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New surveillance technologies and their publics: A case of biometrics

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Abstract

Before a newly-elected government abandoned the project in 2010, for at least eight years the British state actively sought to introduce a mandatory national identification scheme for which the science and technology of biometrics was central. Throughout the effort, government representatives attempted to portray biometrics as a technology that was easily understandable and readily accepted by *the public*. However, neither task was straightforward. Instead, particular *publics* emerged that showed biometric technology was rarely well understood and often disagreeable. In contrast to some traditional conceptualizations of the relationship between public understanding and science, it was often those entities that best understood the technology that found it least acceptable, rather than those populations that lacked knowledge. This paper analyzes the discourses that pervaded the case in order to untangle how various publics are formed and exhibit differing, conflicting understandings of a novel technology.

Keywords

biometrics, identification, information technology, privacy, surveillance

> The projection of a public is a new, creative, and distinctively modern mode of power. (Warner, 2005)

1. Introduction

This paper examines an apparent paradox in the relationship between the public understanding and acceptance of new technology. According to historically influential conceptualizations of this relationship, weak understandings are believed to breed bad attitudes towards science and technology, resulting in non-acceptance. However, in the case of the National Identity Scheme (NIS)—an

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unsuccessful United Kingdom (UK) government proposal for a nationwide biometric identification system—public confusion about biometric technology did not inhibit perceptions of acceptance. The government presented evidence that citizens were largely unfamiliar with biometric technology but nonetheless accepting of its use within the identity cards program. Even more, populations that were familiar with biometric identification were often those most vocally opposed to the technology.

This paper argues that the conundrum is the result of the political context in which biometric technology was being introduced and traces these contours. The public made numerous appearances in the government's discourses including discourses about their perceptions and understandings of biometrics and whether they approved of and accepted the technologies. In its discourses the government depicted biometric technology—such as fingerprinting, iris scanning or automated facial recognition—as a fixed artifact that could be easily and transparently understood. It also argued that it was a modest, even commonsensical innovation, for which the barrier to public acceptance was low.

In contrast to this linear model of innovation presumed by proponents of the NIS, the plan failed to gain acceptance and was terminated in 2010. The debates and contests during those years demonstrate how diverse publics, rather than a unitary public, emerge in response to new technologies. The aim of this critical discourse analysis is to identify the publics that emerged in response to official discourses about biometrics in the Scheme. At least three publics-in-particular—to use Michael's (2009) concept—emerged to challenge the presumed straightforward acceptance of biometric technology: those unable to utilize biometrics, those confused by the technology, and those with a well-developed understanding who actively opposed it. That is, our argument is less about public understanding or acceptance as a given phenomenon, but rather about the attempted discursive construction of *the* understanding and accepting public despite the emergence of multiple, antagonistic *publics*.

The case of the NIS is especially apt to query dynamics around the understanding and acceptance of technology by particular publics. First, in a literal sense, without the public, biometrics simply cannot happen: as a concept, a technology, or a process, biometrics necessarily involve people and the recording and reading of their bodies or behaviors. Within the information technology (IT) domain, biometrics are fairly unique in this respect. Therefore the public–technology relationship—and the discourses that address it—were particularly important to this case. Second, the critical public understanding of science undercurrent to this paper persuades us to examine not only the discourses that constitute new technology, but also those about the people who are said to benefit from its use. By analyzing these government discourses about the public, we can better understand how certain actors actively and strategically framed publics in ways that were favorable to the aims and objectives of the Scheme's proponents. Last, critical discourse analysis is particularly interested in the study of social relations, of which government–citizen interactions are an important type.

This paper proceeds with a discussion of the scholarship on public understanding of science and technology, tracing how the science literacy approach was supplanted by a focus on attitudes before coming to the critical science and society approach within which this paper is positioned. Next, we introduce the critical discourse analysis used as a method. Finally, we provide an extended analysis of, and discussion on, the government's discourses on the public and the counter-discourses that emerged during the debates about the NIS, before concluding.

2. Theorizing public understanding

Research on the public understanding of science and technology (PUS) has traditionally focused on the public's perception, opinion, and acceptance of scientific innovations such as nuclear power

(Gamson and Modigliani, 1989), biotechnology (Gaskell and Bauer, 2001), and nanotechnology (Gaskell et al., 2005), to name a few common examples. Studies on the public's perceptions and understandings of surveillance and security technologies have started to emerge (see, for example, Pavone and Degli Esposti, 2010).

Originally, PUS research was mostly concerned with identifying and correcting knowledge and attitudinal deficits. This approach has been castigated as being a patronizing 'deficit model' and has since been displaced by so-called critical approaches. Bauer et al. (2007) identify and trace three main PUS research paradigms: 1) science literacy, 2) public understanding of science, and 3) the science and society critique, arguing that each paradigm approaches the topic differently and poses distinguishing questions and solutions to the 'problems' of PUS. In the next sections, we briefly outline each paradigm, noting their respective strengths and weaknesses. The output of this review is a suite of concepts to apply to discourses about publics and counterpublics and their understandings and acceptance of new technology.

