Identifying 1.4 Billion Indians Biometrically? Corporate World, State, and Civil Society

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Abstract

In 2009, India embarked on a scheme for the biometric identification of its people. This project was conceived by IT companies based in Bengaluru. The programme's main architect, Nandan Nilekani, was in fact the head of one of these firms. The idea behind the project was to use digital technology—and the data it enables to collect—for economic ends. But to register the entire Indian population, the State had to be persuaded to be involved in the project, later named as "Aadhaar." The rationale that secured the government's engagement was mostly financial: using Aadhaar would help disburse aid to the poor while minimizing "leakages" caused by corruption and duplicates among beneficiaries. Yet possessing an Aadhaar number gradually became necessary for a number of other things, too, including tax payment. When approached to rule on this matter, the Supreme Court of India dragged its feet and did not seek to decisively protect people's privacy. The law eventually passed—five years later—did not protect it either. As for the avowed aim of the scheme itself, Aadhaar did not improve the quality of the services rendered to the poor and ushered rather a retrenchment in social policies. Its economic impact, too, remains to be proven. It could be either the slow development of a data-driven economy or just another bubble.

Keywords: digital India, personal identification, social policy, capitalism, IT industry, public policy, Aadhaar in India

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¿Cómo identificar biométricamente a 1.400 millones de indios? Mundo corporativo, Estado y sociedad civil

Resumen

En 2009, la India se embarcó en un plan para la identificación biométrica de su población. Este proyecto fue concebido por empresas de tecnología de la información con sede en Bengaluru. El principal arquitecto del programa, Nandan Nilekani, era de hecho el director de una de estas empresas. La idea detrás del proyecto era utilizar la tecnología digital (y los datos que permite recopilar) con fines económicos. Pero para registrar a toda la población india, había que convencer al Estado de que participara en el proyecto, que más tarde se bautizó como "Aadhaar". La lógica que aseguró la participación del gobierno fue principalmente financiera: el uso de Aadhaar ayudaría a desembolsar la ayuda a los pobres y minimizaría las "fugas" causadas por la corrupción y los duplicados entre los beneficiarios. Sin embargo, poseer un número Aadhaar se convirtió gradualmente en necesario también para una serie de otras cosas, incluido el pago de impuestos. Cuando se le pidió que se pronunciara sobre este asunto, el Tribunal Supremo de la India se mostró reticente y no intentó proteger decisivamente la privacidad de las personas. La ley que finalmente se aprobó, cinco años después, tampoco la protegió. En cuanto al objetivo declarado del programa en sí, Aadhaar no mejoró la calidad de los servicios prestados a los pobres y más bien marcó el comienzo de una reducción de las políticas sociales. Su impacto económico también está por demostrar. Podría deberse al lento desarrollo de una economía basada en datos o simplemente a otra burbuja.

Palabras clave: India digital, identificación personal, política social, capitalismo, industria de TI, política pública, Aadhaar en India

通过生物特征识别14亿印度人？企业界、国家与公民社会

摘要

2009年，印度开始实施一项针对国民的生物特征识别计划。该计划由班加罗尔的IT公司构思。该计划的主要设计者Nandan Nilekani实际上是其中一家公司的负责人。该计划的想法是利用数字技术及其能够收集的数据来实现经济目的。但

要登记整个印度人口，则必须说服国家参与该计划，该计划后来被命名为“Aadhaar”。确保政府参与的理由主要是财务方面的：使用Aadhaar将有助于向穷人发放援助，同时最大限度地减少由腐败造成的“泄漏”和受益人的重复。然而，拥有Aadhaar号码也逐渐成为许多其他事情的必要条件，包括纳税。当印度最高法院被要求就此事作出裁决时，其表现出犹豫不决，并且没有果断保护人们的隐私。五年后最终通过的法律也没有保护隐私。至于该计划本身宣称的目标，Aadhaar并没有提高向穷人提供的服务质量，反而导致了社会政策的缩减。其经济影响也有待证实。它可能是数据驱动经济的缓慢发展，也可能只是另一个泡沫。

关键词：数字印度，个人身份识别，社会政策，资本主义，IT行业，公共政策，印度的Aadhaar

Digital technology has today become entrenched globally like a new wave of innovations (in the Schumpeterian sense), much as the steam engine or electricity did in their times. Some hail it, like the World Bank which heralds budding “digital dividends,” even though its attainment still encounters many obstacles (World Bank 2016). Others deplore it, seeing in it a new phase of what is called surveillance capitalism, marked by the expropriation of private experience and an unprecedented asymmetry of knowledge, wealth and power (Zuboff 2019). At the heart of this controversy lies the status of personal data on which this new economy is based: third party access to these data may turn out to flout privacy (Rule and Greenleaf 2008).

Such technology can be developed only if the people are individually identified through various means; facial recognition as done in China, or “e-state” as practised in Estonia being among the best known.

Our interest here is one such digital tool, named “Aadhaar” and aiming to biometrically identify the entire Indian population, i.e., in 2023 around 1.43 billion people, one sixth of the world’s population and slightly larger than China’s (*The Economic Times* 2023). Around 1.36 billion, i.e., 95 per cent of them, would have been enrolled at that time and the technology was being exported to many countries in the Global South while it knocked at the doors of the Global North (UIDAI 2024; *Le Monde.fr* 2024). The scheme was launched in 2009 under the Unique ID Authority of India (UIDAI), a governmental body chaired by Nandan Nilekani, co-founder of Infosys, a world-class IT consulting firm. As stated by the UIDAI, “Aadhaar translates into ‘foundation’ or ‘support.’ This word is present across most Indian languages

and can therefore be used in branding and communication of the UIDAI programme across the country" (UIDAI 2010b, 58). Technically speaking however, Aadhaar is just a digital ID, as it will be called in the present text.

From a technical point of view, the system is as follows. During the initial enrolment, people provide their biometrics—ten fingerprints, two irises, and a photo of the face—and "demographics," i.e., some civil status information—name, gender, date of birth, address, and optionally phone number and email. The data are collected at small kiosks, for instance in the hall of a post office. The data are then sent to the Central Identities Data Repository (CIDR), located on the Indian territory. There, algorithms run checks for duplication and generate a random 12-digit number. Thereafter, the applicant would receive a letter, also meant to be a card, bearing their name, picture and identification number. At the other end, when people need to prove their identity, they can authenticate using various procedures, the most important consisting in providing one's number and one's fingerprints. It is termed "Aadhaar-Based Biometric Authentication" (ABBA, an acronym that also conveniently means "father" in various Indian languages and might also refer to the pop music group; communication matters). Other, more or less reliable procedures also exist, like just showing one's card or receiving a One-Time Password (OTP) on one's phone to authenticate. The UIDAI then responds, either with a "yes/no" answer or by also providing the civil status information, an operation known as electronic Know-Your-Customer (eKYC), the KYC becoming more and more a stringent legal obligation for financial institutions.

