

IS Serving the Community: The Pragmatic, the Ethical and the Moral Questions

Completed Research Paper

Dubravka Cecez-Kecmanovic

University of New South Wales
Sydney, Australia
dubravka@unsw.edu.au

Olivera Marjanovic

University of Sydney
Sydney, Australia
olivera.marjanovic@sydney.edu.au

Abstract

Public sector information systems (IS) may produce unintended negative consequences that are very challenging to predict in advance. In this paper we seek to answer the following critical research questions: How does a democratic society identify and deal with ethically and morally problematic effects of public sector IS? What does it mean for public sector IS to be ethically and morally justified? What principles and norms should govern the discourse in a society to ensure resolution (and prevention) of these ethically and morally problematic effects? We answer these questions by providing empirical and theoretical argument, based on our investigation of My School – an Australian Government portal providing performance data about more than 9500 schools. By drawing from Habermas' discourse ethics we identify problems in the current discourse on My School and propose principles for conducting public discourse to ensure resolution of pragmatic, ethical and moral concerns through a democratic process.

Keywords: Public sector IS, Social issues, Ethical concerns, Moral concerns, Discourse Ethics, Dark side of IS, Democratic discourse, Ethical justification, Moral justification, Public data

Introduction

The relentless march of Information Technologies (IT) in all spheres of human action and social endeavors is typically considered from a pragmatic perspective: Does an Information System (IS) work and fulfill its requirements? Is it efficient in achieving its objectives and producing desired effects? The importance of these questions is undeniable and it is not surprising that they are central to the assessment of IS in organizations and society (e.g. Fincham 2002; Doherty et al. 2011). Problems however arise when IS, while fulfilling their requirements, often produce unintended negative and undesirable consequences (see e.g. Kappos et al. 2005; Robey and Boudreau 1999; Overby et al. 2010; Fichman et al. 2015; Tarafdar et al. 2015a, 2015b). This becomes particularly critical in public sector IS that serve broader community (in education, health, social services and others). Their open nature and complexity make it difficult (if not impossible) to predict in advance all their uses and assess the consequences for all those affected (Brey 2000). Thus, it is not sufficient to comprehend and assess IS from a pragmatic perspective only. In many circumstances, especially when an IS serves broader public and affects users in unpredicted negative and unintended ways, the ethical and the moral questions come to the fore, without obvious and clear answers (Walsham 1996; van der Hoven and Wickert 2008).

An ethical issue arises when an IS implemented by one party in pursuit of its goals materially affects another party's ability to pursue its goals (Mason 1995). When the effect is harmful or in any way detrimental to the affected party the *goodness* or *virtue* of an IS is questioned. This is an ethical question that differs from the pragmatic one as it emphasizes broader implications of IS for "the good life within

one's community" (Mingers and Walsham 2010, p. 841). Both questions, the pragmatic and the ethical, however, refer to self-interests of the parties concerned: is the IS *effective* and *good* for me? When on the other hand we are concerned with the equal goodness of IS for all (affected) and when we transcend the interests of individual parties, we move to the domain of moral questions (Mingers and Walsham 2010; Habermas 1992, 1996). Together with the pragmatic, the ethical and the moral questions of IS are becoming increasingly critical in contemporary society undergoing rapid and unbridled digitization with rising complexity, opaqueness, vulnerability and risks (Brey 2000; Introna 2002; Mason 1995; Walsham 1996; van der Hoven and Wickert 2008; Mingers and Walsham 2010; Fichman et al. 2015).

Public sector IS that provide legitimized data about the functioning and performance in a sector – e.g. in health care, education, social services – present exemplary cases of society digitization. These systems are particularly interesting as they are developed, implemented and regulated by government or public sector agencies with the aim to serve larger community: typically a very broad range of individuals, groups and institutions (Denzinger et al. 2002; West 2004; Dunleavy et al. 2006). While the IS sponsors and developers are guided by the objectives of economic efficiency, accountability and transparency and also the provision of equitable services and clear benefits to citizens and stakeholders, these systems often differentially affect various segments of society. For instance, the provision of data about payments to individual doctors and other providers introduced in the US (by the Centers for Medicare and Medicaid Services - CMS) which was motivated by healthcare transparency (Blum 2014) was criticized for disregarding the interests of individual doctors who may be wrongly targeted and publicly shamed (see e.g. Salzberg 2014; Weaver et al. 2014). Similarly, public availability of school performance data and so-called school league tables in the UK education system created unintended and unpredicted negative consequences (Smith 1995). When IS serving the public produce negative unintended consequences for some sections of a community, the society faces critical ethical and moral questions (Smith 1995; Mingers and Walsham 2010).

Despite the importance of ethical and moral questions for both IS practice and society more broadly, they have not as yet received appropriate attention in the main stream IS literature. Notwithstanding notable exceptions (such as Smith and Hasnas 1999; Cecez-Kecmanovic et al. 2008; Stahl 2008; Davison et al. 2009; Mingers and Walsham 2010; Ross and Chiasson 2011) the discourse on ethics and morality does not feature prominently in the IS literature. The purpose of this paper is to contribute to better understanding of ethical and moral questions in public sector IS serving the public and to propose a theoretically grounded dialogical process to address them in practice. In particular we seek to answer the following critical research questions: *How does a democratic society identify and deal with ethically and morally problematic effects of public sector IS? What does it mean for public sector IS to be ethically and morally justified? What principles and norms should govern the discourse in a society to ensure resolution (and prevention) of these ethically and morally problematic effects?*

We answer these questions by providing empirical and theoretical argument. Based on the investigation of *My School* – an Australian Government portal that provides data on the performance of and resources available to more than 9,500 Australian schools – we reveal negative and harmful implications of the data use and discuss their ethical and moral nature. By drawing from Habermas' discourse ethics (1992; 1993; 1997) we identify problems in the current discourse on *My School* and propose principles and norms for conducting public discourse as a democratic process, to ensure open dialogue and robust critical testing of competing arguments regarding pragmatic, ethical and moral concerns about *My School*. The democratic process, proposed here, not only addresses the issues of appropriateness of stated ends of transparency and effectiveness and the means for achieving them (data and analytical tools provided via *My School*), it contributes to the social intelligibility of complex social interactions mediated by the IS (*My School*). It thus enables development of a broader understanding in a community as to why and how the use of 'objective', 'accurate' and 'legitimate' data may produce negative and harmful implications for some individuals and groups. Through a democratic process instituted in a society the emerging and unpredictable negative effects of public sector IS serving community can be identified and publicly debated in terms of empirical truth, ethical goodness and moral rightness, leading to what Habermas calls a 'reasonable society-wide discursive consensus' regarding legitimation of data and services provided by public sector IS as well as their legitimate usages.

In the following section we first briefly review relevant literature on unintended negative consequences of IS with particular emphasis on public sector IS serving the broader public, and also the debates in IS on

ethics and morality. This is followed by an overview of Habermas' discourse ethics (1992; 1993; 1997) that forms a theoretical foundation for exploring the current debate on *My School* implications and answering our research questions. The methodology and the case study of *My School* are presented next, leading to the findings section on the implications of *My School* since its launch in 2010. By interpreting Habermas' discourse ethics we discuss how the current debate identified and addressed *My School* implications (in particular those ethically and morally problematic) and propose principles, norms and rules to govern the discourse to ensure resolution (and prevention) of such ethically and morally problematic effects. We conclude by summarizing the theoretical and practical contributions and implications of the paper.

Background

As IT applications continue to permeate all aspects of work and social lives, a growing number of IS researchers are starting to investigate the so-called "dark side" of IT use. In general terms, the dark side of IT focuses on "the complex and often alarming ways in which use of IT affects organizational and social lives" (Tarafdar et al. 2015a). Prior examples of prominent research include work in the areas of "technostress" (Ayyagart et al. 2011; Tarafdar et al. 2015b), IT-generated interruptions of work (Gupta et al. 2013; Spira, et al. 2005), negative consequences of information overload (Gupta, Li and Sharda 2013) as well as the widely-recognized challenges of technology addiction and misuse (Steeiman et al. 2012; Turei et al. 2011). So far, these negative consequences have been mostly investigated at the individual level, while "the area of dark side outcomes at the societal level remains largely unexplored" (Tarafdar et al. 2015a, p.165). In this context, of particular interest are negative unintended consequences of IS serving the public. In particular, IT-enabled collection, processing and publications of performance-related data in the public sector are propagated throughout society in unforeseen ways, causing serious unintended consequences. These issues have been studied by two different research streams: open data and public performance data.

The rapidly growing open-data movement refers to "the practices of making data reusable by citizens and/or consumers" (O'Hara, 2012, p.1). While the concept of open data includes many different sources of data, such as for example data created by academic research, it is often related to government data (i.e. also termed 'Open Government') through which a vast amount of data is made publicly available by governments around the world. The main objectives of open data are improved transparency, accountability and citizen participation (Davies et al. 2013). The worldwide proliferation of the open data movement has attracted the attention of a growing community of researchers from different disciplines, including IS. For instance, based on a comprehensive literature review, Davies et al. (2013) identify three broad categories of prior research: (i) open data readiness assessments, such as studies of conditions for effective open data initiatives (Grawel et al. 2011); (ii) open data implementation studies focusing for example on quality and availability of data sets (Braunschweig et al. 2012; Craveiro et al. 2013); and (iii) impact studies seeking to gain a better understanding of whether open data has brought the expected benefits as promised by its advocates (Davies et al. 2013), such as economic growth, democratic empowerment or citizen engagement (Ballingall 2011; Rath 2012). These studies warn that open data could also result in negative impacts that are neither intended nor anticipated (see e.g. Raman 2012). Social impacts of open data is an important domain which, as highlighted by Davies et al. (2012), is under-researched and poorly understood.

