Erasmus School of
Social and
Behavioural Sciences

Sociotechnical Imaginaries of Different Data Futures

An experiment in citizen data

3e Van Doornlezing

Prof.dr. Evelyn Ruppert

Erasmus University Rotterdam
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Prof.dr. Evelyn Ruppert, 14 juni 2018

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Verschillende verbeeldingen op de socio-technische toekomst van onze data.

Een experiment met citizen data

3e Van Doornlezing

Prof.dr. Evelyn Ruppert

Lezing
uitgesproken tijdens de Dag van de Sociologie 2018
in het kader van de prof.dr. J.A.A. van Doorn leerstoel

Erasmus Universiteit Rotterdam, juni 2018

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Make it happen.

Jacques van Doorn Fellowship

De prof.dr. J.A.A. van Doorn leerstoelhouder is als Jacques van Doorn Fellow verbonden aan het Netherlands Institute for Advanced Study in the Humanities and Social Sciences (NIAS). Het Jacques van Doorn Fellowship is ingesteld om het belang van prof.dr. J.A.A. van Doorn voor de Nederlandse sociologie te benadrukken, en is een eerbetoon aan de geestelijke onafhankelijkheid die zijn werk kenmerkt.

De Jacques van Doorn Fellow richt zich tijdens zijn verblijf op het NIAS op een onderzoeksproject dat is gerelateerd aan de sociologie van beleids- en bestuursvraagstukken, een discipline waarvan prof.dr. J.A.A. van Doorn een belangrijke grondlegger was.

Het Netherlands Institute for Advanced Study in the Humanities and Social Sciences (NIAS-KNAW) is een vrijhaven voor nieuwsgierigheidsgedreven onderzoek van gerenommeerde en talentvolle onderzoekers in de sociale- en geesteswetenschappen. NIAS biedt tijd en ruimte voor verdieping, interdisciplinaire samenwerking en wetenschappelijke oplossingen voor maatschappelijke problemen. Het is het oudste IAS van Europa en een instituut van de Koninklijke Nederlandse Akademie van Wetenschappen (KNAW). Jacques van Doorn was sinds 1969 lid van de KNAW.

NIAS

Prof.dr. J.A.A. van Doorn wisselleerstoel

De prof.dr. J.A.A. van Doorn leerstoel is een eerbetoon aan professor Jacques van Doorn, grondlegger van de opleiding Sociologie en vele jaren decaan van de Faculteit der Sociale Wetenschappen (FSW) bij de toenmalige Nederlandse Economische Hogeschool, nu Erasmus Universiteit Rotterdam.

Van Doorn was een van de grootste Nederlandse sociologen van na de Tweede Wereldoorlog. De invloed van Jacques van Doorn op de Nederlandse sociologie en in het bijzonder op de Rotterdamse sociologie was groot. Hij overleed op 14 mei 2008. De wisselleerstoel is ingesteld door de decaan van de Erasmus School of Social and Behavioural Sciences (voorheen FSW) en het Departement Bestuurskunde en Sociologie in samenwerking met Netherlands Institute for Advanced Study in the Humanities and Social Sciences (NIAS-KNAW).
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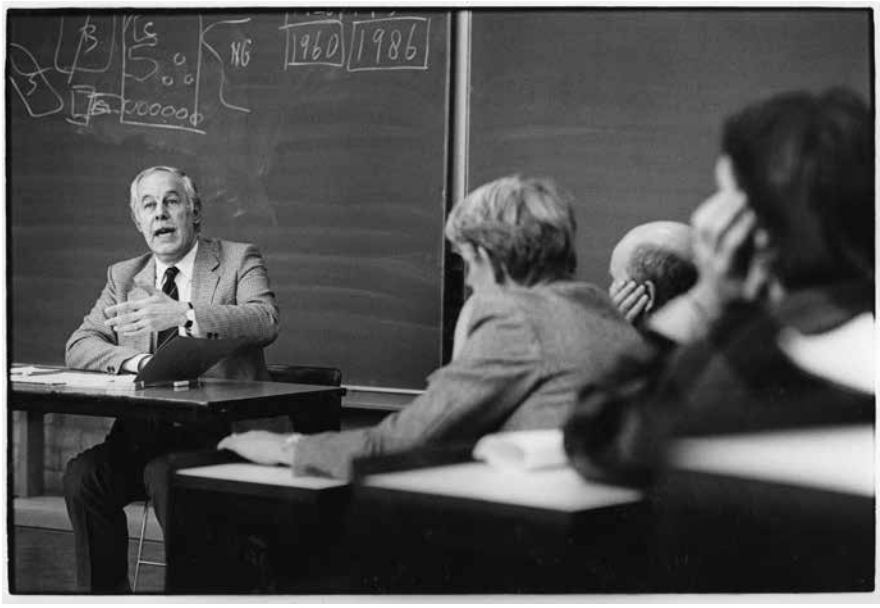

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Foreword

Dean Bekkers, Professor Dykstra, Colleagues of the Erasmus University Rotterdam and of the Dutch and Flemish Sociological Associations, Colleagues of NIAS, Ladies and Gentlemen.

It has been a great privilege to hold the Honorary Van Doorn Chair at Erasmus University Rotterdam along with a Van Doorn Fellowship at the Netherlands Institute for Advanced Study (NIAS). I am also very pleased to deliver the Van Doorn Lecture in conjunction with the Dag van de Sociologie. It is an honour to be the third Chair to deliver this lecture but also the first to do so in English.

During the past several months I have learned much about Jacques van Doorn from Dutch colleagues and have had the albeit limited opportunity to read some of his writings in English. I have also gained some insight about his work from the 2012 lecture of the first holder of the Honorary Chair, Professor Mark Bovens of Utrecht University (Bovens, 2012). In the opening to his lecture he referred to how Van Doorn, in his first book written in 1954, refuted the argument that there was a strong social divide in the Netherlands between unskilled and skilled workers (Van Doorn, 1954). Rather, Van Doorn argued that the working class was significantly more differentiated.

In his lecture, Bovens noted that almost fifty years later Van Doorn expressed less certainty about his earlier argument and suggested that what was in question was more generally the recognisable but perhaps less pertinent social science classifications of class (Van Doorn, 2000). In their place, other group distinctions such as gender, age, and employment status were becoming more prominent and divisions more complicated and diffuse. It was against this background that Bovens then went on to argue that notwithstanding Van Doorn's reconsideration of class distinctions, the information society was leading to new, or at least newly visible, dividing lines or ruptures and one source was differences in education.

In ways I could not have anticipated my lecture engages with these debates albeit from a different set of concerns about class distinctions, power relations and the information society. My concern is how digital technologies are generative of myriad struggles over who owns, has access to and controls the making and circulation of data and knowledge of societies. It is a concern that Francois Lyotard (1984) expressed in the 1980s about computerisation, which he argued was turning knowledge into a new mode of production and power relations, remaking knowledge and its distribution and resulting in new forms of class

distinction and capital, which Pierre Bourdieu (1984) named cultural capital. For Lyotard, the question was ‘who will know?’ To this I pose an additional question, ‘how will we know?’ These are questions that I will approach by first reflecting on recent political struggles over data and truth.

Introduction

Facebook data breaches and election influencing of Cambridge Analytica along with claims about alternative facts make it a challenging time to deliver a lecture about a research experiment that involves designing an app for citizen data. However, they also afford an opportunity or opening to imagine different data futures.

How Facebook data was used to interfere in the US election and UK referendum has been joined by the disclosure that the personal information of up to 87 million users was harvested without their permission by an app designed by a Cambridge academic. The seriousness of this breach intensified when Cambridge Analytica claimed that hundreds of companies harvest such data and that it is legal to do so. Or when the Cambridge academic at the centre of the controversy claimed that it was both legal and ethically acceptable to sell data to a third party—a dangerous ignorance. Or when CEO Mark Zuckerberg on his apology tour admitted that Facebook took no action to ensure that the tens of thousands of apps it approved adhered to their terms of service—a dangerous hubris.

A main lesson to draw from this current political struggle is not that an academic, an internet platform, and a data company are culpable. Rather it is to highlight that data and politics are inseparable and so whether we are academics or app developers, we cannot be naïve but must be reflexive about how we may be implicated in the ways data is part of emerging forms of power relations. For data is not only shaping social relations but democratic politics.
A possible response would be to abandon research that engages with digital technologies such as apps and what has come to be labelled as big data. Wouldn't that then mean to accept that the current trajectory of data politics is inexorable? Wouldn't that mean to accept the history of our present as given? These questions become evident in reactions that data produced by various digital technologies are a threat, menace, risk, or peril or obverse responses that extol their merits and argue that they are at least improving and enhancing our lives and relations and the dangers are a small price to pay.

That the proliferation of digital technologies and data have contributed to competing knowledge has also fuelled similar reactions about the threat of alternative facts. While some reactions are that this represents a 'democratisation' of knowledge and the erosion of the domination of experts, from decades of work in fields such as Science and Technology Studies (STS) we know the separation between true and false is never straightforward. Such a dichotomy

belies how all facts are produced and mediated by complex practices and technological infrastructures and are full of uncertainties (Jasanoff and Simmet, 2017). The division between the real and fictitious is vexed— there are no truths and falsehoods independent of the knowledge regimes that produce them. For this reason, I doubt that the politics epitomised by Trump and his followers heralds a new era of post-truth; rather, it signals the emergence of new regimes of truth. Thus, we need to understand how an asymmetrical view of truth enables emerging politically and economically powerful groups to now 'assume the posture of epistemic underdogs' (Lynch, 2017).