This digital identification can only be understood when placed in a broader context. Reflecting the name of the file, Aadhaar lays the foundation for creating exhaustive files on a large scale. It is of enormous interest to a variety of groups simultaneously. It is a dream for a scientist due to the sum of cumulable knowledge; for a merchant, due to monetisation of personal data, as companies like Google and Facebook do; and for politicians due to the surveillance and control of people it enables the State to conduct. Population mapping becomes a faithful and exhaustive representation of this dream. It can, however, also become a nightmare. One could even say that the map is no longer separate from the territory—it becomes the territory's virtual representation.

Taking Aadhaar in its literal sense, this article theorises that this mechanism paves the way for a twofold recasting of the Indian State. First, in the economic sphere, where it contributes to "valorising" the population in a mercantilist sense as a source of wealth for the nation and making it a vital driver of the country's economic growth. Next, in a clearly more statist perspective, this mechanism authorises widespread surveillance. Developments over the course of time suggest that Aadhaar has moved on from the first to the second perspective. Initially rooted in the mercantile sphere under a coalition government led by the Indi-

an National Congress party, it gradually changed, particularly after the Hindu nationalists assumed power in 2014, to become a mechanism for surveilling the people (for an overall analysis of this second phase, see Jaffrelot 2021).

The Project

The project was conceived initially by the corporate sector, particularly the IT sector, but was subsequently recast in order to make it acceptable for the State.

An IT Sector Initiative

For information and communication technologies, identifying users is a crucial matter (Solove 2004; Schneier 2015; O'Neil 2016). This is quite apparent on e-commerce sites. Since the invention of permanent identifiers or login credentials, euphemised as "cookies," sellers can track who has visited or revisits their website. This enables them to adjust prices based on what they deduce clients are willing to pay, arming them with the means to make the consumer spend more than they had intended, as illustrated in the well-known case of air ticket prices, which rise with each visit that a particular user makes on the seller's website. This identification of individuals has also made online ads spike ("when ads started following you around the web," as B. Schneier put it), which is a vital source of income.

However, beyond the relatively well-charted context of the Internet and developed countries, the identification of individuals is not always reliable. Certain information does, in principle, help identify a person, such as their name, date of birth, place of residence, etc. or a combination of all these. But these elements are not always reliable, particularly for sizeable and/or vulnerable populations. Thus, in India, the penetration of personal computers is relatively low; many people bear the same name, which can, moreover, be spelt differently in different identity documents of the same person; their date of birth may be uncertain (often, 1st January is the assigned date when only the year of birth is known); the address may change, particularly for migrant workers, who are also of a sizeable number. In such a context, the statistical reliability of data mining is in free fall, and with it, the profits of IT companies. In this context, a reliable "unique" identifier based on biometric technology becomes valuable, as it may be the only one capable of guaranteeing the identity of a person, even if they do not use the Internet, bear a very common name, are unaware of their date of birth, and so on.

People's biometric identification, particularly in the South, is promoted by global IT giants through their non-profits, such as Microsoft (Bill & Melinda Gates Foundation) and eBay (Omidyar Network, Pierre Omidyar being the founder of eBay), which have forged ties with the World Bank on these matters. The World Bank, in fact, promotes digital technology, such as biometric identification, through various institutions it hosts but which are essentially financed by Microsoft, Omidyar or other IT companies. Notable examples are Identification for Development (ID4D).

In India, a crucial actor of the movement for the biometric identification of people is Nandan Nilekani. In 2009, he was appointed as the first chairman of UIDAI. In the 2010 Bill, which aimed at conferring a legal foundation on the programme, the chapter on the agency is entirely structured on his person. Who is Nandan Nilekani?

Nandan Nilekani was born in a Brahmin family 1955 in Bengaluru, the capital of Karnataka. An engineer from the prestigious IIT-Bombay, he worked for three years in an IT services firm in this city before co-founding Infosys in 1981 with six other engineers. Two years later, it would be one of the first software companies to set up operations in Bengaluru, which would go on to become India's Silicon Valley. Infosys exemplifies the Indian firms that made the most of economic globalisation. An 8-billion-dollar sector in 2000, and 64 billion dollars in 2008, it saw an annual growth of 40 per cent over this entire period. Infosys reported a turnover of 1.6 million in 1991, 100 million in 1999, around 1 billion in 2003, 3 billion in 2007, their clientele including Sainsbury and Airbus. Nilekani was the CEO of Infosys from 2002 to 2007—a phase during which the company expanded rapidly. In 2003, *Fortune* magazine named him Asia's Businessman of the Year. In 2006 and 2009, *Time* magazine ranked him among the 100 most influential people in the world.

In 2008, the Great Recession affected the whole world, starting with the United States. Infosys and the IT consulting sector in general saw their markets closing up. Numerous Non-Resident Indians (NRI), employed in the United States returned to India, where the job market remained relatively less affected. The same year, a year after having ceased to serve as CEO of Infosys, Nilekani published a book, *Imagining India*, a sort of road map for the country, displaying an intermediate ideology between classical liberalism (*laissez-faire* the firms on their markets) and neoliberalism (the state shall build markets for the firms) (on this distinction, see for instance Dardot and Laval 2009). The book, written with the help of the usual ghostwriter of Infosys' chairmen, looks like the translation into a proposal for the UPA government of what Infosys could hope to gain from India in 2008, as determined by the impact / feasibility matrix commonly used by consulting firms (see for instance Covey 1989). In this matrix, the digital ID is deemed to be a "quick win" compared to other endeavours. The chapter on IT in India is very close to what would be set up for Aadhaar.

While the Aadhaar project was birthed in the private sector, the State alone could make the investment needed for carrying it out. How was the State to be convinced?

Financiers' Overwhelming Influence within the State

To understand the rationale behind the Indian State's adoption of a digital identity project, one must go back to the political context of the times.

Faithful to the Congress' liberal and socio-democratic line, the Man-

mohan Singh government, which ruled India from 2004 to 2014, endeavoured to pursue both economic liberalisation and a policy of redistribution to the poor. The latter aim translated into passing several social welfare laws: Right to Information Act, 2005, a weapon to combat corruption; the National Rural Employment Guarantee Act, (NREGA) 2005, guaranteeing 100 days of minimum wages to each rural household; and the National Food Security Act (NFSA), 2013, for the provision of food grains, based on socio-economic criteria. These policies drew scathing criticism from economic milieus—they would be a drain on the state budget. One major criticism had to do with leakages in social benefit schemes.

A preliminary response to these problems was floated: why not replace the in-kind distribution systems, which calls for numerous middlemen, with a direct transfer of benefits in cash? This features in the UPA's[1] 2004 election manifesto.

Congress leaders as well as high-ranked Finance ministry officials supported the project. Pranab Mukherjee, an influential member of the Congress and Finance minister during the UIDAI's birth (2009–2012), is said to have met Nilekani shortly after his nomination in 2009 and sealed an alliance with him. Thus, the State's financial arm might have seen digital identification as a practical solution for resolving long-standing problems, such as leakages in transferring public funds.