Particularly critical are the so-called performance data due to their large-scale impact and often hard-to-predict unintended consequence. The area of public performance data has been investigated by many researchers in public administration, political science, social sciences, accounting, and to a lesser extent in IS. For example, Smith (1995) describes a case of the UK education system to illustrate the unintended and very serious consequences resulting from the publishing of school performance data, especially when misused for comparisons of different schools and publishing of the so-called school league tables. In this context a new kind of IS termed School Performance Feedback Systems (SPFS) emerged. The main objective of SPFS is to enable complex cross-organizational feedback loops in school environments (Visscher and Coe 2003; Earl and Katz 2006; Vanderlinde et al. 2010). These are "information systems external to schools that provide them with confidential information on their performance and functioning as a basis for school self-evaluation" (Visscher and Coe, 2003, p.321). Development and implementation of SPFSs are very complex endeavors with many open research challenges. "A thorough and rigorous

evaluation of the effects of varying SPFSs is urgently needed ... It is also of great importance to evaluate the extent to which unintended effects occur” (Vanderlinde et al. 2010).

Furthermore, focusing on performance management practices in the pharmaceutical industry, Dambrin and Robson (2011) seek to explore performance measurement not as the implementation of “an optimized system of measurement and control”, as it is commonly done in accounting, but as “constructed chains of transformation” between objects, actions, technologies and, inevitably imperfect, performance numbers. The authors show how interruptions and distortion of the chain of sales performance measures cause the network to “begin to lie” with measures becoming flawed (Dambrin and Robson, 2011). Similarly Bevan and Hood (2006) investigate the effects of performance targets on the English public healthcare system and find evidence of gaming created by “targets and terror”, ultimately resulting in what is measured becoming what matters. In another notable example Selwood (2002) investigates the politics of gathering, analyzing and using data about the subsidized cultural sector in England. Kraemer et al. (1987) investigate politics of government data and modeling practices and confirm the primacy of political over technological factors when defining and measuring success of these practices. Focusing on perceived value of government information, Weiss et al. (1986), show that when information is used by policy makers it becomes “predictably and profoundly shaped by the patterns of control” in which federal information systems are embedded (Weiss et.al. 1986, p.504).

In summary we can conclude that research in IS and related disciplines has identified and begun to address several important aspects of unexpected and unpredictable negative societal consequences of complex IS. However, their broader social implications and significant negative unintended consequences in the public sector create new ethical and moral challenges for modern democratic societies; challenges for which there exists no adequate democratic mechanisms to deal with (Smith 1995; Mingers and Walsham 2010). This paper thus explores the following research questions: *How does a democratic society identify and deal with ethically and morally problematic effects of public sector IS? What does it mean for public sector IS to be ethically and morally justified? What principles and norms should govern the discourse in a society to ensure resolution (or prevention) of ethically and morally problematic and unacceptable effects?*

Research on ethics and morality in IS (e.g. Smith and Hasnas 1999; Stahl 2008; Davison et al. 2009; Mingers and Walsham 2010) provides a valuable foundation for considering these questions. Particularly interesting is a paper by Mingers and Walsham (2010) which provides a comprehensive exploration of ethical and moral theories relevant for understanding and addressing social implications of modern IT. They discuss three major approaches to ethics and morality—*consequentialism* (Bentham 1948/1789; Mill 2002/1861), *deontology* (Kant 1991/1785; Rawls 1971; McNaughton and Rawling 2007), and *virtue ethics and communitarianism* (MacIntyre 1985; Hursthouse 2007)—their focus, assumptions and claims as well as their applications in business and IS. While these approaches provide a wide range of potential ethical and moral considerations of the social implications of IT, Mingers and Walsham (2010) argue that Habermas’ discourse ethics, as a procedural approach to ethical and moral theory with distinctive practical intent, is of particular interest and high relevance to the IS field. Following their argument we seek to answer our research questions by drawing from and re-interpreting Habermas’ discourse ethics in the context of public discourse addressing ethical and moral concerns raised by IS serving the public.

Discourse Ethics

Habermas’ discourse theory of deliberative democracy (1993, 1996) provides fundamental principles of practical discourse to guide public discussions on major questions confronting modern societies. The challenge for us is to interpret and achieve broader acceptance of this rather abstract theory so that it can be applied to better understand controversies and consequences of IS serving the public and govern democratic public debates that would enable resolution of the controversies and seek just and fair solutions. The foundation of Habermas’ discourse theory of deliberative democracy is his discourse theory of morality – referred to as ‘discourse ethics’ – that is grounded in and intimately linked to his Theory of Communicative Action (TCA) and the concept of communicative rationality (1984, 1987). While it is

beyond the scope of this paper to discuss TCA¹ we only briefly draw attention to the distinctive nature of communicative rationality as it is necessary for understanding Habermas' discourse theory.

In addition to purposeful rationality that governs self-interested individuals to achieve their goals, Habermas (1984, 1987) proposes communicative rationality as an alternative organizing principle of social life. Communicative rationality governs actors in social interactions by mobilizing their 'potential for rationality' to mutually coordinate their actions, each aimed at achieving, in principle, their different ends (Cecez-Kecmanovic et al. 2002). While purposeful rationality assumes actors solely oriented to achieving their ends by influencing others, communicative rationality assumes actors' orientation to mutual understanding and achieving aims by coordinating their actions. To do so, communicatively rational actors use language to develop intersubjective understanding of problematic situations that provides a basis for a rationally motivated agreement and coordination of their actions. Importantly communicative rationality assumes an argumentation process free from any force or coercion. This implies that participants in communication understand that their validity claims (to truth, moral rightness, ethical goodness and truthfulness) are open for criticism and justification and that all participants have an obligation to provide arguments for their validity claims and be receptive to arguments by others. In other words, validity claims can only be clarified and justified through argumentation in social discourse. This also implies that the validity claims are not limited to claims to truth (what is the case in the world) but also refer to the social world of values and norms (claims to moral rightness and ethical goodness), as well as to the subjective world of individual experiences, desires and feelings (claims to truthfulness and sincerity) (Habermas 1984). Social discourse that is governed by communicative rationality is thus a consensual form of social coordination in which participants seek to achieve rationally motivated agreement about a publicly recognized problem, an agreement that is justified as good, just, sincere and free from empirical error.

Habermas (2008) defines four conditions for a public discourse to be governed by communicative rationality and ensure robust testing of competing arguments (validity claims and counterclaims): i) no one interested or affected and capable of making a contribution is excluded, ii) all participants have equal voice, iii) participants are free to express their views without deception or self-deception, and iv) there are no sources of coercion built into the procedure of discourse (p. 89). These conditions determine an idealized form of practical discourse – inclusiveness, equality of participation and non-coercion – that is not likely to be fully achieved in practice. Nevertheless, these conditions function as operative standards that can be used to govern and scrutinize actual discourses and check whether their outcomes are reasonably justified as consensual.

As there were objections to his discourse theory as unrealistic and idealized, Habermas responded by articulating more specific principles for actual practical discourse. His *discourse principle* (D) articulates a dialogical approach to practical reason:

“Only those norms can claim to be valid that meet (or could meet) with the approval of all affected in their capacity as *participants in a practical discourse*” (Habermas 1992, p. 66, emphasis in the original).

Discourse principle D is an overarching principle of impartial justification that applies to all types of discourses, including for instance discourses about technical-pragmatic questions regarding effective means to achieve given ends, ethical questions regarding the interest and wellbeing of individual parties affected by an action, and moral questions that need to be resolved in the interest of all.

Habermas' conception of moral discourse and discursive testing of moral obligations is formulated in his *principle of universalization* (U):

“a [moral] norm is valid *if and only if* the foreseeable consequences and side effects of its general observance for the interests and value-orientations of *each individual* could be freely accepted jointly by *all* concerned” (Habermas 1996, p. 354; emphasis in the original).

In other words for a moral norm to be valid it should hold up in a fully inclusive and reasonable discourse. As Bohman and Rehg (2014) explain:

¹ For a broader discussion of TCA and its relevance for IS see e.g. Mingers and Walsham (2010) and Ross and Chiasson (2011).

“(U) explicates a moral epistemology: what it means for moral statements to count as justified. ... Habermas proposes (U) not merely as articulating a consensus model of moral justification, but as an explication of the meaning of rightness itself. Unlike truth, the rightness of a moral norm does not consist in reference to an independently existing realm of objects, but rather in the worthiness of the norm for intersubjective recognition.” (p. 18)

Both the discourse principle D and universalization principle U require development of a shared understanding and the taking of a mutual perspective. Not only is it necessary that all interested and affected individuals freely participate and have a voice, all participants are required to mutually respect and attend to each other’s values and interests while seeking mutual understanding. Through a rational discourse governed by D and U participants themselves change and condition their views and judgments about the rightness and moral norms on what all participants freely accept. As Mingers and Walsham (2010) emphasize “Habermas does not see this as just an analytical procedure or thought experiment; he intends that such debates, especially within society as a whole, should actually occur” (p. 841).

