labs have the methodological expertise to understand social problems, get inside the public perspective, and generate insights and ideas for future policy interventions and practices of governance. Their methods are political acts, yet they remain critically under-conceptualized or empirically documented as governing techniques.

2 Lab research

This working paper examines the methods of innovation labs through paying historical and documentary attention to one particular lab. Futurelab was a prototypical innovation lab based in Bristol, UK, operating 2002-10 in the area of educational technology and innovation. It was originally established by Nesta as 'Nesta Futurelab' before becoming independent and rebranding simply as Futurelab. It makes little sense to consider Futurelab as some kind of isolated organization, as if it existed in a decontextualized and de-socialized neutral setting; instead, it needs to be seen as the product of a whole host of intersecting ideas, assumptions, practices, techniques, technologies and human actions, all located in a particular social and political setting. That is to say that Futurelab had a 'laboratory life' (Latour & Woolgar 1986) that shaped what it did and how it presented itself—its methods and ideas and messages. I worked as a researcher at Futurelab from 2002 to 2010; in what follows I want to suggest that by reflecting critically and historically on the complex laboratory life of Futurelab we can begin to trace the kinds of 'futures' it sought to catalyze, the methods through which it did so, and the ideational messages it circulated to make these futures seem possible, plausible, and even preferable. I do so by mixing my own critical reflections on the experience of the laboratory life inside Futurelab with a documentary survey of the online archive of some of its key projects and resources. I also trace connective tissues between Futurelab and other labs to indicate how a specific situated case study can help illuminate wider organizational connections and ideational continuities across the labs field about the governance of social and public institutions.

To adopt terms from the sociological field of science and technology studies (STS), which has fundamentally concerned itself with the complex processes by which any technical innovation becomes assembled, I term these futures 'sociotechnical imaginaries': collectively held, institutionally stabilized, and publicly performed visions of desirable futures that are animated by shared understandings of forms of social life and social order and made attainable through the design of technological projects (Jasanoff 2015). By tracing something of the laboratory life of one particular lab, I suggest that we can examine how its key methods and messages inscribed particular futures, and to indicate how some of these ideas have become collectively shared and stabilized across the labs field as a desirable model of governance. As such, Futurelab can be viewed as producing a particular sociotechnical imaginary of education as a field of governance that can be identified through its combination of key methods and the circulation and adoption of its key messages.

Taking this historical view can help to provide a kind of 'history of the present' of labs—a sense of how different lines of thinking have gradually coalesced and stabilized in the current work of labs—as well as a sense of the 'history of the future' that labs project—how the imaginaries of desirable futures projected by labs have been formed in specific historical contexts. Sociotechnical imaginaries do not appear 'from thin air,' but are gradually constructed, and therefore need to be traced genealogically through the various lines of thinking that have made them seem like desirable future visions to be acted upon in the present. Focusing on Futurelab allows me to follow some of the genealogical threads of the sociotechnical imaginaries that animate contemporary lab practices and methods. This approach does not seek to impute to Futurelab significant influence on the more recent proliferation of labs, but rather more modestly seeks to trace some of the ways in which the current preoccupations of labs have formed over time through a network of connections, juxtapositions and associations between organizations, individual actors and the ideas that animate them. As a nodal case study, Futurelab is indicative of how the labs movement has developed over the last 15 years through particular methodological approaches to the challenges of governance.

3 Lab methods

Innovation labs are a fascinating subject of social scientific research precisely because they position themselves as methodological experts with the appropriate techniques to analyse and respond to social and public issues. It is worth here noting that methods themselves have recently become the subject of critical engagement which resists framing them simply as technical tools but makes their affordances and capacities into the object of social scientific inquiry (Savage 2013). Emerging studies emphasize how methods do more than simply surfacing data about particular social realities. The design of research methods ultimately involves methodological decisions about the design of instruments, the selection of samples, decisions made about analysis, and the interpretations brought to bear on the data. Moreover, methods are underpinned by particular views of the reality to be examined. So, for example, many data science methods are based on the assumption that social reality can be understood through its data; data are viewed as 'statistical facts,' and the more data that are available are therefore seen as producing a richer and more detailed picture of that reality (this is the basic 'realist' logic of big data analysis; see Kitchin 2014). Other, more ethnographic methods, in contrast, tend to see social reality in terms of complex social, cultural and embodied experiences that can only be traced through the 'little data' of up-close observation in the field (Borgman 2015).

Indeed, methods themselves have 'social lives' (Savage 2013): they are designed in particular social settings, by specific actors and their sponsors, to surface particular kinds of data; they are underpinned by particular assumptions, commitments and aspirations; they generate data that are collected in ways that make them available to be interpreted according to specific theoretical frameworks of understanding; and they are predicated on existing views and theories of how social reality works. In other words, methods are both *socially produced* and *socially productive*. *Socially produced* in that methods do not provide an impartial 'view from nowhere' (Jurgenson 2015) but are embedded in distinctive disciplinary approaches and assumptions; and *socially productive* in that methods are consequential to how particular aspects of social reality are known, and to how that reality might therefore be acted upon in order to improve, enhance or modify it (Ruppert, Law & Savage 2013).

The commitment of public and social innovation labs to emerging methods requires critical alertness to the social life of the methods now increasingly being mobilized to make sense of the problems that government faces and to which policymakers are seeking solutions. Policy labs' methodological commitments are to digital R&D, data science and design-based research methods for diagnosing policy problems and generating policy insights and solutions. These methods are detailed in a 'handbook' of lab methods recently edited by the founder of MindLab that advocates a 'design for policy' approach (Bason 2014). It provides research tools for the 'policy designer,' from ethnographic, qualitative, user-centred methods to rapid prototyping and digital data analysis and visualization; encourages the 'co-design' of policy options between actors in the governance system and its end-users; and argues that design also creates tangible artefacts and deliberate user experiences that make services and products desirable.

