Foreshadowing Data-driven Government: Citizen-Government Interaction in Visions of the Data-powered State

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Content

Introduction

> *"Governments are awash with information, and they face a deluge of data as far into the future as we can see. Big data is the key part of the digital transformation of our lives, and it presents amazing new opportunities for governments to improve how they work, and how they engage with us as citizens."* (Atos 2015)

The hype around Big Data and data analytics has, after sweeping across private business for several years, reached the public sector, driven first and foremost by management consultancies and technology companies. Their claims about the transformative potential of Big Data Analytics for public administration are echoed in the academic literature (see e.g. Pollitt 2014) and seem generally plausible as government is essentially a knowledge-based business (Lenk & Wengelowski 2004). As Max Weber (1922) stated, "Bureaucratic administration means fundamentally dominance through knowledge", and Big Data Analytics promises to multiply this knowledge.

Increasingly, the idea of using Big Data Analytics in public administration has been branded as 'data-driven government', implying a more encompassing administrative paradigm beyond business-as-usual plus running data analyses. Is there such a larger vision of data-driven government? If there is, what are its features? Driven by these questions, this paper strives to outline data-driven government as an preliminary ideal type in the Weberian sense, extracting the essence of the concept from its different instances without claiming that the ideal type perfectly resembles any of these instances (Lopreato & Alston 1970).

Although data-driven government is in a very early, proto-institutional (Zietsma & McKnight 2009) phase, this is still a highly relevant endeavour, since "policy innovations soon become dependent upon the key values and discourses […] that frame them during their decisive early phases" (Chadwick & May 2003, p.273). In a sense, the current framings of this emerging concept are foreshadowing possible effects of the introduction of Big Data technologies to government. Further, data-driven government probably presents the most profound change that digitalisation has brought upon government and public administration so far. Its impact promises to be much more substantial than the office automatization of the 1980s and 1990s (Bellamy 2002) and the transactional e-government efforts of the 2000s (Norris & Moon 2005). Therefore, it is crucial to have an idea into what direction this technology is pushing public administration; or rather into what direction the management consultancies and technology companies are pushing governments when implementing this technology.

To take a closer look at this foreshadowing of data-driven government, I take a two-step approach: As I will show in the first part of the paper, data-driven government qualifies as a "management fashion" as defined by Abrahamson (1996), hence these consultancy reports are the most adequate material to explore and define data-driven government. In the second part of the paper, I use Chadwick & May's (2003) framework of managerial, consultative, and participatory models of interaction between citizens and government in e-government to guide a qualitative content analyse of the material. Thus, I reconstruct the vision of data-driven government from the consultancy reports.

Sample of Consultancy Reports on Data-driven Government

As the empirical foundation of this paper, I use a sample of 43 reports and whitepapers by management consultancies and technology companies that make the case for Big Data Analytics in government. The sample was compiled in the following three steps:

1. An initial sample was collected from publicly available internet sources using the Google search engine in early 2016, combining search terms like “Big Data”, “data analytics” or “data-driven” with “public administration” or “government”. Filtering only for PDF files and ignoring academic publications, this yielded an initial sample of more than 80 reports.

2. Because of their small number but substantially different perspective, I eliminated reports by governmental and inter-governmental organizations, such as the Australian government or the OECD, from the sample.

3. Reports that focused exclusively on technical aspects and contained no or extremely limited insights in the government-citizen relationship were also filtered out.

As a result, a sample of 43 reports by management consultancies and technology remains that contain statements about the social and organizational arrangements of data-driven government (see Table 1). The earliest reports were published in 2010/2011 at the cusp of the Big Data hype, but most reports in the sample date from around 2012/2013. With this wealth of material at hand, I can explore how the emerging concept of “data-driven government” is sketched by its most important protagonists.

Table 1: Sample of Reports on data-driven government by consultancies and technology providers

Company	Year	Title of Report
Accenture	2012	Federal Analytics and Big Data
Accenture	2012a	Government Analytics: What Governments Stand to Gain (or Lose)
Accenture	2013	Government Analytics Can Shape Public Service for the Future
Atos	2015	data driven government: preparing for the age of the citizen
Avascent	2012	Customer-Centric Opportunities in Big Data
Big Innovation Centre	2013	How should the government approach the big data challenge?
CDW	2012	Proactive Planning for Big Data
Center for Data Innovation	2013	Data Innovation 101: An Introduction to the Technologies and Policies Supporting Data-Driven Innovation
CGI	2013	Turning data into reality: Seizing the opportunity for transformation using big data analytics in human services
CSC	2012	Making Big Data Work for Government
CTOlabs.com	2012	Evaluating Big Data Analytical Capabilities For Government Use
Government Business Council & Booz Allen Hamilton	2014	Empowering Smart Decision-Making Through Smart Data
GovLoop	2013	Unlocking the Power of Government Analytics
Hewlett Packard	2013	Data-driven government: HP HAVEn turns Big Data into efficient and effective government
IBM Analytics	2015	Data-driven government: Challenges and a path forward
IBM Center for The Business of Government	2011	From Data to Decisions: The Power of Analytics
IBM Center for The Business of Government	2012	From Data to Decisions II: Building an Analytics Culture
IBM Center for The Business of Government	2013	From Data to Decisions III: Lessons from Early Analytics Programs
IBM Center for The Business of Government	2014	Realizing the Promise of Big Data
IBM Software	2010	Making critical connections: predictive analytics in government
IBM Software	2012	Business analytics for government Achieve better outcomes in four key areas
IBM Software	2012a	Think outside the cell: Reduce recidivism, improve public safety and maximize resources using predictive analytics
IBM Software	2013	Addressing government challenges with big data analytics