Yet, a prominent reaction has been the proliferation of expert practices to now authenticate facts in order to restore authority. For example, Full Fact is a UK charity that checks information and claims made in the media, by politicians and others on matters of public concern. Open Europe's Fact Check blog is where European experts distinguish 'EU fact from EU fiction'. BBC has long run its Reality Check page. And that curiously brings me back to Facebook which after the 2016 US Presidential election launched an initiative that engages such third party fact checking organisations to fight misinformation on its platform. This has led to numerous challenges such as who will fact check the fact checkers. However, rather than restoring authority, these efforts only amplify the binary and make truth the purview of gatekeepers, intermediaries and validators. It treats citizens as needing experts to validate facts for them.

The reaction also demonstrates the significance of critiques of the epistemic authority and command of experts. Those critiques have called for epistemic justice about the setting of priorities for what matters and how knowledge is made, which are central to democratic politics (Jasanoff, 2017a). However, by speaking of experts in general the reaction also conceals how experts compete to maintain their relative authority and position within particular fields of knowledge as Pierre Bourdieu has argued. Different factions of experts from journalists and state statisticians to academics, compete and struggle over the authority to legitimate facts about matters of public concern such as climate change and migration.

I suggest that these struggles and reactions are openings for thinking about different data futures through what I call an experiment in citizen data. It is an experiment that reconsiders relations between states, citizens and digital technologies in the production of data and statistics by imagining a new political subjectivity, that of the data citizen. Before elaborating on these openings, in the first part of this lecture I reflect on how sociotechnical imaginaries of big data drive and frame these struggles. I then turn to how these imaginaries are at work and have effects within a particular field of practice, which I refer to

as the transnational field of statistics. One effect I outline is how the repurposing of big data shapes imaginaries of subjects as passive actants and individual privacy regulators. In the second part I then describe an on-going experiment that imagines subjects as data citizens with the right to shape how data is made about them and the societies of which they are a part.

The lecture draws from four years working on a European Research Council funded project called ARITHMUS[1]. The project is broadly concerned with the practical and political implications of new digital technologies such as smart phones, tablets and web platforms to produce data for official statistics and experiments with big data such as that from mobile phones, search engine queries and social media as possible new data sources. Methodologically, I studied these issues through fieldwork conducted along with five researchers for about two-years through what we describe as a multi-sited and multi-method collaborative ethnography of the data practices of national and international statistical institutes[2]. This lecture consists of reflections on a series of working papers and articles I have authored and various combinations of us have co-authored and how that work led to an experiment in citizen data.

PART 1

Sociotechnical imaginaries

What does it mean to reimagine relations between states and citizens in the production of data and statistics? As many social theorists have argued imaginaries require acts of imagination to express what they are and to pass from a symbol to something more (Castoriadis, 1997). In other words, they are symbols not because they do not correspond to a reality but because they require imagination instituted and maintained by myriad collectives to enact them. This is a sense of the imaginary originally coined by social theorist Cornelius Castoriadis who explored the force of the social imagination and its political implications (Castoriadis, 1997). He argued that to understand what holds societies together requires understanding its institutions. Each institution — whether an economic organisation or statistical institute — exists as a socially sanctioned symbolic system that requires imaginaries such as norms and values, a conception that echoes Durkheim's understanding of collective representations. Imaginaries need their symbols and are social because they are instituted and maintained by collectives in ways that also legitimise and institute power relations. But as Castoriadis articulates, imaginaries are not the functional ends of institutions. Rather, they are forces whose functioning and effects are not guaranteed. As such their consequences can be multiple and non-coherent. That is, the force of imaginaries is essential to the functioning of societies and politics but at the same time are not determining.

Benedict Anderson also engaged with the force of imaginaries in his well-known definition of a nation as 'an imagined political community' (Anderson, 1991). It is through shared imaginaries that technologies of power such as the census, the map, and the museum were organised historically and came to shape how colonial states governed their subjects and territories. Following Anderson's approach, Charles Taylor recognised that social imaginaries were integral to the making of modernity where politics have not simply involved the rational negotiation of ends but moral orientations to what should or could be (Taylor, 2004).

Willem Schinkel in his recent book **Imagined Societies** expands these themes to argue that 'social imagination is a key process in all social life' and that ' "society" is not an entity that exists independently of its imagination' (Schinkel, 2017: 6). Importantly he examines this by tracing discourses of policy-makers, politicians, and bureaucrats on immigrant integration in Western Europe to critique a conception of social imaginaries advanced by Taylor as stable and consensus-driven rather than objects of conflict and struggles against

domination (8). Schinkel, while exploring discourses as the ordering of what can be said and thought, extends this to other technical mediums such as graphs and tables through which imaginaries are also defined and negotiated.

The purpose of this brief summary is to highlight how social theorists have conceived of imaginaries as shaping large scale social processes and grand patterns of institutionalisation, nationhood, societies and modernity. With some exceptions, they have also understood imaginaries as mentalist concepts, that is, as ideational constructs. This is a point of departure for researchers in STS, which Sheila Jasanoff has summarised in her account of sociotechnical imaginaries (Jasanoff, 2015).[3] Taking the work of Arjun Appadurai on globalisation and diasporas as a starting point she argues that universal and homogeneous phenomena such as modernity consist of 'disjointed flows or "scapes" — of people, technology, money, electronic communications, and ideas — each constituted by the overlapping but not necessarily coherent practices of the people engaging in them' (Jasanoff, 2015: 11). Imaginaries thus work at myriad small scales of social practices. However, as Jasanoff further notes, Appadurai, while moving away from master narratives, still conceived of imaginaries as ideational. It is this observation that leads her to specify a second point of departure in STS, which is to account for the intricate workings 'of modernity's two most salient forces: science and technology' (12) in the performance of imaginaries.

One such approach she notes is the understanding of 'technoscientific imaginaries' developed by George Marcus (1995) which is generally concerned with individual scientists visionary ideas in relation to their practices and which lead to individual accounts. However, like the social theorists mentioned above, Jasanoff brings attention to how collective imaginaries about the possibilities of science and technology are the product of social practices and it is through 'the imaginative work of varied social actors' — in states, corporations, social movements, or professions — that 'science and technology become enmeshed in performing and producing diverse visions of the collective good' at various scales (15). This is what the term sociotechnical captures in distinction to the technoscientific.

But the term is significant for another reason. It is through relations between people and technologies that imaginaries of desired and possible futures are performed. This understanding of materiality and relations pays attention to all actors as differently agentic in what imaginaries also come to be. But to speak of agency as distributed in this way does not mean to accord all actors similar capacities to produce collective imaginaries (Jasanoff, 2015). While many imaginaries can and do co-exist only some achieve dominance and become

forceful visions of collective goods and evils of technologies often through their advancement by state and non-state actors. But secondly, how they get elaborated and actualised is through their enactment and performance, which depend on myriad practices involving relations to technologies such as in experiments and demonstrations. That is, while imaginaries are powerful forces what they produce is not determined but enacted and can lead to effects that are unintended or unexpected. It is in this regard, that the conception of sociotechnical imaginaries brings together theories of the normativity of collective imagination as conceived by social theorists with the materiality of the sociotechnical as advanced in STS.

Sociotechnical imaginaries of big data

At our present age, perhaps some of the most forceful sociotechnical imaginaries concern those about digital technologies and big data. From the internet as both liberating and enslaving to autonomous yet murderous cars, one that has and continues to have force is that of a 'big data revolution': 'Data is to the information society what fuel was to the industrial economy: the critical resource powering the innovations that people rely on' (Cukier and Mayer-Schonberger, 2013: 182). What exactly 'is' big data remains a matter of some debate (Ruppert, 2016) and my use of it here is not to accept the term but to consider its imaginary force. In that regard, the most predominant definition is the so-called 3Vs: volume, velocity and variety (Stapleton, 2011). But, as others have noted, the existence and processing of large volumes of data is not new. In the 1980s when social scientists gained access to the entire 1980 U.S. Census database this certainly constituted a large volume of data (Jacobs, 2009). And as Ian Hacking has argued an 'avalanche of printed numbers' marked the first decades of the nineteenth century (Hacking, 1982).

Beyond volume then, it is the velocity of data production that is said to distinguish big data as well as its variety of sources and formats from audio, video, and image data, and the mixing and linking of these. Kitchin (2014) has extended this definition of big data to include additional 'essential characteristics': exhaustive in scope (e.g., covering 'whole populations'); fine-grained in resolution and uniquely indexical; relational by being made up of common fields that enable linking; and flexible and scalable. He argues that these 'make them qualitatively different to previous forms of data' (79). The growing list of qualities attests to the diversity of what is being defined as big data but also that the relevance and degree of each is highly variable depending on the particular data in question. Kitchin, for example, includes emails, text messages, sensor data, retail transactions and pre-paid travel cards as examples yet each of these considerably varies across these qualities.