In fact, methods are at the very centre of many labs' work. In 2014, the UK Cabinet Office launched Policy Lab UK, an innovation lab established at the centre of government to bring new approaches, tools and techniques to the work of policy officials in the UK Civil Service (see Kimbell 2015 for an organizational history and analysis of its methods). Policy Lab UK has also launched an open policy making toolkit that provides methodological resources and guidance for policymakers, 'based on the principles of open policy making—to be open to new techniques, new evidence and new expertise so

we can make better policy and implement more effectively.' The work of Policy Lab UK is all anchored in 'digital, data and design' approaches, and enacted through mixed methods of quantitative/computational 'big data' and qualitative/ethnographic 'thick data' analysis (Siodmok 2014). According to its profile on the Nesta i-teams website, Policy Lab UK deploys 'ethnographic research, service blueprinting, data science and digital tools' as 'a range of tools and techniques to gain new insights into policy issues' (i-teams 2014). Its toolkit includes advice and resources for conducting citizen ethnography and design thinking; on applying social media analytics to trace public sentiments; on the use of data science and big data analytics to analyse and visualize data on particular government issues; the use of 'prototyping' to test out experimental ideas in the real world; the use of randomized control trials (RCTs) to test out 'what works' in public policy; and the mobilization of 'behavioural insights' methods from behavioural psychology and behavioural economics to enable policymakers 'to design policies or interventions that can encourage, support and enable people to make better choices for themselves and society.'

Many of these design, digital and data-based methods and techniques are now being enacted by various labs, often working together in international networks. For example, the Opening Governance programme (of which Nesta, GovLab and MindLab are all international partners) is intended to develop innovative methods for government reform, and is:

> built around agile and empirical experiments with institutional partners such as governments and NGOs. Experiments are designed to apply and test the latest advances in technology as well as new scientific insights on collaboration and decision-making to improve real world decision-making in the public interest.

Its aspirations are described in terms of 'smarter governance' that mobilizes 'crowdsourcing,' 'open data' and technology to 'target' opportunities for greater 'public participation.' The Opening Governance initiative demonstrates how policy labs are taking an increasingly significant role in the design of governance techniques and activities—locally, nationally and globally too—and the centrality of research methods to this enterprise.

Writing on their experimental methods for Nesta, Charles Leadbeater (2014) claims that

> labs are places where people conduct experiments to test out theories. The new labs proliferating outside the hard sciences are a symptom of the spread of experimentalism as an ideology for how we should shape the future.

The anchoring of labs into explicit political objectives, aspirations and ideologies relating to the imagining and shaping of the future through public and social innovation is the central concern of the remainder of this working paper. In sum, labs have tended to emphasize methods that synthetize design-, data-, and digital-based approaches to knowing and acting upon social and public problems. By hybridizing methods of digital R&D, data science approaches, design-oriented methodologies such as user ethnography and user-centred design, and 'tests,' 'trials' and 'experiments,' labs have become expert methodologists of the social, with the methods for making the social world known and the techniques for rectifying its problems. Their methods are both situated acts conducted within the laboratory lives of the actors that inhabit them, and highly significant in shaping the future of public and social service provision. By focusing on Futurelab and its networks of organizational and ideational connections, the working paper provides a genealogical trace of some of the methodological continuities and convergences that now constitute lab practice.

4 Futurelab methods

The 'laboratory life' of Futurelab and the sociotechnical imaginaries it sought to make attainable can be traced through both its methods and its messages. Like many labs, Futurelab tended towards an eclectic mix of methods. It also used the insights generated through its methods to produce particular messages and arguments about educational change. Many of the key messages about public service innovation it generated remain continuous with the dominant aspirations of labs today. In this section I trace how Futurelab, like later labs, has contributed to the production of a particular sociotechnical imaginary for a major area of public policy—a relatively stabilized and shared vision of the future that is then embedded in specific methodological and technical practices intended to make reality conform with that vision. It has created a web of methodological techniques and practices for making education 'known,' and has then built on top of that a set of communicative practices for circulating its findings, insights and ideas and recommendations about educational change. While its specific emphasis was on the education sector, it operated through broader networks of relationships within which ideas about social issues, public services and public policy were shared across sectors.

Design for policy

One of Futurelab's key methodological commitments was to 'user-centred design,' 'informant design' and 'participatory design' methods. These design-based research approaches tend to see users, researchers and designers as co-creators of particular innovations. Futurelab mobilized design-based methods extensively through participatory workshops, user ethnographies and other informant design approaches that saw children or teachers as experts or 'native informants' informing designers of key issues related to their experience, helping to develop early design ideas and testing prototypes in development. In advocating designing educational technologies with users, Futurelab drew explicitly on the Scandinavian 'democratic' tradition of participatory design, as well as on methods from the field of Human-Computer Interaction and on philosophical traditions associated with 'learner voice' and 'human-centred' schooling.

Today, the entire 'design for policy' approach adopted by many labs is likewise based on the assumption that design can envision desirable futures and develop ways to makes those futures realities through the participation of users (Bason 2014; Kimbell 2015). While Futurelab certainly did not invent such methods, it can clearly be seen as part of a movement towards the translation of methods and discourses of design in an important area of public policy. The Innovation Unit, for example, orients its work around the principles of 'Service Design,' which consists of methods including systems mapping, user ethnography, co-design, and prototyping, rapid experimentation, evaluation, learning and adaptation. Underpinning these approaches is a commitment to 'co-production,' itself a mode of policy design that sees citizen-users and other stakeholders as participants in the creation of services. Futurelab regularly worked in collaboration with the Innovation Unit, and was part of its Whole Education program which embedded the principles of user-centred design in a national network of curriculum redesign projects for schools.

Here, the work of Futurelab and its networks around participatory design methods can be seen as entirely congruent with wider debates about the co-production of public services in an increasingly 'user-generated state' that is modelled on the participatory affordances of social media:

> Ideas about co-production developed in the administrative sciences match well with ideas about co-production as they have been developed in the internet community and by technology gurus. … One of

the core assumptions of Web 2.0 is that users generate content. Content is no longer produced and provided by the public service provider but rather being created—i.e., co-produced—in networks and communities. (Meijer 2012)

The shift from a mass, centralised form of provision to more networked, co-produced and personalised provision is dependent on moving power away from professionals and towards users to set goals and outcomes and to assess and manage risks, an interactive process involving diverse intermediaries in 'shaping relations between citizens and government' (Meijer, 2012). Labs like Futurelab and others since have situated themselves as the intermediaries in the co-production of services between citizens and government, utilizing design-based methods of citizen ethnography, user-centred design, and participatory design as part of a sociotechnical imaginary of a user-generated state in which individuals are required to be active and co-productive citizens. Labs thus act as mediating actors able to combine and juxtapose established methods of participatory design with newer ideas about user-generated content from the commercial social media domain.

