Biometric IDs and the remaking of the Indian (welfare) state

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In India, proving your identity is only a fingerprint scan away. In less than seven years, more than 1.1 billion residents have enrolled in what must be the most innovative identification system in the developing world. (Gelb and Metz 2018, 1)

Across the globe, India's new digital identification system is celebrated as a brave attempt to revolutionise identification procedures. The new system launched in 2009 is called Aadhaar, which literally means "foundation". By 2019, 1.2 billion Indian residents have been biometrically enrolled and given a unique 12-digit identification number (Aadhaar number, or Unique Identity) that is connected to a record containing their personal biometric data – fingerprints, iris scan data, and photograph – and to a skeleton set of social data – name, address, and gender. The Aadhaar number can be used for online verification of identity at any time and any place. So far, no other country has attempted a biometric database of this scale. Internationally this "frontier case" is celebrated as promising cost-efficient and secure identification (Gelb and Metz 2018). It allows for maximum interoperability, linking a national ID program to multiple sectoral interventions, such as welfare projects, security operations or commercial applications (Gelb and Clark 2013b; Jacobsen 2015; Zelazney 2012; World Bank 2015).

As part of a global trend, India's investment in a digital ID system addresses at least two major concerns: security and transparency on the one hand, and access to rights for citizens on the other. First, the appraisal and widespread adoption of digital identities is linked to increased complexity of governance in a mobile world. The contemporary capitalist system depends on rapid flows of people and goods, and it challenges states to manage these accelerated movements that generate, among other things, heightened concerns over fraudulent claims and unwanted movements (Fuller 2003). In this context, digital IDs and in particular biometric technology have become trusted partners in the making of new securityscapes (Albro et al. 2012; see also Low and Maguire 2019). They provide automated surveillance at crucial checkpoints in order to protect spaces of privileged sociality against unwanted entrants – in short, they offer a means to separate "bad" flows from "good" flows (Ajana 2012; Amicelle and Jacobsen 2016; Amoore 2006; Breckenridge 2008, 2014; Lebovic 2015; Maguire 2009). Such a gain in flexibility and security has tradeoffs and comes at the cost of unwanted exclusions, new forms of surveillance, and novel mechanisms of exploitation (Breckenridge 2019; Bennett and Lyon 2008; Ziewitz 2016).

Second, from a citizen's perspective, questions of access to rights have high valence. In the twenty-first century, there is refreshed commitment to issuing secure identification to every individual. The matter has strong international backing from its inclusion in the development goals[1] formulated by the United Nations. According to Sustainable Development Goal 16.9, access to "legal identity, including birth registration" is an important stepping stone on which to build "peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels" (SDG 16, UN 2015[2]). It ought to ease access to financial services, employment oppor-

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tunities, welfare programs, or participation in elections. Experiments with novel forms of digital IDs are marketed as cost-saving measures. They establish new forms of collaboration between private corporations and state agencies, and at times de-link identification from citizenship to make access to secure identification more inclusive in conflict and migration situations (Gelb and Metz 2018).

The Indian government echoes these concerns of inclusion and security and proposes that the absence of a universal identity creates conditions of insecurity. To date, citizens have used a host of documents issued by the state – ranging from driving licences to Below Poverty Line (BPL) cards – to prove identity. Aadhaar is supposed to replace this messy assortment of documents and become the one "universal" ID that would be accepted as proof of personal identity across the country. By encouraging both the public and private sectors of the economy to adopt Aadhaar, the government seeks to achieve stated goals of empowerment, cost saving and fraud prevention (Rao and Nair 2019). Keeping these aims in mind, critical scholarship has begun to interrogate the social consequences and the on-the-ground effects of Aadhaar. Summarising the findings so far, this article explores the conceptual framing of the state that underscores Aadhaar, the political ambition associated with biometric technology, and the experience of users with the technology.