The heavy influence of financiers can also be gauged from their project edging out rival ones on identification of individuals. In 2000, following the 1999 Kargil War, during which Pakistanis infiltrated this area of India-administered Kashmir and blended with the people living along the border, the government had asked another private sector major, Tata Consultancy Services (TCS), to bring out a Multipurpose National Identity Card (MNIC) to facilitate ID checks. The enterprise was overseen by the minister of Home Affairs, L.K. Advani, and a pilot project was carried out with 3 million people spread over twelve states. The major difference with UID lay in the fact that the cardholder's information was stored in an electronic chip inserted in the card, which potentially enabled its holder to always be the custodian of this information.

However, at the same time the financiers supported initiatives in a different vein, as that in the UPA's Common Minimum Programme, the Unique ID for families that were below the poverty line (BPL families), so as to better target them. This project was spearheaded by the ministry of Information Technology and Communication, with the technical assistance of the Planning Commission. The direct competitor of Infosys in the IT sector, Wipro, also based in Bengaluru and even larger than Infosys, offered its consultancy services. In August 2007, this group, which also included the Ministry of Home Affairs, proposed to establish a "UID Authority."

Eventually, the security wing of the state tolerated the digital ID as an intermediate step to fulfill its own projects.

Other members of the Congress, particularly its Vice-President, Rahul Gandhi, also promoted digital identification for other reasons. He wished to make the delivery of social welfare schemes more efficient, in a perspective combining the technophile modernism inherited from Rajiv Gandhi, or even Nehru, and the desire to plug corruption. In fact, Rahul Gandhi pushed for Nilekani's appointment in the UPA government in 2009.

Facing all these simultaneous pressures, Manmohan Singh accepted all the conditions imposed by the businessman who was yet to become a member of the Congress (a party on whose ticket he contested only in the 2014 elections): directly reporting to the Prime minister (through the Planning Commission), with the rank of a minister for himself (an exception in practice as, in principle, only the Vice-Chairman of the Commission had this privilege), an official announcement (on 25th June 2009) specifying that he did not demand an entry in the government but that the latter "invited" him, and an assurance that passing the law to solidify the UIDAI would be a priority on the coalition's agenda (Aiyar 2017, 16–22).

Registering 1.4 Billion Persons?

Once the UIDAI was established, executing the project that would become Aadhaar required three steps: finding allies in the administration as well as the corporate world; registering a maximum number of people, ideally all 1.4 billion of the population; overcoming objections.

Finding Allies

The first allies necessary for successfully concluding an action under the State are those who are its daily embodiment—the bureaucrats. This alliance was a particularly delicate matter for a project whose driving force, Nilekani, was a total stranger to the structures of the State. But he found relays amid high-ranked officials the UIDAI engaged. Foremost among them was R.S. Sharma, an Indian Administrative Service officer with an atypical academic background, being an IIT-Kanpur graduate (1978) and having a Master in Computer Science from University of California, Riverside (2002). A significant number of Aadhaar's torchbearers were IIT alumni, like Nilekani. They shared an engineering culture and belonged to the same circles. Before being inducted at UIDAI, R.S. Sharma had served in various positions at the Ministry of Finance, notably interfacing with the World Bank. He drew on his IT expertise when posted in Bihar. Thus, he is credited with having solved 22 criminal cases in one month in 1986 thanks to an algorithm crossing individuals in possession of firearms with police records. Often, he would run afoul of the local politicians, earning him frequent and abrupt transfers. In 2009, Nandan Nilekani recruited him for the post of CEO of the nascent UIDAI.

The division of labour between the chairman and the director general supposedly matched that between external and internal functions. As Nilekani briefed Sharma: "[…] you will execute the project, I have to manage

the ecosystem" (Aiyar 2017, 26). To be honest, the UIDAI was itself a part of Nilekani's personal ecosystem and R.S. Sharma was instrumental when dealing with the high-level administrations.

A market model was extensively used *vis-à-vis* Indian administrations too. Hence, the latter became the second major category of allies supporting the project. Encompassing both central and state government administrations, they were necessary allies. They alone could push Indian citizens to register in the Aadhaar database, as India's federalism confers crucial powers on the states for the execution of social welfare policies (Kennedy 2014).

Central and state administrations were also allies with an ulterior motive: the potential for filing away information on the population opened up by the project, be it sectoral (for central government administrations) or geographic (for that of the states)—created tempting possibilities in terms of economising on public funds, better targeting their policies or even voters. Nilekani and Sharma thus actively prospected bureaucrats between July 2009 and February 2010: ministries of Petroleum, Labour, External Affairs, Rural Development, Department of Tax and Revenue, Post, Shipping, Aviation, Army, etc. as well as the chief ministers of all the states or their representatives.

Starting from sixteen pre-existing fields of the Home ministry, which were the basis for consultations with the ministers and the states (mainly containing civil status, address, photo and fingerprints), "many departments in ministries wanted UIDAI to expand the data field. They wanted data on blood group, disability, religion, ethnicity, income-related information, and so on and so forth. The tendency of governments, driven by the 'it may be useful' line of thinking, is to ask for and collect data that may or may not be necessarily germane to the objective […]. If some agency is collecting data, add to the list" (Aiyar 2017, 37). However, these requests could slow down the project's implementation. Therefore, the IT consultant offered the Indian administrations a tailor-made service: they could develop, if they so wished, their own database with all the possible fields in addition to those mandatory under Aadhaar, the only ones that would be initially collected. The overall project was termed Know Your Resident + (KYR+), a facility lifted from the KYC (Know Your Customer) offered to companies. In exchange, the administrations agreed to become "registrars," i.e., to enroll people within the scheme.

The third support to Aadhaar in its infancy were the private companies, which integrated successfully in the modus operandum of sub-contracting paid on piece rate, as indicated by Sharma: "The government was not able to do the work [required by Aadhaar]. So we used the private sector also. […] We created incentives for the private sector, by paying well" (Sharma 2019).

More specifically, these allies can be divided in three categories.

The first is that of major companies, which like the administrations play the role of registrars. They, too,

hold major client portfolios and are thus very interesting relays for registering huge volumes of population—and making a profit out of it (more on this later). The UIDAI made them sign the same type of contracts as the administrations. A perusal of the documents shows that these essentially involved big banks.

Thereafter, came the enrolling agencies, i.e., the sub-contractors of the registrars. At the other end of the chain, the former are, in fact, those who actually carry out the physical operation of registration, with specifications laid down by the UIDAI.

