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Digital Governance and the Reconstruction of the Indian Anti-Poverty System

Abstract: On a global scale, programmes of social protection for the poor are becoming increasingly computerised, and architectures of biometric recognition are being widely used in this respect. I research how these architectures, adopted in anti-poverty systems, structure ways to “see the state” for citizens living in poverty. To do so I study India’s Public Distribution System (PDS) in Kerala, which is augmenting its main food security scheme with the computerised recognition of its users. In the government’s narrative, biometric technology is depicted as an optimal solution to the illicit diversion of PDS goods on the market. Nevertheless, according to the multiple narratives collected across the state, beneficiaries dispute this view in different ways because of the mixed effects of the new technology on their entitlements under the PDS. The government’s capability to reconstruct its image through digital innovation is thus found to be constrained by citizens’ perceptions derived from their encounters with the new technology of governance.

Keywords: Asia, India, Food Security, Public Distribution System, Biometric Technologies, Social Policy

1. Introduction

Social protection has emerged as a core theme in contemporary studies of development policy and governance. The notion of *social safety nets* encompasses all the schemes aiming to protect the poor and vulnerable from food insecurity, unemployment, lack of sustainable livelihoods, and other problems the condition of poverty entails. Social safety nets are conceived in order to liberate the poor from what Sen (1981) refers to as the “substantial unfreedoms” which threaten the quality of their lives, as they provide the means to combat poverty at its roots. These programmes are the epitome of social protection, and there is a growing sense that they can contribute to providing an effective response to global poverty and exclusion (Barrientos & Hulme, 2009; Devereux & Vincent, 2010; Gelb & Decker; 2011).

Over the last five to 10 years, social safety nets worldwide have become increasingly automatised and computerised through mechanisms which theories of the state *per se* do not fully comprehend. These mechanisms belong to the domain of information technology (IT) innovation, and relate in particular to biometric architectures which incorporate user authentication on the basis of biological data. In anti-poverty programmes, biometrics are key to enforcing targeted systems of access as the uniqueness of biological data should ensure that benefits are limited to genuinely entitled users. However, the change brought about by these technologies goes beyond reconstruction of the state-citizen interface: by reconfiguring access to anti-poverty nets, IT innovation contributes to their reform and ultimately affects the social policies in which the lives of poor citizens are inscribed (Sarkar, 2014).

It is therefore important to study how biometric technologies reshape citizens' access to the state, rebuilding the image of the state which is conveyed through anti-poverty programmes (Corbridge, Williams, Srivastava, & Véron, 2005). More specifically, it is important to observe two processes: firstly, a process of image *construction* by the state, using digital innovation to create a public impression of accountability and effectiveness. Secondly, a process of image *perception* by citizens, who “see the state” through a new generation of computerised social safety nets. Both processes are explored here.

This paper studies an old anti-poverty programme, the Public Distribution System (PDS), which is being redesigned through biometric recognition in India, with a focus on the southern state of Kerala. The PDS is the oldest, most widely available food security net in India, consisting in subsidies on primary goods received by poorer households in monthly rationed quotas. In the PDS supply chain, procurement by the Food Corporation of India (FCI) is followed by redistribution at several administrative levels before items reach the fair-price shops, where they are accessed by beneficiaries. Faced with problems of leakage, Kerala adopted a set of reforms, culminating in the ongoing switch to user identification under the Unique Identity Project (Aadhaar) aimed at identifying every resident Indian through a unique 12-digit number and the capture of biometric details.¹

During eight months in 2011-2012, I conducted an interpretive case study of the PDS in Kerala, using qualitative methods of data collection and analysis. My main dataset

¹ In 2009, the Unique Identification Authority of India (UIDAI) started the Unique Identification Project to collect the biometric data of residents and store them in a unique database. The term “Aadhaar” refers to both the identification project at large and the 12-digit number assigned to each enrollee.

consists of 126 in-depth interviews with actors governing the digital PDS (software developers, government officials and program officers), its users (PDS beneficiaries), and other actors involved in the system in different ways (local politicians, right-to-food activists, volunteers at pro-poor organisations, etc.). I used narrative analysis in the interviews (Riessman, 2008) as the main tool to reconstruct causal processes, and I integrated interview data with participant observation in the ration shops, telecentres, and Taluk Supply Offices adopting the digital PDS.² Following the case study method (Yin, 2009), my primary data have been triangulated with statistics, press releases, and government documents on the PDS and its digital transformation.

From the data analysis emerge key insights into the processes of construction and perception of the state's image, mediated through the biometrically transformed PDS. In terms of image construction, biometric control is framed, in governmental narratives, as the ideal solution to the problem of "rice mafia", i.e. the systematic diversion of goods from the PDS to the private market by illicit means. Jos Mooij (1999) represents the pre-digitisation PDS as a key tool of electoral politics, in which state governments use a well-functioning food security system to portray themselves as effective and accountable. My analysis of the e-PDS extends Mooij's argument to biometric technology, and shows how the government presents it as a key element in solving the problem of the programme's leakage.

At the same time, however, I found that the extent to which this affects citizens' perception of the state is limited: citizens re-elaborate their constructions of images

² *Taluks* are sub-district administrative units in Kerala. A Taluk Supply Office is the bureau in charge of local administration of the PDS and other government schemes.

of the state through their experiences of the effects of technology on their entitlements under the PDS. Aadhaar's biometric architecture is understood in multiple ways by PDS users: their views of the system are influenced by the exclusionary effects of biometric recognition, the perceived limitation of e-PDS to monitor ration shop transactions, and most importantly its controversial role in preparing for the shift to a cash transfers system, which is regarded with suspicion by many beneficiaries. All these narratives seem to reveal that the state's capability of image-building through new technology is constrained by citizens' perceptions derived from their encounters with the e-PDS.