As a tool of governance, Aadhaar is contextualised by a specific tension. While the Indian government is piloting new systems for improving social security, there is a strong trend towards the marketisation and financialisation of all services and a certain hostility towards old-style welfare. There is a sense that a universal secure ID will help improve social security and cut costs, because a digital ID apparently eases access to a host of services from private and public providers and permits profiling of citizens' needs and behaviours and formulation of better policy and tailor-made programs. This ideal-type scenario is far removed from the experiences of Indian users, who battle with multiple access issues, such as lack of documentation, failure of biometric technology, and patchy infrastructure. Moreover, the tendency towards mandating a biometric verification of identity and digital accounting focuses attention on accessibility of service and uptake and away from concerns over quality of service, wellbeing and exclusions. Thus, the fascination for the traceability of potentially all transactions and the accompanying assurance of transparency and optimal services encourages a focus on recognition technology and specific indicators of success, while simultaneously rendering invisible the extensive work required to bring about connectivity and access to basic commodities and services.

Governance and the will to develop

India's biometric project partakes in a particular vision of the state as a capable organiser and facilitator of life, whereby Aadhaar is a new effort to enhance the state's ability to govern. The new system provides an infrastructure to improve what Foucault (1997) classically called governmentality, which connotes activities of the government that seek to direct the conduct of citizens in ways that maximise the quality and utility of their lives. Planning starts from statistical abstraction that makes the social accessible for scrutiny, leading to the identification of social issues and the formulation of policy to address them, thereby bringing about positive change. Efficient implementation of regulatory regimes requires individual compliance. Ideally, this is achieved through institutions that train individuals to self-discipline by directing an internalised gaze of power towards their own selves. The goal of modern governance is to maximise such self-discipline of citizens as a means to enhance individual and collective wellbeing through a combination of discipline and surveillance (Foucault et al. 1991).

As a technology of surveillance, Aadhaar is seen as a partner in this process. Unsurprisingly, its introduction causes concern and criticism about the dangers of totalitarian control and the potential for discrimination and exclusion, as well as raising worries over data security and safety (Ajana 2012; Epstein 2007; Fuller 2003). In response to public outrage, the Unique Identity Authority of India (UIDAI) repeatedly emphasised the neutrality of the project, arguing that the issuing of Aadhaar numbers is separate from any government intervention because these numbers merely provide a basic infrastructure for secure identity verification. Such assurances could not eliminate worries about the surveillance potential of the digital ID. Like all identification systems, biometric systems are invented to make individuals transparent and, on the basis of networked information, discriminate between insiders and outsiders, clients and imposters, and legitimate and fraudulent claims. In this sense, the introduction of Aadhaar is part of a larger vision of transforming governance in the direction of marketisation and financialisation and implies leaving behind some of the political techniques and values of the early postcolonial era. Accordingly, the state functions less as an institution for the redistribution of resources to nurture (groups of) citizens and more as a platform that provides self-caring individuals with optimised access to private and public services (Singh 2019).

When founded in 1947, the newly independent state of India espoused a strong commitment to

the care of citizens, and it borrowed extensively from the toolbox of socialist statecraft. The traumatic experience of colonial exploitation and its dire consequences for people's wellbeing meant that social justice and fair distribution of resources became key goals of the independent nation and an important source of legitimacy for the leaders of the democratically elected governments (Corbridge et al. 2005). The first government of independent India and its head, Jawaharlal Nehru, started with the assumption that India was plagued by mass poverty and ignorance, which made bold, widely distributed interventions seem necessary and prudent, leading to the establishment of what Chaudhuri and Koenig (2017) call "social citizenship". Rather than individuals, welfare interventions targeted collectives of people who were identified on the basis of their status as being particularly needy. Thus, projects were particularly directed at rural populations, women, or members of disadvantaged – formerly "untouchable" – castes, now listed as scheduled castes and tribes (SC/ST). However, development needs persisted, multiplied and became more complex as India began to build an industrialised nation, so that subsequent governments – embroiled in controversies over priorities – shifted policy attention back and forth from rural development to industrial growth and urban upgrading, as well as from poverty alleviation to birth control, health and sanitation, or women's empowerment (Corbridge et al. 2005). The global demise of socialism, coupled with the continuously slow economic growth of the Indian economy, acute fiscal crises and high state spending, produced a strong current for change. While change arrived gradually, 1991 stands out as a watershed moment, since it marks the beginning of a decided shift towards liberalising the economy.