Experimental lab trials

Futurelab was highly active in conducting field trials to test out new technical innovations. Almost all of its own projects, and those of partners it supported, were designed as iterative prototypes that could be tested out 'in the wild' with selected relevant users. Enquiring Minds was a notable example, a 'curriculum innovation' project predicated on the ideal of enquiry-based learning that was developed in collaboration with two secondary schools and trialled and iterated over a period of three years, with financial support from Microsoft. Anticipating the current vogue amongst labs for 'experimentalism,' Futurelab's projects were based on the view that it could test out particular theories on a small scale before attempting to roll out its innovations to larger populations and publics.

Futurelab was also an active advocate of the idea of living labs, including an experimental school-based 'Live Lab Academy' model that was intended to focus on school improvement through objective metrics and measures. This prefigured the current lab enthusiasm such as at the GovLab for living labs methods as ways to 'model' and 'test' new ways of governing, and of methods of metricization and measurement to derive evidence of 'what works' for futures policy design. It also prefigured the growing interest in 'startup schools' to educate young people in design and experimental methods, such as the Future Design School launched by the innovation lab MaRS in 2015.

Lab's orientation towards experimentalism in public service design and provision represent new forms of evidentiary practice in public and social policy, and include tests, evaluations and randomized control trials. Futurelab's parent organization Nesta, for example, has itself been involved in establishing the national UK network of 'What Works Centres' to collect evidence on 'what works' in innovation across sectors, primarily through randomized control trials, founded the 'Alliance for Useful Evidence' and designed a 'Standards of Evidence Framework'—a common language for talking about data and evaluation (Mulgan & Puttick 2013). Nesta has produced a series of articles and reports detailing the importance of 'experimental' methods in the practices of government. A recent Nesta piece for *The Guardian* suggested that:

> there are times when government must experiment on us in the search for knowledge and better policy. … We have to experiment on a small scale to have a better understanding of how things work before rolling out policies across the UK. This is just as relevant to social policy, as it is to science and medicine.

Nesta itself has detailed many of its own projects in public and social policy innovation to 'make government more experimental.' These are all examples of what Bruno Latour has termed 'collective experiments' where 'the laboratory has extended its walls to the whole planet,' and 'the distinction between the inside and the outside of the laboratory has disappeared.'

As the sociologist Will Davies has argued in relation to evidence centres, new evidence practices such as RCTs represent a shift in political thinking:

> RCTs operate according to induction. The facts are meant to speak for themselves; the data and the theory are kept neatly and self-consciously separate from each other. … This is supplemented epistemologically by the rise of Big Data…. The very character of Big Data is that it is collected with no particular purpose or theory in mind; it arises as a side-effect of other transactions and activities. It is, supposedly, 'theory neutral', like RCTs.

In this context, Davies suggests, 'the state becomes a theory-less, inductivist, RCT-ing, data-analytical state, accumulating more and more data to find out "what works."' The lab methods of tests and trials, supplemented by data-based metrics and measurement, are premised on the big data epistemology that pattern recognition methods and techniques can reveal meaningful connections, associations, relationships, effects and correlations about human behaviours without the need for prior hypotheses, theoretical frameworks or further experimentation. The human element that goes into any methodological inquiry is erased by such claims, and replaced by the assumption that 'through the application of agnostic data analytics the data can speak for themselves free of human bias or framing, and that any patterns and relationships within big data are inherently meaningful and truthful' (Kitchin 2014: 132).

In this sense, tracing back the genealogical threads of the experimental methods of labs shows how the current enthusiasm for tests, trials and 'living labs' is actually a historically worked-out way of thinking built upon a number of assumptions. Futurelab acted as one channel for such modes of thought—by making the logic of prototyping, experimentation and test methodologies into practical techniques for public service redesign—which have now become more fully embedded and shared by labs as a desirable methodological imaginary of the experimental state.

Innovative R&D

Futurelab also drew on a methodological repertoire that owed as much to digital R&D as either design-based or social science traditions. Its approach to 'open innovation,' 'disciplined innovation,' and 'transformative innovation' took inspiration from the methodological innovations of science parks and high-tech innovation incubators. These approaches are in some ways consonant with the emphasis on 'disruptive innovation' that has been popularized in the high-tech sector, where new technologies are viewed as challenging and unsettling existing assumptions and practices. Indeed, Futurelab featured as an example in a booklet on innovative methods in educational change produced by the Innovation Unit (Horne 2008), which explicitly likened the innovation process to Silicon Valley. In this sense, Futurelab was part of a network of organizations working at this time on new kinds of technical R&D models for innovation in public services, a network including the

Innovation Unit as well as the think tank Demos (Bentley & Gillinson 2007), that might be seen as prototyping the approaches later popularized and proliferated by innovation labs.

Continuous with the imaginary of innovative R&D as a model for solving public and social problems, Futurelab's parent organization Nesta has recently partnered with the government Cabinet Office to explore the idea of 'a new operating system for government,' based on the notion of 'government as a platform' articulated by web entrepreneur Tim O'Reilly. The idea of government as a platform assumes that successful technology innovations (such as the iPhone) can be used as models for the redesign of government services; for example, making government data open and accessible as a platform for the creation of 'civic apps.' Through developing this approach, Nesta and the Cabinet Office aim to anticipate how emerging technologies such as 'data science, predictive analytics, artificial intelligence, sensors, applied programming interfaces, autonomous machines, and platforms' might in the next five years become 'ingrained into how government thinks of itself,' 'redefine the role of government, and even create a different relationship between state and public.' This is an ambitious programme of work, one that anticipates how advanced methods of digital innovation might play an increasing part in staging the interaction between government and the governed, but itself anticipated by previous labs' emphasis on innovative R&D practices as a model for how government might conduct itself in the design of public services.

Again, the case of Futurelab indicates that digital R&D practices have acted as a model for the work of labs in addressing social and public problems for some time. Futurelab, like later labs, took digital forms as templates or diagrams for new possible forms of social and political order (Barry 2001) by positioning services such as education as problems in need of radically disruptive innovation. Methods of radical innovation exported by labs from the field of digital R&D are embedded in particularly powerful sociotechnical imaginaries of possible social and technical futures that might then be materialized and operationalized through the design of new technological projects.

