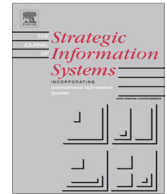




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Exploring the tension between transparency and datafication effects of open government IS through the lens of complex adaptive systems

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ABSTRACT

Government agencies worldwide continue their commitment to providing open data in order to increase transparency of education, healthcare and other public services. Focusing on open government information systems (IS) that provide performance-related data, this paper explores the ongoing tension between government's goal of transparency and the resulting largely opaque datafication effects. Our research insights are derived from an empirical longitudinal study of a controversial open government IS called My School, currently providing performance data on almost 10,000 schools in Australia. We investigate the tension between transparency intended with schools' open performance data and datafication effects they create within the education system and a broader society, through the theoretical lens of Complex Adaptive Systems (CAS). Our study reveals how the tension emerges due to unpredictable use, propagation and reinterpretation of open data by more and more users. Consequently, the original meaning of data gets distorted, as these users continue to reconstruct and reinterpret 'data' in their own contexts and adapt their behavior in pursuit of their strategic goals. We also identify and theorize seven datafication patterns underlying the tension and the ways they produce various social consequences. Based on these research contributions we discuss important strategic implications for government decision makers and identify new opportunities for future research on open government IS.

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1. Introduction

Driven by the pressing need for transparency, governments around the world are making data available to the public. Transparency has become a key objective in public sector reforms as an “apparently simple solution to complex problems – such as how to fight corruption, promote trust in government, support corporate social responsibility, and foster state accountability” (Birchall, 2014, p. 77). As part of the growing ‘open government movement’ (Baack, 2015; Janssen, 2011), transparency is expected to lead to government accountability and better services to citizens (Michener and Bersch, 2013). Over the years the main focus of transparency has shifted from visibility of data through, for instance, public reporting, to a new focus on empowering citizens to infer their own insights from open data (Michener and Bersch,

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2013). By providing open data and simple-to-use tools for data analysis it is assumed that citizens would be able to ‘infer’ their own valuable insights. The open government movement thus marks a new era of transparency in which government data are not only publicly available but also, and importantly, analyzed and interpreted by citizens. For example, citizens are invited to ‘interrogate’ open data on public spending in order to help government identify waste and possible fraud (Lourenco, 2013). This opens, according to the UK Government, “a new era in which people can use open data to generate insights, ideas, and services to create a better world for all” (UK GOV Cabinet Office, 2013, p. 1).

Academic literature, as well as industry and government sources, report many examples of various benefits of open government and data transparency—anticipated or already achieved. Academic literature in particular focuses on social, political, economic, operational and technical benefits (Baack, 2015; Borzacchiello and Craglia, 2012; Janssen et al., 2012; Lourenco, 2013; Zuiderwijk and Janssen, 2014). Industry reports promote open data as a new source of innovation (Manyika et al., 2013) and a common good (Tadjeddine and Lundqvist, 2016). However, despite widespread enthusiasm for open data, some researchers are voicing their concerns regarding “the enduring problems of false transparency and unintelligible disclosures” (Michener and Bersch, 2013, p. 236) and the negative implications of open data (see e.g. Bannister and Connolly, 2011; Gurstein, 2011; Janssen et al., 2012; Zuiderwijk and Janssen, 2014). Nonetheless there is an implicit and unquestioned assumption, shared both by politicians and scholars, that the benefits of open data outweigh the risks and negative effects (Zuiderwijk and Janssen, 2014). Furthermore, there is a lack of literature that investigates tensions between the positive effects and the negative, unintended consequences of data transparency (Zuiderwijk and Janssen, 2014). As Zuiderwijk and Janssen (2014) assert there is “barely any discussion going on in the literature concerning whether certain disadvantages of open data outweigh their advantages and vice versa” (p. 104).

Further concerns focus on the related area of datafication, initially introduced in relation to big data (Mayer-Schonberger and Cukier, 2013). As Mayer-Schonberger and Cukier explain to “datafy a phenomenon is to put it in a quantified format so it can be tabulated and analyzed” (2013, p. 79). Specifically, there are concerns about the datafication of a particular type of open data that represent *performance* of individuals, groups, institutions or government agencies (so-called *open performance data*). The central problem arises when open data are reused and continuously re-interpreted in different contexts and for different and unintended purposes. When this happens open performance-related data may easily produce unintended and negative implications for various stakeholders including society at large (Jeacle and Carter, 2011). For example, publication of mortality data taken to represent quality of clinical care may result in surgeons’ reluctance to operate on high-risk cases—even though these cases stand to gain most from high-risk surgery (Bevan and Hood, 2006; Marshall et al., 2000). The serious implications of these unintended consequences are discussed in more detail later in this paper, drawing on examples from prior literature in education, accounting, and public policy.

In this paper we address the concerns with social implications of transparency and datafication effects of open government information systems (IS). We use the term *open government IS* to denote government IS designed to provide open data to public. We focus on a specific category of open government IS that makes *performance* data available to public, along with the simple tools designed to enable interested parties to infer insights from these data. Of our particular interest is the ongoing *tension* between data *transparency* as the key government objective and the associated datafication effects these IS create throughout society, including various unintended negative consequences. While acknowledging that datafication may result in positive effects, such as empowerment of citizens (Loebbecke and Picot, 2015), we draw attention to the negative effects of datafication of open government IS and the government objective of data transparency. This is important due to a widespread belief that transparency of performance data increases responsibility and accountability in the public sector (Birchall, 2014; Michener and Bersch, 2013) and thus benefits everybody—governments, organizations, communities and citizens. Consequently, the government objective of transparency is more often celebrated than questioned (Michener and Bersch, 2013; Zuiderwijk and Janssen, 2014). What is particularly worrying is the widespread disregard for negative datafication effects of open data and the tension arising between these effects and transparency.

We thus seek to answer the following research questions: *What is the nature of tension between transparency and datafication effects of open government IS that provide performance data? What are the underlying datafication patterns influencing the tension?* We explore these questions by drawing from a case study of a controversial open government IS in Australia called My School. Currently in its 7th year of operation, the government IS My School collects and processes performance-related data from almost 10,000 schools in Australia and makes school performance data together with the simple data analysis tools open to the public. Drawing from this case study, we theorize the tension between data transparency and datafication effects of open government IS through the lens of Complex Adaptive Systems (CAS) (Benbya and McKelvey, 2006; Merali, 2006; Stacey et al., 2000). The theoretical lens of CAS is particularly useful to study the emergent nature of the open government IS and the complex dynamic relations it creates within wider society. More precisely, CAS enables us to open the “black box” of open performance data and their datafication effects and identify and theorize various datafication patterns and their societal implications. Grounded in the analysis of the My School case, we propose seven datafication patterns that explain different patterns underlying the tension between transparency and datafication effects of open performance data. These datafication patterns can be used and further refined and/or extended by other researchers interested in the societal effects of open government IS. In addition to the theoretical contribution, our paper provides an important practical contribution for strategic considerations by senior government decision-makers managing open government IS. These theoretical and practical contributions respond to Galliers et al. (2015) call for further research on the effects of datafication as well as to Newell and Marabelli’s (2015) call “for action on the long-term societal effects of datafication” (p. 3). Through our empirical and

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