My work aims at expanding seminal theory on the anthropology of the everyday state in order to account for the inclusion of digital, and especially biometric, architectures in the state-citizen interface. A new generation of anti-poverty programmes, dominated by biometric recognition, is pervading the developing world, and the ways in which political society is disciplined will be deeply influenced by its advent. From this perspective, the paper aims to elicit the core mechanisms of transformation, relying on the construct of the image (meant as *subjective knowledge*, as in Boulding, 1956) as a tool for examining the dynamics at work. Newly computerised technologies of rule deserve particular attention when it comes to their effects on anti-poverty practice.

This paper is structured as follows: Section 2 details Corbridge *et al.* (2005)'s perspective on anti-poverty programmes as technologies of rule, and augments it through the prospective role of biometric architectures in transforming social safety schemes. Section 3 presents the case of the PDS, in terms of both the old

technology of rule and the new digital artefact which is transforming it in Kerala. Section 4, based on data analysis, details the process of IT-induced image reconstruction by the state. The analysis is then continued in Section 5, where citizens' processes of perception of the state through different *loci* of image formation are observed. Conclusions, and implications for expansion of existing theory, are drawn in Section 6.

2. "Seeing the State" through Technologies of Rule

The idea of "seeing the state" is a reversal of "seeing like a state", which in Scott's (1998) view is where high modernist states produce citizens by inscribing them in classifiable categories, making them amenable to bio-political control. In a reverse perspective, Corbridge *et al.* (2005) detail how citizens, rather than being *seen* and classified, actively see the state in its physical manifestations. The heart of this latter theory lies in an anthropology of the everyday state (Benei & Fuller, 2001): citizens do not conceive of the state through indirect projections, but through the embodiments (bureaucrats, village officers, local agencies) which they encounter in their daily lives. This represents a rupture with the Weberian vision of a "faceless" bureaucracy, as encounters with the officers and agencies in which the state is embodied are real and personalised.

These encounters are often frustrating and sometimes violent for the poor in India (Corbridge *et al.*, 2005, p. 3). This is partly because most of the poor inhabit, as argued by Chatterjee (2004), the "rough and tumble" worlds of political society, where frustration is frequent in interactions with bureaucracy. Chatterjee's dichotomy, between a civil society of equals and a subaltern political society, is

epitomised by India today: whereas richer elites inhabit the former, the latter encompasses the poorer masses who are excluded from most forms of participation in their own development.³ In this domain, the poor can “see the state” only dimly, through the practices of often-corrupt officials.

Nevertheless, encounters with the state are far from being unstructured. Over time, India has developed a host of anti-poverty programmes, greatly needed to sustain the nation’s social policy, and at the same time to maintain the government’s appeal to the “dangerous classes” (Corbridge & Srivastava, 2013). Anti-poverty programmes, ranging from food security to employment generation, inscribe citizens into observable categories (caste, poverty status, etc.): in doing so, they go far beyond the mechanism of poverty alleviation. In performing the developmental function of the state (Williams, Véron, Corbridge & Srivastava, 2003), they act as technologies of rule, as they provide a way to advance state control through the means of governmentality.

The concept of *technologies of rule* refers to all institutions, practices and classification techniques through which government is performed (Rose, 1999). Within theories of the everyday state, this notion has a particular connotation: according to Corbridge *et al.* (2005), technologies of rule result from the conflation of policy principles with the governmental apparatus enacting them. The concept is predicated on the Foucauldian idea that a government is explicated through a set of disciplining techniques, resulting in the indivisible unit of governing rationality being embedded within the tools and practices through which it comes alive (Foucault,

³ While Chatterjee suggests that “civil society and the poor coexist in India like oil and water” (cited in Corbridge *et al.*, 2005, p. 3), Corbridge *et al.* (2005) point to a “sea-change” in contemporary Indian politics, based on the more participatory character of the most recent anti-poverty schemes.

2007). As a result, we refer to technologies of rule to indicate the unity of policy principles with the physical instruments which translate them into practice.

According to Corbridge *et al.* (2005), social safety schemes are the core technology of rule to which the poor are subjected in contemporary India. They result from integration of a policy rationale aimed at protecting the poor from the vulnerabilities of their condition, and a set of physical measures, which translate into the practices of government described above. The heart of the theory lies in the view that these programmes pervade the everyday lives of the poor, and structure their encounters with the government: rather than being an abstract entity, “the state” is encountered through its physical agents, ranging from mediators of employment guarantees to sellers supplying food rations in the villages. Anti-poverty programmes structure the encounters through which the poor “see the state”, and are thus the core device through which their images of the state are formed.

What is not considered by prevailing theories of the state, and needs attention in current scholarship, is the computerisation which anti-poverty programmes are undertaking at a global level. The digitisation of social safety nets is taking diverse shapes: cash transfer schemes, formerly based on the physical delivery of envelopes, are shifting to mobile money (Aker, Boumnijel, McClelland, & Tierney, 2015; Devereux & Vincent, 2010). Programmes of emergency assistance, such as cash transfers to households affected by drought, are being increasingly automated (Gelb & Decker, 2011; Vincent & Cull, 2011). Employment guarantee nets, requiring reliable recognition of workers, are moving to biometric identification (Bhatti, 2012; Muralidharan, Niehaus, & Sukhtankar, 2014). All these programmes have long been

in place, yet new technologies are rebuilding their structures, with consequences for the relation between the state and its beneficiaries.

Diverse streams of ICT for Development (ICT4D) literature have dealt with this phenomenon. Some authors look at the benefits of computerisation on programme delivery: digitisation is expected to help save time and increase the security of cash transfers (Aker *et al.*, 2015). The same tools are functional in reducing leakages, hence acting as means to greater accountability of the state (Bhatti, 2012; Muralidharan *et al.*, 2014). Discussion of benefits is juxtaposed with reflection on the issues involved, since these systems are prone to political manipulation, information capture and invisible costs for the user (Devereux & Vincent, 2010). But the general perspective, with a note of caution for the potential problems at issue, is that technology offers the possibility to build better and more reliable anti-poverty schemes.