These qualities of how big data is being defined highlight two things. What each of the 'Vs' mean is hugely variable and for that reason their force is not in definitions but how they function as imaginaries that provoke notions of speed, quantity, flexibility, scalability and extensity. A second is that these qualities are the outcome of changing sociotechnical practices through which data is being produced. For it is through specific and changing data practices that these qualities are being done. Proclamations about a big data revolution, or data as the new oil or means of surveillance capitalism, are about changes in data practices that now extend throughout cultural, economic, social and political worlds. It is that reach and extensity of the production and deployment of data by myriad organisations, agencies, corporations, institutions, and so on that has fuelled imaginaries of it as a revolutionary force.

The force of big data imaginaries is also not in their proclamation but, as Castoriadis argued, in the acts of imagination of myriad collectives through which they pass 'from symbols to something more'. From the shaping of university curricula, the development of professional training programmes in data science, changes in the priorities of research funding calls and the introduction of new academic journals, the force of big data imaginaries is their diverse take up in myriad fields of practice. How imaginaries of big data have formed and become dominant is complex but my interest is how their force is producing effects in a particular field of practice. It is a field we have conceived of as the transnational field of statistics within which some statisticians consider big data a 'competitor' to data produced by national statistical institutes (NSIs):

> On the other hand, the Big Data industry is rising: the huge volume of digital information derived from all types of human activities is being increasingly exploited to produce statistical figures. These figures often make use of data from private institutions or companies. Leaving aside the current public debate on whether companies which collect the data should own the data and could use them for another purpose without consent, these new statistical figures may be seen as competitors of traditional official statistics.[4]

Reflecting on this competition some two years later, the then Director General of Eurostat (the statistical office of the European Union) argued that 'we are at the edge of a new era for statistics' as 'data is raining down on us' and, as he further put it, others are claiming that the data revolution could make national statisticians obsolete.[5] With a chief data scientist located in the White House what then is their relation to the chief statistician, he asked? For others, ignoring these new developments would mean that official statistics would lose their

relevance in the future and risk being marginalised. What these reflections highlight is that the relation between statistics and states that is so often quoted depends on the mutual relation between statistical professions and state statistical institutions. More generally, they are part of wider mutual relations between science, professions, expertise, knowledge and governing that especially marked the twentieth century (Jasanoff, 2017a). It is this mutual relation between expert knowledge and the epistemic authority of states that imaginaries of big data are having performative effects.

How these imaginaries of big data have passed 'from symbols to something more' amongst statisticians is not occurring within the confines of national contexts. Rather, how they act on these imaginaries is occurring dynamically within a transnational field of statistics.[6] As conceived by Pierre Bourdieu (1984), fields are made up of dynamic configurations of relational positions occupied by professionals who compete with one another over the recognition of forms of capital that shape their relative positions and in turn power and authority. Within any given or emerging field professionals seek to maintain or improve their positions through the valuation and accumulation of different forms of capital, including cultural, economic, social, and symbolic capital (Bourdieu and Wacquant 2006: 127-8). While Bourdieu focused on nations and in particular France, other researchers have adapted his conception to understand international and transnational fields. Most notable are studies in the fields of international law (Madsen 2014; Madsen 2011; Dezalay and Garth 1996) and international political sociology (Bigo 2011). In Didier Bigo's understanding, the 'national' is not simply a level or scale that is replaced by another — whether the 'transnational' or the 'global'. Rather, he says, the transnational can only exist through the national in the form of transnational networks of professionals who enter as experts of their national states. Hence, professionals 'play simultaneously in domestic and transnational fields' (Bigo 2011: 251). In this view, a transnational field is made up of networks and practices between and amongst professionals who act at various non-hierarchically ordered practices of the transnational, national and local. It is through struggle and change that new kinds of practices and forms of expertise emerge and become recognised as legitimate in the production of knowledge within a field (Bigo 2011, 240–41).

Statisticians have operated and worked in simultaneously national and transnational networks and practices since at least the late nineteenth century but especially during the post WWII period through which they have constituted a transnational field of statistics. Through working with and in relation to professional organisations such as the International Statistical Institute (ISI) and international governing organisations such as the European Statistical Service (ESS), they have come to constitute one faction of actors who have forged the

field. Like other fields, they form one faction amongst others that include statisticians and related professions who work in different capacities within states but also beyond. And like other fields it is dynamic and has undergone specific transformations as a result of changing methods, forms of data, digital technologies, and governing strategies, problematisations and rationalities but also as a result of struggles within and between factions.

Myriad stakeholders and factions constitute the field and occupy professional positions such as statistician, demographer, methodologist, information technologist, database manager, and so on. I will not go into detail but instead highlight there are numerous stakes between differently positioned professionals who traverse the public and private sectors. One concerns the implications of the rise of a profession that primarily emerged within the private sector and which claims possession of the skills, knowledge and techniques to analyse big data, that of the data scientist. Imaginaries of big data have been joined by imaginaries of the powers of this profession, which highlights how defining new objects of knowledge are very much entwined with the making of professions (Savage, 2010). For some statisticians, 'hardcore data scientists' have broad knowledge plus specialist skills such as machine learning and modelling and can work with big data systems. Others argue that professions such as computer scientists have been quicker to adopt these skills enabling them to take the 'high' positions that economists once did and are able to sell themselves better. How statisticians define, problematise and value big data are thus very much entangled with how they identify the forms of cultural capital that make up the profession of data scientist. But in turn, these conceptions of skills and competition are shaping the ways they simultaneously imagine the future of their profession and institutes. That is not to say there is agreement amongst statisticians and others who are part of statistical institutes but that how they imagine this competitor shapes their responses and positionings. In other words, they occupy shifting positions in relation to data scientists as a consequence of changing valuations of methods, technologies, expertise, skills, education and experience recognised as forms of cultural capital necessary to produce and analyse big data. Like Mike Savage (2010) previously referred to as a politics of method, statisticians and other professionals both within and outside statistical institutes struggle over the technologies, truth claims, and methods involved in the production of data for statistics in order to improve their relative positions as well as that of the institutions of which they are a part. Rather than possessing and having fixed advantages, resources and skills are 'mobilised to achieve advantage and classify social distinctions' within this particular context and field (Halford and Savage 2010: 944). This includes the production of material infrastructures, the development of analytic techniques and methods to the conventions and rules for the circulation and sharing of

data. It is through such mobilisations that new computational skills and expertise get valued and recognised and professions emerge. In these ways, the spawning of new regimes of data production by private technology corporations such as Facebook is entwined with the making of its professions such as 'data scientist', 'people research scientist', 'people analyst', 'product experience analyst', 'data engineer' and 'customer insights manager,'.

As Bourdieu argued, skills and expertise also include embodied forms of cultural capital or habitus such as sensibilities, forms of appreciation, habits, normative inclinations, and other forms of knowledge that are usually not made explicit. Statisticians express these as capacities to be agile, creative and responsive to new technological developments and innovations and as skills that they need to acquire in order to compete. They are skills that involve not simply learning new techniques such as working with algorithms and generating visualisations, but dispositions acquired through engaging in the practices of data scientists such as hackathons, sandboxes, experiments and data sprints. For statistical institutes, these practices involve the investment of resources in new infrastructures, training programmes, task forces, documents and reports, in brief, all the investments necessary to experiment and innovate in ways that accord with the competition. In that vein it also means rethinking how existing state data such as that from administrative registers, traffic sensors, and public transit can be analysed and become more like the big data produced by corporations (Kitchin, 2014). Arguably, this has been an impetus for the increasing reuse of administrative data registers, often touted for reducing costs and respondent burden, but also understood as a form of big data produced by states. Especially in Nordic states, since about the late twentieth century, registers have been used as a data source for making population statistics and in some instances the main source. During the past decade the reuse of administrative data has become ever more prominent within and beyond EU states. Related developments include the design of digital and e-censuses that involve not simply the direct transposition of paper questionnaires into digital formats. Rather they are imagined as methods of data production that simplify and make it more efficient, detailed and faster in ways similar to data production in the private sector.

The force of these imaginaries is thus evident in practices of cultivating different forms of cultural capital, which statisticians express in calls for a culture change in ways of thinking about data production. This includes the adoption of new 'mindsets' and 'paradigms' that take cues from how data is produced by private technology corporations and analysed by data scientists and other data professions. In these ways the force of big data imaginaries is not simply about whether data produced by private technology corporations has been or will be

used to make official statistics. Rather, it is how such imaginaries are simultaneously reconfiguring cultures and practices of data production on the part of both statistical professions and their institutes.

The objects and subjects of sociotechnical imaginaries

To speak of dominant imaginaries then is to underscore that they not only shape what is thinkable but also the practices through which actors perform them. So, while some commentators declare big data as 'hype', these pronouncements underestimate the material and political effects of imaginaries as they are taken up in practices through which new paradigms or ways of thinking are propagated. For the transnational field of statistics, what is at stake is not only the mutual and relative authority of statisticians and statistical institutes but also what Bourdieu refers to as the exercise of symbolic violence over the production, consecration and institutionalisation of forms of knowledge:

> Symbolic power is the power to make things with words. It is only if it is true, that is, adequate to things, that description makes things. In this sense, symbolic power is a power of consecration or revelation, the power to consecrate or to reveal things that are already there (Bourdieu, 1989: 28).