Science literacy

Historically, the science literacy paradigm has sought to measure textbook knowledge of scientific facts, the scientific method, and the history of scientific and technological 'progress'. It has also aimed at helping the public reject unscientific superstitions (Bauer, 2009). The literacy paradigm often attributes a knowledge deficit to the public so as to correct it. By demonstrating that the public is ignorant about a certain scientific or technological issue, a case can be made for increased education. Calling the public ill-informed in matters of science and technology also permits the rise of an expert class for scientific and technical decision-making. As Bauer et al. (2007: 80) remark, the deficit model "plays into the hands of technocratic attitudes among decision-makers: a de facto ignorant public is disqualified from participating in science policy decisions".

This paradigm has been critiqued extensively over the years due to its inherently negative attitudes towards the public (Wynne, 1995). Critics further argue that researchers in this domain rarely critically reflect on what is exactly meant by the concepts of 'science', 'understanding', 'technology' or the 'public' (Wynne, 1995: 362; Jasanoff, 2000: 41). In particular, two critiques are noteworthy for the present case. First is that the concept of the 'public' as "a national unity of laypeople characterized by greater or lesser degrees of scientific literacy" is difficult to sustain empirically (Horst, 2007: 152).

Second, critics take issue with the literacy paradigm's over-reliance on survey methods, as well as the tendency for governments, businesses, and scientific institutions to sponsor such survey research (Bauer et al., 2007: 79). This tendency has been interpreted and criticized as pursuing agenda-based research. Critics claim that surveys can always be designed to discover some sort of knowledge deficit in respondents. Though Bauer et al. (2007: 79–80) are careful to point out that the relationship between particular methods and political agendas is hardly uniform.

From literacy to attitudes

As the first major research paradigm within PUS, the science literacy approach is historically important. Many policy discourses still reflect its biases; however, in the late 1980s, concerns about public knowledge deficits made way for alarm in scientific and policy-making communities about increasingly 'poor' attitudes towards science and technology (Bauer et al., 2007: 82). A public unsupportive of science was considered harmful to society. Research shifted away from measuring literacy and towards assessing attitudes. The correlation between knowledge and public attitudes therefore became the focal point of PUS research (Bauer, 2009: 224).

Within this research paradigm it is possible to locate two agendas (Bauer et al., 2007: 83). In the first, increased knowledge of science and technology is said to result in improved attitudes: 'the more you know about science and technology, the more you support it'. A lack of knowledge is associated with biased risk perception. It is argued that an informed public is also more inclined to agree with experts.

For the second agenda, attitudes are said to be loaded with values, with important relations with the social world. These "values and emotions are a fact of life and the battle is a battle for hearts of a lifestyle public" (Bauer et al., 2007: 83). The public are seen as consumers of science and technology, and accordingly fall into different market segments: confident believers, technophiles, supporters, concerned, undecided, the 'not for me', etc. It is said that scientific evidence and technical know-how need to be made 'sexy' so that consumers are seduced (Bauer, 2009: 225).

This shift from literacy to attitudes has more recently produced a useful focus on trust as a key correlate in the acceptance of science and technology. For example, Connor and Siegrist (2010) and Siegrist (2008) have shown the importance of trust in acceptance of genetic technologies and both Hossain et al. (2003) and Durant and Legge Jr (2005) show the importance of trust with regard to perceptions of risk regarding genetically modified foods. This approach develops further in the science and society paradigm discussed next.

Critical public understanding of science research: Science and society

In the context of this second debate, the science and society paradigm seeks to move beyond the traditional deficit model by reversing it and attributing a deficit to scientific institutions and technical experts. Its critique of earlier paradigms centers on a perceived crisis of trust among the public with respect to science, technology, and the expertise employed (Bauer et al., 2007: 85).

It is believed that once public trust in science and technology is lost it is exceedingly difficult to regain, and therefore there is a perceived need for increased public deliberation and participation in scientific matters in order to build trust. Proponents argue that efforts of public engagement should occur 'upstream', meaning in the early stages of new scientific and technological developments, "to enable front-end input and not only post-hoc reactions to already established facts" (Bauer et al., 2007: 85). Members of the public should be consulted and involved in decision-making processes, particularly during the early phases of planning, designing, and developing science and technology projects.