Future foresight

As its name would suggest, Futurelab was highly active in exploring different educational 'futures.' Its Beyond Current Horizons project sought to explore possible and preferable futures associated with sociotechnical developments, and was funded by the Technology Futures Unit at the UK government Department of Children, Schools and Families. It considered the rise of cloud computing, the massive growth of digital data and analysis, and the increasing symbiosis of people and machines for the future of learning institutions, largely by mobilizing a repertoire of futures methods such as future foresight and social scientific 'futures studies.' The programme produced a series of future scenarios of education in 2025, all based on tracing social and technical trends and emerging issues and tracking their possible development over the subsequent 15 years. The scenarios were produced through collaboration with scientists and social scientists from the fields of education, economics, demographics, computer science and representatives of key government agencies, and were based on the commissioning of over 60 reviews of existing evidence and potential developments. It also led to the production of a long-term planning toolkit, Vision Mapper, an interactive web application intended to support educational leaders 'to systematically think about the future to inform actions now, especially when planning for the longer term.'

This futures-orientation certainly anticipated the proliferation of futures-thinking among later labs, as reflected for example in Nesta's annual predictions for the year ahead. Such futures-thinking around

government issues is now the staple of innovation labs. As already noted, in an article on their experimental methods in a recent special issue of Nesta's in-house magazine, Charles Leadbeater (2014) has claimed that 'the new labs proliferating outside the hard sciences are a symptom of the spread of experimentalism as an ideology for how we should shape the future.' Another guidebook for labs focuses on the idea of 'prototyping the future,' and advocates methods of scenario planning, forecasting (predicting the future based upon current trends), and backcasting (articulating a vision of success within certain boundary conditions then identifying strategic action steps necessary to achieve the desired outcome).

Understood in these terms as an ideological project, the futures methods of Futurelab and other labs since constitute clear articulations of their sociotechnical imaginaries—the desirable futures they seek to attain through the design of technical projects. As Jasanoff (2015) has argued, sociotechnical imaginaries both encode visions of what is attainable through science and technology, and also express a shared understanding of desirable forms of conduct and social action. Imagination, in this sense, is a social reservoir of power and action. Interestingly, although many labs are engaged in acts of foresight, prototyping, future planning, and prediction, the durable sociotechnical imaginary they articulate is actually a methodological one. It is an imaginary in which government is conducted methodologically through data scientific practices of evidence collection, experimental trial and test methods, design-based research practices, innovative practices of digital R&D, and futures methods of foresight, prototyping and scenario planning. This is an imaginary for the operationalization of government, itself underpinned by particular durable ideas about the desirable futures for which such techniques of government are appropriate. The desirable futures shared by many labs is of making government more methodological rather than political in its techniques. Futurelab was one point of linkage in the genealogy of futures-thinking that now infuses the work of labs.

Social analytics

Futurelab was an enthusiastic advocate of social media, and produced a series of reports detailing the potential of 'social software' and 'learning networks' for disrupting the classroom. The dominant argument of this work was that social media could provide a kind of model for new forms of educational personalization and customization. In collaboration with the 'radical centre' think tank Demos, Futurelab produced a detailed report on using new technologies such as social media to enhance personalization. This concept was also reinforced in a number of publications produced by Demos and the Innovation Unit, including an influential set of publications on personalization written by Charles Leadbeater, now a prominent figure in the labs scene with strong links to Nesta. Futurelab was, therefore, just one actor in a dense genealogical web of actors and associated practices that has worked to translate the concept of personalization into a relatively stable subject of shared interest and action (Williamson 2014b).

Futurelab's own work around personalization specifically drew on the potential associated with then-emerging forms of 'social software' and social media. Its report with Demos on personalization and digital technologies emphasized:

> harnessing the potential of digital technologies in four key areas central to the goals of personalisation: enabling learners to make informed educational choices; diversifying and acknowledging different forms of skills and knowledge; the creation of diverse learning environments; and the development of learner-focused forms of assessment and feedback.

Personalization is defined in the report as the learning system adapting to the needs of the learner, not the learner adapting to the needs of the system. It drew on the potential of new digital platforms to enable learners to share, archive and communicate their learning; to engage in meaningful projects and forms of enquiry using the social web; and to experience the customization or personalization of curricular experiences around their own needs. The focal point of the report is a 'learner's charter for a personalized learning environment' that emphasizes learners having choices, access to new kinds of knowledge and skills for the digital media era, appropriate learning spaces (on- and off-line), and the provision of relevant feedback. It is hard to read the learner's charter nearly a decade later without seeing how such arguments have been developed around online learning environments such as massively open online courses (MOOCs) and open educational resources (OERs). Such interests have been taken up in more recent lab-related projects around using commercial social media such as [Facebook in education](). Of course, much social media is predicated on the potential of personalization, with the design of technical systems which can learn about users from the traces left by their digital activities to provide customized experiences. Facebook, Google, Twitter, Amazon, Spotify and NetFlix exemplify the powerful role of personalization in the social media domain, and the role of users as producers and not just consumers of content. Personalization is the corollary to 'prosumption' in this sense (Ritzer 2014), where social media users can be seen both as consumers and producers of media content, or, understood more critically, to be providing 'free labour' as they 'play' with social media platforms.

Likewise, labs concerned with education such as Nesta now tend to focus on personalisation as a set of possibilities associated with predictive learning analytics and adaptive learning software applications that can automatically adapt to the learner. These technologies are based on machine learning algorithms developed in the commercial social media field that can automatically mine individuals' digital data in order to extract patterns and then act as 'recommender systems' to push personally customized content, suggest people to 'follow,' memes to 'like,' and so on. The Nesta approach to personalization through analytics is symmetrical with methodological innovations in social media analytics. Social analytics enable individuals and populations to be traced and monitored through digital traces of their online activities. These trace methodologies are increasingly attractive among labs as a way of gaining insight into individual and social behaviours, and thus for personalizing services to the needs of specific social groups or individuals themselves. Policy Lab UK, for example, advocates social media analytics methods to mine public opinion and sentiments as a means towards generating insight for the provision of improved public and social services. This is all part of the emergence of a new 'style of government' in which a 'constant audit of behaviour' is undertaken, through techniques of data mining, sentiment analysis and social network analysis, in order to measure and manage the conduct of individuals and thus maintain the social order as a whole (Davies 2012: 774).

Coding & making

Futurelab also sought to develop ideas and practices around issues of [digital participation and digital literacy](), in particular by emphasizing the critical literacies required for participation in a heavily mediated social world. In the more recent context of big data mining, we can see how a focus on critical digital literacy might help enable young people to understand how their personal data might be used for a variety of commercial and governmental purposes. However, digital literacy has largely been superseded by the current emphasis on learning to code and programming, and the assumption that knowing how to code might equip young people to do things with computers. Nesta, for

example, has published a series of reports on learning to code (e.g. Quinlan 2015), and been a key organizational actor in the introduction of new computing programmes of study in the National Curriculum in England. This is at least partly becoming an issue of economics and employability instead of informed critical civic participation. Notably, as programming has been embedded in the new computing curriculum in England, any reference to critical digital literacy has been displaced by an emphasis on computer science concepts and the skills associated with software development.