Embracing market ideology and in line with neoliberal doctrines, India's leadership prioritised investment in economic growth and sought to expand the official economy. The trickle-down effect of a booming market would sweep along poor classes on the route to prosperity, while new public–private partnerships would revolutionise anti-poverty programs. The eleventh and twelfth five-year plans (Planning Commission 2008, 2012) steered the welfare state in the direction of more narrowly targeted systems, along with an emphasis on educating the poor, disciplining and encouraging people to self-activate and take advantage of opportunities provided by the official market to earn, invest and secure their future. The Chairman of the India Development Foundation, Vijay Kelkar, uses a metaphor to explain the new approach to support for the poor:

> To work up the ladder of income and achievement, it is necessary to first get on it, but the poor, the 'left behind', often find it difficult to get their hands on the bottom rung. Our approach must focus on giving the poor the tools to get on the ladder, and access the resources they need to move up and out of poverty. (*Times of India*, 27.11.2010)

This notion of development as individual mobility and effort to climb the ladder of a class society is squarely situated within the framework of liberal doctrines of the responsible individual as a rationally choosing, autonomous, economic actor shaping their plight through determination and willpower. In a development context, this shift is also marked by the growing hegemony of the empowerment paradigm. Aradhana Sharma (2008) highlights that empowerment here means persuading marginal people to embrace the values and work ethics of economically successful classes. It is mimicry for the sake of progress as defined by a particular economic model (see also Li 2007). The state invests in the empowerment of the deserving poor, who are believed to possess the will to improve but lack the skills required to take advantage of what now appears to be an abundance of new opportunities. Moreover, people are encouraged to consider future risks and take necessary precautions to ensure their future wellbeing. Sohini Kar (2017) calls this new regime of care "austerity welfare" because rather than redistributing resources to provide for the needy, the state invests in technologies that allow for seamless access to services for "self-help and active forms of investment" (15), such as saving money or investing in pensions or insurance policies.

Digital technology and the reworked welfare state

The investment in a new digital infrastructure is an integral part of this vision of a refashioned welfare state, imagined as frictionless and leak-free (Cohen 2019a). From the start, Aadhaar is embedded in a host of other programs, prominent among them initiatives for inclusive banking (Rao 2013). The connection between digital ID and banking is emphatically confirmed by the official announcement of the JAM development mission in 2014.[3] The JAM trinity stands for Jan Dhan-Aadhaar-Mobile and entails the promise of giving every Indian citizen access to a bank account (Jan Dhan[4]), an Aadhaar number and a mobile phone to provide frictionless access to all vital services on the data highway. Digital identity verification via the Aadhaar network should ensure that benefits reach the correct person and that financial transactions are completed electronically via transfer into Aadhaar-enabled bank accounts. This goal of development

through digital access differs from an earlier focus on tangible commodities. The architect of Aadhaar, Nandan Nilekani, traces the progression of the development mission from the governmental promise of the 1970s to provide all Indians with "bread, clothing and shelter" (*roti, kapra, makan*) to its focus on universal access to "electricity, roads, water" (*bijli, sadak, pani*) in the 1990s (Nilekani and Shah 2015, 284; see also Singh 2019). While these commodities continue to be unevenly available – marking the typical divides between urban and rural, rich and poor – with the JAM trinity, the government prioritises investment in infrastructure as paving the way for development. Inspiration comes not least from the global enthusiasm for ICT4D (Information and Communication Technology for Development), celebrated as a means to leapfrog developing countries into the twenty-first century (Mazzarella 2010).

Along with easing access for citizens to information and services and stalling corruption, the Aadhaar infrastructure promises an ecosystem for generating more accurate statistics as the basis for better policies. In India, up-to-date information about the population is notoriously difficult to come by. While the National Population Register (NPR) accounts for all citizens, it is not linked to a national ID system. Thus, once aggregated, statistical knowledge of the Indian population cannot be linked to individual persons. This makes running targeted interventions difficult. In order to identify eligible beneficiaries, most welfare projects depend on periodically conducted Below the Poverty Line surveys, which are criticised for their inaccuracy and are usually outdated (Jha & Srinivasan 2001; Mane 2006). In response, service agencies complement the information from such surveys by conducting additional on-the-spot inspection tours (see for example Ghertner 2010; Rao 2019a, 2019b). These procedures are tedious, time-consuming and expensive. Biometric technology and big-data processing (Khera, this volume) promise to generate real-time data that map an entire population while still allowing agencies to disaggregate statistics and trace back through the maze of data in order to see the position of individuals within various systems.