Such deliberative models rely on citizen juries, public hearings, consensus conferencing, scoping exercises, science festivals, and so forth (Bauer, 2009; Callon et al., 2011). These different engagement formats share the same basic elements: the lay citizenry's participation in considering some scientific and technological problem, learning what is known among the public about a given issue and the different values underlying these viewpoints, examining what is known, unknown or uncertain in the evidence base, facilitating deliberation between citizens and experts, and developing policies based on these deliberations. These formats for assessing public understanding were prevalent in the case of the NIS and below we explore how they offer a special set of discourses about the public on which to draw.

Enacting publics. One final conceptual introduction is merited. Instead of assessing or correcting presumed knowledge or attitude deficits in the public, critical approaches to PUS research explore the range and diversity of local or contextualized understandings with respect to new science and technology. In doing so researchers try to explain what these understandings represent in terms of science–society relationships, and the potential role of local or experiential knowledge in policy

making (see, for example, Goven and Morris (2012) on the role of farmers' experiential knowledge in biopharming regulation).

In particular, some scholars try to discern the different 'publics-in-particular' (Michael, 2009) or 'ethno-epistemic assemblages' in respect of a given innovation. These publics are described as coalitions or hybrid groups characterized by heterogeneity and fluidity in their understandings of new science and technology (Irwin and Michael, 2003; Horst, 2007). They are manifestations that are always being constructed, deconstructed, negotiated, and reconfigured as part of the meaning production process that takes place during technological development. In a heavily politicized case such as biometrics, this emphasis on the differing concerns and meanings between 'experts' and 'publics' is, as Wynne (2008: 27) claims, important empirically and normatively.

This conceptual reformulation is in opposition to previous notions of the 'public-in-general', which are most evident in the national surveys of PUS informed by traditional deficit models. Critics charge that these instruments actually construct the public (or publics) whose knowledge they aim to measure. When these publics appear in policy discourses on science and technology they may have further normative and performative effects. Theorizing discourses on public acceptance in this way resonates with Law's remarks on method: "Method is not … a more or less successful set of procedures for reporting on a given reality. Rather it is performative. It helps produce realities" (Law, 2004: 143). It also draws attention to the potential "reactivity" of public measures such as opinion polls, and the extent to which they create social worlds; that is, whether they are self-fulfilling prophecies or commensurating mechanisms (Sauder and Espeland, 2007).

The concept of an ethno-epistemic assemblage on the other hand provides an alternative by highlighting how any discussion of the public, be it in a research instrument, a political speech or a media report, simultaneously functions to make and perform multiple publics. It allows us to theorize the publics of biometrics in a new way—as constructions that emerge through the research tools used to measure their acceptance, opinions, and knowledge, policy discourses that depict their relationship with proposals, and media coverage of these events.

3. Methodology

The discussion in Section 4 is based on a critical discourse analysis of policy and media texts in which the publics of biometrics make an appearance. To conduct this analysis we created a corpus of every publicly accessible government document and mainstream media report relating to the NIS, published between 2002 and 2009 (when the data collection period of the research project formally ended). The corpus included legislative and parliamentary publications, government research publications, feasibility studies, tracking research, corporate publications such as business plans, delivery plans and contracts, speeches by political leaders, leaked government documents, publicly available responses to Freedom of Information requests, Hansard data, and UK newspaper reports.

The use of such documents is well established in social research (Prior, 2003). The corpus was indexed in its entirety in the ATLAS.ti software for analysis. For this analysis, our focus was on instances of the 'public' and its 'understanding' or 'acceptance' of biometrics.

Once the data were loaded in ATLAS.ti, we coded them according to techniques from critical discourse analysis (Wodak and Meyer, 2009). According to Fairclough (2010), critical discourse analysis consists of three main properties. First, it is a relational form of research meaning that its focus is not entirely on entities or people, but rather complex and layered social relations. Discourse is relational, both internally (i.e., between people and texts) and externally (i.e., between objects in the world). It must, therefore, be studied by analyzing social relations and the processes of meaning making.

Second, discourse is dialectical in that these relations are between things which are different from one another yet not totally discrete. Fairclough's illustration of this dialectical nature of discourse is the relationship between power and discourse. Power is, in part, discursive insofar as power depends on discourse to sustain legitimacy, but power is not totally discursive as it can also rely on physical force or resort to violence. "The complex realities of power relations are 'condensed' and simplified in discourse"; they "flow into" one another (Fairclough, 2010: 4).

Finally, when we study discourse, we are not studying it in and of itself. Instead, we are studying the dialectical relations between discourse and other phenomena, like publics.

In the discourses analyzed below, the public is frequently spoken of—and for—by politicians who reiterate how strongly the public supported the government's proposals, for example; or by activists who present counter-arguments about how the public actually detested plans for biometric identity cards. The public is continually constructed in these discourses by those seeking to enroll them in their rhetoric, either positively or negatively, about the NIS.