Lastly, UIDAI mobilised a number of individuals interested in this adventure, either against payments up front, or on a voluntary basis with prospects of future gains. First of all, UIDAI contracted players from various sectors; for example, it floated a call to tender for identifying a designer to come up with a logo that would attract enrolment. Next, it recruited IT sector executives—some of them returnees from the United States due to the 2008 financial crisis. Many of them worked on a voluntary basis. David Dupond (an anonymised name, since he wished to remain anonymous), who worked on the digital ID before becoming a consultant at the World Bank, knew a few of them:

> Nilekani is really good, truly brilliant. He brought over all the small engineers, poached them and put them on a plane from Silicon Valley in style and promised them, 'You won't be very well-paid, but we'll make it worth your while' […]. I got the impression that some of them were kind of waiting for the cash-back moment and that they had overlapping interests in private businesses […]. These are people who were involved in the Aadhaar programme at some point and want to generate income today. One sees them everywhere as they gravitate towards [international organisations]: PWC, Ernst & Young, World Bank, and so on. (Dupond 2020)

Once these allies had been mobilised, there remained the toughest part—actually enrolling the entire population.

Biometrically Identifying 1.4 Billion People?

For this, two major issues had to be resolved: technological ones on the one hand, but even more, that of enthusing and exerting pressure on people to make them enrol.

Technological and practical issues

The main aim of the IT companies, it may be recalled, was to irrefutably identify individuals. Their number one problem, as R.S. Sharma explained, came from the fact that "one person can have two identities" (Sharma 2020a). That was why priority was given to "de-duplication," a neologism stemming from programming languages and meaning that the username of an individual would be checked against all the others in the database to ensure that

it did not already exist. We translate it as "singularization."

Therefore, the first task that the UIDAI tackled was to find a satisfactory technology for singularizing a person. To this end, it set up several deliberation committees and takes a few months to take the decisions. Biometrics was finally chosen as it appeared to be the most reliable system. Recording fingerprints—recycled from police identification methods and the old practice of the British (Breckenridge 2014)—was nonetheless insufficient. It was decided that iris scans would be carried out in addition. However, between 1 per cent and 10 per cent of the population remain incorrectly identified, being either not enrolled in the system, or enrolled but not properly recognized when they try to authenticate.

This can appear to be a low percentage; it is accepted by hundreds of commercial applications in numerous countries. But applied to 1.4 billion persons, sometimes as a gatekeeping mechanism to provide basic relief, it means that around 13 million among them will not be recognised, including for getting their basic social rights.

In addition to their biometrics, obtaining reliable information from the enrolled persons on their name, date of birth, residential address (which the UIDAI terms as "demographics") was another major challenge. As R.S. Sharma explains:

> Identity is such a circular process that if you have one identity document, you can always create another one on the basis of the first, but if you don't have any, how do you say that I am X, what proof do you have? How do I prove to you that I am R.S. Sharma? That was a serious problem because many people in this country do not have valid identity documents. People have ration card, for example, these are family documents, so in situations where you do not have any identity paper, how do you create the first one? (Sharma 2020a)

The enrolment operations have been described by ethnographer Tarangini Sriraman, who spoke to *coolies* (porters) at an inter-state bus terminal in Delhi and in two enrolment centres in the north of the city (Sriraman 2018). Through a historical comparison with the Partition period and the issuance of ID cards in the 1990s to slum dwellers, she demonstrates how people saw their rights drastically reduced with the biometric ID. Whereas informal documents and oral statements used to be partially accepted by high-ranking public servants, the new identification programme considerably raised the requirements with regard to proof of identity (PoI) and proof of address (PoA), the two documents that people needed to give the enrolling agencies in addition to their biometrics. For instance, UIDAI refused the *coolies*' union cards during a very long time before shifting its position. Yet these porters are mostly migrants from rural areas, working in the city, where they live in the dor-

mitory of a union, which protects and controls these workers with precarious incomes. This card—for which they already had to prove their credentials by showing their family ties with their village of origin and accepting the rules of collective urban labour—thus organises their identity in this new context. The difficulties they encountered show that the enrolment was not a vast, generously "inclusive" operation as official discourse would have it, but was closer to police controls with the UIDAI drastically questioning all the other systems of belonging and identification.

After enrolment, authentication, too, raised a number of issues. Reading biometric data and linking with the CIDR require electrical devices and internet connectivity. These conditions are not always available, especially in rural areas. Downgraded mode procedures exist, such as temporary storage of data and sending it later once internet connection is available, or disconnection between authentication and the rest of the process. Bidisha Chaudhuri, for instance, narrated how she had seen a complete separation between the authentication process in a ration shop distributing food grains sent through PDS and the actual distribution of the food (Chaudhuri 2019). The shop owner explained that due to the poor internet connection, he was compelled to carry out the authentications from the roof of the building. He would give a paper receipt to the applicants, who could then come to the shop "whenever they wanted" to collect the rations they were owed.

There were other situations, too, that led to the system's failure. Thus, in certain regions of Gujarat, the lack of internet connection led to people being refused food rations (Yadav 2016a). In tribal areas of the same state, the lack of electricity hampered enrolment (Macwan 2020).

Eventually, the lack of electricity, lack of connectivity and authentication failures (the UIDAI declared to the CAG a failure rate of 30 per cent in 2017 and 25 per cent in 2020) deeply impaired the functioning of the system (Khera 2019; GoI 2021).

Security violations: Outlines of a typology

Breaches were detected at three stages of the system: enrolment, authentication, and, above all, data storage (Kodali 2017).

First of all, at the initial enrolment stage, it was observed that fake cards bearing fake numbers were available on the black market at trifling prices: five rupees for a number or a card in the streets of Hyderabad, perhaps lesser for bulk purchases in Delhi or Mumbai. However, these counterfeits would not pass the scrutiny of authentication, so their existence is rather akin to artificial jewellery. On the other hand, more problematic are the abuse of Aadhaar numbers allocated not only to those who should not have received them at all—such as Pakistanis or Bangladeshis who are not really residents of India—but also fictitious entities, which might have been created by opponents of Aadhaar precisely with the aim of showing

the system's vulnerabilities. Thus, cards were issued to animals, to Lord Hanuman (with a date of birth of 1st January 1959), etc. These different cases all show the unreliability of the system. Frauds can equally occur during authentication. A Kanpur gang thus collected the fingerprints of users whose Aadhaar numbers they had stolen to resell the replicas at 5,000 rupees apiece. This matter reveals complicity internal to the Aadhaar system, and the UIDAI ultimately blacklisted nearly 50,000 operators for corrupt practices. Using fingerprints digitised this time on scanners properly speaking, the well-established Axis Bank, on its part, made hundreds of fraudulent authentications without the real Aadhaar cardholder's presence. For this, it sufficed to use the "replay" function of the device.

Further, doubts remain over the integrity of the data recorded. The data is first stored with the enrolling agencies. Some of these agencies thus published online not the biometrics—to which they are not supposed to have access in principle—but their clients' numbers. There are doubts even as to the reliability of the biometric software, which could have backdoors that enable their manufacturers to collect these data. The numbers then pass on to the registrars like the states and the banks, where they are stocked along with a number of other personal information. It is mostly at this stage that so-called confidential data was leaked many times in the 2010s from official websites—whose security was ensured only gradually and uncertainly by the authorities (Madanapalle 2017). Thus, thirteen leaks were discovered in 2017. For instance, the Food and Civil Supplies Department of the Union Territory of Chandigarh had published the Aadhaar data of 490,000 PDS beneficiaries, the state of Jharkhand did the same with that of 150,000 government pensioners, and the ministry of Rural Development published the Aadhaar details of 100 million NREG beneficiaries online. In all, 210 websites linked to public authorities were the source of more or less major leaks (Sinha and Kodali 2017).