IDC Government Insights	2012	The Impact of Big Data on Government
Informatica	2013	Big Data for Government: Drive Better Decisions for Better Policy and Program Outcomes
Information Control Company	2013	Big Data: Big Brother or Guardian Angel?
Infosys Public Services	2013	7 Key Considerations for Big Data Adoption in Government
IPL	2013	Be innovative with Big Data in civil government
McKinsey Global Institute	2011	Are you ready for the era of 'big data'?
McKinsey Global Institute	2011a	Big data: The next frontier for innovation, competition, and productivity
Microsoft	2013	Big Data Ready to Help Government Agencies
Newgen Software	2014	Big Data for Government Agencies
Nordicity	2014	Big Data for Public Good: A Primer
Oracle	2012	Big Data: A Big Deal for Public Sector Organizations
Oracle & GovLoop	2012	Big Data in Government
Policy Exchange	2012	The Big Data Opportunity: Making government faster, smarter and more personal
SAP	2013	Smoother, Faster, Cleaner, Safer: How Big Data's Driving the 21st Century City
SAP	2014	Improving Citizens' Lives and Government Performance with Public Sector Analytics
SAS	2013	How Governments Are Using the Power of High-Performance Analytics: Faster, smarter decisions for better outcomes
splunk & GovLoop	2015	Why you need improved operational intelligence for Big Data
TechAmerica Foundation	2012	Demystifying Big Data: A Practical Guide To Transforming The Business of Government
The Performance Institute & IBM	2013	Analytics to Align Organizations and Redefine Mission Success
Xerox	2013	Big Data Analytics: Federal Business Analytics

Data-driven Government as a Management Fashion

Why is it relevant to examine what management consultancies and technology companies write about data-driven government? Because consultants are not only the busiest disseminators of management fashions, but also regularly their creators (Williams 2004; Newell et al. 2001). On the topic of data-driven government, consultancies have rushed ahead of rather slow-moving governments and academia and arguably dominate the discourse. For instance, the report "Big data: The next frontier for innovation, competition, and productivity" by the McKinsey Global Institute (2011a) is probably the single most influential publication on using Big Data Analytics in government, with over 2000 citations recorded by Google Scholar.[1]

Management Fashions in General

A management fashion, as defined by Abrahamson (1996), is "a relatively transitory collective belief, disseminated by management fashion setters, that a management technique leads to rational management progress", meaning it "must appear both rational (efficient means to important ends) and progressive (new as well as improved relative to older management techniques)". Management fashions spread through their organisational fields, become institutionalized to various degrees, and in many cases eventually peter out and are replaced by new fashions. Well known examples include concepts such as Business Process Reengineering, Total Quality Management or, specifically in the

[1] Google Scholar citation metrics include references from non-academic publications, pre-prints of conference papers, academic grey literature like student term papers, and so on (Mikki 2009; de Winter et al. 2014). It therefore overestimates the impact in the academic community but serves better as an indicator of general societal perception of a document than more conservatively curated bibliometric services.

public sector, New Public Management and its various sub-trends. Central to the spread of management fashions are "fashion setters – consulting firms, management gurus, business mass-media publications, and business schools" (Abrahamson 1996), as is observable in the case of data-driven government. Despite their capitalized names, management fashions typically do not entail clear-cut and concrete guidelines. Rather, their "interpretative viability, i.e. leaving room for interpretation" (Benders & van Veen 2001) is a central part of their success, as it allows for a variety of local adaptations. Nonetheless, management fashions usually possess certain core ideas. It should be noted that management fashions are more than discursive flutter, as they often play a key role in the destruction or creation of organizational institutions and therefore shape organizations and their social practices.

Typical Elements of Management Fashions

Benders & van Veen (2001) compile six typical elements of management fashions, which can all be found in the consultancy reports on data-driven government (see Table 2). They stress that management fashions promise performance enhancement in the case of adoption and evoke the threat of bankruptcy in the case of non-adoption. This is clearly visible in data-driven government's core promise of "smartness", i.e. increased efficiency, effectiveness and 'better decision-making' overall. While bankruptcy is a rather unlikely threat to public organizations, a recurring theme in the reports are increasing demands and shrinking resources, entailing the danger of failing the agency mission and ultimately being delegitimised in the eyes of citizens. Similarly, becoming 'data-driven' is presented as future-oriented and innovative, using the latest technologies to fulfil agency missions in unexpected ways.

Another typical element is pointing towards well-known and successful users of the concept, which is abundant in the material at hand. Almost every report presents at least one example or case study of a public organization that has successfully implemented data analytics in its operations, from the US Department of Defense to the city government of Chicago. This also underlines the occurrence of another typical element, which is the management fashion's universal applicability. Not only do the reports argue that any level of government can benefit from becoming data-driven, but any kind of agency as well, no matter what the task, from snow removal to counter-terrorism.

The terms used in this context, like 'Big Data', 'analytics', and 'data-driven government' itself are obvious cases of "catchy titles", another typical element of management fashions. While running Big Data analyses may be complicated, the underlying idea of making smarter decisions by picking apart your agency's data is easy to communicate and grasp.