4. Biometric publics and counterpublics

Government proponents of the NIS needed to mobilize at least four main populations: the companies engaged by the Home Office to build the systems, politicians who were needed to sustain the Scheme's political support, public sector departments which were expected to implement the identity system, and the public which was supposed to be the eventual users of the system. As Swanson and Ramiller (1997) explain, such an effort requires an *organizing vision* that serves to reduce uncertainty, thus simplifying the process of understanding and acceptance. Throughout the effort, the Scheme's supporters sought to present a vision of biometric technology as publicly acceptable and easily understandable, yet the attempts were repeatedly unsettled. As such, it offers insight into anticipatory discourses that were ultimately less performative or constitutive than intended (cf. Borup et al., 2006; Horst, 2007).

In what follows, we first introduce in more detail the government's official discourses about the understanding and acceptance of biometric technology by the public. These ranged from the initial consultation in 2002 when the views of the public were presented as unknown (but key) variables to the success of the NIS, to later efforts which actively sought to construct a knowledgeable and accepting public through various means of varying subtlety. Throughout the government's endeavor, counter-discourses emerged that challenged the effort to present biometrics as publicly acceptable. We discuss three in particular: 'biometrically-challenged' individuals, confused supporters, and knowledgeable opposition. Each counter-discourse helped construct a 'public-in-particular' that prevented the closure of debate and the black boxing of biometric technology (cf. Latour, 1987).

Manufacturing the public

When entitlement cards were first proposed by the Labour government in 2002 in a consultation paper, the use of biometrics was considered simply an "option" within a much larger proposal:

> Another option which the Government would like to explore is the recording of biometric information as part of a card scheme … However it is also important that the introduction of this technology should be *acceptable to the general public and the Government would like to use this consultation exercise to seek people's views. This means whether it would be acceptable in principle for this information to be recorded and also whether it would be acceptable in practice as people would need to go somewhere where the appropriate recording equipment was installed when they applied for a card*. (Home Office, 2002: 2; emphasis added)

The inclusion of biometrics was said to be ultimately dependent on the feasibility, cost-effectiveness, and importantly for our discussion, public acceptance of the Home Office's proposals.

However, this view of biometrics as merely optional shifted as biometric technology became central to the policy aims of the NIS (i.e., tying people to a "unique" identity). By 2006, when identity cards were enshrined in the Identity Cards Act, then-Prime Minister Tony Blair would explicitly justify their introduction on the grounds that biometrics were now possible to process at this scale (Blair, 2006). In turn, the government's discourse became more authoritative and less open to modifications. Their rhetoric presented biometrics as largely unobjectionable—a technology whose adoption was common sense. For example, the Home Office (2005a: 15; emphasis added) said, "There were few objections to the proposed biometric procedures *among the able bodied*." Later, in a 2008 interview with the *Guardian* newspaper, then-Prime Minister Gordon Brown said that, "In fact, I don't actually think most of *the general public* think that the use of biometrics is in itself wrong, either for private transactions or for passports or whatever" (Watt, 2008; emphasis added).

In these cases and others, the government assumed certain characteristics of the relationship between the public and technological understanding. When Gordon Brown referenced "the general public", it was unclear who he believed that population to be. Similarly, the Home Office's qualification of "among the able bodied" permitted it to ignore important populations who are unable to use biometric technology (discussed further below). In time, these interrelated assumptions of a unitary public composed of able-bodied individuals would be challenged.

So, too, would assumptions about the characteristics of the technology in question. Supporters of the NIS made considerable assumptions about the capabilities, costs, and reliability of biometric technology. The science and technology of biometrics were taken as steady and settled, as were their future applications within the Scheme. In practice, generic statements about "biometrics" allowed for an organizing vision that elided important differences in the affordances of particular biometrics. For example, the Home Office (2005b: 6) suggested biometrics were "just like having a picture taken", thus depoliticizing the unequal ability of some populations to use fingerprint or iris scanners.

Perhaps more revealing was the incongruence between the government's authoritative public statements and its uncertain internal deliberations, such as those revealed due to leaks to the No2ID activist group (which opposed identity cards in the UK) in 2007. Digital fingerprinting, the most publicly recognizable biometric technology, was considered central to the NIS. Originally, the proposal called for four fingerprints to be collected, but this was eventually increased to ten. In public discussion, the government presented digital fingerprinting as the *sine qua non*, a reliable and effective technology for establishing identity; however, the leaked internal documents would reveal that the Home Office was considering allowing certain groups to forgo fingerprinting—an admission that undermined the standard argument that biometric technology was essential to the NIS (see Identity and Passport Service, 2007).