Based on the hypothetical assumption about the traceability of all transactions, the relationship between citizens and the state is reimagined as a series of fully automated transactions that will measure, control and map citizens. Comprehensive mechanisms for automated identification seem to eliminate challenges of unknowing citizens, manipulating intermediaries, or corrupt bureaucrats, and they promise to provide the basis for the configuration of an optimal service ecosystem for the performance of individualised self-care. The new fascination for traceability pushes inclusive systems in the direction of a growing obsession with fraud and leakage and prioritises the collection of information about service delivery over the quality of social protection. This trend has been evident in a number of places, foremost among them South Africa (Breckenridge 2005; Donovan 2015) and the US (Magnet 2011). It is part of a propensity of neoliberal statecraft to prioritise weeding out inefficiencies, thus driving policy towards a focus on surveillance and audit.

Aadhaar is a building block of this surveillance culture. This becomes apparent when considering the perspective of users, who experience Aadhaar as adding another layer of bureaucracy to already complex application processes. As a surveillance technology, demand for a functioning biometric ID pushes service culture in the direction of normalising suspicion as a default position of a new securityscape. Although Aadhaar enrolment remains voluntary, many essential services mandate the submission of a valid Aadhaar number. Concerns over surveillance and data security aside, biometric identity verification is haunted by multiple challenges that create uneven access to services. While these tend to reinforce traditional social divisions of class and caste, there are also surprising new instances of empowerment and discrimination (Rao and Jacobson 2018; Rao 2019a). In the following section, I spell out indicative findings from qualitative studies about typical challenges that block people from receiving or using an Aadhaar number and thus prevent their seamless access to services.

Practical challenges of living with Aadhaar

Identity verification via the Aadhaar network is seamless and easy, as a leading employee at the UIDAI demonstrates before my eyes. He keys his Aadhaar number into the online portal and then presses his index finger into the fingerprint reader that is attached to his computer. Within seconds he receives a response from the data processing unit in Bangalore that shows up as a green signal on the screen, confirming that this is indeed his number. We repeat the experiment with my finger and are presented with a red signal that indicates an identification failure. "Would this work everywhere in India and at all times?" the bureaucrat marvels in the tone of a sales pitch. Having conducted research among urban squatters for many years, I remained sceptical. What happens when the electricity fails, servers are down, and fingers are damaged from daily labour? How do semi-literate citizens access English-language digital portals, and would their cheap smartphones reliably support the new services? Schol-

arship on rolling out and using Aadhaar illustrates the extensive human labour required to make apparently automated processes work.

So far, there is a dearth of large-scale quantitative studies about the social impact of Aadhaar. The urgent need for such studies cannot be overstated, considering that access to most welfare programs and many public services today requires submission of valid Aadhaar numbers for all applicants, including vulnerable citizens like children or the elderly. Indicative results from a growing number of qualitative studies illuminate the extensive scope for exclusion errors (for an updated list of references see Cohen 2019a). By way of example, I will summarise below three pertinent issues arising from the failure of body readings, the struggle to receive entitlements, and the lack of digital literacy. All three examples show that to get and update an Aadhaar number to access welfare or operate bank accounts, citizens rely heavily on intermediaries, leading to what Bidisha Chaudhuri (2019) calls a "paradox of intermediation". While automated identification procedures are celebrated as curtailing corruption by circumventing human mediation, the practice of issuing, seeding[5]and using the Aadhaar number creates a completely new service class (Khera 2017), is conditioned on old patronage networks (Baxi 2019; Rao 2013), and opens up novel business opportunities for intermediaries in the formal and informal economy (Chaudhuri 2019). As Aadhaar becomes embedded in everyday life, it undergoes a process of subversion from above and below (Rao and Graham Greenleaf 2013).