Table 2: Elements of management fashions and examples from the consultancy reports

Element of Management Fashions	Examples from the reports
Promises of, preferably substantial, performance enhancement	"At a time when public funds are limited, the world population is aging, and citizen expectations continue to rise, government has a major opportunity to increase the efficiency and value of the services it delivers to its constituents. Getting the right data to the right decision-makers— precisely when they need it— can go a long way to help streamline government and reduce costs while delivering higher-value service" (Hewlett Packard 2013) "Get Big Data right, and you'll unlock a treasure chest of improved intelligence that can inform better and faster decision-making up and down your organisation." (IPL 2013)
The threat of bankruptcy in case of non-adoption	"Only the data driven government will be ready to rise to the challenge of meeting citizen's increasing demands and expectations." (Atos 2015) "At a time when public sector resources and budgets are shrinking and citizens are demanding improved services, big data promises much needed relief for government agencies." (splunk & GovLoop 2015)

	"How well you understand your data and put it to effective use is now more crucial than ever—especially given the ongoing pressure for public sector organizations to 'do more with less.'" (Hewlett Packard 2013)
Using well-known and successful users of the concept in question	German Federal Labour Agency (McKinsey Global Institute 2011a) SKAT – Danish Tax Agency (IBM Software 2012) HM Revenue and Customs (Accenture 2013) US Air Force (Informatica 2013) etc.
Stressing the concept's universal applicability;	"Public sector organisations could all benefit from harnessing the power of the Big Data they have available to them." (IPL 2013) "Virtually every agency collects data but many struggle to turn the information into useful information that can inform and drive decisions." (IBM Center for The Business of Government 2011)
Presenting the concept as an easily understandable commodity with a catchy title;	"Big Data" and "data-driven government" are obviously catchy titles.
Presenting the concept as timely, innovative and future-oriented;	"… predictive analytics be applied along with other data- driven techniques to identify and solve problems and to better equip an organization to make fact-based, cross-agency decisions that improve delivering public service for the future." (Accenture 2013) "Be innovative with Big Data in civil government" (IPL 2013)
Interpretative viability, i.e. leaving a certain room for interpretation.	

Zilber (2006) points out that management fashions tend to draw on societal meta-narratives like rationality or modernity, rendering them more easily absorbable. This also holds for Big Data, which is often portrayed in a hyper-empiricist way. In the case of data-driven government, the consultancy reports allude to this with statements like "What are we doing today that is driven by gut instinct, and what is driven by solid, reliable data?" (IBM Center for The Business of Government 2012), or simply "Stop Guessing. Start Knowing." (Accenture 2012). Thus, they also tie into the long-standing rationalist "ideal of replacing politics with knowledge" (Torgerson 1986).

Of course, technologies like Big Data Analytics can in principle be employed in connection with any public sector reform paradigm. However, especially highly interpretively flexible (Bijker et al. 1987) general-purpose technologies like data analytics have to be understood as socio-technical assemblages (Ruppert et al. 2015) that consist of social practices as much as of technical soft- and hardware. Therefore, these social practices spread along with the technology as it turns into a management or IT fashion (Wang 2010). An example of this are the e-government reforms of the 1990s, which effectively became carriers of New Public Management ideas, even though their technical components – e.g. using PCs at work desks or displaying office hours on agency websites – are not inherently tied to NPM aspects like market logic or performance management. (For a discussion of the independent or intertwined nature of NPM and 'office automation', see Hood 1991 and Taylor 1992.)

Looking at the current buzz around data-driven government through the lens of the typical elements of management fashions, data-driven government seems to qualify as a management fashion. Therefore, examining the claims and arguments in the consultancy reports can be highly instructive of what data-driven government may look like in practice. As Chadwick & May (2003) argue in their assessment of digital government reforms in the early 2000s: "If we want to understand what often seem to be extremely fast-moving policy changes and innovative administrative reforms, we need to examine the kinds of claims that have been made about their potential, and what kinds of discourses have tended to be more influential as policy has developed."

Chadwick & May's Models of Citizen-Government Interaction

The discussion of information technology in government has always been polarized (Hood 2008). Techno-utopian visions of cyber-democracies and hyper-efficient cybernetic systems contrast with dystopias of electronic surveillance states and non-human algorithmic governance (van de Donk et al. 1995; Margetts 1999; Danaher 2016). Like more general government paradigms, these different visions of digital government hinge on different understandings of the relationship between citizen and state.

Taking this as their starting point, Chadwick & May (2003) differentiate three ideal types of interaction between government and citizen that can be derived from the e-government discussions and practices of their time: *Managerial*, *consultative*, and *participatory* (see Table 3).

Table 3: Three Models of Interaction in E-Governance (Chadwick & May 2003, p.277)

	Managerial	**Consultative**	**Participatory**
Role for government	Regulatory; responding to the needs of the "new economy"; efficient and faster delivery of government information to citizens and "users."	Regulatory; responding to the needs of societal interests as expressed electronically; better policy provision to citizens and "users"	Protector of free speech and rights of expression, regulator of infrastructure, but little beyond that; civil society exists away from the state and (will be) mediated electronically.
Principal actors and interests	Government and its "customers"; business; the mass media.	Government; "customers"; business; interest groups	Voluntary associations and interest groups spontaneously interacting within "cyberspace"; groups use information gleaned through deliberation to influence government
Flow of information	Unilinear from government to "customers" or customers to government, but main emphasis on improving flow of information within government	Unilinear from government to citizens or citizens to government	Discursive and complex – citizens to citizens, citizens to government, government to citizens
Principal mechanisms for interaction	Online tax returns; benefit claims; "one-stop shops"; updating personal information held by public bureaucracies; government gathering and aggregation of "market research data"; government provision of information about its activities to media and public	"E-voting" at elections; instant opinion polling; electronic input from voters and interest groups to government; "advisory" referendums; "electronic town meetings," and so on	Autonomous pluralist mechanisms, such as discussion lists, Usenet, peer-to-peer technologies; time and distance become compressed, facilitating increased political participation and a "cyber civil society"
Usage issues	Market-based access and usage patterns; minimal state regulation and public education programs to equip customers	Market-based access and usage patterns; minimal state regulation and public education programs to equip customers	Universal access and widespread usage are prerequisites
Defining logic	"Service delivery" and policy presentation	"Technical accuracy" and improved policy success rate	"Deliberation," participation and enhanced democracy