In addition, Futurelab's work around digital literacy has anticipated more recent concerns around 'digital making.' Current interests in the skills and competencies of 'digital makers' as producers of digital media, not just its consumers, can be found in the Make Things Do Stuff campaign launched by Nesta and the Nominet Trust in 2013, as well as much more widely in campaigns such as the BBC's Make It Digital. The figure of the youthful 'digital maker' and coder has become the subject of much interest among labs such as Nesta, which has acted effectively to translate such interests into government policymaking—as the establishment of 'computing' in the English National Curriculum illustrates (Williamson 2015a).

The emphasis on learning to code and digital making among many labs reflects a much wider global interest in the promotion of programming and code writing skills. The coding and digital making movement is at least in part a response to governmental and industry concerns about a shortage of human capital and a weak skills base in innovative digital methods for innovation in the digital industries. But it is also part of a concerted attempt to develop the 'digital citizens' required for participation in increasingly digitized and data-driven societies, and is intricately connected to the 'civic hacking' movement that has also been popularized widely by the work of innovation labs. Nesta, for example, has developed a number of schemes in which knowing how to code is positioned as a way of solving social and public problems. Nesta documents describe projects such as 'local government digital making' and 'coding for civic service' that involve a mixture of coding skills, design skills, and user experience to explore 'solutions to challenges'—thus merging 'what is (technically) possible and what is (politically) feasible.'

The figure of the digital citizen is a direct product of the coding and making movement. As Ruppert and Isin (2015: 9) note, the emerging figure of the 'digital citizen' has become 'a problem of government: how to engage, cajole, coerce, incite, invite, or broadly encourage it to inhabit forms of conduct that are already deemed to be appropriate to being a citizen.' In particular, they ask how the lives of digital citizens, as 'political subjects,' are 'configured, regulated and organized by dispersed arrangements of numerous people and things such as corporations and states but also software and devices as well as people such as programmers and regulators' (Ruppert & Isin 2015: 4). Activities such as learning to code and digital making have become everyday acts that produce the political subjectivity of digital citizens: individuals and social groups that can act through the digital to forge styles of participation, but are simultaneously shaped and constrained by the coded software devices and institutional arrangements that make such forms of participation possible. In this sense, the notion of the digitally literate citizen produced through learning to code and digital making is part of a sociotechnical imaginary of a computational future in which digital lives are to be governed through their participation and productivity in new digital networks.

Futurelab's original work around digital literacy, and its gradual translation in to the language of learning to code and digital making, indicates how the production of sociotechnical imaginaries is temporally contingent and shifting, with different lines of thinking associated with particular

technical developments gradually combining and coalescing into emergent visions and aspirations for the future. At the core of the work of innovation labs is the challenge of educating digital citizens for participation in an increasingly digital world, especially one in which government services and the relations between government and its citizens are being staged via digital platforms. The work of Futurelab around digital literacy and participation constitutes a significant genealogical thread in the more recent preoccupation of labs with new forms of active digital citizenship.

Policy learning

One of Futurelab's dominant objectives was to influence education policy around new technology. This was evidenced by its production of research-based policy recommendations, its work for government, and its involvement with quangos (quasi-non-governmental organizations) such as Becta (British Education Communication and Technologies Agency) and the QCA (Qualifications and Curriculum Agency). Through such relationships, Futurelab was seeking to influence the 'policy learning' that goes on inside of government. Policy researchers working in education have referred in the past to a tension between ideas about 'policy borrowing' and policy learning. Policy borrowing, it has been claimed, is the process whereby policy makers and advisers exchange and share policy ideas with one another. In contrast, policy learning

> takes account of the research on the effects of the policy in the source system, learning from that and then applying that knowledge to the borrowing system through careful consideration of national and local histories, cultures and so on. (Lingard 2010: 132)

Lingard claims, though, that policy learning is often over-ridden by political values and ideology, so that research knowledge derived through policy learning becomes only one part in a 'policy pastiche' that is dominated by other political concerns and interests.

Futurelab itself actively sought to intervene in policy learning through the production and promotion of a range of handbooks and guidance around, for example, doing user-centred design and designing technologies with users. In the more current context of the labification of government, policy learning needs to be understood not just in terms of learning 'policy knowledge' from other policy systems, but in terms of learning new methods. The scale of this policy learning is amply illustrated by the publication of a range of methods handbooks for policy makers and civil servants, including the Open Policy Making toolkit from Policy Lab UK, a Lab Practice methodological guide by Kennisland, the Service Innovation Handbook by Lucy Kimbell (also of Policy Lab UK), the Service Design Toolkit from the European SPIDER project, the *Design for Policy* handbook edited by the head of MindLab, as well as others. The Open Policy Making Team in the Cabinet Office is also collaborating with Civil Service Learning in a major learning and teaching programme for civil servants to learn design thinking. The Civil Service Learning initiative has also published extensive documentation on the learning needs for civil servants and policy professionals, in terms of policy knowledge, policy skills, and behavioural skills. As its report states:

> A policy professional sees their career, learning and development anchored around policy work and seeks to achieve the level of competence, behaviour and status that goes with being professional in their work. Like all civil servants, policy professionals share a common set of transferable behavioural skills.

The central focus for many of these toolkits and frameworks is the idea that policy professionals need to become adept at learning new methods throughout their careers in order to inform and

improve their synthesis of evidence, politics and delivery in the formation of new policies. Policy labs are positioning themselves as pedagogic intermediaries with the methodological and technical capacity to educate policy professionals in new digital, data and design methods of policy innovation.

As I have argued earlier, digital, data and design methods are now becoming increasingly important resources and skills in the governance of public services according to many labs. Emerging developments such as data analytics, social media analysis, design ethnography, behavioural insights techniques, and rapid prototyping are becoming key methods that policy professionals are required to learn. The current emphasis on policy learning, civil service learning, and the production of toolkits to operationalize this learning is therefore a significant development in addressing the deficits of policy borrowing. However, interesting work could be done to explore the nature of this learning, and, in particular, to inquire into the kinds of pedagogies of professional policy learning that might be involved—where by 'pedagogy' I mean the techniques by which knowledge, skills and values are transmitted from an authority to a learner, in this case the authority being those policy lab organizations and individuals that seek to educate the professional policy learner. What pedagogic role do such actors assume? What pedagogic resources do they deploy (such as handbooks and toolkits)? What knowledge and skills do they transmit, and which values and politics underpin them?