Body readings

India is the first country to scale up biometric technology to be used by more than one billion people. Among the countless technical questions were concerns about recognition errors caused by current biometric technology. In this regard, the quality of fingerprints in India sparked debate. Dr. R. Ramakumar, an expert witness before the Lok Sabha Finance Committee, stated during an initial debate that "it has been proven again and again that in the Indian environment the failure to enrol with fingerprints is as high as 15% due to the prevalence of a huge population dependent on manual labour" (Standing Committee on Finance 2011: 11). Recognising issues with the reliability of digital fingerprints, engineers decided to include scans of irises in the database to reduce the margin of error for false positives during the de-duplication process to a negligible 0.25%.[6] However, these precautions against *inclusion* errors, while they protect service providers from fraud, do not protect citizens against a host of *exclusion* errors. Individual stories vary greatly.

A farmer spoke about the inability to access his Aadhaar-enabled bank account after harvest season, when his fingers bore the effects of manual work in the fields. Students at an elite university complained about not being able to enrol for class properly in winter when their fingers are stiff. Aadhaar enrollers working in poor neighbourhoods complained that they were unable to meet their daily enrolment quota because too many people failed the fingerprinting test, including most people over forty-five, masons, painters, and washerpeople. A retired veteran who had fought for India in several wars against Pakistan could not believe that his privileges as a patriot and war hero ended the day Aadhaar was introduced. Working in the army had left him with compromised fingerprints, and he failed to complete Aadhaar enrolment after the pension office had made submission of an Aadhaar number mandatory. Because he had no number, they took him off the ledger. When asked about the usefulness of fingerprinting for clocking in and out, the manager of a leading newspaper shrugged his shoulders: "About ten percent of our employees are unable to provide fingerprints. We give them smart cards as substitutes," he said pragmatically.

Rather than being passive victims of these failures, people seek mediation instead. From above, policy makers introduce grievance mechanisms or change rules to create alternatives; while from below, users invent new bodily routines to save themselves from recognition errors (Rao 2019b). People look after their fingers, maintaining, cleaning and protecting them. When decorating their hands with Henna on ritual occasion, they leave one fingertip untouched, knowing that on Monday they will have to perform their usual biometric clocking-in routine. People stop using creams or oil and exercise caution while cooking. Clients also fight for alternative means of identification. For example, many welfare projects today permit relatives to fingerprint on behalf of their unbiometrifiable kin, such as children and the elderly. Sometimes, documents, databases or personal witnesses can identify the person and cause the system to be overruled. In view of living bodies and fallible machines, the making of social justice necessarily depends on human subjects who adjudicate the multiple instances of "reject" to distinguish the legitimate rejection from the obvious mistake.

These on-the-ground experiences undermine the dominant biometric imaginary that posits the universal applicability of biometric identity verification. Recent scholarship has begun to analyse systemic recognition errors and the structural violence of automated recognition produces (Pugliese 2009; Ziewitz 2016). In India, fingerprinting is particularly precarious for the working class, although there is less knowl-

edge about the practicality of iris scanning. Given the current technology, for users in India, biometric identification is an anxious activity that entails presenting their fingers or eyes and hoping that machines will recognise them. When identification fails, people must search for alternatives, and exclusion errors tend to be high when these are denied. In routine settings, no statistics about such errors are available, since machines are unable to extract the "false negative" from the list of identification failures. Building back-up systems or providing alternative means of identity verification require human mediation and undermine the idealised notion that automated identity verification is free from bias.

Recognition of rights

By designing Aadhaar as a universal identity system, its architects attempted to make enrolment as easy as possible. Proof of identity and proof of address are sufficient to enrol. If no written evidence is available, an introducer can act as witness and officially confirm a person's identity. With such a low entry threshold, the project was able to reach 1.2 billion enrolments in less than ten years. The decision to provide easy access comes at the cost of de-linking the issuing of Aadhaar numbers from any assurance of rights or status, including that of citizenship. Thus, the Aadhaar number is rarely sufficient to register for a service. For most transactions, identity verification must be combined with additional procedures that allow service providers to generate the relevant social profile of their clients. A loan application requires evidence of personal credit history, applications for bank accounts need evidence of a local address, and a passport office will ask for proof of citizenship. In the welfare context, the demand for Aadhaar has added another layer of bureaucracy to already complicated procedures, because clients without an Aadhaar number and those unable to verify their identity on the spot, usually via fingerprint, are more and more often excluded. In the meantime, applicants continue to be harassed for documents to prove their income and evidence that they are living permanently within the constituency in which they are applying for welfare. An address on the Aadhaar letter is insufficient, since it could have changed and, to make matters worse, an address registered with the Aadhaar authorities can become a serious obstacle if it differs from the address at which people are currently residing and applying for a benefit. The exclusions from the public distribution system on account of Aadhaar are particularly well documented (Chaudhuri 2019; Dèrez et al. 2017; Masiero 2017; Rao 2018).