Another stream of scholarship goes beyond exploring the expected benefits, and focuses on the relation between technology and the context of implementation. The idea that “artefacts have politics” (Winner, 1980) is the core concept here, stating that technology acts as an embodiment of the political visions behind it, and should thus be conceived in terms of political effects rather than of its materiality alone (Cordella & Iannacci, 2010). Computerisation is seen in terms of the policy objectives that it enacts and how it interacts with the context by advancing specific visions of social policy design. This shifts the focus to the political genesis of computerisation, and to the meaning of development which technology brings into the programmes it helps to redesign (Prakash & De, 2007).

These ideas have long characterised information systems scholarship, and are now being applied to the automatised of anti-poverty programmes. Veeraraghavan (2015) analyses the computerisation of a large Indian workfare scheme as a means of surveillance, which advances a top-down view of control over workers. Masiero and Prakash (2015) trace links between a digital food security scheme and the policy of narrow targeting embedded in it. In a study of Tamil Nadu, Carswell and De Neve (2013) study how “technologies” in the broad sense (including cards, documents and the like) reveal people’s everyday interactions with the state as embedded in relations of power, subordination and agency. The question here is no longer about benefits, but about the politics advanced by computerisation and its effects on beneficiaries.

Another stream of research focuses on the policy effects of biometric systems, whose presence in the domain of social protection has increased over the last five to 10 years. In biometric technologies, data capture (usually involving fingerprints and/or iris scans) allows unique authentication precisely because of the biological nature of the data. This function is the root of the technology’s relevance to social safety nets: secure authentication, in which accountability is enhanced by the uniqueness of biological data, enforces the targeted nature of programmes, allowing access to those entitled and excluding all others from appropriation. In systems where corruption and leakage are problems, biometric devices are particularly helpful in identifying entitled users (Gelb & Decker, 2011; Muralidharan *et al.*, 2014).

The material features of biometrics should thus allow for the exclusion of fake beneficiaries, and enable programmes to reach the poor and needy in a more reliable way. Yet the enforcement of barriers to (wrongful) access may come without the means to ensure the inclusion of the many households which while in need are not acknowledged as such (Khera, 2014; Swaminathan, 2008). While the association with anti-poverty objectives has increased the public legitimization of biometric systems (Srinivasan & Johri, 2013), many complain about the exclusionary effects of the same architectures in social safety practice (Ramakumar, 2010). In this debate, the consensus is that biometric technologies are enacting a deep transformation which is changing the face and substance of anti-poverty schemes worldwide.

We thus need to ask what the consequences are of reconstructing anti-poverty programmes through biometric devices. Most importantly, new technologies participate in people's views of the state, in terms of both the state's *construction* of itself and its *perception* by citizens (Kuriyan & Ray, 2009). The advent of biometrics, and more broadly the pervasive changes resulting from digital technologies, led me to investigate the construction and perception of the state's public image through these technologies. To do so, I needed long-term engagement with a practical example, in which an old anti-poverty programme - the Indian PDS - was being reconstructed by a biometric infrastructure.

3. Kerala: The Reconstruction of the PDS

The PDS supply chain, providing primary necessity goods (mainly rice, wheat, sugar and kerosene) at subsidised prices to the Indian poor, has three main phases.

Firstly, goods procured from the FCI and private producers are distributed at the district level through Authorised Wholesale Dealers (AWDs), who store them in dedicated warehouses known as *godowns*. Goods are then obtained from the local AWD by fair-price shop owners, who collect them on a monthly basis for redistribution to programme recipients. Finally, beneficiaries buy the subsidised goods from fair-price shops, known as “ration shops” as commodities are sold in monthly rationed quotas. The difference between PDS and market prices is intended to allow poorer households to afford the goods required to cover their basic nutritional needs.

As shown in Corbridge *et al.* (2005), the ration shop is the physical space for people to access the PDS, and constitutes a core *locus* of image formation processes. In the shop, citizens encounter the state in the form of *ration dealers*, the agents selling them subsidised food items. This exemplifies the anthropology of the everyday state illustrated above: the state is encountered in the form of the ration dealers who allow people access to the PDS, and (as detailed below) sometimes constrain access by failing to provide the rations. People’s encounters with the dealers, whether well-functioning or ridden with frustration, thus play a major role in determining poorer people’s views of the state.

The PDS was originally universal, meaning that all citizens could have access to it. Yet in the fiscal crisis of the 1990s, international funding institutions criticised the scheme for its universal coverage, resulting in “meagre transfer at exorbitant cost” (Radakrishna & Subbarao, 1997, p. 72). This was at the root of the nation’s move to a targeted system in 1997: in the targeted PDS, entitlement is related to poverty

status and aimed at the households categorised as below the state-specific poverty line. The policy shift had mixed effects, of which the case of Kerala is paradigmatic.

Before 1997, Kerala operated the best PDS in India (Khera, 2011a; Swaminathan, 2002). Under the universal system, it catered to 97% of the state's population (George, 1979, p. 23), and its impact on beneficiaries' nutritional status was high and significant (Kumar, 1979). This was very relevant in a state whose food-deficit situation would have put people's nutritional security in peril. The philosophy behind the Keralite system was based on the universality of the right to food, and on the need to translate it in a programme capable of serving all households in need of support.⁴

However, the shift in 1997 to targeting households caused major ruptures in the scheme. The new system, allocating goods to each state based on poverty incidence, reduced the supply of PDS goods to Kerala to less than 10% of the pre-targeting amount (Swaminathan, 2002, p. 51). Simultaneously, users regarded as above the poverty line (APL) were *de facto* phased out, as they were permitted only a very limited subsidy on food.⁵ As a result of the drop in their customer base many ration shops had to close, which caused a wave of suicides among ration dealers (Suchitra, 2004).

⁴ Shortly after state independence in 1956, Kerala underwent a socioeconomic transition from below, in which peasants played a key role in subverting feudal relations of power. From the onset of the PDS in 1965, the various governments' consideration for redistributive policies fostered the construction of a well-functioning PDS (until the shift to a targeted system in 1997).