While Bourdieu does not express this as performative, he asserts that a description 'makes things'; from populations to the economy, the outcome of struggles involves practices that perform their objects of knowledge. That is, big data imaginaries and the struggles between professions that they spawn also have consequences for the exercise of epistemic authority over the making of the objects of statistics (Ruppert, 2011). Beyond which faction of professions within a field will exercise that authority at issue is the power 'to reveal things'. Choices about methods of producing data and in turn statistics produce and reproduce the very objects that they ostensibly reflect. In this sense they are performative in that they do not involve the discovery of truths about objects but simultaneously represent and enact, that is, bring into being the very objects they are meant to describe and represent (Law, 2004; Mol, 2002). Methods of producing data have advocates (methodologists, demographers, information technologists) who seek to achieve specific purposes, address certain problems and interests, and are founded on conceptions of objects or of what is to be measured (Law et al., 2011). They involve normative choices about what matters such as classifications and categories and how to know those objects, which involve further choices about technologies, materials, people and conventions for their conduct. In these ways methods involve numerous choices about what is to be made present and absent (Law 2004).

Yet, methods not only produce their objects such as populations but also their subjects. That is, they are configured in ways that imagine who are the subjects of methods and how they should, can and will likely perform. Just as methods are treated as producing data and statistics that are reflections of objects, so too are they imagined as reflections of subjects as already formed rather than produced and reproduced. It is to this question I now turn to argue that epistemic authority is not only exercised over the conception of objects of knowledge but also relations to the subjects of data production.

Methods typically imagine people as respondents and data subjects.[7] In relation to population data, the modern paradigm of this is the census questionnaire. As a method, census questionnaires and surveys more generally presuppose and are part of producing knowing, self-aware people who can be called upon to account for themselves. They presuppose, knowing, self-eliciting individuals who have the reflexive capacities to respond (Ruppert, 2007). Osborne and Rose (1999) for example describe how the production of 'opinioned or opinionated people' was central to the development of public opinion surveys in the early twentieth century. They argue that genealogies of methods can be paralleled with genealogies of persons: in the case of public opinion polls, people 'learned' to have opinions, became opinionated, which means that opinion polls 'made up' people.

While not without problems and without wanting to idealise questionnaires, they typically involve direct relations with subjects who are called upon to participate in their identification but who can thereby also intervene and exercise the capacity to not answer, subvert questions, challenge categories and so on. That is, while methods perform sociotechnical imaginaries of both their objects and subjects, what comes to be enacted is not predetermined. Methods do configure conditions of possibility but can be inventive of the unintended or unexpected as a result of interactions and dynamics between people and technologies (Lury and Wakeford, 2012).

Historically, there are many examples of how people have variously influenced, interfered, or intervened in the ways questionnaires have imagined them as respondents and obedient data subjects. Researchers have documented how subjects have challenged social categories such as race, ethnicity, gender, and intervened in their identification, for example (Anderson and Fienberg, 2000; Kertzer and Arel, 2002; Nobles, 2000). While some subjects may obey and submit to the categories of statistical authorities, others have asserted the right to answer otherwise. Questionnaires, while organised to guide their responses in specific directions, thus involve an interplay between the categories of statistical authorities and those performed and claimed by subjects.

In other words, people take up different subject positions when they act in relation to them: they can obey, submit and/or subvert them (Isin and Ruppert, 2015). Work in critical citizenship studies offers a way to interpret these as acts of citizenship, where being a citizen is understood as a political subjectivity that includes not only the possession of rights but the right to make rights claims (Isin and Nielsen, 2008; Isin and Saward, 2013). In this view, subjects who perform in ways not anticipated by a method and who demand identifications that are not recognised perform a political subjectivity of 'data citizen' by claiming the right to shape how data is made about them and the populations of which they are being constituted as a part.

Methods of data production such as questionnaires have enabled such contestations in part because of the affordances and possibilities provided by the sociotechnical relations that make them up. From open text fields enabling the insertion of elective categories to skipping or refusing to respond to questions, the method, often to the dismay of methodologists, has variously afforded such contestations, reinterpretations and resignifications. One condition of this possibility is that they involve more-or-less direct and explicit relations between statistical institutes and subjects. Through these relations subjects can participate in their identification on terms they can assert and thereby perform as citizens when called upon to translate their knowledge and experiences into responses to questions and in turn the production of data about them. By performing this right to contest, subjects thereby pass from being obedient and submissive data subjects to being data citizens in the sense I am developing here.

How then does big data transform relations between subjects and methods of data production? What kinds of subjects are presupposed and what possibilities are afforded for them to perform as data citizens in the production of data about them? Unlike long established methods that involve 'registers of talk' (Marres, 2017), the production of big data imagines subjects as passive actants where technologies are one-way tools for extracting data about them. Through subjects' actions, interactions and transactions with digital technologies such as social media, mobile phones and browsers, data is produced often without their knowledge and through processes that work in the background. Furthermore, while that data is used for purposes such as the functioning and performance of a technology such as a platform, data can also be repurposed. This is one of the valuations promoted in big data imaginaries: the possibility of the commodification of data through its circulation and its infinite reuse for purposes beyond that which data were originally produced. Data are imagined as independent of their relations of production that brought them into being but also from subjects who are imagined as passive actants.

Data then are interpreted as simple representations of behaviours, of who subjects are, what they think, and what they do and which can be reused for purposes far removed from the sociotechnical relations and conditions of possibility that brought them into being.

The many implications of the repurposing of big data in relation to the commercial agendas of technology corporations are well documented (e.g., (Morozov, 2011)). And, to return again to my opening remarks, it is the repurposing of Facebook data by an academic to do psychological profiling and by a corporation to intervene in democratic elections that have fuelled current struggles. Much critical attention is being paid to what this repurposing means for data protection and ownership, and privacy and consent and effects such as profiling, the filtering of choices and influencing of opinions, and so on. However, what such criticisms underestimate are the implications of detaching data from their conditions of production and interpreting these 'registers of action' (Marres, 2017) as simple reflections of both objects and subjects. Instead, the deleterious effects of repurposing big data are resolved by reducing subjects to the role of individual privacy regulators. Subjects are given ever more fine-grained ways of regulating what, when and how data can be produced about them as European citizens are learning with the implementation of the General Data Protection Regulation (GDPR). During the past several weeks citizens have been inundated with emails from organisations notifying them of changes to privacy policies and how to take action to remain on mailing lists. While important, data rights are confined to consenting to the collection of data and the sending of emails. But how citizens might know or interfere in the production and interpretation of data to which they agree or consent is not at a matter of concern.

It is this imaginary of repurposing big data and of subjects as passive actants and individual privacy regulators that are shaping how relations to citizens are being imagined. But it is also shaping how digital technologies are more generally being imagined as tools for mediating relations to subjects in ways that reduce the possibilities of how they can act in the production of data. This is evident in conceptions of digital censuses as technologies for narrowing and calibrating choices, directing responses into desired categories and managing the obedient performance of subjects.

The consequences of repurposing data independent from their relations of production are many and I have suggested a few. But perhaps most significantly is how it constitutes a rupture in the relation or a detachment between states and citizens in the production of data. It means adopting data that is implicated in the rationalities, assumptions, interests and norms of private sector

professionals and technology corporations. If epistemic authority for data production is indeed a stake of big data imaginaries then practices such as repurposing delegate some of that authority to them. It means relegating to others relations to subjects as users, customers and data sources and makes their capacity to perform as data citizens in the ways I have expressed more difficult if not impossible. But more generally it shapes how relations between states, citizens and digital technologies are imagined within an emerging paradigm of data production.

PART II

Imagining data citizens

Many of my arguments come from our research and analyses of the discourses of statisticians about big data and digital technologies as well as ethnographic fieldwork that involved observing their experiments with data produced by subjects' actions, interactions and transactions with digital technologies to produce statistics on mobility, public sentiments or concerns. How they experiment and compete over innovations in statistics has provided access to their assumptions and the stakes and politics involved in their efforts to learn new skills, adopt new 'mindsets', and assess the potential and consequences of repurposing big data for the making of official statistics. We have written several papers that analyse and critique these experiments. As such we have followed a scholarly tradition of observing field sites such as international and national statistical offices, meetings, conferences, data camps, hackathons and so on and used techniques such as taking notes, engaging in informal conversations, and conducting in-depth interviews as well as participating in conference calls, following or participating in intranets, wikis, websites, listservs, emails, and webinars, and monitoring, compiling and analysing tweets. These are techniques that are core to ethnographic methods and involve following and analysing the words and practices of research subjects to then engage in critique.

It was through such critiques that we came to see the force of big data imaginaries in how statisticians imagine future relations between states, citizens and digital technologies.

Some of us began then to think about how critique might be performed differently.[8] Building on approaches to experimentation and demonstration in STS, and to return to the provocation I started with, we asked how might we respond to the political fragility of digital technologies and data as openings for reimagining those relations? If digital technologies and data are now becoming ever more part of social, cultural and political worlds then how might they also afford possibilities for imagining different relations in how those worlds are enacted and known?