People with a valid ration card lost their privilege when Aadhaar became mandatory and subsequently were only able to restore it for family members who overcame all obstacles to actually receive an Aadhaar number. Today, in some parts of India, real-time authentication, which requires both electricity and an internet connection, is mandatory every time a client purchases subsidised food at fair-price shops. But because such shops are often in locations that have sporadic access to electricity and poor internet access, Bidisha Chaudhuri found ration shop owners subverting the procedure to be able to provide regular access to rations, for example by divorcing the processes of identity verification and grain distribution. Especially in rural settings, identity verification was accomplished outside the shop on a free day at one of the few locations that had a signal, such as the rooftop of a temple. People who had verified their identity were given a slip of paper that could later be used by any random person to collect rations. The example shows what has been observed in many cases across India: aligning infrastructures that allow digital processes to work requires an entrepreneurial spirit. Intermediaries, brokers, shopkeepers or patrons align things in ways that allow automated processes to work in countries with patchy infrastructure. They are the human infrastructure that creates the necessary connectivity, which in the case of Aadhaar-enabled services is a precondition for access to social rights.

Digital literacy

According to the vision formulated for "Digital India", the new technology will empower citizens by improving connectivity, increasing the number of e-services, the volume of e-commerce, and providing job opportunities in the digital economy.[7] To this end, the National Institute of Electronics & Information Technology offers basic courses in computer concepts and skills.[8] This state-funded initiative is complemented by the activities of countless NGOs that help people to train in reading, writing, using computers, operating portals, and handling smartphones. This work is embedded in a complex social environment that poses multiple hurdles to using digitally augmented services. Digital literacy then refers not just to knowing how to use a computer or smartphone, but when to use it and when to speak to a person instead, understanding the network of institutions concerned with a project, and speaking confidently to authorities to receive help when things go wrong or are not transparent. An example can best illustrate these complications.

I met Lata[9] in March 2016, when I heard her complain that she had been waiting for more than six months to receive her National Food Security (NFS) card. After I told her about the tracking function of

digital systems, she requested my help and we went to a cybercafe to check the English-language homepage. Using her Aadhaar number, it was easy to find Lata's application. The system confirmed that her NFS application had been approved and the card dispatched. Lata was overjoyed, but she was puzzled about the whereabouts of her card. Where was it? Why had it not reached her? To find out, she took the bus the next day to the ration office 20 km away, where the officer traced her application using the same online system and confirmed that the card should have reached her by post. There was nothing he could do. However, he wanted to be helpful and thus searched for the postal tracking number and wrote it down for her so that she could check with the central post office, which she did the next day. The postal employee regretted that he could not say what had happened to the envelope with this tracking number, and then helpfully suggested that she could substitute the card with a printout of the online approval. Such a printout is a valid document, he reassured her. When I visited Lata a few days later, she reported on all these events, and because I realised that she had no idea how to print the e-document, I accompanied her once more to the cybercafe to produce what is called an eRation card. I remember Lata staring at the flimsy piece of paper with disdain. It did not look like a proper card, and she predicted that the shopkeeper would turn her away. She was right. The ration shop owner simply said: "This is not a ration card. I will receive grains for you only when you have the proper card." (Rao 2018)

The analysis of this scene offers a glimpse of what digital literacy entails. Lata knows no English and cannot operate a computer. Moreover, without step-by-step instructions, she has no idea how to utilise the given information. The case was worse for those clients who were informed that their application had been rejected or was stalled or delayed. Such messages come without explanation. In this situation, travelling to a government office is the only option. Here, marginalised people find it hard to talk to bureaucrats, who might be dismissive of poor people, might themselves struggle with the computer system, or might demand an unofficial "service fee". People who can afford it will use brokers to navigate state institutions and perform the multiple tasks of reading, operating computers, locating offices, finding authorities, knowing what to say and how to speak in a public place, and following up on the issue.