The *managerial* model of interaction employs the new possibilities opened up by information technologies with an emphasis on increased efficiency, i.e. the mantra of "faster, better, cheaper" (Fountain 2002). The improved information and communication capabilities are used to for "more accurately targeted communication of citizen requests and faster responses" (Chadwick & May 2003, p.276), essentially improving service quality and citizen satisfaction. However, fundamentally, government remains a closed shop that manages public services while citizens are seen as passive consumers of such services.

In the *consultative* model, the new technical possibilities are used in a "pull model" (Chadwick & May 2003, p.278) of information. Government uses information technologies deliberately to improve its policies and services with explicit feedback and input from citizens. The aim is "discovering what real people think" (Chadwick & May 2003, p.278) in direct communication with citizens, without intermediaries like interest groups or corporatist actors. In contrast to the managerial model, public administrations actively ask citizens for input in the consultative model. Nonetheless, government still follows a closed shop model, as the consultation of citizens is merely used as input to the government-exclusive design process of policies or services.

Finally, the *participatory* model is strongly inspired by visions of cyber-democracies. Information and communication technologies enable new interactive venues of deliberation and participatory decision-making, bringing us closer to the ideal of the Athenian agora. Here, government follows a radical open shop model where policies and services are co-designed with citizens.

In their original analysis, Chadwick & May conclude from the analysis of several contemporary e-government strategies that the managerial model of interaction is dominant. However, governance as well as e-government have since then taken a "participatory turn" (Saurugger 2010; Kim et al. 2005; Gbikpi & Grote 2002), bringing the participatory model of interaction to the fore. This turn manifests in various forms of citizen involvement ranging from voting on policy options in referenda and co-designing policies and their implementation in Open Innovation processes (Thapa et al. 2015; Hilgers & Ihl 2010) to fully-fledged co-production (Meijer 2012; Brudney & England 1983), where citizens are directly involved in the production of public services. Mirroring this development in the realm of digital government, the reform agenda of Open Government (Lathrop & Ruma 2003)– essentially a digitally-enabled version of participatory governance – has become the dominant discourse, even if more in rhetoric than in practice (Sandoval-Almazan & Gil-Garcia 2012). While the majority of efforts under this label have been directed towards Open Government Data, i.e. the publication of datasets held by the government, they are typically motivated by a "logic of participation and citizenship" (Davies & Bawa 2012). Practices like digitally-powered participatory budgeting (Matheus et al. 2010; Sampaio et al. 2011) may be less widespread than Open Government Data repositories, but reflect Chadwick & May's *participatory* model more fully. Thus, considering the widespread enthusiasm for Open Government (Huijboom & Broek 2011), there seems to be a trajectory towards more participatory models of interaction in digital government reforms.

So how does the emergence of data-driven government affect this trajectory? Arguably, "big data analytics can have a real and direct impact on the way policymakers work and citizens interact with governments" (Policy Exchange 2012), but it is still unclear what this impact might look like.

Examining Data-driven Government with Chadwick & May's Framework

To see where data-driven government positions itself among the managerial, consultative, and participatory models of interaction, I examine the sample of consultancy reports with five of the six guiding questions that Chadwick & May used in their original analysis:

1. What role is played by government?
2. Who are the principal actors and interests?
3. What is the dominant perspective on the flow of information?
4. What are the principal mechanisms for interaction between government and citizens?
5. [What attention is paid to the ability of citizens to interact electronically?]
6. What is the defining logic, or raison d'etre, of each model?

I leave aside the question about citizens' ability to interact electronically aside because on the one hand, the digital divide is much less of an issue today than it was in 2003 (International Telecommunication Union 2015; Kakihara 2014), and on the other hand, because the issue is simply not sufficiently addressed in the sample. Nonetheless, issues like the 'data divide' (Easton-Calabria & Allen 2015; Lerman 2013), which is concerned with the representativeness of Big Data and the systematic exclusion or underrepresentation of certain demographic groups, are important criticisms to data-driven government.

Data Analysis

The five remaining questions of the framework serve as guiding questions to approach the sample of consultancy reports. I conducted a conventional qualitative content analysis (Hsieh & Shannon 2005) and openly coded the text for each question. In a second step, I grouped the *in-vivo* codes generated for each question into categories (Gioia et al. 2012). To reconstruct the concept of data-driven government along the lines of Chadwick & May's framework, I next present the most important categories for each question with a number of exemplary text fragments.

What role is played by government?

In the way it is portrayed by the consultancy reports on data-driven government, government is first and foremost a service provider (see Table 4). The political level of government may set the institutional framework for agencies and companies to work within, but the overall task of government is to satisfy citizens' needs for public services. These needs do not have to be explicitly voiced, but government should use the monitoring and predictive capabilities of data analytics to anticipate and respond to new demands or service issues as they arise.

Who are the principal actors and interests?