⁵ In Kerala, as in most Indian states (with the exception of Tamil Nadu, which maintained a universal PDS), the move to a targeted system resulted in the dichotomy between the APL, left with a very limited subsidy, and the BPL households, for whom the subsidy remains substantial. In 2000, the Antyodaya Anna Yojana (AAY) scheme was introduced, for the poorest of the poor to receive greater quantities of subsidised food-grains.

One of the problems resulting from post-targeting dynamics is that of leakage, which is also severe at the national level. As commodities flow from FCI and private producers to ration shops, a high share of goods is lost in the process, mainly due to illegal sales on the private market. This phenomenon, popularly known as *rice mafia* (rice is the staple commodity in the PDS), may put the whole programme at risk, and its persistence constitutes the core criticism of the programme's detractors (Bhalla, 2011; Gulati & Saini, 2015). However, the leakage problem has triggered reforms at the state level, which in several cases have been successful in lessening these leakages (Drèze & Khera, 2015; Himanshu, 2013).

In Kerala the digitisation of the PDS, delegated to the National Informatics Centre (NIC), has been at the core of the programme's reconstruction. Computerisation was introduced to monitor the PDS supply chain, hence detecting and preventing food-grain diversion. Government officials, and the NIC staff I observed during the implementation were adamant about the anti-leakage nature of the effort and that the IT-based PDS was built to detect diversion through digital monitoring. The reconstruction of the programme had two phases: the first when the infrastructure was built; and the second, still ongoing, its augmentation by Aadhaar's biometric recognition technology.

In the first phase, the NIC developed a suite of software articulated in three modules, of which a front-end module involved citizens and two back-end ones were used by staff at the Taluk Supply Offices (TSOs). The front-end interface consisted of a Ration Card Management System (RCMS), a workflow-based application for ration card requests: once received by the registration counter, applications are verified by

rationing inspectors who then submit them to the TSO for approval. Applications are made through Akshaya centres, the telecentres (public-private internet kiosks) operating across the state. This has partly shifted the *locus* of image formation from the busy public offices where applications were originally made to more citizen-centric e-kiosks (Madon, 2005).

The two back-end functions pertain, respectively, to allocation of goods and inspection of the ration shops in the state. Through a software programme named Allocation 2.0, TSOs can ascertain the requirements of each ration dealer in their area, and allocate PDS goods to them accordingly. As a result, all shops should have enough stock to deliver monthly rations to every household registered with them. Another application, called an Inspection Monitoring System, consists of a database of inspections conducted by officers of all ration shops to combat the illicit trade of PDS commodities.

It is the second phase of digitisation, aimed at rebuilding state-citizen encounters in the ration shops, that affects beneficiaries most visibly.⁶ The Aadhaar project aims to solve identification issues by endowing each Indian resident with a 12-digit number and registered biometric details (fingerprints and an iris scan). Massively high rates of Aadhaar enrolment in Kerala⁷ make it technically possible for people to use it for access to anti-poverty schemes, and a pilot project in Trivandrum (capital of Kerala) has started this phase: a selection of ration shops has been provided with point-of-

⁶ In September 2013, an order by the Supreme Court of India forbade states to make enrolment in social programmes conditional upon Aadhaar registration. However in March 2016, a new order reversed the previous one, providing legal backing to the use of Aadhaar in anti-poverty programmes.

⁷ Rates of Aadhaar enrolment in Kerala currently exceed 95%, and there are more than 700 among enrolment stations and enrolling machines in the state. Statistics can be found at <http://uid.kerala.gov.in/aadhaarKerala.htm>.

sale machines, performing Aadhaar identification to ascertain users' entitlement to the PDS.

Interviews with government officials and NIC software developers revealed the policy rationale behind this measure. A frequent practice of some ration dealers is that of attaching bogus cards, whose number is not registered in the system, to their shops' registers. By registering sales to fake users as real, they can mask illegal sales to the private market and make their activities appear normal in the registers checked by the inspectors. Biometric recognition, by linking each user to their own biometric details, ensures that sales are only made to real beneficiaries as all transactions need to be matched by a valid Aadhaar number. This implies a two-fold accountability mechanism: non-genuine beneficiaries are excluded from subsidy, and ration dealers are prevented from selling goods to non-entitled users.

This is the rationale at the root of the biometric PDS. By computerising the PDS, biometric authentication involves the last stage of the supply chain and the ration shop's technology is reconstructed in the process. When an established anti-poverty programme such as the PDS is subjected to the principles of biometrics, the space in which this reconstruction occurs is also where citizens form their images of the state. This has enabled me to focus on the construction and perception of the state's image, as reproduced by these new technologies.

4. Biometric PDS: The Self-Reconstruction of the State

Narrative analysis conducted at the government level allows me to focus on the state's use of the biometric PDS as a means of reconstructing its public image. Mooij (1999) illustrates how the programme is used to recast the image of the state, with governments enhancing their popularity through well-functioning PDS infrastructures. An effective food security system is used by the state to enhance its political appeal, and as digital technology is increasingly applied to anti-poverty systems, the role it plays in government image-building needs to be explored.

From the narratives of government officers, and from NIC staff in charge of PDS computerisation, I found a two-fold mechanism at work in the IT-based reconstruction of the state's image. The first was briefly discussed above where the front-end part of e-PDS is being moved from public offices to Akshaya telecentres, the e-kiosks distributed across the entire state. The Akshaya project is a public-private partnership in which private entrepreneurs, known and integrated into the local community, manage e-kiosks which provide all kinds of government services, ranging from bill payments to applications for social security schemes. By moving ration card applications to the Akshaya network, in the effort to promote an image of effectiveness and accountability, the government has shifted the *locus* of image formation to a trusted space, away from the public offices where the poor are often neglected or mistreated by officials (Gopakumar, 2007).