The official discourse used additional means to portray biometrics as straightforward, uniform technologies, easily capable of being understood. Government studies of public perception claimed that people did not understand the simple 'facts' of biometrics. For example, people "tended to find it difficult to grasp that biometrics would only need to be provided once" (CRD, 2004c: 74), noted one study commissioned by the Home Office. In actuality, such 'facts' and others are provisional and still unsettled, with research ongoing to try to better understand these complexities (see, for example, Bowyer et al. (2009) concerning the disputable permanence of iris biometrics).

In addition to authoritative (if empirically misleading) statements, the government made use of other means in its attempts to establish the acceptability of biometric technology. For example, in 2005 the UK Passport Service adopted a more active approach, holding a 'biometrics roadshow' at

different locations across the country. There the public was invited to have their irises and fingerprints recorded in order to raise awareness about biometrics. Home Office minister Andy Burnham remarked at the time, "This roadshow is very much a hands-on experience and people will be able to see for themselves how biometrics work and what advantages they can bring in safeguarding our identities" (Burnham, as quoted in McCue, 2005).

The Home Office also began a series of reports and surveys that introduced a version of the public into discussions surrounding the NIS. Between 2003 and 2004, the Home Office contracted a research consultancy, Cragg Ross Dawson to produce reports on three separate issues: public perceptions of identity cards (2004c), the public's response to the proposed "customer propositions" for identity cards (2004b), and a special report on "people with special issues" (2004a). These reports fed much of the government's discourse on the public's understanding and acceptance of biometrics by providing data to substantiate claims.

An important early finding from these studies was that the "term 'biometrics' was rarely known" by interview respondents (Cragg Ross Dawson, 2004c: 59). In the Home Office's summary of findings from the consultation on identity cards it was noted that: "Awareness of the term 'biometric information' was low—at least 70% amongst each sample had not heard of the term before" (Cragg Ross Dawson, 2004c: 86). As plans for identity cards progressed, these findings were echoed in Tracking Research surveys conducted by the Central Office of Information (2007a, 2007b) on behalf of the Identity and Passport Service (IPS), in which it was repeatedly found that fewer than half of the respondents were aware of the term 'biometrics'. Focus groups undertaken as part of this paper's research also confirmed the lack of understanding among informants.

The Home Office asserted that while biometric technology may have been unknown, it was not unknowable. That is, they argued that the public's understanding would improve as people began to record their biometrics: "Surveys have shown that people who have experienced the process find it convenient *and understand the benefits* of having the information recorded" (Home Office, 2005c; emphasis added). The logic of this argument proffers a form of 'understanding by doing', which serves to limit the opportunity for upstream engagement in the design of the technology. It also ignores a raft of ethical and political concerns relating to meaningfully informing data subjects before their data are collected and processed.

Moreover, there was a subtle politics to the survey methods used to measure such understandings and perceptions. For example, the government's own longitudinal Tracking Research (conducted by the Central Office of Information) was serially inconsistent. Whereas the first and second surveys posed an open-ended (if not unproblematic) question regarding the public's awareness and understanding of biometrics—"What do you think 'biometric information' is?"—the third survey asked a different question, also open-ended, about where people would be most "comfortable" recording a particular biometric: "Where would you feel comfortable having your fingerprints recorded?" In the fourth survey respondents were asked a 'yes/no' question about whether they would be "happy" to have their fingerprints recorded (64% said 'yes'), followed by a question asking them to choose from a set list of places where they would prefer to enroll their biometrics: "In which of the following locations would you consider having your fingerprints, photo, and signature recorded?" The fifth survey again posed a slightly different question: "Respondents were asked to choose from a list where they would not consider having their fingerprints, photo, and signature recorded". The sixth, seventh, and eighth surveys avoided specific questions about biometrics altogether.

The questions on biometrics moved from exploring general understandings and interpretations, to asking whether respondents would be "happy" having their fingerprints taken, to not asking about them at all. Notably, many of the other questions in the tracking surveys were not subject to such regular changes. Considering these frequent modifications, it is not clear what was being

'tracked'. A skeptical interpretation of these reformulations might conclude that they were not accidental but rather carefully framed such that the Home Office could find evidence to justify its ongoing policy changes.

This skeptical interpretation is corroborated by an incident that came to light in 2010. Following repeated inquiries by an activist opposed to the NIS, the IPS admitted that it had used government employees as the source of quotations on its website that purported to be from happy identity card users (Lettice, 2010). Of the nine people quoted on the IPS website dedicated to sharing positive customer experiences with biometric identity cards, eight "at the time either worked for the Identity and Passport Service, the Home Office or another government department or agency" (Identity and Passport Service, 2010). Although less subtle than carefully crafted surveys, until its unmasking, the desired effect was the same: discursively presenting biometric identification as a publicly accepted—even desired—technology.