The analysed material presents a vision of the actors involved in public administration that is reduced to public organizations and their clients, i.e. citizens or companies.

The image of public organizations conveyed by the reports on data-driven government is that of entrepreneurial and largely autonomous agencies that are driven by their agency missions and the quest to provide efficient, high quality services to their clients.

Table 4: Views on agencies and their interests

Category	Examples from Reports
Agencies as autonomous and entrepreneurial actors	"Operational analytics shifts your organization away from a broad long-term planning approach and instead helps it become more agile in its ability to respond to each constituent or service issue [… and] to deliver the exact service or response that meets citizens' needs. An agile government organization also modifies its operations proactively to ensure that potential operational issues are prevented and future constituent needs are met." (IBM Software 2012)
Agencies' focus on mission	"Governments around the world see big data as an important new tool to help them meet their mission goals during tough economic times." (Oracle 2012) "With the right tools, even nontechnical users can work with large data sets to find information, deliver better services or make decisions that support the mission." (CDW 2012) "The government market is at a tipping point, realizing that information is a strategic asset, and government needs to protect, leverage, and analyze both structured and unstructured information to better serve and meet mission requirements. As government leaders strive to evolve data-driven organizations to successfully accomplish mission, they are laying the groundwork to correlate dependencies across events, people, processes, and information." (IDC Government Insights 2012)

	"For government to reach the goals of their complex missions, they must learn to extract knowledge from their data to find new trends, patterns and identify business value from information." (splunk & GovLoop 2015)
Agencies' focus on efficiency + Agencies' focus on citizen satisfaction/better services	"Why just meet citizen demands when you can anticipate them, identify new opportunities, and provide targeted services." (SAP 2014) "No matter where they are located or what range of constituents they serve, all government organizations are looking for ways to become more efficient, reduce or maintain costs, offer better services and increase responsiveness." (IBM Software 2013) "Governments and public sector organizations must find new strategies to deliver cost-effective, rapid and robust services, while bringing the citizen into the center. The most compelling solution is to be data driven, using powerful intelligence extracted from Big Data to establish an evidence-based foundation for addressing the challenges of digital transformation, and designing the most efficient, sustainable, secure, and responsive services for the citizen." (Atos 2015) "Government must become leaner – and using big data with analytics is a means to more efficient government." (SAS 2013) "You can predict and target the needs of citizens more accurately, and match programs and resources to meet the highest-priority citizen needs. In addition, your organization can position resources to focus on high-priority service areas, and then automate processes for more efficient and effective service delivery." (IBM Software 2013) "Citizens and business can spend less time and effort in their interactions with government agencies and receive services better targeted to their needs." (McKinsey Global Institute 2011a) "Governments can and must use the power of Big Data to be more citizen-focussed, to design cost-effective and responsive services, reinvent their business models and prepare for the challenges of a digitally transformed society." (Atos 2015)

Citizens, on the other hand, are presented as highly demanding customers who want fast, high quality services at low costs. Accordingly, these services should of course be personalised. Further, citizens are described as being interested in government transparency to hold public agencies accountable and track the proper use of their taxes. Apparently, collective actors such as interest groups play no role in this vision. Similarly, media is only mentioned as a data source in the reports, not as a watchdog to make use of government transparency in its own right.

Table 5: Views of citizens and their interests

Category	**Examples from Reports**
	"Where the organisation is in the public sector, there can be benefits for citizens both as taxpayers and as end users." (Policy Exchange 2012)
Citizens' demands for faster, better, cheaper services	"Citizens demand high levels of services." (IBM Software 2012) "Governments and their agencies must harness the same data-led power that is changing citizens' perceptions of the world if they are to shape the intelligent, intuitive, and personalized engagement that citizens now expect." (Atos 2015) "Citizens have the power to transform the way the public sector works – allowing for more efficient, timely and accurate interventions, and changing the relationship between government and its citizens for the better." (SAP 2013) "Connected citizens want public organizations to offer the same transaction speed and flexibility they enjoy in their homes and businesses – with anytime, an-

	ywhere access to automated services online. Purchasing services via mobile devices offers great convenience, so governments need to provide contactless and mobile payment facilities that offer total privacy and convenience. Automated government should also be 'joined up', so citizens get value and cross-service information when making transactions." (Atos 2015)
Citizens demand transparency & accountability	"Linked to each other and to information sources all over the world, we citizens have access to limitless knowledge, and expect high standards of speed, joined-up service quality, and transparency from governments – just as we do in other aspects our live." (Atos 2015) "These days, governments must use fewer resources to provide high-quality services—while also coping with increasing crime and terrorism, aging infrastructures and citizen demands for transparency and accountability." (IBM Software 2012)

Strikingly, the political level of government is largely absent from the portrayals of data-driven government. If it is referred to at all, it is acknowledged as the source of regulation on the use of data analytics in government, especially on the tricky question of privacy. While agency "missions" and "mandates" are central to data-driven government, it is hardly mentioned in the sample where these "missions" come from, which would typically be the political level.