It is important to note here that Habermas differentiates between ethical and moral questions. Ethical questions regarding for instance an IS focus on ‘what is good for me or for us’, that are typically concerned with different interests and values of individuals and groups in pluralist societies. Moral questions on the other hand are concerned with ‘what is equally good for all’. This suggests that achieving morally justified agreement on an IS in an actual public discourse may be very difficult due to plurality of interests and values that prevent finding solutions that are equally good for all. In cases where universal agreement on what is good for all and thus morally justified cannot be reached there is an opportunity to seek solutions that do not harm anybody and are acceptable (while not equally good) for all affected parties. Such solutions agreed upon through a public discourse governed by the principle D (but not U) would not be morally justified but could be ethically justified. There is a risk however that such discourse may deteriorate into bargaining and strategically motivated behavior by the parties involved (see discussion in Mingers and Walsham 2010, p. 843).

Habermas’ discourse ethics exemplifies a dialogical approach to practical reason and as Mingers and Walsham (2010) argue is more comprehensive and more practical than other ethical theories. It is more practical in a sense that it recognizes plurality of interests and perspectives involved in ethical judgments in modern societies. However, as Habermas often stated himself, discourse ethics has to be interpreted and meaningfully applied in any concrete case of public debate. Before we do that, in the following sections we first present our case study and the findings.

Methodology

An Interpretive Case Study

In order to answer our research questions we draw from an interpretive case study of *My School*, a web-based IS that provides public information about performance and resourcing of more than 9500 Australian schools. This case is chosen as it exemplifies a public sector IS that serves a community and produces publicly available performance information in a sector (in our case education) causing unexpected and undesirable harmful effects. This is also a case of a Government IS that has created unprecedented public controversy and criticism so much so that it was subjected to two Senate inquiries. With ongoing public attention since its introduction in 2010 – articles and debates in media, submissions and hearings in the Senate inquiries, Australian Government reports, responses and *My School* website, and numerous published studies – this case provides ample material for studying how a democratic society attempts to understand and deal with ethically and morally problematic effects of a public sector IS. This case also provides an example of a complex public debate (now in its sixth year) that has failed to resolve the major negative and publicly argued implications on children, parents, teachers and schools. By adopting Habermas’ discourse ethics we examined opportunities for improving the public debate so that it may be possible to resolve (and in future prevent) ethically and morally problematic effects (that answers our research questions).

Our methodology is interpretive underpinned by hermeneutics as both a philosophy and a methodology for interpreting meaning (Gadamer 1960; Crotty 1998). Engaged with contemporary hermeneutics we assume that understanding is always practical, lived and temporal experience and that interpretation is inevitably provisional and progressive, never ‘finally correct’ (Heidegger 1962). Especially in the context of the case like *My School* that involves hundreds of documents, a huge number of actors (educational

institutions, media, children, parents, teachers, schools, educational experts and researchers), and events, our interpretation has emerged gradually through a dialogical engagement with evidence. This process was iterative in a sense that understanding is constantly moving from the whole to the part and back to the whole – referred to as a hermeneutic circle (Gadamer 1960; Klein and Myers 1999).

The hermeneutic circle as a methodological tool helped us in seeking understanding through ever-widening circles. While ‘the harmony of all the details’ as proposed by Gadamer (1960) may never be reached, the hermeneutic way of understanding helped us in creating a rich picture of the complex social ordering that has been going on following the implementation of *My School*. Importantly our hermeneutic analysis was also informed by Habermas’ discourse theory thus sensitizing our understanding of the multitude of interests, values, ideologies, and political views that all play a role in the emerging debate on controversial and negative implications.

My School – Case Description

Driven by the new education reform agenda to move towards ‘transparency in reporting and assessment’ the Australian Curriculum Assessment Report Authority (ACARA) launched the so-called *My School* web site/portal in January 2010 (ACARA, 2010). According to ACARA, *My School* ‘provides an important opportunity for everyone to learn more about Australian schools, and for Australian schools to learn more from each other’ (ACARA, 2014, p.1). *My School* is designed to provide detailed information about all schools in Australia (currently over 9500 schools) along with school’s results of the so-called NAPLAN test. This is an Australia-wide test in literacy and numeracy, administered in Years 3, 5, 7 and 9 in all schools in Australia at the same time. When launched in January 2010, *My School* included two sets of NAPLAN results for 2008 and 2009. Currently in its sixth year of operation the portal provides seven years’ worth of data. According to the *My School* website:

With 2014 data added, there are now seven years over which you can compare a particular school’s progress in its students’ levels of literacy and numeracy with those of schools serving students from similar social backgrounds or similar starting points in literacy and numeracy. The site also permits comparisons of the resources available to a school, both overall and per-student. The number of visitors to the site each year – over 1.4 million user sessions in 2014 – reveal the continuing interest in it.

As the site enters its fifth year, it is routinely used to help parents make informed decisions about their child’s schooling, and contributes to both policy discussions and public debates. We welcome discussion that paves the way to improve outcomes for our students – both now and in their future years.

The data provided by *My School* are collected in several different ways. When enrolling a child, parents are asked to provide information about their own education and occupation. Additional sources of data are sourced from the Australian Bureau of Statistics (ABS), including for example, ABS census of population and housing data for different areas. Each school is also required to provide financial data, including recurrent income, capital expenditure (presented as a total figure and an average amount per student). Furthermore, a school profile page includes information about student enrolment, attendance rates as well as staff numbers used to determine school’s student/staff ratio. Each school is given an opportunity to provide very brief qualitative information about its values, ethos, programs and main achievements.

The most important data on *My School* are collected from NAPLAN tests that are conducted in teacher-supervised classrooms with students’ answer booklets collected and sent to ACARA. ACARA then analyses and records the results in a database. Within approximately 4-5 months students get individual reports on their performance while their school gets a comprehensive report showing the overall performance of its students. Most importantly, soon after, the results of all schools go online and are made publicly available on *My School*.

In addition to data, *My School* also provides easy-to-use tools enabling any user (non-registered) to search and compare various aspects of school and students’ performance over time. The outcomes of these operations are shown in simple visual forms to facilitate better understanding. For example, users could see and re-order various lists (by clicking on the column titles), look at graphical comparisons (e.g. showing the whole school in relation to the national average), or geographical maps of up to “20 schools that are geographically closest to the selected school”.

In order to enable a more meaningful comparison of students in one school with students in another school, as well as the grouping of similar schools (of up to 60 schools), ACARA developed an Index of Community Socio-Educational Advantage, specifically for *My School*, called the ICSEA index. Development of this index was based on related research showing that family educational and professional background factors (i.e. parents' education level and occupation) are closely related with student educational outcomes. Consequently, each school is given an ICSEA value on a scale which has a mean of 1000 and a standard deviation of 100. For example, a value around 500 represents extreme disadvantage and up to 1300 represents high advantage. Furthermore, ACARA has developed a financial methodology specifically for *My School* in order to provide useful and reliable financial information about schools and more importantly, enable meaningful comparison of financial data. The methodology is designed to take into account a wide set of variables including the location, type and size of each school, its programs and operations.

The *My School* portal continues to create a controversy in Australian society due to numerous unintended consequences for all intended beneficiaries of this system (teachers, school principals, students and their parents), as well as wider society. So far, the *My School* environment and its use have been subjected to two Senate Inquiries with the most recent government review announced in March 2015. Figure 1 presents the timeline of *My School* development and significant events that have occurred so far.