Even more particularly, such work would need to inquire into the digital technologies involved in the forms of policy learning required for policy professionals to work with new operating models of government. Highly coded computer technologies are now a major part of professional work and learning in many sectors, not least policymaking. For example, if policy learning in the future is likely to involve the use of data analytics and predictive analytics, then it will be important to examine how policy professionals are inducted into their use and application. Ruppert (2012) has usefully described 'database government' as the rapid and agile collection and counting of vast datasets, through techniques of data mining, pattern recognition and social network analysis, for the purposes of both monitoring and manipulating people's behaviour and thus maintaining the social order as a whole. So what are the pedagogies through which policy learners might be inducted into the techniques of database government? What are the policy skills involved in enacting this form of government?

What is at stake here is how the pedagogies of policy learning being promoted by policy innovation labs are integrally bound up in the functioning of digital technologies and resources that have themselves been designed to enable particular kinds of action, to enable particular forms of analysis, and to produce particular kinds of policy insights. One potentially useful way of thinking about this is the idea of 'programmable pedagogies.' Programmable pedagogies are the lessons taught by computational systems that have been programmed in accordance with the systems of thinking of technical experts to sculpt particular forms of conduct, catalyze particular behaviours, and delimit particular forms of learning. It refers to the ways that educational software products project particular codes of conduct into the ways in which they are intended to be used. Much contemporary research on software tends toward the argument that the 'lines of code' that constitute any application also carry particular codes of conduct; that computer code and algorithms are 'abstracted theories about the world' which also 'have the capacity to become active in shaping and constituting social life' (Beer 2013).

The term 'programmable pedagogies of policy learning', then, refers to the ways in which the digital techniques, devices and resources employed in the professional learning of policy professionals might themselves act to shape the kinds of policy analyses and actionable policy insights that are possible.

Research in this area would need to inquire into the origins of such devices and resources. And it might inquire into the ways in which such instruments are received and used by policy learners, or into how their use is framed for them through training courses. Are, for example, data visualization resources designed for the policymaker, such as data dashboards, framed as neutral and apolitical containers of 'visualized facts', or are they presented as a socially powerful means for codifying the art of political persuasion into seductive and convincing graphical displays—a form of 'visual reasoning'—for presentation to different audiences (Kitchin, Lauriault & McArdle 2015)?

These could be important issues and questions to take up as policy learning processes become intertwined with software code, algorithms, and sophisticated methodological and technical techniques of data collection, calculation and circulation. The lines of code and algorithmic forms of data analysis that constitute the programmable pedagogies of policy learning are seriously consequential for the ways in which policymakers will learn to see patterns in data, identify social and public problems, derive actionable policy insights, and put into place new service solutions. If policy borrowing has been shaped by political values and ideology, then digital policy learning could be shaped by the subtler politics and forms of 'algorithmic power' (Beer 2013) written into software code. The sociotechnical imaginaries projected by policy innovation labs such as Futurelab suggest that policy learning itself is a process seriously in need of modernization, to equip policy professionals with relevant new policy skills and methods for making sense of new sources of digital data and enacting design for policy approaches in the co-construction of new public services. Policy labs increasingly see themselves as pedagogic intermediaries with the responsibility for facilitating new forms of digital, data and design methods in policy learning.

Lab notes

The distribution of scenarios, visions, prototypes and plans for the future depends on the production of material inscriptions. Futurelab's approach can be characterized in part by the materiality of its messages. By this I mean the actual material presentation and production of its resources. Futurelab worked extensively with designers and project managers (many of them in-house employees) to create glossy graphic presentations of its work for a wide variety of audiences, from practitioners to policymakers to wider publics. Futurelab emphasized high design values, and most of its handbooks, reports and various online resources can be characterized by their high-gloss design, interactivity, visualizations and graphic forms of display.

Most of the labs we can see operating today also mobilize such methods of data visualization, infographics and other forms of graphical display to illustrate their messages, reinforce their arguments, and construct compelling graphical displays to support possible futures. These graphical techniques all make particular imaginaries of the future 'visible,' and ultimately lend visual support to the discourses and ideas of its other outputs. These materials, then, can be seen as particular devices for 'inscribing' sociotechnical imaginaries in words and images, making them seeable and knowable, and therefore amenable to being acted upon through the design of technical projects. Two influential concepts first articulated by Bruno Latour (1986) can help to explain the diffusion of scientific and technical ideas into societies. The first is the production of 'inscription devices' (texts, images, diagrams) that simplify and 'flatten' the world; and the second is their subsequent distribution by 'centres of calculation' that enable these representations to draw together actors and actions far outside the original location of their production. The futures methods of labs such as Futurelab might be seen in these terms, as sets of techniques designed to produce inscriptions describing

possible futures—scenarios, visions, prototypes, long-term plans—that can then be distributed from centres of calculation—the labs themselves and their social networks—to produce conviction in others in far distant locations. These techniques of inscription and distribution enable alternative futures to be represented and shared, they enable or constrain actions, and naturalize potential ways of thinking about possible futures as collectively held, durable and sustained imaginaries.

More recently, a key technique through which labs circulate their ideas and messages is in fact through the device of the Twitter hashtag #psilabs. The hashtag performs the simple function of enabling Twitter users to search for and follow debates related to policy labs, and acts as a mediating device through which the various activities, products, relationships and conversations of policy innovation labs all flow. As such, the #psilabs hashtag performs the function of juxtaposing interorganizational relationships, policy ideas, publications and events and freezing a history of processes and network relations into a (temporarily) stable form in order to exert material effects and consequences in the world. In particular, the #psilabs hashtag acts as a concrete device for the circulation and stabilization of sociotechnical imaginaries, bringing the various visions that are embodied in different labs' work together as a network of shared aspirations and alignments of interest. Understood as a method enabling social 'happenings' (Lury & Wakeford 2012) to be traced from digital fragments, the Twitter hashtag therefore has a methodological function, one mobilized by the labs community to render visible its ongoing activities and to enable its future visions to be traced and aggregated into stable and coherent form. Devices such as the #psilabs hashtag, as well as the reports, websites, and resources it combines, act to make certain sociotechnical imaginaries and the reforming visions of labs into collectively held reference points for future projects.