It is in relation to these questions that we started to think about a method of research that could critique but also produce different imaginaries of subjects as data citizens.[9] That is, we sought to go beyond accounting for and critiquing the role of 'calculative logics and rationalities in managing and making societal futures' (Wilkie, Savransky and Rosengarten, 2017: 2) by developing different 'approaches and sensibilities that take futures seriously as possibilities that demand new habits and practices of attention, invention, and experimentation' (Ibid.). It is with this objective that we drew on approaches at the 'interface' between ethnography and STS (Cadena et al., 2015) through an experimental set-up and the creation of what George Marcus (2014) calls para-sites. Rather than observing conventional field-sites, para-sites involve setting up an overlapping academic and fieldwork space for testing and developing ideas with research subjects not as informants but as collaborators. Para-sites are understood as integral and designed parts of fieldwork that combine research, reflection and reporting and a mix of participants. As Marcus and others have elaborated, they are sites through which actors located within centres of relative power and authority can develop and express a critical consciousness of their own situations and experiment with the possibility of different thinking or practices in the context of the power relations they find themselves. For Stavrianakis (2015) 'collaboration is one in which two kinds of participants, in their engagement, are able to name a problem or do a practice that in their position as participants (prior to engagement) they would not have been able to do' (171).

Para-sites can take different forms such as the set-up of 'hybrid forums' (Callon et al., 2011) and the making of 'new collectives' (Latour, 2006) through which different groupings of actors can encounter each other, question and reformulate settled problem definitions (Waterton and Tsouvalis, 2015).
It is within this framing that we conceived of a para-site that would involve changing our subject positions from that of social science researchers and

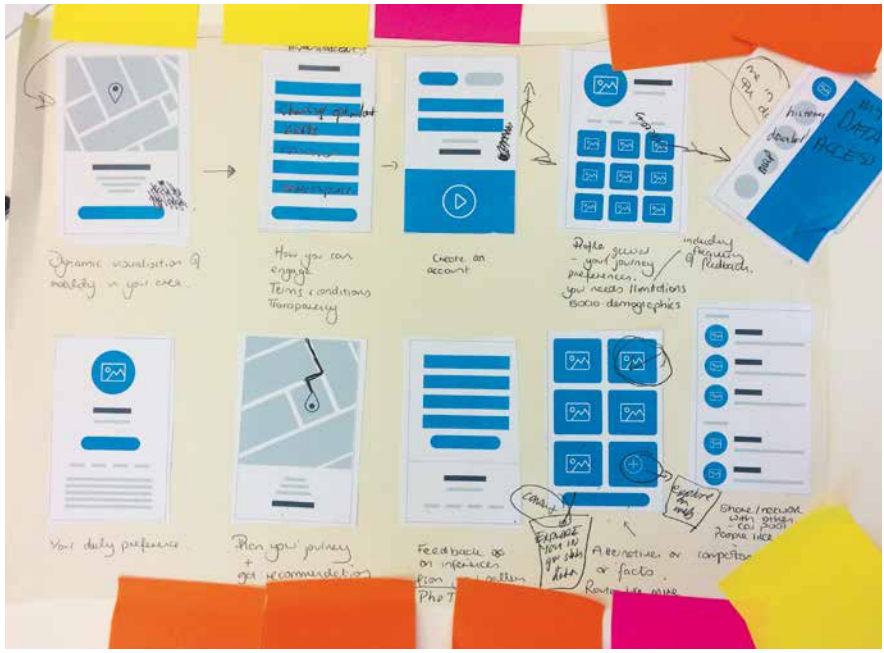
statisticians to that of collaborators. Given the uncertainties of how such a collaboration might or might not work we adopted an experimental orientation. Rather than the controlled and scripted procedures of a closed laboratory, we conceived of a para-site as an exploratory, trial-and-error format that would accept uncertainty about the outcomes without a language of absolute success or failure.

In proposing a collaborative, experimental approach we joined others in STS who adopt experimentation as a method and mode of participation (Lezaun et al., 2017). Rather than treating experiments as objects of study, it involves 'approaching them as devices of STS research' (204). One mode concerns political experimentation where the objective is not only participation but to interrupt 'ingrained ways of being and doing' (210). Various strands of social science have operated with degrees of experimentalism (Gross and Krohn, 2005; Guggenheim, 2012) and have adopted experimenting as a method to explore areas of scientific and technological expertise (Waterton and Tsouvalis, 2015). One approach involves working collaboratively with experts to develop and explore new problem formulations, transcend ingrained styles of reasoning, disrupt existing hierarchies and critically examine how objects of study come into being and what they include and exclude (Rabinow and Bennett, 2012; Ruppert et al., 2015). This is the model of a 'collaboratory' (or, co-laboratory) in which participants engage in 'concept work' through the common exploration of a topic. Another approach involves going beyond a discursive mode of collaboration to incorporate experiments in design. This approach involves building artefacts that reconfigure relations between people and technologies to imagine different distributions of power and agency (Vertesi et al., 2017).

Practice research is one version and well developed in the fields of design and art but now also in STS as an ethnographic approach to undertake research through an engagement with the skills, materials, small tasks and everyday labour involved in making things, instead of primarily relying on texts and spoken word (Jungnickel, 2017). Building something, rather than critiquing through discourse, produces an entanglement with research subjects and matters of concern. Through experiencing the confusion and failure that are part of making and designing, the aim is to make present the hidden skills, assumptions and technical infrastructures that are part of the making of a thing. It is through design that participants have to make future modes of working explicit and issues can be made 'experimentally available to such an extent that "the possible" becomes tangible, formable, and within reach' (Binder et al., 2015: 163). It thus involves not only experimenting but collaborating to make ways of thinking and generating knowledge open to the influence and insights of others and in doing so imagining and speculating on different possibilities (Stengers, 2010).

For us, a para-site involving the design of a thing was conceived as a way to explore sociotechnical imaginaries of different futures not as objects of knowledge or thought captured by a 'backward-looking present' but by creative experimentation that can 'lure' other possible ways of thinking and knowing (Wilkie, Savransky and Rosengarten, 2017). Wilkie, Savransky and Rosengarten refer to this as speculative research, a discredited word that they resignify to mean the cultivation of a creative and responsible sensibility. What they also point out is that speculating demands the active taking of risks but that it is only through doing so that the unexpected can erupt and different futures be created.

An experiment in citizen data



It is in that spirit that we have been organising a series of para-sites for imagining different relations between states, citizens and digital technologies in the production of data for official statistics. Building from the critique of the imaginaries of subjects of big data, we took as the starting point relations to subjects as data citizens and which engage the dynamic, performative and interactive possibilities of digital technologies (rather than conceiving of them as one-way tools for extracting data). How might the affordances of digital technologies be mobilised to not only produce data but forge new relations with and between states and citizens? How might such participation be

organised to mobilise the positive synergies between digital technologies and democratic politics? Instead of imagining digital technologies as surveillance or control modes of power as they are usually interpreted, how might they participate in enacting data citizens?

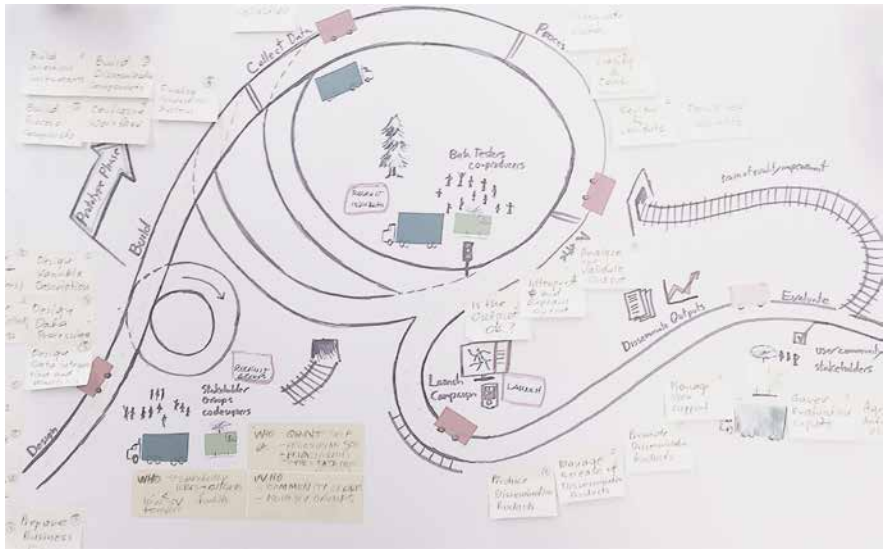
We approached these questions by imagining states, citizens and digital technologies as co-producers in three senses. First, following how it is defined in STS, we approached co-production not only as a relation between people but also with materials, technologies, things, imaginaries and conventions (Jasanoff, 2015). In this way, we imagined digital technologies not as technologies of government but as performative participants. Second, we drew on examples from citizen science where citizens engage digital technologies to produce data such as on air pollution to challenge that of science or the state (Gabrys and Pritchard, 2015) or to politically mobilise data against official, data-driven, cost-benefit calculations about climate change (Jasanoff, 2017b). From these examples we considered co-production as forging a relation between citizen science and statistical science. Finally, drawing from critical citizenship studies, we defined co-production as a move from relations to subjects as passive actants who obey or submit to methods of data production to a political subjectivity where subjects can perform as data citizens by having the right to make claims and intervene and contest how data is made about them.[10]

We decided to explore these relations of co-production with statisticians through a first para-site aimed to design a thing we named a 'citizen data app'. We named it as such to capture that citizen data is not only data about citizens, but that which is co-produced with them. The set-up of the para-site consisted of a collaborative workshop involving ARITHMUS researchers, statisticians, other academic researchers, information and interaction designers, and facilitators. Of course, any set-up already configures possibilities through the things and people it gathers together. For example, we wrote a background working paper that shared some of the initial thinking and principles I have outlined above, we selected who participated, and we organised a programme of guided activities and exercises with the help of a facilitator.[11] What is important to note is that we reflexively conceived of the para-site as a 'situated' site for research. That is, we sought to not only imagine different futures but engage in a practice that combines research, reflection and auto ethnographies as participant observers.