It was then that a major limitation of the system came to light: since the Aadhaar Act, 2016, the UIDAI alone is authorised to lodge a complaint when a data breach occurs. This prevents the people whose data have been breached to lodge a complaint by themselves. Worse, this State agency is not legally obliged to inform an individual her/his data are defective, have been leaked or used by a third party. Each time this monopoly was challenged, for example, through Right to Information (RTI), the petitioners were dismissed in the name of "national security"—which confers inordinate privilege on the UIDAI. Especially as, while the UIDAI itself sued several private companies—including Axis Bank, as seen—it has almost never attacked the State despite the lapses mentioned earlier and many others.

Nevertheless, the State expended more energy in covering up the problems than tracking the guilty. The whistle-blowers were, in fact, among its first victims, one of them being arrested for having revealed vulnerabilities in the system. The same kind of pressure was

exerted on the media. When the Punjab-based newspaper, *The Tribune*, carried an expose on anonymous sellers over WhatsApp providing full access to the details of the over 1 billion Aadhaar numbers generated till then, the UIDAI filed a case against the reporter behind the investigation, forcing the Editors' Guild of India to take up cudgels on her behalf (Khaira 2018).

A Micro-political question: How can one get people to enroll?

For the Aadhaar project to succeed, it was indispensable to enrol all Indians. If for any reason, too few people had enrolled, the unique number would not have been used by companies, nor administrations, for whom not enough clients/residents would have been reached, and the State, in turn, would not have been encouraged to invest in the endeavour to enrol people. The promoters of the project needed to find ways to swiftly kick off a virtuous circle.

The first methods employed, borrowed from marketing, were incentivising. In 2009, the agency opened its Demand Generation and Marketing division, headed by Shankar Maruwada. An alumnus of IIT Kharagpur (1994) and IIM Ahmedabad (1996), Maruwada had earlier served in brand management at Proctor and Gamble from 1996 to 2000. He went on to found his own firm in Bengaluru, Marketics, which he headed from 2003 to 2008. UIDAI needed to create a sense of need among the people for having an Aadhaar.

A preliminary outcome of this work in terms of brand image was the transformation of the "UID Project" into "Aadhaar." Its success must be acknowledged as it is under this valorising and Indian tagline that the project would henceforth be known not only in India but all over the world. The homepage of the agency's website would proclaim thereafter, "My foundation, my identification" (*Mera Aadhaar, Meri Pehchaan*), bearing a very positive connotation for an individual's adhesion to the new system. Credit for this discovery is also due to Naman Pugalia, a young member of the team organising focus groups with tribals in the rural areas of Rajasthan (Pugalia 2021). At the end of a focus group, an old man approached him and expressed support for the project, asserting that "identification is the entire foundation of life" (*Pehchaan hi toh jeevan ka aadhaar hai*). Thus, a name spontaneously pronounced by a tribal man was a good shot.

Registrars, in turn, set up mechanisms that would be incentives for enrolment. The ministry of External Affairs, for example, issued passports in record time to citizens who furnished their UID number ("Have Aadhaar? Get Passport in 10 Days," *Times of India*, n.d.). Banks pushed their clients to "link" their bank accounts with the digital ID, threatening to freeze the account if they did not comply.

Vulnerable sections of society were a priority target, given that an Aadhaar card could be regarded as guarantee of one's existence in the eyes of the State, or even as a sign of social recognition. This was often so in the case of Muslims in a period during which they

were frequently targeted by the Hindu nationalist power. As explained by Irfan Engineer, head of an NGO promoting secularism:

> Muslims were very enthusiastic to have Aadhaar in the first place and that's because they're more insecure. Many social activists boycotted taking up Aadhaar. I, however, did not have that luxury, I needed an identity document and if I didn't have any I would be under more suspicion [than the average Indian] (...) because of my name.
>
> [Authors: But this sense of insecurity is more acute in Muslims?]
>
> Yes, it is (...). They were made insecure all the time, their nationality was questioned all the time, and were told to go to Pakistan. They weren't allowed full freedom for their cultural practices. For example, if you're consuming non-veg food then you're advised to go to Pakistan. I've heard it all the time. Aadhaar was seen to partly allay some fears and insecurities and the State was recognising and accepting you as its citizen. (Engineer 2020)

This opinion, as will be seen, has changed.

However, apart from incentives and the marketing push, people also enrolled because, although for a long time it was unclear whether it was optional or mandatory to have this number to access a series of common services, it became *de facto* mandatory to deal with public authorities on many occasions. One of the first steps towards this came through messages from client relations officers or street-level bureaucrats (Lipsky 1980) who would refuse to grant or delay a requested service without an Aadhaar. This was the predicament that Muhammad found himself in (Muhammad 2018). This under-30 lawyer was supposed to close the bank account of a recently deceased family member. The bank employee asked him for his own UID number, which he refused to give. The matter dragged on for a long time until one day at the bank, chancing upon his file, he learnt that special checks had been carried out on him without his knowledge, revealing nothing suspicious about him. Furious about such suspicion, which he attributed to his religion, and wishing to see an end to the long-pending matter, he finally gave his Aadhaar number. The bank account was soon closed thereafter.

If the middle class faces problems in accessing goods (cars, for instance) and services (efficient banking services, telephone connection, etc.) without their Aadhaar number, those from the working class often face refusal for essentials, such as healthcare (the well-heeled see doctors at their private chambers or private hospitals and clinics), as illustrated in Munni's case (Dayal 2018). On 9 February 2018, this young villager turned up at a Gurgaon hospital as she was in labour. Since she was unable to produce an Aadhaar card, the hospital refused to admit her, and she ended up giving birth to her baby in a nearby parking lot.

Muhammad and Munni's cases show that, even if possessing an Aadhaar number is not mandatory, it at least serves to facilitate matters: the temporary denial of service from the person in charge of providing it—as illegal as it may be—has a powerful impact on motivating people to apply for enrolment.

An additional degree of pressure came when possessing an Aadhaar number became a legal obligation. In March 2017, the government required school goers to have an Aadhaar number to be able to avail of midday meals at school. This measure certainly led many parents to enrol their children. Some opponents asked: "Why is the government so bent on registering children on the Aadhaar database, to the extent of jeopardising one of its most important food programmes?" Child malnutrition continuing to be one of India's major ills, the midday meals scheme is vital for addressing it while encouraging the education of children who would otherwise have been quickly put to work in the fields or the workshop by their parents.