Counter-discourses

Despite their efforts, proponents of biometric identification were unable to convincingly offer the technology as fixed, let alone understood and acceptable. Three aspects of this situation are particularly noteworthy. First, the biometric technology ran into unruly, 'biometrically-challenged' bodies that upset the narrative of biometrics being easily acceptable. Second, biometrics proved to be confusing, stymieing public discussion and acceptance. Third, certain counterpublics emerged that demonstrated a strong understanding of biometric identification but a firm rejection of its use.

Technologically-rendered publics. An important discursive distinction found in the data is between those who are capable of using biometrics and those who are not. These discourses divide the population of potential publics of biometrics into two categories: the 'able-bodied' and the 'biometrically-challenged'. Such discourses connote a 'standard' or 'general' population, and a group of biometric 'others'. In doing so, they shift the burden of conformity and adaptation to human bodies rather than to technology. These others—those with bodily or mental challenges—included the blind, the disabled and ill (e.g., those with Parkinson's disease), the vulnerable and elderly, children, the homeless population, and people with "complex lives".

As regards the 'standard' population, throughout the course of the Scheme the government argued that they were more or less accepting of the concept:

> There were few objections to the proposed biometric procedures among *the able bodied*. (Home Office, 2005a: 15; emphasis added)

The latter category, however, proved much more complicated to resolve in government discourses. The government often approached biometrics generically, equating various techniques and therefore obscuring the unequal implications of their different affordances. As the NIS proceeded, especially with technological tests and increased public awareness, new populations of 'biometrically-challenged' individuals emerged that were unable to interface with certain or all biometric identification technologies.

These *technologically-rendered publics* became a sensitive issue for proponents of the NIS who had to amend their discursive presentation of biometrics as acceptable in the face of very real incongruities. Rather than rethinking its decision to pursue biometrics for these people, the government made efforts to be as inclusive as possible. In its discourses the government was careful to promote "a scheme that works for everyone".

> We will work with such organisations to agree, for example, how we enroll people with complex lives such as the homeless and how an address should be recorded for them—such lifestyles will not be a barrier to enrolling. Special provisions will be required, for example, for the small group of people transitioning between genders who have complex identity needs but will not be excluded from the Scheme—we will offer an identity card in both genders—or for those unable to give full facial or fingerprint biometrics due to disability, for example. (Identity and Passport Service, 2008: 13)

For the government, the solution for such 'problematic' individuals was technological in nature—not to fundamentally rethink the policy itself. That is, during the Home Office's market soundings, specialized equipment was pursued for those with physiological or psychological problems who faced difficulties using biometrics.

> Suppliers are encouraged to provide additional or specialised equipment to assist with the recording of biometrics that may be challenging to record successfully on standard equipment (meaning that standard equipment that is suited to the general working population may not be ideally suited to persons whose biometrics are challenging to record successfully). (Home Office, 2005d: 23)

On the one hand, these discourses could be seen as being about empowering publics through biometrics, and thus resonate with arguments that in certain contexts surveillance can be empowering for some segments of society (see, for example, Murakami Wood and Firmino, 2010; Szreter and Breckenridge, 2012). On the other hand, these discourses appear not to appreciate the logic of arguments by authors such as Lyon (2002), who points out that biometrics are discriminatory *by design*—that the Scheme would not 'work for everyone' in the same way and that there are large swathes of the population that would be treated differently simply because of the use of biometrics (e.g., those without readable fingerprints or irises suitable for biometric scans). However, we ought to be careful not to assume too much about the future practices of the Scheme, as it is these that determine the degree to which biometrics would have been empowering or repressing, and as we know the Scheme never got to this stage.

Indeed, as with the government's statements discussed above, there is a certain performative and anticipatory aspect to the promises about inclusion. Until biometrics are actually employed on a large (i.e., national) scale, we cannot know definitively the extent of their discriminatory effects, whether feasible remedies will emerge to mediate biometrics-related discrimination, how technology will contribute to those remedies, and what discursive dynamics will organize and maintain the sub-system for the biometrically-challenged. However, the constitution of certain publics by the proposed technology functioned to unsettle the very proposal. Put bluntly, before the emphasis on biometric technology, certain sub-populations did not have an 'identification problem'; the anticipation of biometric identification rendered them problematic. What is evident from this case is the effect that diverse bodies have on the state's ability to present a uniform and objective means of identification. As Michael (2000: 33) notes, discursive performativity is always "conducted in material settings, where bodies and texts, for example, come into contact or close proximity at least."

Ignorance and acceptance. As discussed in Section 2, influential strains of PUS scholarship have posited a positive relationship between ignorance and rejection of science and technology. The commonly held sentiment within that paradigm is that undeveloped understandings of new science and technology are a barrier to the public's acceptance of the innovation—that knowledge deficiencies breed bad attitudes (Bauer et al., 2007). However, in the case at hand, a different, inverse dynamic was evident: entities that exhibited ignorance of biometric particularities were offered as supporters while the opposition often demonstrated a keen knowledge of the technology.