All elements of this set-up contained explicit and implicit normative and political assumptions, some of which I have already noted. As Donna Haraway (1988) has argued, experiments are not impartial and objective processes of discovery. Instead, they reshape relations between participants, objects of knowledge and

things and bring into being new entities, agencies and problematisations. As such set-ups make us as researchers answerable as we are not outside of what we are describing and criticising (Law, 2002). As a mode of critique, set-ups make this explicit. In sum, the para-site was envisioned and organised as a way of doing ethnographic research and critique through making something and being reflexive about what springs forth and our entanglements with it. The uncertainty about what might spring forth is one of the risks of such experiments insofar as the unexpected may be, from our or other participants' perspective. Once put into action a para-site can take on unexpected dynamics and outcomes. But the objective was not to settle on an end-product, that is, an app. Rather it was to experiment with imagining data citizens in ways that break from big data imaginaries of subjects as passive actants and individual privacy regulators and where digital technologies are tools working in the background rather than interactive participants.

Reimagining what makes data 'official'



Instead of detailing outcomes of this first para-site I will outline one imaginary that I observed in the design of an app I was part of prototyping. It was relatively easy for the group I worked with to come up with shared principles for a citizen data app such as ensuring it met public goals and values, that it would be easy to use, that it would empower citizens, that the software would be open and the data co-owned, and that consent and privacy would be built into its design and throughout the life cycle of data. What was more difficult emerged when translating terminology and principles into designs. This demonstrated one of the values of doing research through collaborative design: imaginaries of

citizens as co-producers when materialised in prototypes revealed differences in meaning and understanding but were also generative of something else.

The group designed an app called 'How we move' to explore the different meanings of and relations citizens have to mobility that defy usual statistical categories of where people live and work. One proposition put forward was that existing statistical categories about what is called a subject's usual place of residence or journey to work do not capture the complexity of mobilities in contemporary societies. Amongst other issues, the group imagined how these categories could be rethought through an app that mixed automatically collected GPS data along with citizens annotations, interpretations and categorisations of their and others' mobility patterns.

One tension emerged through design elements that created possibilities for citizens to intervene, modify, categorise and interpret data versus those that aimed to control its collection, standardisation and quality. Not a surprising dynamic perhaps but rather than resolving the tension one solution offered was that co-produced data could be treated as a hybrid form based on different quality standards yet generative of unique and perhaps previously not imagined kinds of statistics. In subsequent conversations, statisticians then spoke of co-produced data as complementary rather than a replacement of existing data, a term often called forth when a new and unsanctioned form of data is produced. That is, relegating it to a special status was a strategy of accepting while at the same time retaining the authority of existing methods of data production. However, it also signified another potential. It signified that there is not one set of standards through which data can be produced and made 'official'. Coming from years of fieldwork following statisticians' data practices, we observed such variability as a condition of all methods of data production from how surveys are conducted (paper, digital, phone, internet, tablet, etc.) to how administrative registers are organised (taxation, national insurance, health, etc.). For each, adherence to standards, norms, conventions, rules and principles varies to the extent that what can become 'official' is not settled or measurable by adherence to a single standard, but something that is collectively negotiated, instituted and maintained. To imagine complementary data then is to offer a different way of accomplishing what counts as 'official' but specifically through new modes of production instituted and enacted by different social and technical collectives.

However, and critically, this interpretation does not mean according complementary data the status of 'alternative facts'. Previously, I argued against 'fact checking' as an answer to the evaluation of competing 'facts' in part because it disregards critiques of the epistemic authority and command of

experts. What is at stake is not which experts win the authority to legitimise public facts — or what counts as 'official' data and statistics. Rather, I suggest, it is the norms and values on which public facts are made and legitimised including the relations of production that enact them. This means to recognise that different social and technical collectives may engage in forms of practical reasoning that adhere to different principles and standards. Rather than engaging in an infinite search for all possible solutions, evaluating them and then arriving at the best one, practical reasoning involves juggling numerous criteria to arrive at one that 'satisfices' (Simon 1947). Gabrys and Pritchard (2015) make a similar argument to counter the reliance on measurement accuracy as the only criterion for evaluating environmental data gathered through citizen sensing practices. They note that measurements of environmental phenomena meet different objectives or questions, which are often not known in advance. For instance, a 'rough' measurement to identify a pollution event when it is happening or when it has happened might be sufficient and 'good-enough'. What Gabrys and Pritchard draw attention to is that the potential uses or value of data often cannot be known in advance and that there is value in organising data production and interpretation as practices of searching for potential rather than reiterating and replicating already known objectives or questions through previously established rules and standards. In other words, methods of data production can be evaluated according to different norms, objectives and standards such as the relations of production that bring them into being rather than their truth claims.

Reimagining a category: usual residence

The prototyping of the 'how we move' app introduced how population categories can also be reimagined through a design experiment. This is what we will explore in a second para-site that will involve academic researchers, information and technology designers and citizen groups. We decided to focus on the category of mobility in part because it frequently came up as a concern in our fieldwork. Additionally, it addresses a fundamental basis of population statistics which in contemporary times is referred to as the category of a 'usual residence.' That is, determining a single usual residence for each subject has been the foundation of a governing rationality of knowing which subjects to count, or in other words, who are the subjects of governing within specific political jurisdictions.

While states have adopted many definitions of who to count, an internationally agreed standard has been adopted for the purposes of determining which subjects belong to which state jurisdiction for the purposes of comparability and to avoid the double or multiple counting of subjects. The current definition

is called the '12 month rule'. Subjects are 'those persons who have their place of usual residence in the country at the census reference time and have lived, or intend to live, there for a continuous period of time of at least 12 months.'[12] However, a recurring problem, beyond technical difficulties, are those subjects who cannot be easily placed in a usual residence for which there are numerous exceptions and 'particular cases' such as Higher Education students, circular and seasonal migrants, homeless people, reconstructed families, international business people, citizens who have residences in two or more countries, and so on. Arguably, many modes of living have historically been at odds with governmental definitions as what constitutes being resident is and has been a variable condition of humanity because of choice, circumstance, law or force.

In brief, our proposition is to imagine different categories. Rather than beginning with 'usual' residents and identifying rules for addressing exceptions and special cases, we will begin with the 'unusual' to experiment with how residence might be reimagined through categories that accord with the multiplicity of 'modes of living'. That is, we will take exceptions as the rule and ask, what would happen if we unlocked the definition of a population from its historical connection to a residence and imagined different ones? On this point we will follow STS researchers who attend to the multiplicities of a phenomenon and bring into question practices that seek to make them singular and centred on one meaning (Law, 2002; Mol, 2002). We will thus take multiplicity of modes of living as a starting point.

We offer this starting point in consideration of two conditions of contemporary cultures that are changing modes of living and how they can be known: that new modes of living are also being facilitated by digital technologies (e.g., distance working, long distance relationships of care and support) and at the same time, digital technologies afford the possibility of knowing different modes of living by co-producing categories with data citizens. Ontologically and methodologically, the next para-site will engage with digital technologies in this dual way. It will involve workshops with citizen groups who constitute some of the exceptions to generate different sociotechnical imaginaries on 'how we move' not for the purposes of producing data on mobility but to probe a fundamental category of official statistics.

Conclusions

The history of our present marks an emerging transformation in data production. I have set out in this lecture that the relations between states, citizens and digital technologies in this transformation are not inevitable and that different data futures are possible. I have suggested one such future by imagining a new political subjectivity, that of the data citizen. This imaginary of a 'future citizen' (Isin, 2015) may be literally unthinkable for some. However, it is through acts of imagination by collectives that start from somewhere different, not with solutions to problems already defined, but through practices of invention and experimentation that different futures can be performed.

While examples such as the Facebook data breaches dominate the headlines, there are numerous initiatives that imagine different data futures. Groups such as the Tactical Technology Collective, a Berlin non-profit engaged in information activism that provides tools for finding, creating and representing evidence and turning information into action; or the Ushahidi platform, a crowdsourcing tool managed by an international non-profit group based in Nairobi that seeks to help especially marginalised people generate data from the bottom up. These are just two examples of performing different data futures. Our experiment in citizen data is to imagine yet another that involves new relations between states, citizens, and digital technologies in data production.