In the meantime, a major legal battle had started on this issue between the central government and the Supreme Court. On 23 September 2013, and five other occasions till October 2015 following many cases of social welfare services being denied, the Supreme Court passed interim orders stating that: "No person should suffer for not getting the Aadhaar card in spite of the fact that some authority had issued a circular making it mandatory. But, in practice, the State continued to demand this number to provide social welfare services. Finally, in September 2018, in a long-awaited judgement, the Court decided in a spectacular volte-face that enrolment would be mandatory to avail of certain social rights, and be optional for commercial services (an aspect dealt with in the last part of this volume).

The practical necessity of an Aadhaar number to access a series of services considerably boosted enrolment. The project benefited from the power of big companies and the State's capacity to exert pressure. No Aadhaar, no services or rights, which led to a vigorous rise in enrolment.

Overcoming Opposition

While they proceeded to the enrolment of people, the main target of the project, its promoters had to protect it from its opponents.

Bypassing Parliament

The Parliament took special interest in Aadhaar, a project that could lead to a fundamental reorganisation of public action and have far-reaching consequences on the lives of Indians. N Nilekani had foreseen that action would be necessary on this front, because during his meeting with Manmohan Singh in 2009, he had asked for a law to be passed swiftly to protect the organisation. A Bill was tabled in autumn 2010 in the Rajya Sabha, the Upper Chamber of the Indian Parliament.[2] Its chapter headings are eloquent. After the usual preliminary (Chapter I), the first substantial chapter (Chapter II) focuses on "Aadhaar Numbers," which confirms

that the identifiers are the *raison d'être* of the system, rather than their applications, or the rights that they would help assert. Their use matches what UIDAI does—allocation of a number for biometrics and a yes or no answer to a request for authentication. Article 9 deals with data collected besides biometrics. It does not give a fixed list of these, but only states what the UIDAI may not collect: race, religion, caste, tribe, ethnicity, language, income, and health. In other words, apart from these elements of information, the UIDAI has carte blanche to collect what data may be stored in the CIDR. Moreover, these precautions, which perhaps had to do with ensuring interoperability, were of no use for protecting personal data, because the national identifier is shared with other databases that let various information to be crossed. The Bill was completely silent on this point. Finally, the last article was a retroactive legislative approval for all that the UIDAI had done on the basis of a simple authorisation from the administrative authority.

Stormy debates ensued in Parliament. In December 2011, the Parliamentary Standing Committee on Finance, dominated by members of the Lok Sabha (the Lower House), chaired by Yashwant Sinha (an MP of the BJP – Bharatiya Janata Party), rejected the Bill. The Bill was, in fact, be in violation of Parliamentary rights, as, on the one hand, the UIDAI had started functioning without the authorisation of this democratic organ (which votes the State budget) for its spending, and on the other, as the Bill, by having listed a non-exhaustive number of matters excluded from the ambit of the agency, would allow the extension of these without parliamentary oversight. The Committee also stated that the Aadhaar numbers had nothing to do with problems of distributing social welfare aids; that the UIDAI was duplicating the work of the National Population Register (NPR, launched in the wake of the Kargil War); and asked for amendments to the Bill in the light of its remarks.

The legislative process remained stalled for several years. After the 2014 General Elections, which gave a majority to the BJP, the new Prime minister of India, Narendra Modi, who had until then been very critical of Aadhaar (which he had dismissed as a "gimmick" during his campaign) (Narendra Modi [@narendramodi] 2014) became a convert of the system, apparently following decisive discussions with R.S. Sharma and Nandan Nilekani (Aiyar 2017; R. S. Sharma 2020b). Thenceforth, the executive wing promoted Aadhaar systematically. His resolve translated into its entry into force as The Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016, the full name mentioning subsidies instead of rights and wrongly suggesting that the digital ID was a way to boost them. The government passed it in Parliament as a Money Bill, the only type of legislative text that does not require voting by the Upper House, where the BJP did not have a majority. The structure of this Act also generally reproduces the 2010 text. It is just more detailed due to the experience accumulated over the six years that had elapsed since the first Aadhaar Bill. Above all,

it henceforth authorised the sharing of the number, photo and demographic data, for KYC purpose, something that was not meant at the beginning, when the UIDAI was only supposed to respond "yes" or "no" to the authentication query.

Bypassing the Judiciary

Apart from the Parliament, the Bill also came up against the courts. Particularly during a petition on the unconstitutionality of the Bill voted into law: after the Aadhaar Act vote, the opposition did not fail to initiate proceedings in the Supreme Court on this matter, reviving the argument of the lack of initial authorisation from the Parliament (the first argument of the Yashwant Sinha committee), along with that of breaching the provisions of a Money Bill.

Numerous petitions had already been filed against the project (for an overview, see Prasanna 2019). In end-2012, when it was still deadlocked in Parliament, K.S. Puttaswamy, a retired judge of the Karnataka High Court, and P. Khanna, a lawyer, filed a writ petition in the Supreme Court on the grounds that the collection of biometric data could potentially violate the right to privacy and could therefore only be authorised by Parliament, under Article 21 of the Constitution; they also stated that the Aadhaar number would enable illegal migrants to obtain rights. Over time, more petitioners joined them and raised many arguments. But beyond the clash over whether Aadhaar was optional or mandatory to access various services and the issue of the illegality of the UIDAI—to which the government replied that the agency had been established through an executive order of the government and was therefore perfectly legal—the main opposition focused on the violation of privacy.

The Supreme Court was not in a hurry to hear all the petitions, given the government's determination to push the Bill. It even decided to group up Aadhaar petitions instead of hearing them as and when they were filed. The Supreme Court convened in a small bench for a final ruling on the constitutionality of Aadhaar. But astonishingly, the Attorney General for India (who represents the State), raised a preliminary objection, contending that the right to privacy was not a constitutional right. The court then decided to refer this issue to a larger bench. Thereafter, another two years went by before the Court ruled on privacy in August 2017. Contradicting the government, it declared the right to privacy as a fundamental right protected under the Indian Constitution. However, the Court also declared it to be circumscribed: "Privacy is not absolute and cannot prevent the State from making laws imposing reasonable restrictions." It was an appeal to the State to legislate anew on Aadhaar. The UIDAI, in the meantime, continued its enrolment drive. As journalist S. Sharma said, slightly exaggerating the figures, "What happened was by the time the Supreme Court judgement came, 99 per cent of the population already had Aadhaar" (Sharma 2020b).

Finally, on 26 September 2018, a nine-judge bench of the Supreme Court finally delivered its much-awaited ver-

dict. All the judges, except one dissenting voice, and in a spectacular volte-face with regard to the decisions reiterated since 2013, rendered Aadhaar mandatory for social welfare programmes financed from the Consolidated Fund of India. It also deemed it mandatory for paying income tax. On the other hand, the Supreme Court ruled that Aadhaar was optional for commercial services, such as banks and telecom The UIDAI managed to circumvent even this last limitation by outsourcing the legal responsibility to the concerned firms and by modifying related legislations. Eventually, a personal data protection law was enacted, but only five more years later (2023) and of a very limited extend.