Much government discourse sought to present the public as *capable* of understanding biometric technology, even if they did not currently do so. The public's understanding of biometric identification was important to their ability to accept it as autonomous citizens; however, in practice, the concept of biometrics is vague, awkward, and even alien. Neither the public nor key parts of the government demonstrated a clear grasp of the concept. This ambiguity also served to trouble the organizing vision of the Scheme's proponents.

The government's discourses on biometrics portrayed an *unaware* yet *accepting* public. The public were said not to fully understand biometrics—"the term … was rarely known" according to government studies (Cragg Ross Dawson, 2004c: 59)—but surveys repeatedly showed, and government spokespeople often reiterated, that members of the public generally approved of their use within the NIS. Indeed, public acceptance of biometrics was said to remain high over the course of the Scheme despite various misunderstandings.

Certain Members of Parliament (MPs) who were supportive of the Scheme also exhibited a weak understanding of biometrics. Although calculated misrepresentations of certain aspects of biometrics were common in policy documents and prepared speeches, there were also moments of genuine confusion. During parliamentary debates, MPs (particularly those on the backbench) were puzzled about or poorly briefed on the issues, and would pose odd and seemingly misplaced questions about the use of DNA information in the identity cards, for example, or question the state of iris biometrics in a way at odds with the current thinking of the Home Office.[1]

In one episode, MP Bob Spink sparred with then-Parliamentary Under Secretary of State Andy Burnham, questioning the viability of "iris and facial recognition and fingerprints" by noting the Science and Technology Committee had "found no evidence from any large-scale project that using multiple biometrics in the way that the Government propose would work technologically" (30 Mar 2006: Column 1126[2]). While Spink's point aligned with expert opinion on the feasibility of using multiple biometrics at scale, in the same exchange he curiously suggested the government, instead, use DNA, seemingly unaware that most experts consider the use of DNA biometrics for day-to-day citizen identification and authentication even more fanciful.

At a public speech on identity cards at the Social Market Foundation in 2010, before the Scheme was abandoned, the then-Under-Secretary of State at the Home Office, Meg Hillier, momentarily went off-script to openly confess that she "hated" the term 'biometrics'. Even so, she continued using the term that day to promote identity cards for the disempowered. Biometrics were obviously an important component of her discourse for an inclusive national identity system, even if the term itself was unsatisfactory. Why was such a frustrating term so convenient for the government sponsors of the NIS? Specific awareness of fingerprinting technologies, for example, would almost certainly have been much greater—due to their association with criminal investigations—than would the intricacies of iris photography. But it also seems that the salience of biometrics is due to the lack of specifics, and thus their interpretive flexibility, in the face of resistance from counterpublics: the degree of abstraction offered by 'biometrics' allowed supporters to attribute myriad characteristics to the proposals, from security to inclusiveness. It would require detailed, knowledgeable critics to undermine such discursive flexibility.

Knowledgeable opposition. A further contrast with the deficit model was the nature of opposition to the proposed biometric technologies. A number of influential entities resisted the NIS, particularly its use of biometrics, but instead of arising from ignorance, their rejection of the technology was linked with a considerable knowledge of biometric technology; oftentimes, this knowledge was motivated by political opposition to national identification systems (Whitley et al., 2014), leading to extended research into the technological state-of-the-art, financial risks, and social implications of biometric identification. In particular, there were two groups that offered knowledgeable

opposition to the government's proposals. The emergence of these publics aligns with Wynne's advocacy of studying "*different* sets of priority concerns" (2008: 28; emphasis original).

The first group, a research team based at the London School of Economics (LSE), provided academically informed criticism of the Scheme. In June 2005, they issued a detailed report that analyzed the government's proposals (LSE Identity Project, 2005). The researchers suggested that the likely cost of the Scheme was far higher than government estimates, evaluated the technology options, including the proposed use of multiple biometrics and the likely challenges in deploying these technologies, and identified focal points around the policy that would likely give rise to privacy and surveillance concerns. This led to widespread media coverage around these lines of criticism, and most notably the costs, while the parliamentary debate was fuelled by data and analyses from the LSE report.

The second group, the activist organization No2ID, led popular opposition to the Scheme. No2ID actively followed policy developments and government activity around the program, sometimes proactively through the use of Freedom of Information requests. They also studied the technical and policy literature to better understand the limitations and weaknesses of the use of biometrics on a national scale, and used this knowledge in their campaign against the NIS.