Experiments can lead to dangerous outcomes such as potentially co-opting subjects or reproducing passive forms of participation such as those enacted by big data. They could also lead to making citizens responsible for participating in data production rather than affording opportunities to perform as data citizens in the ways I have proposed. Such outcomes are conceivable given the ascendancy of governing rationalities that imagine citizens as subjects to be trained and responsibilised for everything from digital literacy to digital etiquette. Acknowledging such possible outcomes is to recognise that acts of imagination that break from dominant imaginaries are a formidable challenge. However, to experiment requires not beginning with pre-conceived notions of what constitutes success or failure but to be reflexive about outcomes and their possible consequences. But finally, it is at a moment of the political fragility of digital technologies and data that experimenting can offer different imaginaries to those that dominate and demonstrate that other futures are possible. For one, to think of data citizens is to offer an imaginary not of data-driven knowledge as is often proclaimed, but of democratically driven knowledge.

To conclude, many of the issues raised in relation to methods, data production and official statistics are also ones we grapple with in the social sciences. Questions about our relations to data subjects or data citizens, and of how we participate in dominant imaginaries or break through to new ones, are also our challenge in relation to new digital technologies and the data they produce. If data and politics are inseparable in the ways I suggested in the introduction, then this calls for reflexivity about how we may be implicated and the part we play in emerging power relations.

Afterword and thanks

It is a great honour to have held the Van Doorn Chair here at the School of Social and Behavioural Sciences at Erasmus University Rotterdam. I am especially grateful to Willem Schinkel who nominated me for this Chair and the many opportunities to engage with him and others within the School during these past few months and earlier visits. I have come to know several PhD and Postdoctoral Researchers and faculty in the School connected to Willem's work and especially thank Rogier van Reekum, Jess Bier, Sanne Boersma, Maya Hertoghs, Eva van Gemert, and Irene van Oorschot amongst others for their participation and contributions during seminars here at Erasmus. I am also grateful for the support and assistance of Marjolein Kooistra within the School who has assisted with arrangements during my visit including the production of this written text.

Taking up the Chair has been a wonderful opportunity to spend time with many Dutch social scientists whose work I have come to know over the past several years and to also make new connections. One of the great benefits of simultaneously holding the Van Doorn Chair and Fellowship at NIAS is the opportunity to engage with researchers from a variety of academic disciplines from the Netherlands and beyond as well as artists and writers-in-residence. Such opportunities are ever more vital at a time when economic, political and cultural nationalisms of various forms are being asserted. I am thus grateful to my co-Fellows at NIAS for helping make it a vibrant and stimulating academic and international environment and to the Director, Jan Willem Duyvendak and the many NIAS staff who have provided wonderful support.

I also wish to acknowledge and thank five researchers who have been working with me as part of ARITHMUS, which lead to the writing of this lecture: Baki Cakici, Francisca Grommé, Stephan Scheel, Ville Takala, and Funda Ustek-Spilda. Though they are now moving on to new positions, we continue to collaborate and write together and I am grateful for their contributions, commitment and collegial support. Finally, I want to acknowledge the support and contributions of numerous statisticians across Europe including several from Statistics Netherlands who have facilitated and participated in the research leading to this lecture.

I did not know of Van Doorn before holding an honorary chair in his name but can attest to how such a tribute to his work has spawned for me new intellectual and international connections. That is what the Honorary Chair and Fellowship at NIAS have made possible and for that I am truly appreciative.

Samenvatting

Verschillende verbeeldingen op de socio-technische toekomst van onze data. Een experiment met citizen data

Na de datalekken bij Facebook, door Cambridge Analytica beïnvloede verkiezingen en uitspraken over alternative facts is het nogal een uitdaging om een lezing te houden over een onderzoeksexperiment waarin een app wordt ontworpen voor citizen data. Toch bieden deze gegevens kansen om ons een alternatieve datatoekomst voor te stellen.

Nadat duidelijk was geworden dat Facebookgegevens zijn gebruikt om de Amerikaanse verkiezingen en het Brexit-referendum te beïnvloeden, kwam ook aan het licht dat de persoonlijke gegevens van wel 87 miljoen gebruikers zonder hun toestemming zijn verzameld via een app die was ontworpen door een onderzoeker aan de universiteit van Cambridge. De ernst van dit datalek werd nog eens onderstreept door de reacties van de betrokkenen op de lopende controverse. Zo beweerde Cambridge Analytica dat honderden bedrijven zulke gegevens verzamelen en dat dit gewoon legaal is. De onderzoeker uit Cambridge zei dat het zowel juridisch als ethisch gezien acceptabel is om data aan derden te verkopen, wat getuigt van een gevaarlijke onnozelheid. Met gevaarlijke overmoed gaf Facebookbaas Mark Zuckerberg tijdens zijn excuustournee toe dat Facebook geen maatregelen had genomen om ervoor te zorgen dat de tienduizenden door het bedrijf goedgekeurde apps aan hun algemene voorwaarden voldeden.

Een belangrijke les die we uit deze actuele politieke strijd kunnen trekken is niet dat een academicus, een internetplatform en een databedrijf verwijtbaar gedrag hebben vertoond. Het gaat er vooral om dat we beseffen dat data en politiek onlosmakelijk met elkaar zijn verbonden. Of we nu in de wetenschap actief zijn of apps ontwikkelen, we mogen daar niet naïef in zijn. We moeten ons realiseren dat data deel uitmaken van nieuwe vormen van machtsrelaties die ook ons kunnen raken. Want onze data zijn niet alleen van invloed op sociale relaties, maar ook op de democratische politiek.

Een mogelijke reactie zou kunnen zijn dat we geen onderzoek meer doen dat zich inlaat met digitale technologieën zoals apps, en met wat tegenwoordig big data wordt genoemd. Maar zouden we daarmee niet accepteren dat onze huidige omgang met datapolitiek onomkeerbaar is? En zou dat niet betekenen dat we daarmee de geschiedenis van ons heden als voldongen feit accepteren? Deze vragen komen niet alleen naar boven in reacties van mensen die zeggen dat data die via digitale technologieën zijn verzameld, een gevaar, bedreiging of risico

vormen, maar ook in tegengestelde reacties, waarin de voordelen van data worden geprezen omdat ze ons leven en onze relaties verbeteren. Dat er ook gevaren aan kleven zien zij als de geringe prijs die we daar nu eenmaal voor moeten betalen.

Dat de verspreiding van digitale technologieën en data heeft geleid tot tegengestelde kennisclaims, leverde vergelijkbare reacties op over het gevaar van alternative facts. Sommigen vinden dat het hier om een 'democratisering' van kennis gaat die het einde van de dominantie van deskundigen inluidt, maar tientallen jaren van onderzoek op het gebied van bijvoorbeeld Science and Technology Studies (STS) hebben uitgewezen dat de scheidslijn tussen waar en niet waar nooit eenduidig is geweest. Deze tweedeling verloochent dat feiten worden geproduceerd en bemiddeld via complexe praktijken en technologische infrastructuren en vol onzekerheden zitten.13 De scheidslijn tussen werkelijkheid en fictie is een netelige kwestie. Er bestaan geen waarheden of onwaarheden die onafhankelijk zijn van het kennisregime waar ze uit voortkomen. Daarom betwijfel ik of de politiek van Trump en zijn aanhangers een nieuw post truth-tijdperk inluidt. Ik denk eerder dat we getuige zijn van de opkomst van nieuwe waarheidsregimes. Daarom moeten we inzicht krijgen in hoe een asymmetrische kijk op de waarheid opkomende, in politiek en economisch opzicht krachtige groepen in staat stelt om nu het 'standpunt van de epistemische underdog in te nemen'.[14]

Toch zien we een belangrijke reactie: steeds meer deskundigen doen aan factchecking om hun gezag te herstellen. Zo controleert de Londense non-profitorganisatie Full Fact informatie en beweringen die door politici en anderen in de media worden gedaan over maatschappelijk relevante kwesties. En de Europese deskundigen van het Fact Check-blog van Open Europe scheiden de 'Europese feiten van Europese fictie'. De BBC heeft al tijden een Reality Check-pagina op haar website. Wonderlijk genoeg brengt dit mij weer terug bij Facebook, dat na de Amerikaanse presidentsverkiezingen in 2016 met een initiatief kwam om externe partijen te factchecken om desinformatie op het platform tegen te gaan. Dat leverde weer allerlei nieuwe problemen op, zoals de vraag wie de factcheckers factcheckt. Deze pogingen dragen echter niet zozeer bij aan herstel van het gezag, maar maken spanningen alleen maar groter, omdat de waarheid nu de verantwoordelijkheid wordt van poortwachters, intermediairs en validators. Burgers worden behandeld alsof ze zonder deskundigen feit en fictie niet meer van elkaar kunnen onderscheiden. De reactie laat ook het belang zien van kritiek op het epistemisch gezag van deskundigen. Die kritieken pleiten voor epistemische gerechtigheid bij het stellen van prioriteiten in wat belangrijk is en hoe kennis tot stand komt, vragen die essentieel zijn voor de democratische politiek.[15] Omdat wordt gesproken over deskundigen in het algemeen, blijft in deze reactie onderbelicht dat deskundigen ook onderling met elkaar concurreren om hun

relatieve gezag en positie binnen een bepaald kennisgebied te handhaven, zoals Pierre Bourdieu heeft betoogd. Verschillende groepen deskundigen, van journalisten en statistici in overheidsdienst tot academici, wedijveren met elkaar over wie het gezag heeft om feiten over maatschappelijk relevante vraagstukken als klimaatverandering en migratie te legitimeren.