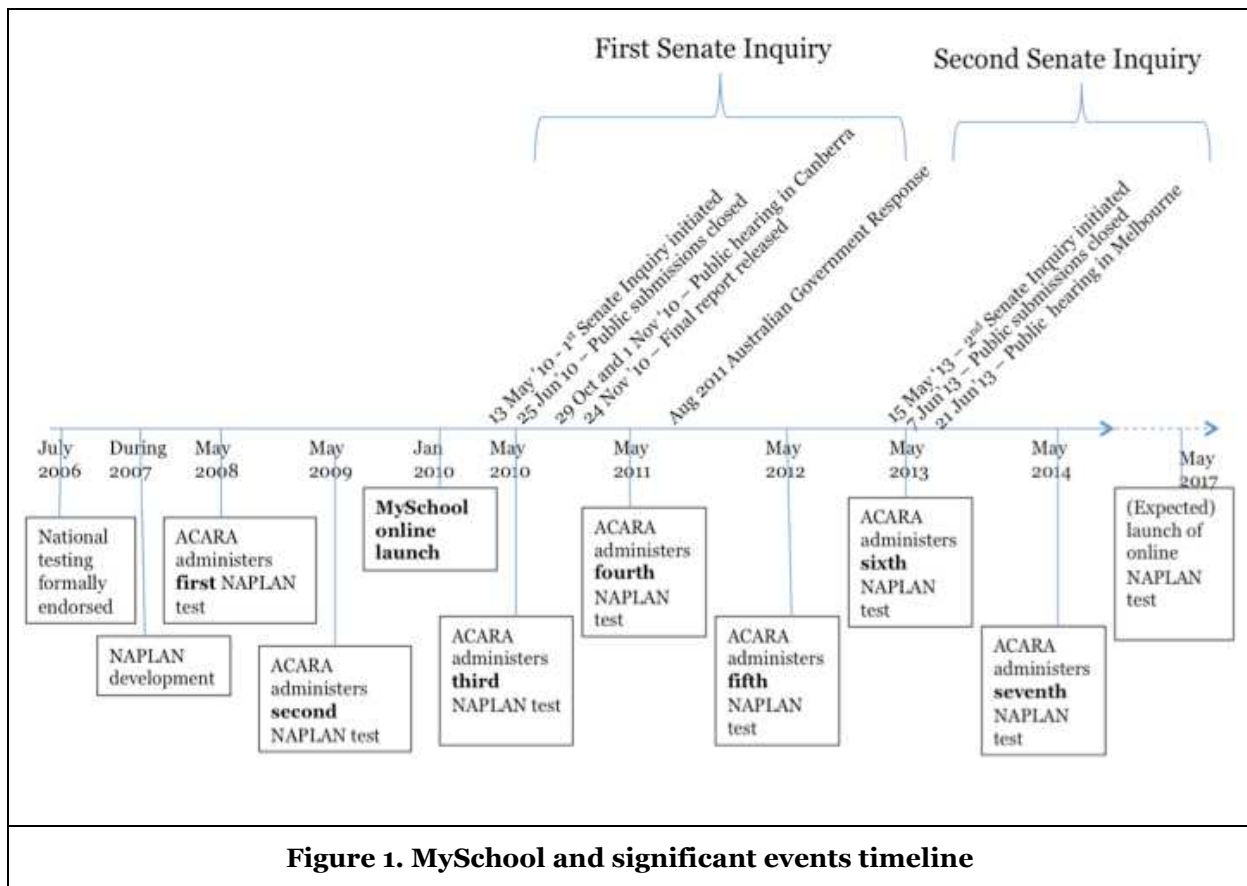


Figure 1. MySchool and significant events timeline

My School also makes data available to the public, via a third party (i.e. ACARA government agency). However, data sources are not provided in the original and machine-readable forms. Instead of providing "raw" data as collected from individual schools, ACARA pre-processes data and makes them available in an aggregated (summarized) form at the school level. In addition, in order to facilitate meaningful comparison among schools, data on financial performance are "adjusted" using the previously described financial methodology and new data are created to indicate each school's socio-economic value.

Data collection and analysis

Data collection for this project started with the initial launch of the *My School* website (in Jan 2010) and has been continuing ever since. Table 1 offers a selected sample of the most relevant documents used for the research presented in this paper. The sample reflects the ongoing progress of the public debate in Australia and includes the most authoritative documents made available on the Australian government web site.

<p>First Senate Inquiry Documents:</p> <ul style="list-style-type: none"> - <i>Public submissions to the Senate Inquiry- 268 written submissions, June 2010.</i> - <i>Interim report: "Effectiveness of the National Assessment Program – Literacy and Numeracy", Aug. 2011.</i> - <i>Transcript of the public hearing (84 pages) – Friday 29 Oct 2010 Canberra: Official Committee Hansard Senate: Education, Employment and Workplace Relations References Committee - Reference: National Assessment Program-Literacy and Numeracy</i> - <i>Transcript of public hearing (49 pages) – Mon 1 Nov. 2010. Canberra: Official Committee Hansard Senate: Education, Employment and Workplace Relations References Committee – Reference: Primary Schools for the 21st Century program</i> - <i>Final report: Education, Employment and Workplace Relations References Committee: Administration and reporting of NAPLAN testing, Nov. 2010.</i> - <i>Australian Government Response to the Senate Education, Employment and Workplace Relations Reference Committee: Report on the Administration and Reporting of NAPLAN Testing, Aug 2011.</i>
<p>Second Senate Inquiry Documents:</p> <ul style="list-style-type: none"> - <i>Public submissions to the Senate Inquiry- 93 written submissions June 2013.</i> - <i>Interim report: The effectiveness of the National Assessment Program Literacy and Numeracy (NAPLAN) – 27 June 2013</i> - <i>Transcript of the public hearing (53 pages) – 21 June 2013 Melbourne: Official Committee Hansard Senate: Education, Employment and Workplace Relations References Committee - Reference: National Assessment Program-Literacy and Numeracy</i> - <i>Final report: The Senate: Education and Employment Reference Committee: Effectiveness of the National Assessment Program – Literacy and Numeracy: Final Report, March 2014.</i>
<p>Additional Documents:</p> <ul style="list-style-type: none"> - <i>Research Report: "The experience of Education: The impacts of high stakes testing on school students and their families: A qualitative Study" Whitlam Institute & University of Western Sydney, May 2014 (findings from the interviews with 16 Principals/School Leaders; 29 teachers, 26 parents and 70 students (22 Grade 5, 25 Year 7, 23 Year 9).</i> - <i>Research Report: "The Experience of Education: The impact of high stakes testing on school students and their families: An Educator's Perspective", Whitlam Institute Australia & University of Western Sydney, June 2012 (findings from online survey of 8353 participants)</i> - <i>Australian Primary Principal Association: My School- NAPLAN Discussion Paper, 8th Sept. 2014.</i>

Table 1. Data Sources

Our data analysis involved a number of hermeneutic circles. We read the documents as we collected them and broadly classified them according to the origin (authority), purpose, topics, and special features. For the analysis in this paper we selected papers based on topics – arguments and counterarguments regarding the consequences of *My School* (or NAPLAN). Within each document, we coded sections of the text (such as specific claims, views, perspectives, events, statements, and recollections of events related to consequences of *My School*). These sections were then interpreted in the context of the document, which is in turn interpreted in the context of the related event (e.g. Senate inquiry) as well as the broader debate. At the same time, the overall debate (whole) was used to gain a deeper understanding of individual parts (documents and contributions to debate). In this way, interpretation of different “parts” and the context (whole) were continuously revised and mutually co-produced (Crotty 1998).

Findings

As the *My School* timeline (Figure 1) indicates there are two series of significant events associated with the First and Second Senate Inquiries. Both series illustrate serious unintended and unanticipated negative consequences caused by NAPLAN data made available to public. These consequences affected all intended beneficiaries (parents, students, schools, teachers and school principals) of the *My School* system. Moreover, as data and effects of data interpretation started to propagate throughout the wider society, more stakeholders got involved, with some being affected and others actively contributing to these negative effects. Guided by our research question, this section follows the process since *My School* was launched in January 2010 and provides a short overview of public debates including two Senate Inquiries.

The First Senate Inquiry was initiated on the 13th of March 2010 shortly after the *My School* website went online in January of the same year. “This inquiry was initiated following allegations of schools cheating and manipulating test results by excluding students when the literacy and numeracy tests were held” (The Australian Senate 2010). These practices were fueled by very crude league tables ranking schools based on their performance. These league tables were constructed and published by Australian media that welcomed *My School* for “leading education revolution” and “becoming the voice of the public”:

..the fact is that news outlets love league tables because people want to hear about them (Canberra Times Editorial 2010)

Leaving things up to the experts - keeping performance data secret within the bureaucracy as the critics of publication want - does not result in action (Sydney Morning Herald Editorial 2010a)

...the test results should be part of wider transparency and accountability about schools and their principals and teachers. The teaching profession should accept that it cannot shield misfits and time-servers (Sydney Morning Herald Editorial 2010b)

Serving the needs (and rights) of “consumers” to know how service providers are performing, *My School* is setting up the example for other “service providers” to follow:

My School the NAPLAN tests on which it is based and media analysis will revolutionise education by making it possible to base decisions on data not the education establishment's dogma. They establish a marvelous model for other public services from universities to hospitals where consumers have a right to know which service providers are performing. (The Australian Editorial, 2010)

The use of *My School* to provide publicly available data on school performance was welcomed by many parents in the name of accountability and transparency. While previously parents had to make their choices on “anecdotes and gossip” (Canberra Times Editorial 2010a), with *My School* they now have critical information to make “one of the most important decisions of their lives: where to send their children to school” (Sun Herald Editorial 2010).

Indeed, within days of *My School* web site going alive, informed by published school leagues, numerous parents made last-minute decisions putting lots of pressure on the school system in order to move children from “bad schools” to better performing schools. In addition to making those decisions “informed by objective data”, they also started to put pressure on “non performing schools, principals and teachers” to improve quality of “service”. “Parents as consumers are being taught to read the abstract data to interrogate “good teaching” (Thomson and Cook 2013, p.137).

However, parents have had difficulties dealing with serious consequences of data-reinforced perceptions. Some children were stigmatized as “coming from bad schools” and their parents for not being able to offer “better education” to their children (Wyn et al. 2014). Parents’ experiences with using *My School* were reported in the Senate submissions:

“All it [My School] did was leave me with a bad taste in my mouth,” because given where she lives within the school boundaries her child could not go to another school and her child's school was being compared against private schools that she could not afford. So she felt that the school was being stigmatised with this bad reputation and she could not do anything about that. When she went to the website it left her with this bad taste. (First Inquiry, Submission 86)

A parent of a child attending a school with below average NAPLAN scores commented on what she saw as 'labelling' students as low achievers, expressing a fear that her daughter and others like her would simply accept the label and stop trying to do better. (First Inquiry, Submission 83)

Parents also reported other negative consequences on their children including stress, anxiety, low self-esteem and discrimination (The Australian Senate 2010). For example, low-performing students were asked to stay at home so they do not impact on the overall NAPLAN score.