The Result

Corporate world: Long-term investment or bubble?

One of the first outcomes observed after implementing Aadhaar was the rise in the volume of transactions of the firms using it, stemming from the fall in client acquisition cost, which was itself largely facilitated by two innovations linked to Aadhaar: eKYC and UPI, described earlier. Thus, the reduction of transaction and administrative costs for firms tops ID4D's assessment of the economic impact of identification systems at the global level, precisely by offering the Aadhaar example:

> In India, for example, the typical firm's onboarding cost has been about 1,500 rupees ($23). With the increased queriability, digitization, and interoperability of the Aadhaar system, some estimate that onboarding costs could plummet to as little as 10 rupees ($0.15). (ID4D 2018)

Other benefits identified by the international agency are the reduction of costs related to legal obligations (combating money laundering) as well as the companies' liability in case of their database being hacked (as external identification systems host the personal data), easier customer prospection, lesser customer identification errors producing "false positives" (low-risk customers falsely assigned a high-risk score), and providing biometric identification services for firms working in this sector.

These positive points were highlighted in India by Venkatesh Hariharan, Director of IDFC Institute, the research organisation of the eponymous bank:

> It [the cost] is very high to verify these things [paper IDs], it's easy for me to photoshop something and give it to the bank. This also brings in the financial inclusion angle, because if my transaction cost is high [for the bank that has to verify these ID documents] then that really impacts the kinds of loans I offer. Therefore, one of the key things about Aadhaar from a financial point of view is that it brings down the transaction cost. So, if a bank must've spent 100-200 rupees doing authentication, with Aadhaar they

> can bring it down to 10-15 rupees. (…) [On the other hand], when the frauds go up, instead of pricing your loans low, you start pricing them higher. It has a ripple effect. Aadhaar brought down the frauds [and therefore allowed lower prices for loans]. (Hariharan 2020)

Hence, by decreasing the cost banks incurred in the authentication of potential borrowers and bringing down fraud, Aadhaar helped reduce borrowing costs and thus fostered financial inclusion.

Changes in retail payment systems well illustrate the spike in volumes that Aadhaar brought about. UPI saw swift growth with 359 million dollars in March 2017 (see table below). On this occasion, demonetisation (November 2016) probably played a major incentivising role in this rise, even if it originated from a far more political motive. Among the companies that use UPI are WhatsApp and Paytm, an Indian pioneer of online payment. Its founder, Vijay Shekhar Sharma, apparently started out offering this e-payment wallet for buying bus tickets, before widening its scope, and Paytm saw its customers soar from 22 million in 2014 to 215 million in 2017.

Payments transiting through the Aadhaar-based (UPI ou *Universal Payment Interface*)

	08/2016	09/2016	10/2016	11/2016	12/2016	01/2017	02/2017	03/2017
Monthly amount (million $)	0	5	7	15	108	249	285	359
In % of all digital wallets	0	1	1	3	9	21	25	30

Source: Mary Meeker, "Internet trends 2017" (Annual Code Conference, Terranea Resort, California, U.S., 31 May 2017, https://www.vox.com/2017/5/31/15693686/mary-meeker-kleiner-perkins-kpcb-slides-internet-trends-code-2017).

However, high volumes do not necessarily mean high profit margins. In fact, although UPI showed a spectacular rise in volume and values it processed, the profits were disappointing ("RBI Bulletin" 2020). True, the total volume of transactions UPI claimed were around 1.3 billion in December 2019, i.e., close to 40 per cent of the 3.3 billion transactions recorded by national retail payment systems. And its value was 2,025 billion rupees (around 28 billion dollars). But this value only accounts for 6 per cent of the 33,284 billion rupees from all the payments systems taken together, the major part of which is made by other inter-banking credit transfers to the extent of 73 per cent of their total value, by paper-based instruments for 19 per cent, by card payment for 4 per cent, and so on. Thus, if we assume that the tariffs are overall proportional to the sums exchanged, the profits from UPI—and therefore authorised by Aad-

haar—remained limited in comparison with those gained from traditional retail payment instruments.

This did not prevent some players to fare well, especially Infosys and N. Nilekani (see, I*nfosys Integrated Annual Report*, 2021-22, p. 363). Infosys accrued its turnover from $3 billions in 2007 to $8 billions in 2014 and $16 billions in 2022, i.e., its revenues more than tripled during the implementation of Aadhaar. The fate of N. Nilekani has remained closely linked to the one of the company he co-founded. In 2014, his personal balance sheet (laid for the Karnataka elections he was contesting) indicated that 80 per cent of the $1.26 billion he and his wife owned were in Infosys shares (Rai 2014). In 2022 N. Nilekani chaired Infosys again. While he already possessed a huge property in Bangalore in Koramangala 3rd Block, also known as the "boulevard of billionaires," he bought a second one through a foundation in April 2022 in the same area, for a value of around Rs. 580 million (a little less than $7.6 million) (Khan, Vyas, and Babar 2022).

To sum up, the outcomes of the digital ID for the firms until around 2020 have been a huge rise in the volume of transactions, much more limited profits—except for the big companies of the IT sector like TCS, Infosys and especially for N. Nilekani—and even some failures and bankruptcies—like in the online education sector. This did not prevent important investments in the data economy, in particular from global players like Google and Facebook which brought fresh money to Jio (the Reliance telecom subsidiary), that Aadhaar had helped to become leader in the telecom market. This might have been a way for these players to access to the personal data Jio possessed. The global result is either the slow development of a data economy, or just an economic bubble deemed to burst.

Do States really make budgetary savings?

As far as the States are concerned (the Centre and the States & Union Territories), apart from an enhanced surveillance of people—which will be dealt with later—one of the main results of Aadhaar would, in principle, be budgetary savings. But this is doubtful, as several controversies that have pitted the defenders against the opponents illustrate.

The most prominent one was triggered following the World Bank report on digital dividends, in which India is frequently cited as an example (World Bank 2016). The level of cost reductions credited to Aadhaar in the report was considerable: 11 billion dollars per year. The figure was mentioned in an annexure on the specific contributions of individual identifiers to the digital economy. The Bank cited a study according to which India's fuel subsidy program, by implementing cash transfers to Aadhaar-linked bank accounts for LPG cylinders, saved about US $1 billion per year.

This preliminary estimate itself is disputed. It was extrapolated from a chapter of a thesis defended at the University of Columbia (Barnwal

2015) based on data from Hindustan Petroleum, an oil and gas major, and a black-market survey. The figure advanced was itself doubled (2 billion dollars per year) in an article by the Chief Economic Adviser to the Indian Government published in *The New York Times* (George and Subramanian 2015). However, following the publication of a number of critical articles in the press, the authors retracted partially, explaining that the figures presented were not actual but potential savings, the only reliable element being the decrease in subsidised gas consumption (Subramanian and George 2016).