The other mechanism contributing to the reconstruction of the state's self-image lies in how the government has reframed the problem-solution nexus (i.e. a logical link between a problem and its solution), flowing from identifying the root cause of PDS leakage to devising the technology to fight it. Identifying this link requires analysis of

two narrative streams, both of which recur frequently in government officials' speech: one revolves around the problem, depicted as being centred on ration dealers' involvement in the rice mafia; the other is about the solution, and portrays the biometric PDS as the best way to tackle the problem.

Government staff are unanimous in recognising leakage as a serious problem, and acknowledge its negative impact on the food security system. As noted by a former collector of rationing:

Kerala is known to have one of the best PDS in India, but it is still very corrupted...prices are higher on the market, so there is an incentive to sell [PDS goods] there. (Personal communication, 8 November, 2011)

The root cause of leakage is identified by the state as the rice mafia, to which practically all diversion from the system is attributed. While losses in transportation and storage are sometimes acknowledged, leakage is blamed on the black market networks where BPL rice is sold for much higher prices than within the PDS. This generates a gap in the system, which makes the poor consistently unable to access the food items to which they are entitled.

However, as long supply chains make it hard to determine responsibility for the diversion properly, the core question remains as to *which actors* are actually involved in the rice mafia. Blame is attributed quasi-unanimously by the government to ration dealers: very often, ration shop customers are turned down, with the excuse that the

shop has “run out” of stock. Government officials are adamant that shortages are mostly the ration dealers’ responsibility, as summarised by a rationing inspector:

In Kerala there are many bogus cards, which copy existing ones or invent households that do not exist...it is the ration dealers that fabricate bogus cards, not the customers. So, they can pretend having sold goods to the BPL, when instead they have sold them elsewhere. (Personal communication, 8 November 2011)

It is true that ration dealers were put in a dire position by the central government’s shift to a targeted PDS in 1997. As noted above, targeting forced many ration shops to shut down and left the remaining ones at serious risk of becoming unviable. This has been a factor in pushing many dealers into market diversion: according to Khera (2011a, p. 1058), corruption has become a “requirement of economic survival” for many fair-price shop owners. This point is corroborated by the ration dealers I interviewed, whose narratives of struggle for business viability are explored in greater detail below.

A second thread of narrative revolves around the solution, as embodied in the integration of Aadhaar into the PDS. This is articulated as occurring through three mechanisms or advantages, all embedded in the Aadhaar system.

The first advantage lies in the secure identification of PDS users. As noted above, the main way ration dealers divert food-grains is based on bogus cards registered in their shops which mask illegal sales to the black market. By linking each card to the

biological data of the owner, biometrics will make this virtually impossible as point-of-sale machines require recognition of users' fingerprints for any transactions. As reported by a member of staff at the Kerala State IT Mission (KSITM):

Ration cards have barcodes...often they are copied, and ration dealers claim false sales as a result. With Aadhaar, there is no risk of this, because control will be biometric. (Personal communication, 4 August 2012)

Yet this alone would be insufficient if the e-PDS did not provide a way to check that *all* transactions conducted by ration dealers happen through point-of-sale machines. The second advantage of Aadhaar stems from the fact that, beyond checking the identity of buyers, point-of-sale machines register exactly the amount of goods sold at every transaction. This makes it possible to determine the requirements of each shop, and to allocate commodities to them on a monthly basis.⁸ This leaves no room for “inventing” sales, as noted by another official at KSITM:

The system will make sure of what goods are sold, and to whom. Ration dealers... claim that stocks have finished, and sell them on the market. But now, the system will be able to track exactly who buys what. (Personal communication, 4 August 2012)

A third advantage is that Aadhaar makes it more difficult for ration dealers to cheat on their customers by pretending to run out of goods – or selling them at prices higher (or quantities lower) than allowed in the PDS. At present, all targeted

⁸ The monthly bill, summing up all transactions conducted through Aadhaar, is the basis on which allocation for the subsequent month is provided.

households are registered with a ration shop and cannot decide to opt out without being suspected of fraud or irregular behaviour. However, Aadhaar has been set up to allow “portability” as biometric authentication can be performed anywhere. As an NIC officer noted:

Ration dealers will be unable to count on their usual customers, because people will be able to buy [PDS] food from everywhere...they won't be able to compete if they continue their cheating. (Personal communication, 7 August 7 2012)

These three advantages of the integration of Aadhaar complete the narrative used by the government to recast its image through the e-PDS. This is a carefully designed problem-solution nexus, in which attribution of guilt to ration dealers is matched by a three-fold system to prevent them from diverting food-grains illegally. From this narrative, the state emerges as a self-constructed problem-solver, concerned with devising “the right technology” to combat diversion of goods to the black market. This turns an old technology of rule into a seemingly benign biometric system whose capability of combating corruption helps building legitimacy in the eyes of poorer people (Srinivasan & Johri, 2013).

5. Image Perception: “Seeing the State” through the Biometric PDS

To complement the discussion of image construction by the state, I now focus on the perception of the state through the PDS as experienced by its beneficiaries. I do so

through interviews with PDS users in the ration shops, as well as extensive interviews with beneficiaries in multiple other settings (self-help organisations, urban slums, rural villages). While some narratives occur with particular intensity in specific communities, other narrative threads seem to cut across social groups, revealing common preoccupations among recipients in different contexts. In my analysis in this section, beneficiaries voices are combined with those of telecentre entrepreneurs, ration dealers, and members of PDS staff interviewed across the state.

My research reveals that a diversity of views exist of the image of the state in relation to PDS and Aadhaar. Akshaya entrepreneurs concur in reporting high rates of ration card applications performed through them, while users often compared the newer telecentre-based process with the frustration they previously experienced in public offices. There could be downsides to the use of telecentres, as IT mediation of access to state services may be implemented unevenly across the state, creating new geographies of exclusion (Wade, 2002). In addition, telecentre entrepreneurs may be tempted to adopt a logic of profit maximisation, which clashes with the objective of social inclusion for which e-kiosks were created. The implications of moving ration card services to Akshaya centres thus need further exploration.