Furthermore, the “fact sheet” provided on the *My School* website explains the role of performance data in supporting the improvement of teachers’ and schools’ professional practices:

Effective teachers need quality information about how and what their students are learning in order to diagnose student learning needs, monitor progress and make sure their students are being taught the right things in the right ways. Effective schools collect quality information from student assessment to evaluate themselves and examine where they need to improve and how they can use experience of success and failure to generate that improvement. (ACARA 2010)

Yet, in practice the consequences of publishing performance data turned out to be very different:

[T]eachers now had their reputations at stake and had been given an incentive to teach strong performers and gifted students, who are often clustered in classes, instead of being judged on the performance of lower achievers. (Fist Inquiry, Submission 75)

Teachers expressed concerns with simple and “data-driven” assessment of complex education practices. These were however interpreted as acts of self-interest out of fear that their own inadequacies could be exposed through data (Mocker 2012). “By accumulating data (tests) and analyzing that data to produce patterns, the database produces information that has consequences for those whose names are associated with the captured data” (Thomson and Cook 2013, p.137). Even new terms are being created by the Australian teaching standards, such as ‘highly accomplished teacher’ or ‘lead teacher’, to distinguish different performance levels.

The new reality of being evaluated on the basis of published data, but without any insights into teaching that “produced” these data, started to change in-class practices of teachers. In a survey completed by the Australian Secondary Principals’ Association, many teachers reported on “teaching to data” (ASPA 2010). Furthermore, while many, if not most, teachers will attempt to maintain their integrity in the face of the system that does not value integrity, “increasing numbers of teachers are responding by manipulating the data” (Thomson and Cook 2013 p.137). The reported examples of these practices included: preparing the classrooms (with posters, charts and other visual prompts), reviewing the answers with students before submission and changing the curriculum to focus on NAPLAN-like tests (Thomson and Cook 2013; ASPA, 2010). Some even engaged in strategies of “preparing the population” by identifying students who are likely to have a negative effect on NAPLAN results and using different tactics to exclude them from the test. For example, they would suspend “troublemakers” (Cobbold 2010) or encourage students with learning difficulties or recent migrants to stay at home to protect them from negative results (Anderson 2010; Barry 2011). To encourage positive impact, reported strategies include encouraging parents to buy preparation materials and enroll students in paid NAPLAN classes (Branley 2011), free breakfast during NAPLAN week and free transport to school for high-achieving students (Anderson 2010; Branley 2011).

Similarly to teachers, school principals appear to share the same mistrust by the wider society, as they are also perceived to be driven by self-interest (Mocker 2012). “Bureaucrats and principals of poor performing schools will not be able to use the social or economic poverty of their school community as an excuse for failure. They will be forced to look at how they resource and teach their students and justify their efforts” (The Advertiser Editorial 2010). Influenced by public perception of their school’s performance data, schools also started to change their practices to influence data. For example, admission criteria are now influenced by NAPLAN results with schools making decisions to admit better students, in order to maintain or increase their performance (ASPA 2010; Mocker 2012).

In summary the first senate inquiry confirmed the negative effect of publishing *My School* data on students, parents, teachers and schools. After examining all evidence, the committee put forward twelve recommendations including “reforms to the publication and representation of test data, ... reforms to the *My School* web site and management of publications of league tables in media” (The Australian Senate 2014). In response to these recommendations, the Australian government and ACARA implemented a number of improvements, with the following recommendations related to data collected and posted on *My School*. For example, Recommendation 8 called for improvements of the method used to develop comparisons of like-schools. In response ACARA revised the ICSEA index (used to reflect socio-educational advantage in a school) to include direct student data and the addition of a language background other than English.

Recommendation 9 called for examination and public reporting on ways to mitigate the harm caused by simplistic and often distorted information in league tables published by newspapers. In response, ACARA has strengthened legal and technical protections of data and the new version *My School* 2.0 has new logon requirements and terms and conditions to protect the integrity of data (Australian Government, 2011). ACARA will be supported to take steps to counter any inaccurate use of *My School* information, including public response with corrected data.

Recommendation 11 focused on inclusion of more contextual information about schools on the *My School* website and acknowledgement to the users of the limitations of comparisons based on raw performance data due to extrinsic factors. In response the Australian government and ACARA offered the following

improvements and plans for the future: “In the future ACARA will add an option for principals to comment on their NAPLAN and senior secondary outcomes, information from students, teacher and parent satisfaction survey data, information about student destinations and information on students with disabilities”. In their response (2011), the Australian Government and ACARA also declared their commitment to enhance contextual information and improve understanding for the media and the public of the school data made available via *My School*.

Recommendation 12 called for a comprehensive review of the type of information on *My School* to “shift the focus from raw school performance data to value-added measurement of school performance” (The Australian Senate 2010). In response, *My School 2.0* is changed to show improvement between NAPLAN years, more precisely “the improvement that occurred over time for a specific group of students” (Australian Government 2011).

The debate in media continued with voices critical of *My School* “data and services” (NAPLAN in particular) and others defending their usefulness. This led to the Second Senate Inquiry opened on the 15 May 2013, this time focusing on the effectiveness of NAPLAN, including the impact of publishing NAPLAN results on the *My School* website. This inquiry attracted a smaller number of public submissions (93) and like the first one, also included a public hearing.

Our analysis of the associated set of data confirms the ongoing controversy created by *My School*. Various submissions confirmed the same negative effects on students, parents, teachers, and schools:

Elevating the status of NAPLAN results via the My School website diminishes the public’s trust in the teaching profession and portrays NAPLAN incorrectly as a definite and absolute measure. (Second Inquiry, Submission 23).

Teachers continued to change their practices in order to improve the test results. They were “required to respond to parent’s expectations by providing NAPLAN preparation... [Teachers thus] regularly feel quite disempowered as their professional knowledge is undermined by being forced to be so narrowly focused.” Compared to the first Senate Inquiry, and in spite of all recommendations, three years later NAPLAN becomes established as “high stake testing” with *My School*’s public data being one of the main contributing factors:

[T]he publication of NAPLAN results on the My School website, with the associate publicity and impact on schools and students, means that NAPLAN may be defined as high-stake testing. (Second Inquiry, Submission 30)

As long as NAPLAN is the only measure used by My School website to measure achievement, many schools will teach the tests and parents will do all that they can (including tutoring and purchasing commercial products) to enable their child to do as well in the test as possible. (The Australian Senate 2013, p.34)

In spite of previous recommendations and measures put in place to prevent publication of league tables by media the practice continued. For example, a supplement entitled “Your School” published by the leading national newspaper the Australian in its Weekend Australian issue (1-2 June, 2013), included pages headed “The nation’s top 100 primary schools” and “The nation’s top 100 secondary schools”. The same supplement was identified in a number of senate inquiry submissions as “a good example of misleading practice”. (Second Inquiry Submission 32)

In relation to data-processing effectiveness, the Senate committee received very strong evidence that the delay in returning the results to teachers and their publication on *My School* four months after the test restricted the effectiveness of NAPLAN as a diagnostic tool.

For teachers, any time lag beyond a few weeks considerably diminishes the diagnostic potential of the program for individual students. (Second Inquiry, Submission 9)

The second Senate Inquiry resulted in four recommendations being put forward. The Senate committee recommended the quick turnaround of test results with the design and implementation of NAPLAN Online (Recommendation 1), that needs to take into account special needs of students with a disability (Recommendation 2) as well as the needs of students from non-English backgrounds (Recommendation 3). Finally, ACARA is required to “closely monitor the use of NAPLAN results to ensure results are published to assist the Government to deliver extra targeted funding to students and schools who need more support, rather than development of league tables” (Recommendation 4)

Following these recommendations, ACARA announced the plans to introduce Online NAPLAN in 2017. At the time of writing, the *My School* controversy continues, with many prominent voices (including politicians) calling for *My School* to be “scrapped as ineffective” and “tools enabling school comparison to be removed”. New government investigation of *My School* was announced in March 2015.

The public debate on *My School* continues without signs that any of the serious issues are being appropriately addressed. The debate itself has been critiqued:

My School publication of results exposes schools to blunt, arguably inaccurate and damaging comparison and ranking. By raising the public profile and stimulating media commentary and league tables based on raw scores, it encourages uninformed and harmful debate. (APPA 2014, p.5)

This report confirms what we observed – that the public debate as it is unfolding (in media, the Senate inquiries, *My School* website, research publications) is more harmful than helpful. We witness a stalemate situation: on the one hand we read that ACARA continues to claim that *My School* has produced overwhelmingly positive effects, and that some minor problems could be and will be fixed; on the other hand the key critical issues regarding the negative implications on children, teachers and schools raised during the first and the second Senate inquiry, in media, and in academic reports, remain unaddressed. In such a climate of opposing claims and counterclaims (and blames) the public debate does not seem to be leading to clarification or resolution of any critical issues. While negative implications are articulated by one side of this impasse, there is no explicit engagement with ethics or explanation as to why these implications are ethically or morally problematic. Furthermore, it is not clear how a democratic society should respond to such negative implications and what the obligations of the Government are to ensure democratic legitimacy of the IS (*My School* and its key component NAPLAN) that continue to affect the education sector quite significantly. In the following section we respond to these concerns and answer our research questions by drawing from Habermas’ discourse ethics.