Table 6: Views on the political level and its key task

Category	Examples from Reports
Political level of government as regulator of Big Data in government	"Most importantly, leadership at all levels of government is needed on privacy as over time with relatively little guidance, agencies have taken action, or not, as they best saw fit." (TechAmerica Foundation 2012) "Scrutiny could be tightened further by providing an oversight role for Parliament in addition to that for Ministers." (Policy Exchange 2012) "However, to achieve the full potential of data-driven innovation, policymakers must create the necessary infrastructure and policy framework." (Center for Data Innovation 2013) "More than twenty years after Congress first passed a law requiring planning and measurement, it's clear that the public sector has made large strides in both areas, yet fully connecting the two remains elusive." (The Performance Institute & IBM 2013) "Policy makers need to recognize the potential of harnessing big data to unleash the next wave of growth in their economies. They need to provide the institutional framework to allow companies to easily create value out of data while protecting the privacy of citizens and providing data security." (McKinsey Global Institute 2011a) "With responsibility to regulators, citizens, and communities, public sector organizations are expected to safeguard the data entrusted to them." (Hewlett Packard 2013)

What is the dominant perspective on the flow of information?

In the sample of consultancy reports, data-driven government is outlined with two major flows of information: Data about citizens flowing towards government and data about government activities made available to citizens (see Table 7).

The flow of data about citizens is the characterizing feature of data-driven government and not limited to data directly provided by citizens via surveys or communication with government. Rather, data-driven government makes extensive use of citizens' "digital footprints" and "data exhaust"

(George et al. 2014; Madden et al. 2007), i.e. data that citizens generate inadvertently as they go about their daily and digital lives. This includes linking the many data sets available about citizens that may currently be spread across different government agencies. However, this influx of data also encompasses publicly available data about citizens, from their social media postings to the GPS movement profiles of their cars. Which data sources are tapped for data-driven government is eventually only a question of the legal framework, accessibility, and public agencies' resourcefulness.

Concerning the information flow from government to citizens, data-driven government picks up the dominant discourse of Open Government and champions widespread government transparency. This is explicitly linked to questions of accountability and legitimacy in the eyes of the citizens as well as the disciplining effect transparency has on agencies.

Importantly, both flows of information do not require active engagement on neither the citizens' nor the agencies' part. Government data is passively made available on agency websites of Open Government Data repositories. Citizen data on the other hand is for the most part collected without the need for citizen action, with possible exceptions. For example, rather than approaching citizens with a survey on service satisfaction, a public agency may monitor what citizens voice about the service on social media.

Table 7: Views on information flows

Category	Examples from Reports
Gathering data on citizens and their needs	"Immediate and easy access to consistent information lets staff conduct comparative analysis, perform ad-hoc queries and better gauge overall performance. Departments and agencies can also improve financial and operational governance, reduce risk and increase compliance with intergovernmental reporting requirements. As a result, government organizations can make more timely decisions, improve accountability and strengthen financial performance." (IBM Software 2012) "Knowing a lot about an individual user, consumer or citizen makes it possible to forecast their specific needs and behaviour, sometimes with a very high degree of precision. Used responsibly, this capability to anticipate needs can be massively beneficial. Time can be saved, services personalised, and – in perhaps the most significant cases – decisions made or behaviours altered to avert undesirable outcomes." (Policy Exchange 2012) "Consider this list of government-adopted digital resources: citizen-facing websites, mobile computing, electronic records, cloud services, social networks, smart sensors, IP video, geographic information systems and more. As society has grown increasingly digital, government agencies are harnessing digital technology to operate more efficiently, improve service to citizens and better protect people and places. With the use of these technologies has come an influx of data. Lots of data. Big Data." (CDW 2012)
Providing data on government to citizens	"With analytics, departments and agencies can more easily achieve a transparent budgeting process and demonstrate communication and good governance to citizens, partners and regulators." (IBM Software 2012) "Moreover, at the same time that digital technology has enabled government to collect massive amounts of data, it's become an important tool for encouraging transparency. As a result, agencies must be able to handle their data efficiently, make sense of what it reveals and share that data openly with the public, in a format that citizens can consume." (CDW 2012) "Many agencies are rethinking the role of traditional storage and deploying a cost-efficient and combined approach of tape for archival storage, disks for often requested records, and cloud storage for Big Data information. A strategic approach to storage allows agencies to produce documentation when needed, enhances employee efficiency and productivity, and provides the information

	needed for transparency, collaboration, and participatory government." (IDC Government Insights 2012) "Greater transparency of information creates improved accountability in public sector agencies and improved public trust. Dashboards and comparative engines offer citizens the means of measuring the effectiveness of programs and policies." (McKinsey Global Institute 2011a)

What are the principal mechanisms for interaction between government and citizens?

The principal mechanism of interaction between government and citizens, if it can be called thus, is the indirect data collection of data on citizens by public agencies. As the overall aim of data-driven government is to provide services to citizens comfortably, direct interaction is reduced as much as possible. Spotting and predicting problems and citizens' needs based on ambient data is therefore preferable to bothering citizens with direct communication. This is enabled by linking various datasets available on citizens, services, and infrastructure to produce "unified" or "holistic" views of their clients and instruments for public agencies.

If direct communication with citizens becomes necessary, it should be personalized and comfortable. As granularity and therefore the possibility of personalization is one of the defining features of Big Data, this is a logical consequence of a data-driven paradigm.