Conclusion

Aadhaar fuels fantasies about the making of an efficient, objective and coherent form of rule. It is a convenient point of reference for imagining a regime of seamless governance that will produce functioning institutions and docile citizens. However, as a socio-technical infrastructure, Aadhaar is embedded in complex social contexts and when used requires multiple adaptions and improvisations. Critical social science has long known that the impacts of a new technology are always going to be liberating and constraining. The Aadhaar network unfolds its consequences in a host of different socioeconomic spaces, which are particularly numerous in a heterogeneous society with fractures along the lines of class, caste, education, religion, and ideology. As new connections are forged, Aadhaar unravels its potential to create empowerment and encourage alterative pathways of learning, while also producing frustrating breakdowns, scary surveillance, and intolerable exclusions.

Here I propose the value of broad contextualisation. It helps to illuminate some of the links between, on the one hand, practices through which an actually existing infrastructure is created and, on the other, ideologies of rule, state–market relations, and durable cultural habits and the body-object relations they mediate. In India, the belief in the benevolence of the market and liberal ideals of self-care, coupled with a long-held commitment to providing social security through collective forms of welfare, creates a desire for complex systems that allow a fine-grained understanding of citizens' economic needs and secure ways to identify the needy. The ideal regime would provide optimal care at the lowest possible cost and, in the techno-optimist world of Aadhaar, is premised on long-term investment in expensive infrastructure, efficient implementation through well-functioning institutions, and compliant subjects.

As Aadhaar becomes an integral part of bureaucratic procedures, typical issues with basic infrastructure shape the structure of biometric governance. Harsh lives create worn bodies, and uneven access to formal education, gaps in electricity supply, and patchy computer networks create innumerable interruptions. The multiple breakdowns are overcome by improvisations, primarily by people who mediate between citizens and service institutions. Social workers, brokers, street-level bureaucrats, patrons, and educated citizens follow up procedures, communicate about the urgent need for rule changes, or demand exceptions. An understanding of Aadhaar as a social technology requires attention to these details of the social process and how they are shaped by imaginations of an ideal society. Then Aadhaar appears not as a unitary and stable object but as an intervention at the beginning of an open-ended process that is shaped by spending priorities, power relations, and ideology within a political economy.

Endnotes

1 The most recent iteration of these goals is called "Sustainable Development Goals" and follows the earlier formulation of Millennium Development Goals (for an explanation see https://www.un.org/sustainabledevelopment/development-agenda/, accessed on 21.08.2019).
2 See https://sustainabledevelopment.un.org/sdg16, accessed on 23.05.2018.
3 Mishra, Asit Ranjan 2016. India has started linking Jan Dhan scheme, Aadhaar and mobile numbers: Arun Jaitley, live mint, 02 Apr 2016, available at https://www.livemint.com/Politics/PRmaclHkzL6fGJEUlVLo3H/India-has-started-linking-Jan-Dhan-scheme-Aadhaar-and-mobil.html, accessed on 15.08.2019.
4 The project – with the full name Pradhan Mantri Jan Dhan Yojana (PMJDY) – is designed as a program in financial inclusion. It eases the access of (poor) adults in India (20 to 65-year-olds) to bank accounts by introducing so called "no-frills" accounts for which the know your customer (KYC) procedures are relaxed. The accounts require no minimal balance and can hold up to Rs 10,000 (US$ 149).
5 Seeding is a technical term used to describe the process by which persons' records or bank accounts gets linked to their respective Aadhaar numbers.
6 Verbal communication during an interview with Ram Sewak Sharma (09.03.2015).
7 https://digitalindia.gov.in/, accessed on 18.08.2019.
8 http://beta.nielit.gov.in/content/digital-literacy-courses, accessed on 18.08.2019.
9 I am using a pseudonym to protect the identity of the informant.

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