Discussion

The key problem with the ad hoc and random nature of public discourse on *My School* (and NAPLAN) is the absence of norms regarding the obligations by all parties – the Government agency, schools, teachers and parents, various associations and researchers – to listen and respond to arguments in a rational manner. Freedom of expression and open public criticism in media and research publications are not sufficient for achieving a meaningful dialogue among those responsible for organizing and managing such a complex IT system and those affected by it. There are no opportunities to rationally address current conflicting positions, clarify contested claims and converge to a reasonable resolution of the negative and undesirable effects in the education sector and wider community. What are missing are clearly formulated and widely accepted norms and rules of rational discourse that govern the public debate.

To answer the first research question as to how does a democratic society identify and deal with ethically and morally problematic effects of public sector IT applications we draw and learn from our case of *My School* debate. It is interesting first to find out how the problems are voiced, by whom, and with what evidence. That is, we need to understand the strength of the argument provided and how those affected as well as those investigating the effects (e.g. journalists, researchers) present the evidence. Second, we need to find out how the provided arguments (including valid evidence) are treated and scrutinized – debated, responded to by counter-arguments and counter-evidence and whether the process concluded with any broadly agreed resolution. It was only through such an investigation that we can reveal whether a process, such as *My School* debate in Australian society, identified or could identify the effects that are ethically or morally problematic and thus in need of public scrutiny and resolution.

Our findings show that since the introduction of *My School* in the Australian education system the debate was very vigorous and at the times of both Senate enquiries quite intense. The debate was characterized by huge efforts by all interested parties in raising claims –on the one hand about numerous benefits to schools, teachers, parents, and children, and on the other, about numerous negative effects on teaching, teachers, schools, parents and children. In particular, the submissions to two Senate enquiries and public hearings show unprecedented efforts in providing evidence to support various claims. To anybody participating in, or following the debate (as we did), it was obvious that the efforts to respond to claims and agree or disagree, and perhaps provide reasoned counter-claims, were negligible. For instance, claims that teaching practices have changed (due to NAPLAN) and that “teachers are teaching to tests”, that

students are discriminated against due to anticipated or achieved low scores, that schools are labeled “bad” schools, and many more, have not been seriously considered or responded to by ACARA. For instance, the CEO of ACARA responded (in *The Daily Telegraph* April 22, 2015) to the complaints that sitting the test causes anxiety by saying that “It’s natural for children to feel a little anxious before tests”. Even when there were responses to claims, in particular objections to NAPLAN and the ways it is administered, the responses addressed only some pragmatic aspects. ACARA responded by promising to increase speed of providing information back to schools and to introduce computer-based testing instead of paper-based. Well-argued criticism by teachers and principals regarding negative pedagogical implications of *My School* or parents’ objection to labeling children as ‘failures’ due to low NAPLAN test results, have been dismissed as simply motivated by self-interest. Despite hundreds of claims about negative effects of *My School* the debate has not focused on identifying the key critical issues for all or for some sections of the community that have to be acknowledged, debated and resolved. Despite recommendations from the first Senate inquiry and Government responses (and numerous media articles and reports) there is no clear public understanding of the goodness or harmfulness of *My School* in the Australian education system. The debate without a rational dialogue has left opposing views and contradictory evidence unexplained and largely not understood.

In answering the first question, we can conclude from the findings and analysis that our democratic society has so far failed in identifying and dealing with ethical and moral questions regarding the effects of *My School*. The debate has not engaged in understanding ethical let alone moral questions. This leads us to our second question: What does it mean for public sector IT applications to be ethically and morally justified? Ethical questions concern goodness or harmfulness of *My School* to individuals and groups – students, parents, teachers, schools, principals, teachers associations, educational institutions and the government agencies. The ethical questions refer to interests of the individual parties concerned (Mason 1995; Mingers and Walsham 2010): Does *My School* fulfill the needs and interests of various individuals or groups in the education sector? Are there individuals/groups/sections of a community whose interests and well-being are not considered or are negatively affected and how? In identifying the ethical questions we are concerned with particular positions and interests of individuals, groups or sections of a community and how they are affected by an IT system. To raise and debate ethical questions individuals and groups have the right to participate and argue based on their positions and interests. It is important to note that it is not enough that issues are openly raised and criticism expressed, however convincingly. Ethical problems have to be publicly recognized by accepting the rights of individuals and groups to object and critique public sector IT systems such as *My School* from their point of view, based on their interests and values. Something that may be good for one group may be harmful to the other. As long as an IT system is argued or shown to be harmful to any individuals or groups in a community the system is ethically problematic and therefore cannot be ethically justified in a democratic society.

The discussion so far has been about ethical justification, but what about moral justification? From our observations and the analysis of *My School* debate we suggest that talking about what would be good and just for *all* has not been the subject of serious debate. While ACARA (on the website) claims that *My School* is benefiting everybody, no evidence has been provided for such a claim. On the contrary, the evidence of detrimental effects on some schools and children provided in the debate so far, without even the dialogue between the opposing parties, shows that *My School* is neither good, nor fair, nor just for all.

So the question arises: What principles and norms should govern the discourse in a democratic society to ensure resolution (or prevention) of ethically and morally problematic effects? Habermas’ discourse ethics (1992; 1993; 1996) discussed above provides general conditions and principles for conducting public discourse that has the capacity to identify and address ethical and moral concerns related to *My School* and other IT applications serving the public. The challenge is to adapt these general conditions and principles to a particular context and establish new democratic mechanisms in a society to conduct public discourses that would ensure identification and consensual resolution of ethically and morally problematic effects of these applications, during both their design and use.

Following Habermas, we propose that a public discourse can be considered democratic if it is conducted according to the discourse principle D in a reasonable manner. To the degree that the discourse principle D and the principle of universalization U are practiced the results of the public discourse would be ethically and morally justified. As an overarching principle of impartial justification discourse principle D applies to all types of questions such as pragmatic questions of IS design, implementation and use; ethical

questions concerning the interests and wellbeing of individual parties affected by IS, and moral questions concerning the goodness and fairness of IS for all. Through such discursive testing of pragmatic, ethical and moral concerns regarding an IS (that observes both D and U) the community would seek consensually achieved outcomes, that is, IS solutions that are considered just and moral. While they are essential to define a democratic discourse and what it means for public sector IS to be ethically and morally justified, the principles D and U are too abstract to be directly applicable in practice.

We therefore propose reinterpretation of Habermas' conditions and general principles for practical discourse, as a procedural framework for governing public discourse in the case of public sector IS serving the community (such as *My School*):

1. Principle of inclusion: all affected and interested actors in relation to the design, use and effects of an IS should be included in a public debate.

As IS serving the public would have a very large number of potentially affected and interested actors the principle of inclusion poses practical difficulties. How to involve in a meaningful debate several thousand or million participants? The use of the Internet and Web 2.0 in particular has been shown to provide technological means to design and manage large-scale interaction of distributed groups of people (Bryson and Anderson 2000; White 2002; Palazzo and Scherer 2006).

2. Principle of equal and cooperative participation includes norms and rules of participation that should be agreed in advance:

- 2a. Rules that define free, equal and non-coercive expression of views, values, interests, concerns, experiences related to the IS.
- 2b. Rules that define the form and length of individual contributions to the debate (to ensure that key points are succinctly expressed and comprehensible to a broad audience).
- 2c. Rules regarding obligations by all participants to genuinely engage in discourse so as to take other's views, positions and interest on board and seek achievement of shared understanding and reasonable consensus.
- 2d. Rules regarding recognition and ways of resolving conflicting positions, values and interests.

3. Principle of facilitation: public large-scale debates should be facilitated by independent professionals to ensure the public discourse emerges according to the accepted norms and rules, that all participants have equal voice and that the stronger arguments win.

4. Principle of an independent observer: an independent observer (e.g. an ombudsman, a Senate committee) would be charged with responsibility to monitor and oversee public discourse and ensure that participants comply with the agreed norms and rules and that the dialogue is reasonably fair and just.

These principles adapt Habermas' conditions for practical public discourse and at the same time ensure the implementation of the discourse principle D and the principle of universalization U in a public debate about public sector IS serving the community as presented in Table 2. The adoption of the proposed principles would ensure that the IS concerned should hold up in a fully inclusive and reasonable discourse and thus become ethically and morally justified.

The above procedural framework that defines conditions for democratic discourse about complex public sector IS and their social implications has to be legally regulated in a society. Governments would then be responsible for following such a procedural framework when developing and implementing IS in a public sector (education, health or social services). Institutions such as a Senate committee could play the role of an independent observer, engaged on an ongoing basis rather than just called upon in crisis.