Table 8: Views about mechanisms of interaction between government and citizens

Category	Examples from Reports
Government indirectly monitors citizens	"By collecting and analyzing data from a wide variety of structured and unstructured sources, such as medical and caseworker records and notes, financial transactions, watch lists, death records, crime data, social media, geospatial information, videos, email and other data sources, big data analytics can help to automatically identify hidden relationships and activities." (IBM Software 2013) "Richer holistic views of citizens and other entities, as well as their associated activities and events." (IBM Software 2013) "The same tools that help intelligence analysts map networks can help web developers evaluate guest activity on a website, can help the citizen-facing parts of your organization understand citizen requirements/trends, and help HR keep track of work flows and loads." (CTOlabs.com 2012) "Technology now offers an unparalleled opportunity to transform the vast amounts of data that state and federal governments already collect into a deeper understanding of citizens' needs—and into forward-thinking yet cost-effective ways to meet those needs." (Informatica 2013) "CIOs are working on various big data projects focused on getting a unified view of citizens and their interactions with public agencies, services, and goods. […] A unified view of citizens can not only streamline costs of service delivery, but also improve a citizen's interactive experience with the public sector." (IBM Center for The Business of Government 2014) "Knowing a lot about an individual user, consumer or citizen makes it possible to forecast their specific needs and behaviour, sometimes with a very high degree of precision. Used responsibly, this capability to anticipate needs can be massively beneficial. Time can be saved, services personalised, and – in perhaps the most significant cases – decisions made or behaviours altered to avert undesirable outcomes." (Policy Exchange 2012) "Twitter users are estimated to generate nearly 100,000 tweets every 60 seconds. This comes in addition to almost 700,000 Facebook posts and more than 100 million emails a minute. Somewhere in that deluge is information related to an

	agency's mission, perhaps from citizens voicing their dissatisfaction or seeking assistance." (CDW 2012) "One increasingly important source is the information shared publicly via social media. […] This is agile, real-time learning at its best – and a far cry from the traditional approach of reading and replying to pen-and-paper correspondence and management memos as the primary source of data on how an organisation is working." (Policy Exchange 2012)
Personalized direct communication between agencies and citizen	"Citizens expect personalized services and processes in all aspects of their lives, and this will increasingly be expected in their relationships with governments. Self-service provides boundless opportunities for citizens to communicate directly with governments through e-channels, and become partners in a dynamic evolution of public services." (Atos 2015) "The agency is working toward providing chat sessions and live online agents to help process electronic claims. Smartphone applications will be available for simple services and exit surveys at kiosks in field offices will provide real-time feedback on services." (IBM Center for The Business of Government 2011)

In the sample, there are hardly any references to the interactions of citizens and public agencies with the political level of government. Yet, it seems safe to assume that elected officials play a central role in enforcing agency missions as well as probing and disciplining agencies that have been red flagged by citizen scrutiny of their public records. There are several references to performance monitoring by supervising agencies or 'policymakers' in the sample, so this stands to reason.

What is the defining logic, or *raison d'etre*, of the model?

In synopsis of the answers to the four previous questions, the defining logic of data-driven government can be formulated as: "Anticipatory, responsive and optimized service delivery and government transparency". Here, 'anticipatory' and 'responsive' reflect the aspects of prediction and holistic monitoring that have emerged as characteristic of data-driven government. 'Optimized' points to the emphasis on "faster, better, cheaper" public services.

Overview of Data-driven Government

Summarizing the features of data-driven government that Chadwick & May's questions have revealed, we see a government that is strongly oriented towards being a service provider and puts citizen satisfaction first. While the political level of government is reduced to a regulatory role, the information flows between public agencies and citizens are at the heart of the model. Agencies are focussed on achieving their mission goals and maximum citizen satisfaction as efficiently as possible, making use of the predictive and real-time monitoring capabilities of data analytics. Citizens have very high standards concerning government services and scrutinize the proper and efficient workings of agencies through the open data they provide on their activities.

Discussion

Comparing the reconstruction of data-driven government to the three original models by Chadwick & May, data-driven government most closely resembles their managerial model, but integrates a number of elements from the consultative model. Similarities to the managerial model are especially the role of government as a service provider and its orientation towards efficiency and service quality. Akin to the consultative model, there is a "pull" model of information to draw input and feedback from citizens to improve policies and service delivery.

Bureaucracy-Citizen Axis

Noteworthy is data-driven government's emphasis in the axis between public agencies and citizens, while the political level of government appears to be side-lined. As Snellen (1995) observed: "Bureaucracies increasingly make use of marketing-like ICT devices to measure the quality of public services and the needs and desires of their clients. The will of the people is established directly by bureaucracies and can be imported directly into the policy making process. However, when local bureaucracies behave like this, the municipal councils which are supposed to monitor and control bureaucracies, may begin to feel marginalized." What role is left for elected officials remains a question mark, since the information flows and mechanisms of interaction in this rendering of data-driven government suggest that the day-to-day business of government is conducted by highly responsive, autonomous public agencies. To some extent, this resembles rationalist suggestions of largely depoliticized, technocratic governance (Fischer 1990), as decisions are based on data analysis and the goals – mission fulfilment and citizen satisfaction – are clear. "In other words, e-government potentially blurs the distinctions between executive and legislative functions by creating opportunities for citizens to have direct political influence upon public bureaucracies in ways that have not existed before. This will, of course, throw up its own issues of accountability" (Chadwick & May 2003). However, this blurring of functions and citizens' direct influence on bureaucracies does not play out in the highly participatory way that the authors foresaw. Instead, in the case of data-driven government, it manifests in a clearly managerial fashion, where citizens are not engaged but rather serviced. Nonetheless, the question of accountability remains.

Accountability: Citizen Satisfaction and Government Transparency

In this reconstruction of data-driven government, the issue of accountability is tackled from two directions: One is the close adherence of agencies to their missions and citizen satisfaction, the other government transparency.