Mixed methods

In sum, through a brief survey of some of Futurelab's approaches, it is clear how it deployed a highly mixed methodological repertoire of social science, design-based and digital R&D methods. Through these methods, Futurelab was able to construct particular images and ideals of how the future of education might be, or even should be, and therefore to generate ideas and messages that might produce conviction in others that such futures were desirable and even attainable. More widely, Futurelab was also involved in the development and circulation of methodological approaches that have now become characteristic of labs' participation in social and public innovation, as well as in the production of ideas about forms of digital literacy, personalized services and active citizenship that now infuse the work of many labs.

Much more needs to be done here to explore the complex social lives of the methods that have contributed to the ways Futurelab functioned as a practical ideas organization. For example, what are the principles upon which its approach to 'transformative innovation' rested? What political tensions underlie the approach to futures thinking it advocated? On what theoretical assumptions did its 'experimentalism' rely? More broadly, what are the limitations of a scientific 'lab test' methodology for understanding social and public problems? Are there competing methodological paradigms at work here, and to what extent might that matter? And how are methods consequential to the development of key messages about the problems of public services such as education and to the circulation of proposed solutions? How, in other words, do methods contribute to the creation, circulation and legitimation of particular sociotechnical imaginaries?

5 The politics of policy laboratory life

Policy innovation labs like Futurelab act as producers of sociotechnical imaginaries: collectively imagined views of the future that might be attained through the design and deployment of technical projects. As Christiansen (2014: 13) notes, labs work in the borderlands between 'what is perceived as "the real" and "the imaginary", challenging current perceptions of what is now being perceived within real possibility.' But sociotechnical imaginaries are more than simply naïve predictions or ideational fantasies. Instead, sociotechnical imaginaries are embedded in methodological commitments and embodied in both the words and the materiality of their messages. Labs like Futurelab need to be understood as particular spaces in which different methods from across different sectors and fields—from social science, digital R&D, and design-based research to future foresight—become entwined as a set of techniques for surfacing particular views and perspectives of the social reality that they then wish to intervene in to bring about some sort of change. This means interrogating the rich 'social life' of Futurelab, and inquiring into the genealogical combinations of methods, ideas and messages that contributed to the formation of its futures-thinking approaches.

When Bruno Latour and Steve Woolgar (1986) produced their classic sociological account of the work of scientists in *Laboratory Life*, their conclusion was that scientific laboratories are deeply complex places where negotiations, arguments, disagreements and compromises are constantly hammered out as scientists seek to construct 'scientific facts,' or models of how the world works. They drew attention to the need to 'follow the actors' that inhabit labs: to follow the scientists in their everyday laboratory practices and the scientific collectives to which they belong, but also to follow the nonhuman actors such as the pieces of paper that govern how and when the work gets done; the political and institutional funding incentives that dictate the resources available for it; the technical devices that shape the ways in which phenomena are observed and recorded; and the written papers that communicate those findings and circulate beyond the lab as inscription devices to make scientific facts known and accepted.

Drawing on this text in an article for Nesta, Charles Leadbeater (2014) has claimed that 'labs are places where people test theories,' but this neglects the extent to which 'laboratory life' is always shaped by a range of social, personal, technical, political and economic circumstances. Theories get tested when funding arrangements are in place. Theories get tested when the right social networks of expertise form around them. Theories get tested through particular technical devices, which are themselves produced by particular organizations with devices to sell. Within laboratories, methods are powerful devices that are designed to capture aspects of the world, or particular phenomena, and translate them into formats that are sufficiently intelligible for interpretations to be made and explanatory models to be constructed. Published scientific papers are merely the product or outcome of such methods, arguments, translations and compromises. But these papers, as inscription devices that freeze such translations, debates and disagreements into scientific facts, are important political acts because they construct reality in a particular way. Policy innovation labs are likewise committed to the production of inscriptions that fix reality in particular ways, shape interpretations and provide explanatory power. As my survey of Futurelab's methods and messages has shown, it too was involved in utilizing methods for making sense of social phenomena and generating messages to redefine how it might be or should be in the future. Ultimately Futurelab can understood as having partaken in a reconstruction of the social reality of education, redefining the way the educational world works, designing methods to measure it, and producing products and recommendations to modify it. It is prototypical of how many other labs now operate to solve social issues.

Moreover, the work that gets performed in labs always takes place within a particular scientific style of thinking—a more or less coherent way of making arguments, constructing explanations, and building conceptual models within a particular scientific community, or a 'thought collective':

> a community of persons mutually exchanging ideas or maintaining intellectual interaction. Members of that collective not only adopt certain ways of perceiving and thinking, but they also continually transform it—and this transformation does occur not so much "in their heads" as in their interpersonal space. … When a thought style, developed and employed by a collective, becomes sufficiently sophisticated, the collective breaks into a small *esoteric circle*—a group of specialists which "are in the know"—and a wide *exoteric circle* for all those members, who are under the influence of the style, but do not play an active role in its formation.

A closer analysis of the laboratory life of Futurelab would explore the various debates, disagreements and compromises that coalesced into a distinctive thought style that then underpinned its approaches, its methodological commitments and its production and circulation of key ideas. After all, Futurelab was not some innocent and politically neutral organization, but consisted of many human hands, eyes and minds, each with distinctive ways of doing and seeing things. The researchers, designers, business manager, marketers, project managers and technical experts who inhabited it were engaged in a constant struggle (sometimes with each other) to make educational problems seen in particular ways, and to propose solutions that might remedy those perceived problems. The interpersonal space of Futurelab was where its collective organizational thought style was developed and maintained. Many of its solutions were the joint production of researchers (many on their way toward academic careers in the social sciences) with designers, managers and programmers whose commitments were not always commensurate with one another. Moreover, Futurelab was managed and governed under a particular style of thinking which saw educational change as an imperative; close historical research into its trustees, governance and management would help to illuminate how its strategic objectives and purposes were operationalized in its methods and messages, as well as less visibly in its business plans, its partnerships, its recruitment of particular personnel, and its distribution of expertise across technical, business and scientific spheres.