Conclusion

We conclude by reiterating the criticality and importance of ethical and moral concerns, and not only pragmatic concerns, involved in the implementation of public sector IS serving the community. Unlike the pragmatic, the ethical and moral concerns have neither been well understood nor adequately addressed in democratic societies. Based on the exemplary case of the *My School* six year debate, we demonstrate the difficulties involved in revealing, publicly recognizing and addressing unexpected and unintended

Habermas' conditions for practical public discourse that leads to outcomes justified as good, just and free from empirical error	Principles for governing public discourse about IS serving the community			
	1. Principle of inclusion	2. Principle of equal and cooperative participation	3. Principle of facilitation	4. Principle of an independent observer
i) No one interested or affected and capable of making a contribution is excluded	<i>All affected and interested actors in relation to the design, use and effects of an IS should be included in a public debate.</i>		<i>Public large-scale debates should be facilitated by independent professionals to ensure public discourse emerges according to the accepted norms and rules, that all participants have equal voice and that the stronger arguments win.</i>	<i>An independent observer (e.g. an ombudsman, a Senate committee) would be charged with responsibility to monitor and oversee public discourse and ensure that participants comply with the agreed norms and rules and that the dialogue is reasonably fair and just.</i>
ii) All participants have equal voice		<i>2a. Rules that define free, equal and non-coercive expression of views, values, interests, concerns, experiences related to the IS. 2b. Rules that define the form and length of individual contributions to the debate (to ensure that key points are succinctly expressed and comprehensible to a broad audience). 2c. Rules regarding obligations by all participants to genuinely engage in discourse so as to take other's views, positions and interest on board and seek achievement of shared understanding and reasonable consensus. 2d. Rules regarding recognition and ways of resolving conflicting positions, values and interests.</i>		
iii) Participants are free to express their views without deception or self-deception				
iv) There are no sources of coercion built into the procedure of discourse				
Discourse principle (D)	Ensures approval of IS solutions by all affected in their capacity as participants in a practical discourse.		Ensures observance of the agreed norms and rules.	Ensures fully inclusive and reasonable discourse.
Universalization principle (U)	Enables the foreseeable consequences and side effects of IS to be expressed and scrutinized from the interests and value position of <i>each participant</i> and also freely accepted jointly by <i>all</i> concerned.			

Table 2 Principles for governing public discourse about public sector IS and their relations to Habermas' conditions and general principles for democratic discourse

negative consequences of *My School* for certain sectors of the community. We also show and explain why our democratic institutions are not capable of dealing with these consequences. As a result detrimental effects persist and nobody can demonstrate that *My School* provides ethical and just effects in the

Australian education system. What is missing is a democratic process that ensures the ethical and moral concerns are expressed, debated and resolved in a reasonably consensual manner.

This paper contributes to a better understanding of ethical and moral questions that modern societies face as a result of large-scale public sector IS serving the public by applying Habermas' discourse ethics, following in the footsteps of Mingers and Walsham (2010) and other IS researchers addressing ethical issues (such as Smith and Hasnas 1999; Stahl 2008; Davison et al. 2009; Ross and Chiasson 2011). The paper makes three distinct contributions: i) it articulates and theoretically explains ethical and moral dilemmas and questions that, together with pragmatic ones, inevitably emerge and become critical to implementation and use of such IS; ii) it defines what it mean for public sector IS to be ethically and morally justified; and iii) it then proposes – grounded in Habermas' discourse ethics – the procedural framework for a democratic discourse on public sector IS that should be applied to their design, implementation and use in order to achieve their pragmatic, ethical and moral justification in a community.

The paper has significant implications for IS research and practice. It exposes new research problems in a highly critical domain of public sector IS serving the community. The paper demonstrates that our knowledge is insufficient and that further research is needed to better understand unintended and unpredictable large-scale social consequences of such systems. Furthermore, the paper shows opportunities for IS research to contribute to IT-enabled public discourses that characterizes exceptionally large community participation. There are opportunities to develop new and innovative ways of using Web 2.0 to conduct, facilitate, support and monitor large-scale public discourses. Finally, our paper demonstrates how IS researchers may engage with key challenges of digitization of contemporary societies and contribute to multi-disciplinary efforts in addressing them.

A final note on limitations: This research has limitations regarding the ability to identify and debate numerous and wide-ranging concerns in *My School* debate due to enormity of evidence. It has, out of necessity, focused on selected key aspects relevant for our purpose and research questions and presented even more select evidence in the text. Importantly, all the evidence used in the research presented in this paper is publicly available and can be accessed by interested researchers and practitioners.

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References

- ACARA. 2010. Australian Curriculum, Assessment and Reporting Authority: *My School*, www.myschool.edu.au.
- ACARA. 2014. *CEO Report, My School*, May 2014.
- Anderson, B. 2010. "Struggling students "exempt" from test, *ABC News*, 11 May 2010, Retrieved from <http://www.abc.net.au/news/2010-05-11/>
- APPA. 2014. Australian Primary Principal Association: *My School- NAPLAN Discussion Paper*, 8th Sept. 2014.
- ASPA. 2010. *The Australian Secondary Principals' Association (ASPA), My School Survey Results*, March 2010, J.K. See Consulting.
- Australian Government. 2011. Australian Government Response to the Senate Education, Employment and Workplace Relations Reference Committee: Report on the Administration and Reporting of NAPLAN Testing, Aug 2011.
- Ayyagart, R., Grover, V. and Purvis, R. 2011. "Techno-stress: technological Antecedents and Implications", *MIS Quaterly* (35:4), pp. 831-858.
- Ballingall, R. 2011. "Is There a Case for Limited Democratic Openness?" *Public Policy and Governance Review* (2:2), pp.52-62.
- Barry, E. 2011. "Geelong East Primary urged Parents to keep boy from NAPLAN tests", *Herald Sun*, 4 May 2011.
- Bentham, J. 1948 (orig. 1789). *Introduction to Principles of Morals and Legislation*, Oxford, UK: Oxford University Press.

- Bevan, G. 2006. "What's Measured Is What Matters: Targets and Gaming in the English Public Health Care System", *Public Administration* (84:3), pp.517-538.
- Blum, J., 2014. Next Steps in Medicare Data Transparency. *Centers for Medicare & Medicaid Services*, <http://blog.cms.gov/2014/04/02/next-steps-in-medicare-data-transparency/>.
- Bohman, J. and Rehg, W. 2014. "Jurgen Habermas", *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/habermas/>
- Branley, A. 2011. "NAPLAN: a Testing Time", *Newcastle Herald*, 10 May 2011
- Braunschweig, K. Eberious, J. Thiele, M. and Lehner, W. 2012. "The State of Open Data Limits of Current Open Data Platforms", *Proc. of WWW 2012*.
- Brey, P. 2000. "Method in Computer Ethics: Towards a Multi-Level Interdisciplinary Approach," *Ethics and Information Technology* (2), pp. 125-129.
- Canberra Times Editorial. 2010. "The test results will hit the fan this week". *Canberra Times*, January 25 2010, pp. 12.
- Canberra Times Editorial. 2010b. "A little scrutiny goes a long way". *Canberra Times*, May 10 2010, pp. 8.
- Cecez-Kecmanovic, D., Janson, M. and Brown, A. 2002. "The Rationality Framework for a Critical Study of Information Systems", *Journal of Information Technology* (17), pp. 215-227.
- Cecez-Kecmanovic, D., Klein, H. and Brooke, C. 2008. "Exploring the Critical Agenda in Information Systems Research", *Information Systems Journal* (18: 2) pp. 123-135.
- Cobbold, T. 2010. "Rorting and Cheating of School Results is in the Future under NAPLAN", *Save Our Schools*, 2010.
- Craveiro, G. da S., Santana, M.T., De, and Albuquerque, J.P. de. 2013. "Assessing Open Government Budgetary Data in Brazil", *Proc. of ICDS*.
- Crotty, M. 1998. *The Foundations of Social Research – Meaning and Perspective in the Research Process*, Allen & Unwin.
- Davies, T. and Bawa, Z.A. 2012. "The Promises and Perils of Open Government Data (OGD)", *The Journal of Community Informatics*, (8:2), pp.1-24.
- Davies, T., Perini, F. and Alonso, J.M. 2013. "Researching the Emerging Impacts of Open Data: ODDC Conceptual Framework", *World Wide Web Foundation*, International Development Research Centre.
- Davison, R., Mrtinsons, M., Ou, C., Murata, K., Drummond, D., Li, Y., and Lo, H. 2009. "The Ethics of IT Professions in Japan and China," *Journal of Association of Information Systems* (10:11), pp. 834-859.
- Dambrin, C. and Robson, K. 2011. "Tracing Performance in the Pharmaceutical Industry: Ambivalence, Opacity and the Performativity of Flawed Measures", *Accounting Organization and Society*, (36), pp.428-455.
- Denziger, J.N., Andersen, K.V., 2002. "The Impacts of Information Technology on Public Administration: An Analysis of Empirical Research from the 'Golden Age' of Transformation, *International Journal of Public Administration* (25), pp. 591-627.
- Doherty, N.F., Ashurst, C. and Peppard, J. 2011. "Factors Affecting the Successful Realization of Benefits from System Development Projects: Findings from Three Case Studies", *Journal of Information Technology* (26), pp.1-16.
- Dunleavy, P., Margetts, H., Bastow, S., Tinkler, J., 2006. *Digital Era Governance*, Oxford, Oxford University Press.
- Earl, L.M. and Katz, S. 2006. *Leading Schools in a Data-rich World: Harnessing Data for School Improvement*. Thousand Oaks, CA:Corwin Press.
- Fichman, R., Gopal, R., Gupta, A. and Ransbotham, S. 2015. Call for Papers: "Special Issue on Ubiquitous IT and Digital Vulnerabilities", *Information Systems Research*, <http://pubsonline.informs.org/page/isre/calls-for-papers> (accessed 1 March 2015)
- Fincham, R. 2002. "Narratives of Success and Failure in Systems Development," *British Journal of Management* (13:1), March, pp. 1-14.
- Finlayson, J. G. 2000. "Modernity and Morality in Habermas's Discourse Ethics", *Inquiry* (43:3), pp. 319-340.
- Gadamer, H. 1960. *Truth and Method*, New York: Continuum.
- Grawel, A., Iglesias, C., Alonso, J.M., Boyers, S. and Brath, S. 2011. *Open Government Data – Feasibility Study in Ghana*, World Wide Web Foundation.
- Gupta, A., Li, H., and Sharda, R. 2013. "Should I send this Message? Understanding the Impact of Interruptions, Social Hierarchy and Perceived Task Complexity on User Performance and Perceived Workload", *Decision Support Systems* (55), pp.135-145.