Although it is not clear how the highly autonomous agencies of data-driven governance are bound to their missions, the analysed reports present this as a strong incentive for continuous efforts at service improvement. In combination with the emphasis on citizen satisfaction, this results in a strong version of output legitimacy: As long as citizens are satisfied, the agency is obviously doing everything right. It reflects a consumerist paradigm (Bellamy & Taylor 1998), familiar from New Public Management, which also uses "the satisfaction of preferences as the measures of accountability" (Kaboolian 1998). This certainly falls short of active citizenship with vibrant interaction between citizens, politicians and public officers, as for example put forward by Barber's (2003) idea of "strong democracy", since "consumer democracy legitimates the use of market intelligence as a proxy for explicit democratic expression" (Bellamy & Taylor 1998) and thus deemphasises explicit citizen voices and the joint production of knowledge.

While the idea of government transparency in data-driven government is clearly borrowed from Open Government and may thus at first glance seem to point towards the participatory model, Chadwick & May include 'Open Government Data' in the managerial model. Indeed, the passive provision of Open Government Data does not necessarily open up the closed shop of government but rather underscores the contractual relation between citizen and public agencies. As Clarke & Margetts (2014) point out, "[t]he emphasis on transparency, opening up data for 'an army of armchair auditors,' […] is reminiscent of NPM's emphasis on the citizen-consumer's 'right to know' the performance record of public service providers, as embodied in the U.K.'s Citizen's Charter, the one citizen-facing element of the early days of NPM in the United Kingdom." Thus, this practice of "open book governance" (Dunleavy et al. 2006) invites scrutiny, but not participation.

In sum, both modes of accountability found in data-driven government point towards the managerial model of interaction and forego opportunities to engage citizens more interactively.

Indirect Data Collection Instead of Interactive Consultation

The function of consultation, originally a limitedly deliberative element in the interaction between citizens and government, has been replaced by indirect data collection in data-driven government. Even though Chadwick & May (2003, p.279) allow for a "continuum of consultation, stretching from low-level information-gathering towards (but not finally reaching) a fuller, quasideliberative level of interaction and consultation", the way it manifests in data-driven government further pronounces the closed shop model of service design represented by the managerial model. In fact, the "aggregation of 'market research' data" (Chadwick & May 2003, p.277) is identified as one of the managerial model's information flows and can certainly be understood as a predecessor of indirect data collection and analysis. Nonetheless, the underlying idea of the consultative model, i.e. to improve policies and service with citizen feedback, is reflected in data-driven government, but not in an interactive way.

Invoking the Supermarket State

The identified strong managerial and contractualist bend of data-driven government closely resembles the tradition of the "supermarket state" (Olsen 1988), a concept born out of the NPM-hype of the 1980s.

In the supermarket state, "the state has a service-providing role, with an emphasis on efficiency and good quality". It sees its citizens as "consumers, users or clients" who have to be satisfied. "In its extreme form, this set of beliefs implies that if governmental units do not produce satisfactory services at a low price these services must be outsourced or downsized." Further, "instead of the state controlling society, based on a democratic mandate from the people, society more directly controls the state through market mechanisms". (Christensen 2003, p.180f)

The data-driven government outlined in the examined consultancy reports seems to be – wittingly or unwittingly – modelled on the tradition of the supermarket state. Thus, it rolls out a vision far from the 'Athenian' expectations of information technology bringing about a "Do It Yourself State" (Meijer 2012), a digitally self-governed commune, as in Chadwick & May's participatory model. This also indicates that the rise of data-driven government may mean an end to the dominant trajectory of Open Government. However, Laudon (1977) already argued forty years ago that data transformation technologies such as mainframes and databases are most compatible with a managerial version of democracy.

Conclusion

This paper set out to "foreshadow" the emerging concept of "data-driven government", essentially the use of Big Data Analytics in government, that is currently propagated by consultancies and technology companies, with special regard to the envisioned interaction between government and citizens.

Based on a sample of 43 whitepapers and reports on data-driven government, I first of all showed that data-driven government fulfils all requirements to become a management fashion. As management fashions are the 'travelling ideas' of the organizational world, this establishes the relevance and maturity of the concept, but also the appropriateness of the compiled sample.

Having outlined Chadwick & May's (2003) original managerial, consultative, and participatory models of interaction, I turned their framework on my sample of consultancy reports with a conventional qualitative content analysis guided by their questions. As a result, I find that the core of the emerging

data-driven government is “anticipatory, responsive and optimized service delivery and government transparency”, with a strong direct axis between public administration and citizens but a surprisingly side-lined political level. While data-driven government presents itself as a mixture of the managerial and consultative model, its defining feature is the indirect data collection through which governments ‘consult’ citizens to improve and anticipate services.

In a further discussion, I find that data-driven government breaks with the participatory trajectory of concepts like Open Government (Lathrop & Ruma 2003) or New Public Service (Denhardt & Denhardt 2000), but instead move towards a data-powered version of the “supermarket state” (Christensen 2003), where engagement with citizens is substituted by encompassing and granular data about citizens.

Thus, this analysis foreshadows a data-driven supermarket state where citizens are served to their utmost satisfaction based on their digital traces, but are hardly engaged with government beyond this. While this analysis is of course limited by the relatively small sample and the fact that the consultancy reports are intended to sell consulting on a relatively narrow technical issue rather than provide holistic utopias (Moylan & Baccolini 2007), this “foreshadow” is sufficiently clear-cut to raise caution and further research interest on the topic. As the consultancy Policy Exchange (2012) writes in their report: “We must recognise, however, that unlocking the full potential of big data for governments is about more than investing in technology and replicating commercial innovations. Important distinctions in the objectives of public sector organisations and the unique nature of the state/citizen relationship raise the stakes significantly.”

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