Furthermore, among other campaigning strategies No2ID commissioned ICM Research to conduct a series of public opinion polls, in order to provide different survey data than the government's on public perceptions. These polls showed a steady decline in support for national biometric identity cards over time. Relevant to the current discussion is how a public-in-particular, No2ID, sought to portray the public-in-general as unsupportive of the NIS through the use of a survey device. That is, the politics of public-making is not solely the business of government. Other actors may also seek to strategically represent the public and its acceptance of new science or technology.

One way to understand this is in relation to MacKenzie's (1990) "certainty trough" which suggests that familiarity and knowledge are U-shaped. In this model, individuals far removed from a technology (e.g., non-users) are uncertain about its particularities, users tend to have few questions about the technology, but those closest to the technology—its designers and engineers—are quite aware of technological uncertainties. In the case of the NIS, a slightly different dynamic was operating. Inverting Bauer et al.'s (2007: 84) mention of cases where "familiarity breeds contempt", here, proximity did not precede knowledge of the technology. Instead, political opposition motivated increased familiarity: one could say 'contempt bred familiarity'. The value-laden context into which biometric technology was proposed generated counterpublics and their co-constitutive discourses.

5. Conclusion

Following Bauer et al. (2007), our research has aimed to "contextualize survey research" by elucidating the role of discourse and politics in the public understanding of science. Discourses about the public and their understanding and acceptance of biometrics persisted throughout the case analysis. Taken literally and uncritically, these discourses are simply descriptions of public opinion and the eventual users of a new technology. However, these discourses may also be seen as simultaneously attempting to construct the future users of a system. More than merely describing matters of fact, such talk about the public and their relationship to a new technology also serves to generate expectations and shape attitudes.

In other words, these discourses are *performative* (Borup et al., 2006; Horst, 2007), or rather performative attempts. The case of the UK's National Identity Scheme demonstrates the difficulty of enacting public understanding and acceptance of a novel technology, especially in situations deeply intertwined with sensitive political questions of citizenship, rights, and autonomy. The

government proponents discursively sought to demonstrate biometric technology as understandable and acceptable to the British public; they did so through public statements and appeals that elided the multiplicity of technological and political issues that remained to be settled. Notably, they also made use of public opinion surveys, drawing on a classic PUS research methodology as evidence of the acceptability of the proposal by, in Gordon Brown's words, "the general public".

However, throughout the case, these efforts repeatedly confronted multiple *publics* that unsettled the efforts to establish uniformity. The three publics discussed above diverge in their particular understandings of biometric technology, but each served as something akin to what Warner (2005) calls a counterpublic. Unlike many other information technologies, biometric identification relies quite literally on the public, through the recording and reading of their bodies. As such, biometric technology rendered a particular counterpublic in the form of people that the technology could not identify (for reasons ranging from Parkinson's disease to certain religious beliefs). A larger population—ranging from surveyed citizens to MPs—consistently demonstrated that biometrics were a confusing technology, limiting their ability to discuss and debate them accurately. Finally, an influential network of academics and advocacy groups demonstrated a detailed understanding of biometric technology but were vocal opponents of its use.

This orthogonal relationship between a public's understanding and acceptance of a technology challenges some historically influential strains of PUS scholarship, which posit that non-acceptance of science and technology is a result of misunderstanding. Instead, it seems that national biometric identification is a case where the political-ladenness of a technological innovation pervades its relationship with the public. Future research in this area may help to confirm these conclusions or to unveil further complexities. A comparative approach exploring the discursive emergence of publics and counterpublics of biometrics in other countries in which the technologies are being pursued may help elucidate the unique social and political dimensions of the UK case, as well as the common features across these different contexts. For example, in India the government is currently introducing a national biometric identity system and in South Africa the use of biometric identification in welfare programs is considered largely unproblematic (see Donovan, forthcoming). Another future research program could explore how other forms of technological surveillance, beyond biometrics, may render publics-in-particular that differ from the case at hand (e.g., communications surveillance). In general, there is rich opportunity for more PUS-inspired research in the area of new surveillance technologies.

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Notes

1. It is conceivable that the Home Office had experts who understood the science and practice of biometrics. However, we did not have direct access to such individuals—just their organizational knowledge as transmitted through carefully prepared and purposeful discourses in policy texts. There is therefore an outstanding empirical question regarding the communication and reporting channels that exist between organizations like the Home Office and politicians who are responsible for making policy and communicating policy change to the public. It appears the Home Office was not entirely forthcoming in its communications about changes to plans for biometrics. For example, it took several months—if not an

entire year—before finally clarifying the role of iris biometrics, with both frontbench and backbench MPs appearing not to know the actual status of the technology in the Scheme. There are important implications for such uneven knowledge sharing and policy-communication practices between those organizations responsible for system implementation and oversight bodies. These dynamics grow even more complicated as third parties such as IT contractors enter the picture. This topic demands further research and may require creative and opportunistic research approaches.

2. This notation designates the location of the exchange in the Hansard record.

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