Akshaya entrepreneurs require an income-generation mechanism in order to ensure the sustainability of their businesses, as government funding is only provided for the set-up phase. Once the telecentre's activity has started, the entrepreneur needs to ensure continuity of the business, providing locally relevant content for intended users. To do so, telecentres not only offer government services, but also engage in private activities which can ensure steady streams of cashflows, such as computer

training courses or access to communication facilities. As a telecentre entrepreneur in Malappuram district remarked:

If I do not make a profit, I cannot sustain my business. All the telecentres that failed to understand the needs of the people have shut down. (Personal communication, 22 August 2012)

However, an “either-or” logic of mutual exclusion – in which either the telecentre makes a profit, or it becomes unable to serve the poor and disadvantaged – is disputed by existing works on Akshaya telecentres (Gopakumar, 2007; Kuriyan & Ray, 2009; Madon, 2005). This is because multiple channels have been established by the state government to ensure that Akshaya telecentres are easily accessible by the poor and vulnerable. The Akshaya project started with an e-literacy phase, where one member of each family was invited to the local telecentre to attend a basic computer usage course. Geographic coverage, which places one telecentre at a maximum of 3 km from each house, depends on accessibility, as does the role of telecentre entrepreneurs as active facilitators of e-services, as a telecentre user remarks:

Beforehand, it was hard to find information about government schemes. Akshaya entrepreneurs know about the schemes, and help people making applications and getting exactly the information they need. (Personal communication, 23 August 2012)

It emerged from entrepreneurs' narratives that this is the heart of the training imparted to them by the Akshaya project office. Selected as trusted members of their local communities, entrepreneurs act as representatives of the state and make the connection between users' needs and the new information technologies. When users arrive for ration card services, telecentre staff guide them through the process, from the documents required to the actual steps of the online application. This makes Akshaya centres different from public offices: with the proactive presence of trusted facilitators, the project changes the public face of the government, ultimately leading to a positive mechanism of image reconstruction in the eyes of the beneficiaries (Kuriyan & Ray, 2009).

But when it comes to the problem-solution nexus, where the government posits Aadhaar as a means to combat the rice mafia, users' narratives reveal a more complex picture. In particular, users question the government's arguments on the nature of PDS leakage, and consequently on the technology devised to combat it. The state of Kerala is characterised by high political mobilisation, and trust in government is often affected by people's engagement with politics. In the case of the integration of Aadhaar into the PDS, people expressed diverse narratives of suspicion casting doubt on the image of problem-solver that the state has constructed for itself.

These critical narratives were encountered across the whole state, but different groups of residents tend to focus on particular aspects of the problem. In what follows, I discuss three main themes emerging from these narratives: the practical

feasibility of digitisation, diversion in the early phases of the supply chain, and the potential exclusionary effects of digitisation.

5.1. The Practical Feasibility of Digitisation

The first theme, found especially in rural villages, reveals concern over the practical feasibility of digitisation. It is felt that computerisation of ration shops is not sustainable if the wider infrastructure is unable to support it, a problem synthesised by a citizen in a rural area of north Kerala:

How will this work? Electricity keeps coming and going. Every now and then, a blackout leaves us without light for many hours...people have a right to the PDS, and we cannot lose it because of power shortages. (Personal communication, 23 November 2011)

The issue is that with power shortages, or faults in biometric identification, point-of-sale machines may not work, and hence the system will end up excluding genuine beneficiaries. This happens in the context of a programme which already suffers from exclusion errors, leaving out substantial numbers of households (Khera, 2014; Ramakumar, 2010; Swaminathan, 2008). These exclusions are regarded as a serious problem needing examination in its own right.

The problem of establishing principles for inclusion into social safety nets stems from the 1997 move to a targeted system, which confines the PDS to households recognised as below the state-specific poverty lines. However as Swaminathan

(2008) finds, households classified as BPL or Antiyodaya Anna Yoyana (the poorest of the poor) in all-India are just 29.5% of the total population, which substantially limits the coverage of food subsidies in a nation already suffering from severe hunger and malnutrition. Lists of BPL residents are capped for each state, and their numbers can only be expanded if the expense is met by local government. In addition, I heard numerous reports of well-off households obtaining BPL cards illegally in order to enjoy additional government benefits. A PDS user in Malappuram district illustrates the issue:

Irrespective of one's real status, it is very difficult to be recognised as BPL. Many people in the slums have blue cards [APL], but they clearly live in poverty. In the meantime, a lot of rich people get BPL cards out of friendship with people in government. (Personal communication, 21 August 2012)

This implies that numerous households who are genuinely entitled to the PDS are left out of it by design, and this severely limits the potential of the programme. The problem presented by the perverse consequences of targeting is structural, and the solution requires a rethinking of programme design along lines of greater coverage (Sen & Himanshu, 2011). Diverse measures can be taken to improve poverty mapping, and ideas of participatory classification have been experimented with in Kerala, resulting in substantial increases in the estimated poverty incidence (Swaminathan, 2002, p. 51). However these classifications should acknowledge the causes of poverty, and take into account social and political factors which they often fail to consider (Williams, Thampi, Narayana, Nandigama, & Bhattacharyya, 2012).

In a situation where many households in need are already excluded from PDS, people worry that Aadhaar may worsen the problem rather than solve it. This is because in a system affected by severe exclusion errors biometric recognition is tailored to combat the opposite problem: the illicit *inclusion* of non-entitled beneficiaries. While effective in combating inclusion errors, the newly computerised technology of rule does not help tackle the exclusion of the needy: given the depth of this problem, the introduction of Aadhaar recognition may be a sub-optimal intervention for the PDS (Ramakumar, 2010). The residents' voices heard in the field reflect this preoccupation, and problematise the state's self-constructed image as being a successful anti-poverty agent.