Ik denk dat deze strijd en reacties een opening bieden om over verschillende datatoekomsten na te denken, via een experiment met citizen data. In dit experiment wordt de relatie tussen staten, burgers en digitale technologieën, die allemaal data en statistieken produceren, tegen het licht gehouden.
Dat doen we door ons een nieuwe politieke subjectiviteit voor te stellen: die van de 'databurger'. Voordat ik hier verder op in ga, zet ik in het eerste deel van deze lezing uiteen hoe socio-technische verbeeldingen over big data deze strijd aanwakkeren en vormgeven. Daarna bespreek ik hoe deze fantasieën werken en van invloed zijn op het praktijkgebied dat ik de transnationale statistiek noem. Eén effect dat ik behandel is hoe een nieuwe kijk op big data leidt tot een perspectief waarin burgers passieve actoren zijn en individuele privacywaakhonden. In het tweede deel beschrijf ik een experiment dat nog gaande is. Daarin worden subjecten als databurgers gezien, die het recht hebben om te bepalen hoe gegevens over henzelf en de samenleving waar zij deel van uitmaken worden geproduceerd.

De lezing blikt terug op vier jaar werk aan het door de European Research Council gefinancierde project ARITHMUS.[16] Het project richt zich volledig op de praktische en politieke gevolgen van nieuwe digitale technologieën, zoals smartphones, tablets en webplatforms, en produceert data voor officiële statistieken en experimenten, waarbij big data van bijvoorbeeld mobiele telefoons, zoekmachines en sociale media als mogelijke nieuwe gegevensbronnen worden gebruikt. Mijn onderzoek bestond uit veldwerk met vijf andere onderzoekers, met wie ik twee jaar lang heb samengewerkt. We hebben een zogenoemde samenwerkende multi-sited en multi-method etnografie opgesteld van de datapraktijken van nationale en internationale statistische instituten.[17] In deze lezing bespreek ik een aantal working papers en artikelen die ik met verschillende coauteurs heb geschreven en laat ik zien hoe dit werk tot een experiment met citizen data heeft geleid.

Dr. Evelyn Ruppert, hoogleraar aan het Department of Sociology van de Goldsmiths, University of London. Gasthoogleraar op de prof. dr. J.A.A. van Doorn wisselleerstoel, Erasmus School of Social and Behavioural Sciences, Erasmus Universiteit Rotterdam, en Van Doorn-fellow aan het Netherlands Institute for Advanced Study in Humanities and Social Sciences (NIAS).

Notes

1 The project, Peopling Europe: How data make a people (ARITHMUS) is funded by the European Research Council under the European Union's Seventh Framework Programme (FP/2007-2013) / ERC Grant Agreement no. 615588. Principal Investigator, Evelyn Ruppert, Goldsmiths, University of London.

2 Postdoctoral researchers are Baki Cakici, Francisca Grommé, Stephan Scheel, and Funda Ustek-Spilda and Doctoral researcher Ville Takala. We conducted fieldwork across various sites of five national statistical institutes (NSIs) and two international statistical organisations. See www.arithmus.eu.

3 As McNeil et al. (2017) note, while many STS researchers refer to imaginaries, they do so through a plurality of approaches that rarely reference theoretical approaches such as those summarised here. They cite Jasanoff's (2015) work as uniquely addressing this lacunae by attending to these 'theoretical precursors.' I draw from Jasanoff in this regard and to specify the meaning of sociotechnical imaginaries.

4 Eurostat. 2014. 'Big data – an opportunity or a threat to official statistics?' Presentation to the Economic Commission for Europe Conference of European Statisticians. Sixty-second plenary session. Paris, 9-11 April 2014.

5 Fieldwork Notes. From the opening address of Walter Radermacher, then Director General of Eurostat at the 'New Techniques and Technologies for Statistics (NTTS)' conference in Brussels, an international biennial scientific gathering organised by Eurostat, from 10-15 March 2015.

6 This discussion of the transnational field of statistics draws from Scheel S, Cakici B, Grommé F, et al. (2016) Transcending Methodological Nationalism through Transversal Methods? On the Stakes and Challenges of Collaboration. ARITHMUS Working Paper. Avail at: http://bit.ly/2lqR1aM; and, Grommé F, Ruppert E and Cakici B. (2018) Data Scientists: A New Faction of the Transnational Field of Statistics. In: Knox H and Nafus D (eds) **Ethnography for a Data Saturated World**. Manchester University Press (forthcoming).

7 The discussion of subjects draws on a work-in-progress by Ruppert, E. and B. Cakici, provisionally titled, 'Methods as Forces of Subjectivation: Experiments in the Remaking of Official Statistics.'

8 This part of the project involves two postdoctoral researchers, Francisca Grommé and Funda Ustek-Spilda.

9 The discussion of the set-up of the citizen data app para-site draws on a work-in-progress by F. Grommé and E. Ruppert, provisionally titled, 'A citizen data app as an emergent para-site: Imagining citizens as more than data collectors and subjects.'

10 This conception is elaborated in Isin E and Ruppert E. (2015) **Being Digital Citizens**, London: Rowman & Littlefield International.

11 The facilitators were from the Waag Society, a non-profit organisation in the Netherlands that organizes and leads events on cultural and social innovation.

12 This is the definition developed and jointly agreed to by the United Nations Economic Commission for Europe (UNECE) and Eurostat.

13 Jasanoff S en Simmet HR. (2017) No funeral bells: Public reason in a 'post-truth' age. Social Studies of Science 47: 751-770.

14 Lynch M. (2017) Post-truth, alt-facts, and asymmetric controversies. Te vinden op: https://bit.ly/2IPjgep.

15 Jasanoff S. (2017) Science and Democracy. In: Miller C, Smitt-Doer U, Fouche R, et al. (eds) **Handbook of Science and Technology Studies**, Cambridge: MIT Press, 261-287.

16 The project, Peopling Europe: How data make a people (ARITHMUS) is gefinancierd door de Europese Onderzoeksraad als onderdeel van het Zevende Kaderprogramma van de Europese Unie (FP/2007-2013) / ERC-subsidieovereenkomst nr. 615588. Hoofdonderzoeker, Evelyn Ruppert, Goldsmiths, University of London.

17 Postdoctorale onderzoekers: Baki Cakici, Francisca Grommé, Stephan Scheel en Funda Ustek-Spilda en promovendus Ville Takala. We hebben veldwerk gedaan bij vijf nationale statistische instituten (NSI's) en twee internationale statistische organisaties. Zie: www.arithmus.eu.

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Ruppert is hoogleraar Sociologie aan de Goldsmiths, University of London. In 2014 heeft zij een ERC Consolidator Grant ontvangen voor haar project 'Peopling Europe: How data make a people'. Evelyn Ruppert is tevens een van de oprichters van het open acces wetenschappelijke tijdschrift 'Big Data & Society'. Haar meest recente boek, samen met Engin Isin, is Being Digital Citizens uit 2015. Voordat zij in 2002 promoveerde en werkzaam werd bij de universiteit is zij elf jaar in de ruimtelijke ordening actief geweest en als heeft zij als beleidsadviseur en overheidsconsultant gewerkt.

Het misbruik van facebook-data door Cambridge Analytica en het verschijnen van nepnieuws roept urgente vragen op over onze persoonsgegevens.

Wie in deze context een experimentele app voor burgerbetrokkenheid wil ontwikkelen, maakt het zich niet gemakkelijk. Maar juist de kwetsbare en instabiele toestand waarin digitale technologie zich momenteel bevindt, biedt mogelijkheden.

De data-relaties tussen overheden en burgers, waaruit statistieken en kennis gevormd worden, kunnen vernieuwd worden. Door een verslag van een ontwerp-experiment zal Ruppert de democratische mogelijkheden van data-gebruik verkennen. Experimenten met burger-data bieden zo verschillende vooruitblikken op de socio-technische toekomst van data. Haar lezing is gebaseerd op het European Research Council project, Peopling Europe: How data make a people (ARITHMUS).

Prof.dr Evelyn Ruppert is een vooraanstaand en vernieuwend onderzoeker van de manier waarop technologie overheidsbestuur verandert. Met haar werk zet ze een wijze van werken van professor Jacques van Doorn voort in een tijd van big data. Zo onderzoekt zij de manieren waarop beleid en bestuur samenhangen met data en kennis. Ook onderzoekt zij de wijzen waarop kennis zich vertaalt in de praktijk van hedendaagse beleidsvraagstukken als migratie en burgerschap. Ruppert stelt voor de sociologie belangrijke vragen: welke gevolgen hebben het gebruik en voorhanden zijn van big data voor de manieren waarop sociale wetenschappers onderzoek doen? Binnen welke geschiedenissen en politieke contexten komen methoden tot stand?

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