Examining Futurelab historically reveals how sociotechnical imaginaries of possible futures can be made material and operational through particular methods and modes of message dissemination that are themselves shaped by, and a product of, a particular style of thought. The purpose of this working paper was to conduct an initial study of Futurelab in order to prefigure future research on the new wave of lab development. As such, it indicates that the new laboratories for experimenting on social and public life require much greater scrutiny as political actors as they gain influence in the definition of policy problems and the specification of policy solutions. What is laboratory life like inside a policy innovation lab, or in a network of labs? What problems do they define, by what methods? What innovations do they design, and what are the effects of such solutions on the world out there beyond the lab, its methods and its publications? What kinds of 'policy learning' and policy professionalism' do they imagine, and how do they position themselves pedagogically to facilitate the learning required for the policy work they envisage as necessary? How, in particular, are the lab methods of today's policy innovation labs—like Futurelab before them—influencing (or not) the ways in which public and social institutions, issues and individuals are known, understood as problematic, and made amenable to intervention, solution and modification?

The apparent theory-neutrality and data-agnosticism of labs is another feature requiring much greater scrutiny and theorization. Through ethnographic work with Policy Lab UK in the Cabinet Office, for example, Lucy Kimbell (2015: 36-37) has conceptualized the different kinds of evidence that labs work with in terms of the differences between deductive, inductive and abductive evidence practices:

> As a kind of reasoning, abduction produces plausible provisional results—insights, guesses and concepts that link things together in new ways. Abduction shows something may be, but does not prove it, whereas deduction shows something is true in a particular case. … Abductive reasoning produces insights and ideas that are plausible but provisional. They need further exploration and elaboration.

Another potential line of inquiry around labs' use of evidence might be around the extent to which they make data. 'Data' itself is derived etymologically from the Latin *dare*, meaning 'to give.' When we use the word data, however, we are usually referring to those elements that are 'taken' (*capere*) or selected, not those units that have been given by nature to the scientist. Yet for some enthusiast advocates of data, and particularly digital data, it appears as though those data are indeed naturally given representations of reality. It would be useful for research on labs to detail the specific assumptions about data they work with and the kind of evidence they produce—is this evidence taken as a partial selection from all that could have possibly been given, or is the assumption that reality is giving evidence that labs are merely capturing in the form of raw and unmediated data? This would mean treating data in terms of the practices that generate it, rather than seeing data as unmediated, truthful or 'raw' representation of reality (Ruppert *et al.* 2015).

Innovation labs are places where new kinds of social facts are now being created and circulated according to the styles of thinking of particular thought collectives. Through new kinds of evidence practices and data analytics, labs claim, they are generating new insights into contemporary social and public problems and new practical ideas for solving them. A particular style of thinking percolates through labs, one that can be discerned in the appeal to digital data, claims about 'what works,' a desire for citizen-centricity, and in the call to engage in design thinking and other design for policy methods. Fruitful work could be undertaken by engaging ethnographically in the laboratory life of labs, tracing and unpacking the style of thinking that governs their work and then working backwards to track how such a thought style has been convened from complex genealogical lines of thinking. This would consider, for example, how ideas about design, digital R&D and data analytics have been translated into the kind of style of thinking that informs labs' production of methodological guidance for policy professionals. Science and technology studies could provide the theoretical and empirical resources for 'following the actors'—both human and nonhuman (e.g. following the #psilabs hashtag in Twitter, as per Williamson 2015b)—that constitute policy innovation labs.

Labs are also sites where sociotechnical imaginaries of the future of many public and social institutions are being constructed and circulated. These imaginaries are not simply ideational fantasies or ideological visions, but carefully crafted methodological accomplishments and the result of technical projects made public through the material circulation of discursive and visual messages. As such, lab methods are not neutral, but key techniques governing the ways in which major areas of public and social policy are being reimagined and made amenable to active intervention. As labs develop their methodological repertoires to adopt emerging technical developments such as data science, analytics and even machine intelligence techniques, the future of significant aspects of social and public policy and governance look set to be accomplished through labs. We need detailed genealogical and empirical studies to get inside their laboratory lives.

6 Conclusion

Policy innovation labs emphasize the perceived neutrality, objectivity, rigour and effectiveness of methods and downplay the political values that underpin the work that labs do. As Kieboom (2014) notes, the methods used by policy innovation labs are presented as 'a-political' forms of expertise, and thus by 'denying their own political character, they depoliticize their own roles as political players.' But the way in which labs define the problems they focus on, the practical ideas they derive, and the solutions they design, are fundamentally political acts. In this important sense, then, lab methods such as user-centred design, data mining, the trialling of digital service platforms, and so on, are powerful techniques for testing out new ways of mediating the relationship between government and citizen. Methods are not merely neutral windows on to existing social and public realities, but participate in a shaping of those realities, making them visible and intelligible enough to be acted upon. Futurelab, as one node in a loose global network of innovation labs, needs to be understood as a prototypical ideas organization, or an ideational institution, focused on solving social problems.

By focusing on Futurelab as a case study, and tracing continuities through the current labs environment, it is possible to see how a mixed methodological complex of design for policy approaches, data-based techniques, evidence practices, tests, trials and experiments, and future foresight are mobilized by labs as means towards operationalizing particular sociotechnical imaginaries in the design and delivery of new services. The historical and critical analysis of Futurelab shows how sociotechnical imaginaries are produced, and how they slowly circulate and percolate among like-minded actors and organizations to become much more distributed, shared and ultimately stabilized visions of desirable futures. This is not to suggest that Futurelab was the origin of all the ideas that have now stabilized in the practices and visions of labs, but that it can be seen as a node in a network of relations that, over the last 15 years, has gradually solidified into a relatively coherent field of lab practice centred on testing new methodologies and technologies of governance.

Ultimately, then, labs are designing new methods for the practices of government. Their practical ideas and 'governing methods' (Williamson 2015b) are a hybrid product of data science, design-based research and digital R&D, taking in laboratory experiments, RCTs, ethnography and new forms of data collection, mining and analytics, as well as R&D methods of digital platform development. They are turning methods into advanced political techniques, and they are proposing that government itself should act lab-like, conducting experiments, running user-centred design workshops, and developing prototypes to 'test out' policy approaches. These methods need to be understood critically as specific kinds of political practices, not least as digital methods such as social media analytics enable the governmental gaze into people's everyday online lives, and as practices such as predictive analytics enable government to anticipate future actions and to design remedial solutions to predicted risks and problems. Policy labs are likely to play an increasingly significant role in social and public policy in coming years, and their technologies to influence diverse practices, but as yet little research has interrogated their ideational, methodological and technological power to test governance. Policy innovation labs are testing governance in two senses: by critically assessing current governance practices, and then testing out new modes of governance in which they play a significant role as laboratory technicians, ideas-producers, and methodological experts.

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