5.2. Diversion in the Early Phases of the Supply Chain

A second theme in people's narratives affects the problem-solution nexus on which the state's image construction is predicated. The government's assumption that ration dealers are the core party guilty of causing the leakage problem is contested by recipients, who often point to the supply chain agents *before* the goods reach the ration shops as guilty of diversions. This theme cuts across locations and communities, and was often brought up by the food security activists and volunteers who work with PDS recipients. In particular, there are concerns with a *border mafia* who steal commodities before they reach the local AWDs:

A lot of goods are stolen at the border...the goods that really get to the shop, and are not sold somewhere else, are just a small share. It is easy to say, the

ration dealers are causing the system not to work, but goods are being stolen during transportation. (PDS user, personal communication, 22 August 2012)

Would there be any corruption, if the private sector was not involved? There are many private companies that buy PDS goods, repackage them, and then sell them on the market. Otherwise, the rice mafia could not exist. (Food security activist, personal communication, 20 June 2012)

While it is hard to verify these assertions, I did observe that the back-end modules of the software (on allocation of goods and inspection monitoring) are still at an early stage of development, and in many TSOs they are not used at all. On the one hand, investing in this would probably be less popular than enhancing the front end service, as these modules do not “transform” the ration shop and hence do not affect people’s views of the state. On the other hand, the current strategy trades visibility for effectiveness, as it focuses only on the last stage rather than on a holistic monitoring of the PDS.

Early-stage diversion is reported by many ration dealers who claim to be systematically unable to obtain the amount of food-grains needed to serve all their users. The issues raised by ration dealers need to be examined in greater detail as targeting has substantially reduced their customer base. Ration dealers interviewed discuss the complexities of running a fair-price shop, arguing that their incomes have been significantly reduced, undermining the possibility of sustaining their businesses in the long-run. As noted by one of the leaders of the All Kerala Ration Dealers’ Association, it is hard to make a living from running a ration shop:

Ration shops...are not viable on their own. Many of us have had a shop licence for a very long time, and have no chance to learn a new profession. Now [after 1997] things have changed: many customers have left the shops...many shops have had to close down because of debt. (Personal communication, 10 August 2012)

With the reduction of the state-level PDS supplies to less than 10% of the original amount, the average monthly purchase of food-grains in Kerala diminished from 4.1kg to 1.8kg between 1997 and 2001 (Khera 2011b: 107). The drastic reduction in offtake is at the heart of the problem, and market diversion is often presented, even by ration dealers themselves, as the only viable solution for PDS shops to survive. As noted by a fair-price shop owner in one of Trivandrum's slums:

We get a commission on the goods we sell, but that is very low. We are left alone with our shops, not knowing how to even cover our expenses. (Personal communication, 2 August 2012)

Reflecting the point of view of ration dealers, these narratives put the problem in a more complete perspective. Engagement with black market networks is considered deplorable, and actively contributes to impeding poor people's access the food items to which they are entitled. At the same time, however, the root cause of the problem is ascribed to a perverse consequence of targeting: ration dealers' narratives reveal the unsustainable conditions of their shops, and often end with the stories of those who committed suicide as a result of debt. Aadhaar monitoring may prevent shop

owners from cheating, but its effect is limited as it does not provide any real alternatives for them to make a sustainable living.

5.3. Potential Exclusionary Effects of Digitisation

Finally, a third theme in the narratives reveals what is perhaps the most profound cause for people's concern. Backed by reforms envisaged at the national level, the adoption of biometrics is related to the incoming shift to a cash transfer system, which if implemented would dismantle the PDS at its very roots. While there is consensus on this at the government level, citizens across the state present a more complex picture:

Aadhaar will make cash transfers mandatory for everyone. This is very difficult for the poor, who may have never used a bank at all. (PDS user, personal communication, 22 August 2012)

The real problem with Aadhaar...will be in the long term. Since people can use every ration shop, ration dealers will not know how many customers they have, and so they will not be able to require the right amount [of food-grains]. The only way is giving licences to grocery shops...the PDS will disappear, and people will have to use the market. (Food security activist, personal communication, 20 June 2012)

Fears of exclusion of the poor, lack of protection from inflation, and lack of familiarity of vulnerable groups with banking systems are the main practical concerns

surrounding a shift to cash transfers. These fears need to be added to political understandings of the proposed shift, based on the unwanted involvement of the market in a system which had previously been isolated from it . PDS user surveys conducted across India reveal strong preference for the current PDS, as compared to a potential move to a cash transfer system (e.g. Aggarwal, 2011; Puri, 2012; Khera, 2014). It is widely feared that a shift to cash transfers could exacerbate the exclusion errors initiated with the move to a targeted PDS.

This last theme raises issues which are now the most critical. The narratives presented here were collected before a new national government, led by Narendra Modi's National Democratic Alliance (NDA), voiced the intention to replace the PDS with cash transfers and envisaged operational measures to implement the shift (see Government of India, 2015, p.52-66). To do so, Aadhaar is being combined with a financial inclusion programme (Jan Dhan Yojana) and mobile technologies: Jan Dhan Yojana aims at providing each household with a bank account, which will be the backbone infrastructure to transfer benefits to those entitled. The combination of Jan Dhan Yojana, Aadhaar and mobile payments, under the acronym "JAM trinity" in the government's discourse, is being planned with the explicit purpose of rebuilding the nation's anti-poverty system, by converting existing subsidies into a lump-sum transfer to the BPL (Government of India, 2015, p. 56-57)⁹. People's serious concerns with this move, and with the implications of the end of the PDS, should be taken into account as policy decisions are made.¹⁰

⁹ No timeframe has yet been announced for this proposal.

¹⁰ This does not imply that cash transfer programmes are ineffective or biased *per se*. For example, Aker *et al.* (2015) demonstrate that transfers enabled by mobile money can work as effective instruments of social protection. The problem voiced by recipients is not with the JAM project itself, but with the implications that a shift from the PDS would have on their access to food security entitlements.