- Habermas, J. 1984. *The Theory of Communicative Action Vol. 1: Reason and the Rationalization of Society*, London: Heinemann.
- Habermas, J. 1987. *The Theory of Communicative Action Vol. 2: Lifeworld and System: A Critique of Functionalist Reason*, Oxford, UK: Polity Press.
- Habermas, J. 1989. *The Structural Transformation of the Public Sphere*, Cambridge, MA: MIT Press.
- Habermas, J. 1992. "Discourse Ethics: Notes on a Programme of Philosophical Justification," in *Moral Consciousness and Communicative Action*, J. Habermas (ed.), Cambridge, UK: Polity Press, pp. 43-115.
- Habermas, J. 1993. "On the Pragmatic, the Ethical, and the Moral Employments of Practical Reason," in *Justification and Application*, J. Habermas (ed.), Cambridge, UK: Polity Press, pp. 1-17.
- Habermas, J. 1996. *Between Facts and Norms*, Cambridge, UK: Polity Press.
- Habermas, J. (2008). *Between Naturalism and Religion*, (C. Cronin transl), Cambridge: Polity.
- Heidegger, M. 1962. *Being and Time*, (J. Macquarie and E. Robinson trans), New York: Harper & Row.
- Herald Sun Editorial. 2010. "Rank schools to get results". *Herald Sun*, 28 January 2010. p. 30.
- Hursthouse, R. 2007. "Virtue Theory", in *Ethics in Practice*, H. LaLollette (ed), Oxford, UK: Blackwell, pp. 45-61.
- Introna L (2002) The (Im)possibility of Ethics in the Information Age. *Information and Organization* (12), pp. 71-84.
- Kant, E. 1991 (orig. 1785). *Groundwork of the Metaphysics of Morals*, London: Routledge.
- Kappos, A., Rivard, S. and Lapointe, L. 2005. "Explaining Contradictory Reactions to Information Technology Implementation", HEC Montréal, Cahier de Recherche No 05-02, Juin.
- Klein, H. and Myers, M. 1999. "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems", *MIS Quarterly* (23:1), pp. 67-94.
- Kraemer, K.L., Dickhoven, S., Tiemey, S.F., King, J. L., 1987. *Datawars: The Politics of Modeling in Federal Policymaking*, Columbia University Press.
- MacIntyre, A. 1985. *After Virtue*, London: Duckworth.
- Mason, R.O. 199. "Applying Ethics to Information Technology Issues", *Communication of the ACM* (38:12), pp. 55-57.
- McNaughton, D. and Rawling, P. 2007. "Deontology", in *Ethics in Practice*, LaFollette (ed.), Oxford, UK: Blackwell, pp. 31-44.
- Meisenbach, R. 2006. "Habermas's Discourse Ethics and Principle of Universalization as a Moral Framework for Organization Communication," *Management Communication Quarterly* (20:1), pp. 39-62.
- Mill, J.S. 2002 (orig. 1861). *Utilitarianism*, New York: Hackett Publishing Co.
- Mingers, J. and Walsham, G. (2010) "Toward Ethical Information Systems: The Contribution of Discourse Ethics", *MIS Quarterly* (34:4), pp. 833-854.
- Mocker, N. 2012. Reporting on the 'Education Revolution' *My School.edu.au* in the Print Media", *Discourse: Studies in the Cultural Politics of Education*, 2013, 34, pp.1-16.
- O'Hara, K. 2012. "Transparency, Open Data and Trust in Government: Shaping the Infosphere", *Proc. of the ACM Web Science 2012*. Evaston, US, 22-24 Jun 2012, pp1-10.
- Overby, E., Slaughter, S., and Konsynski, B. (2010) "The Design, Use, and Consequences of Virtual Processes", *Information Systems Research* 21(4), pp. 700-710.
- Rath, S. 2012. "Data Template for District Economic Planning", *The Journal of Community Informatics*, pp.1-24.
- Robey, D. and Boudreau, M.-C. 1999. "Accounting for the Contradictory Organizational Consequences of Information Technology: Theoretical Directions and Methodological Implications", *Information Systems Research* (10:2), pp. 167-187.
- Ross, A. and Chiasson, M. 2011. "Habermas and Information Systems Research: New Directions", *Information and Organization* (21:3), pp. 123-141.
- Rowls, J. 1971. *A Theory of Justice*, Boston: Harvard University Press.
- Salzberg, S. 2014. "New Medicare data reveal startling \$496 million wasted On chiropractors", *Forbes*, April 20.
- Selwood, S. 2009. "The Politics of Data Collection: Gathering, Analysing and Using Data about the Subsidized Cultural Sector in England", *Cultural Trends* (12:47), pp.13-84.
- Smith, H.J. and Hasnas, J. 1999. "Ethics and Information Systems: The Corporate Domain", *MIS Quarterly* (23:1), pp. 109-127.

- Smith, P. 1995. "On Unintended Consequences of Publishing Performance Data in the Public Sector", *International Journal of Public Administration*. (18, 2&3), pp.277-310.
- Stahl, B. 2008. "The Ethical Nature of Critical Research in Information Systems", *Ethics and Information Systems* (10), pp. 97-108.
- Sydney Morning Herald Editorial. 2010a. "Why we are publishing a league table". *Sydney Morning Herald*, January 29 2010. p. 14.
- Sydney Morning Herald Editorial. 2010b. "Testing time for teachers". *Sydney Morning Herald*, January 21 2010. p. 12.
- Tarafdar, M., Gupta, A. and Turel, O. 2015a. "Editorial: Special Issue on 'dark side of information technology use': an introduction and a framework for research", *Information Systems Journal* (25), pp. 161-170.
- Tarafdar, M., Pullins, E., Ragu-Nathan, T.S. 2015b. "Technostress:Negative Effect on Performance and Possible Mitigations", *Information Systems Journal* (25), pp.103-132.
- The Advertiser Editorial, "Students will benefit from School scrutiny", *The Advertiser*, 15 Dec, 2009, p.18.
- The Australian Editorial, 2010. "Accountability is essential to improve all our schools". *The Australian*, May 1 2010, p. 15.
- The Australian Senate. 2010. Final report: Education, Employment and Workplace Relations References Committee: Administration and reporting of NAPLAN testing, Nov. 2010.
- The Australian Senate. 2014. Final report: The Senate: Education and Employment Reference Committee: Effectiveness of the National Assessment Program – Literacy and Numeracy, March 2014.
- Thomson, G. and Cook, I. 2013. "Manipulating the Data: Teaching and NAPLAN in the Control Society", *Discourse: Studies in the Cultural Politics of Education* (35:1), pp.129-142.
- Turel, O., Serenko, A. and Bontis, N. 2011. "Family and Work-related Consequences of Addiction to Organizational Pervasive Technologies", *Information & Management*, (48), pp.88-95.
- van der Hoven, J. and Wickert, J. (eds.) 2008. *Information Technology and Moral Philosophy*, Cambridge, UK: Cambridge University Press.
- Vanderlinde, R., Hermans, R. and van Braak, J. 2010. "ICT Research and School Performance Feedback: A Perfect Marriage?", *Educational Studies* (36:3), pp. 341-344.
- Visscher, A.J. and Coe, R. 2003. "School Performance Feedback Systems: Conceptualisation, Analysis, and Reflection", *School Effectiveness and School Improvement* (14:3), pp.321-349.
- Walsham, G. 1996. "Ethical Theory, Codes of Ethics and IS Practice," *Information Systems Journal* (6), pp. 69-81.
- Weaver, C., Beck, M. and Winslow, R. 2014. Doctor-pay trove shows limits of Medicare billing data. *Wall Street Journal*, April 9.
- Weiss, J.A., Gruber, J.E., Carver, R.H., 1986. "Reflections on Value: Policy Makers Evaluate Federal Information Systems", (49), pp.497-505.
- West, D.M., 2004. "E-Government and the Transformation of Service Delivery and Citizen Attitudes", *Public Administration Review* (64), pp. 15-27.
- Wyn, J., Turnbull, M., Grimshaw, L. 2014. The Experience of Education: The Impacts of high stakes testing on School Students and their Families: A Qualitative Study. The Whitlam Institute, University of W. Sydney.