Overall, the analysis of the narratives of those interviewed has revealed deep asymmetries between the government's perspective and users' appraisal of the biometric PDS. As illustrated above, the government depicts biometric technology as the key to combating the rice mafia, by monitoring all transactions conducted by ration dealers. At the same time, many PDS users dispute this view, as Aadhaar not only monitors the supply chain only partially, but its architecture actually prepares the way for a policy shift which will dismantle the PDS as it is currently known. The image of a skilled problem-solver, which the state has constructed for itself, is not taken at face value, as citizens do not "see the state" through it but rather through the actual effects of technology on their entitlements within the PDS.

Lessons drawn from this case study go beyond an explanation of the role of technology in streamlining anti-poverty systems. What is suggested, given that Aadhaar is a potential means to shift towards cash transfers, is the inscription of a political agenda onto technology, as cash transfers involve a view of anti-poverty nets which involves the market rather than excluding it. A shift to cash transfers is a likely evolution of India's food security policy, and biometric architectures constitute the backbone of the "JAM trinity" at the basis of such change. The reform potential of biometric architectures seems therefore deep enough to enable radical reconstruction of the anti-poverty system by the state – regardless of people's concerns.

6. Lessons and Conclusion

In this paper, based on the case of the computerisation of the Kerala PDS, I have examined the effects of the incorporation of digital architectures into an anti-poverty programme. Field narratives reveal that on the one hand, the state constructs the biometric infrastructure of Aadhaar as the ideal means by which to combat diversion or leakage from the PDS. On the other hand, this portrayal is disputed by users in that technology is seen by many as exclusionary, over-focused on ration dealers, and oriented to the elimination of PDS in favour of cash transfers. The power of technology, in reconstructing the state's image, seems therefore to be limited by the real-life encounters of citizens with the PDS.

As biometric technologies are increasingly being adopted in anti-poverty nets worldwide, these findings have two main implications. Firstly, Corbridge *et al.* (2005) show how poorer citizens "see the state" through their encounters with it in relation to anti-poverty technologies of rule. As these are augmented by biometric architectures, this fosters the role of the state in image-building: as image formation is structured through encounters between a state and its citizens, biometric recognition is used to reconstruct precisely these encounters, as it occurs through ration shop transactions in the PDS. **This is intended to feed** into citizens' views of the state, and enables governments to reinvent themselves as skilled problem-solvers.

Secondly, the narrative analysis has highlighted that citizens re-elaborate, and sometimes dispute, the images of the state rebuilt through biometrics. This is how the same technology, allegedly constructed to combat illegal diversion of PDS goods, comes to be perceived by the people as exclusionary, mis-targeted, and paving the way towards a largely unwanted shift from PDS to cash transfers. This

illustrates how technology can be the carrier of a policy agenda, which if implemented may significantly transform the existing reality of anti-poverty structures. The potential of biometrics therefore goes beyond a reinvention of the state's image, and extends to the actual reconstruction of anti-poverty systems.

At the time of writing, the central government's intention of shifting from the PDS to cash transfers based on the JAM trinity has been declared but not yet translated into action. If the policy shift is made, biometric authentication will be used to identify recipients, and to enable transfers of subsidy money to their bank accounts. While this would dismantle the existing PDS supply chains, in which the rice mafia networks proliferate, the concerns presented here remain. A well-functioning banking infrastructure, coupled with protection against price volatility and mechanisms to avoid the exclusion of legitimate beneficiaries would need to be included in an effective cash transfers programme. The absence of any of these might result in a malfunctioning system which would perpetuate the errors made with the PDS.

In particular, the main limitation of JAM emerging from this analysis is its focus on tackling inclusion errors, when the problem of the PDS is found chiefly in the fundamental, massive exclusion of genuinely needy users. A move to cash transfers would not augment the system's coverage, and would leave untouched the problem of the many vulnerable households excluded from social protection. The risk of further exclusion, due to issues with implementation of electronic infrastructures and people's low familiarity with banking systems, would actually worsen the problem, potentially leaving more households unable to access the subsidies to which they are entitled. While cash transfer programmes have been successful elsewhere, this

specific transition seems risky, and reasons for concern often surface when people discuss it.

At the same time, however, the national landscape shows signs of improvement in PDS reform. At the state level, interventions leading to a more inclusive PDS are becoming more frequent: in addition to Tamil Nadu, Andhra and Himachal Pradesh have moved to a quasi-universal system, and the coverage of BPL lists has been expanded in many states (Khera, 2014). These interventions were accompanied by the approval of the National Food Security Act (NFSA), on 12 September 2013, which gives 67% of the Indian population legal rights over a uniform quantity of 5kg of food-grains, to be made available at a fixed price of Rs.1-3 per kg through ration shops. The common denominator of these interventions is that of making the PDS more inclusive, reducing access prices and increasing entitlement quantities.

Should the central government decide to preserve the PDS and combat leakage through incremental reforms, at least two types of intervention will be needed. Firstly, holistic monitoring should be preferred to focusing only on ration shops, which are only one stage of the programme's supply chain. Front-end interventions on anti-poverty systems may well be more popular, as they affect the physical *loci* of state image formation for citizens, as opposed to the back-end measures which citizens cannot really see. Yet failure to address supply chains in their early stages may easily result in the persistence of leakage, as it leaves a substantial part of the problem untouched.

Secondly, while monitoring ration dealers is important, the current system still sees them struggling with the threat of unviability induced by the design of the targeted PDS. Interventions to monitor the dealers, such as using Aadhaar-based point-of-sale machines, should be combined with policy measures which remove dealers' incentive towards diversion. At the state level, the Kerala government has already taken some steps in this direction, by giving credit concessions to ration dealers and allowing them to sell commodities outside the PDS. The nation-wide NFSA, which will expand the customer basis of ration dealers, will be a significant improvement in this respect.

At present, biometric architectures are reshaping anti-poverty programmes worldwide, a phenomenon exemplified by the case presented here., With this paper, I hope to have contributed to a greater understanding of their role in reconstructing the anti-poverty systems through which many citizens, subjected to their operations, still “see the state” in most of the world.

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