The second point of contention was the extrapolation of the conclusions on LPG to all Aadhaar-linked programmes. On this, the World Bank wrote:

> This is just one of many subsidy programs in India that are being converted to direct transfers using digital ID, potentially saving over US$11 billion per year in government expenditures through reduced leakage and efficiency gains. (World Bank 2016, 195)

It justified this claim with a footnote, which would spark off heated debate. Its initial version would refer to a CGAP brief (Banerjee 2015). While this study dealt with Direct Benefit Transfer (DBT), that is the direct transfer of subsidy to the account of an Aadhaar-verified beneficiary (the traditional subsidy being in kind, such as gas or food grains at subsidised rates), the 11-billion-dollar annual figure she had advanced did not reflect the savings that could be made through DBT, but the total amount for Indian programmes that might use this technique (Khera 2016). Contacted on this matter by an investigative journalist (Venkatanarayanan 2017), the World Bank finally replied that the 11 billion USD of savings did not come from Banerjee's study, but from an extrapolation to all the programmes, from the percentage of savings made thanks to Aadhaar for the LPG program calculated in the Columbia University thesis—between 11 and 14 per cent—and another percentage, calculated from savings from the National Rural Employment Guarantee (NREG, the scheme instituted in 2005 by the NREGA mentioned earlier) through the introduction of another biometric ID (smart card), that was pegged at 10.8 per cent (Muralidharan, Niehaus, and Sukhtankar 2014). The savings range was between 8 and 14 billion, and the World Bank with due rigour (sic.) apparently reported the midpoint, i.e., 11 billion. This official reply replaced the initial footnote in a new version of this Bank report, which is what we now find online. The extrapolation from the two cited articles was not straightforward, and the substitution of proof is, for the least, troubling. When recontacted by the same journalist on these two points, the Bank had no other response to proffer. This silence is all the more awkward as the assessments on LPG subsidies were themselves questioned soon after the Comptroller and Auditor General of India published a report stating that 92 per cent of the price fall came from

the fall in barrel prices and 8 per cent from the demand for subsidised gas ("Report of the Comptroller and Auditor General of India on Implementation of PAHAL (DBTL) Scheme" 2016). So the actual impact of Aadhaar would apply only to LPG and to less than one-tenths of the original estimate on this product.

All in all, while information is available erratically, there is still no estimate of the savings Aadhaar may have brought about for the public authorities.

For the people: Retrenchment of social policy and endangerment

First, the digital ID addressed only a minor issue in social policy, as illustrated by the study made on the PDS by a specialist of the issue (Khera 2017). According to the economist, there are indeed not one but three kinds of frauds within the welfare schemes, the digital ID being able to solve only the last of them. The first is the eligibility fraud, which "refers to inclusion of persons who do not meet official eligibility criteria," for instance APL persons pretending to be BPL. While the introduction of targeting mechanisms into social policies is an important cause of eligibility fraud, a better identification of people is of no help to reduce it. Secondly, quantity fraud "takes the form of eligible persons receiving less than their entitlements, for instance under-selling in the PDS." Like for eligibility fraud, the digital ID is of no help against it. Finally, identity fraud "refers to case where one person's benefits are claimed fraudulently by another." It can happen through the existence of fake cards in the name of dead or non-existent persons ("ghosts"), or when several cards exist for the same person ("duplicates"). The digital ID can obviously address identity fraud.

It must also be noted that while eligibility and identity fraud happen at the expense of the public finances, quantity fraud happens at the expense of the beneficiaries. Thus, while the digital ID might trigger some public savings, it is of no use to help people access their entitlements.

Second, the digital ID introduced new hurdles for people to access their entitlements. In order to access one's social rights under the digital ID, one has as a matter of fact to undergo six stages: enrolment with the ID, opening of a bank account, linking with one's phone number (that is supposed stable over time), functioning electricity and Internet, successful authentication, absence of rejected, diverted or locked payment. All of them may be tricky and if any of them is missing, then the person cannot access his or her right. For instance, as we have seen in 2020 authentication failure rates remained around 25 per cent in average.

Besides, as explained by two members of the RTF campaign, far from making the life easier for the beneficiaries, the introduction of a biometric remote authentication has reinforced the mechanisms of social domination of the poor:

> In fact, experience suggests that the introduction of Aadhaar, especially the Point of Sale device, has made the PDS dealer and state machinery even more

> powerful *vis-à-vis* the beneficiary. The identification procedure has left people at the mercy of the ration shop dealers and middlemen as the asymmetry of information has increased in terms of the rules related to Aadhaar and biometric authentication at the point of delivery. If the dealer says the machine is not reading fingerprints or the biometrics are not matching or cites software/connectivity problems to deny ration, the beneficiary has no way to meaningfully engage or question the claims. This is especially true for the unlettered and those who are not digitally literate. (Johri and Bhardwaj 2018)

When the entitlements could not be accessed, it led to deprivation and sometimes death of the beneficiaries, as illustrated for instance by the case of Rajasthan's pensioners (Yadav 2016b; 2019). When enrolling people, the government of this state had created its own database, called Bhamashah. Later, it reported a savings of Rs. 6 billion (around $ 80 million) thanks to the deletion of 297,000 "dead" and 170,000 "duplicates" pensioners from the lists. However, these figures were largely over-estimated. In October 2015, the government had transferred the payments from local post offices to banks, using the digital ID. Yet if the people did not succeed in achieving the six stages we just reviewed (enrolment, linking, etc.), they were struck off the lists. In particular, the local e-governance service provider, E-Mitra, had made errors when making the registration and linking operations for pensions. They were also some cases of diverted payments. Eventually, six months after they took place, numerous transfers made to bank accounts remained uncollected. When the Rajasthan Finance department realized this, it ordered a physical verification of the beneficiaries, which was carried out more or less scrupulously, resulting in additional deletions from the lists. Hence, according to A. Yadav, in a *panchayat* she visited, out of the 44 persons officially recorded as being dead, 25 were actually alive, i.e., more than half. Other journalists have estimated this proportion at one third for Rajasthan as a whole. The pensions amounted between Rs. 500 and 750 per month, a meagre but indispensable source of provisions. Some pensioners indeed died in the months after their pensions stopped. Villagers protested at *panchayats* and the MKSS relayed their collective action, which raised awareness about this problem. However, the government of Rajasthan transferred very little money in terms of arrears to the beneficiaries who were still alive.

In addition to social rights, the digital ID threatens civil and political rights. Aadhaar jeopardises the confidentiality of the personal data of those who have enrolled not only through the leaks mentioned earlier, but also due to the interlinking of files. Once a customer's number is obtained, there's nothing to stop any operator from collating the other available information on her/him, nor from circulating it among other databases, probably against a fee.

Thus, little by little, Aadhaar was linked to a series of files: those of social welfare programmes (NREG, Direct Benefit Transfer of Liquefied Petroleum Gas Scheme, PDS—to mention but a few), taxation (as it is not possible to pay one's taxes with only one's PAN[3] card —linking it to Aadhaar was made mandatory in 2017), bank accounts (for receiving social welfare aid and paying taxes), one's phone operator, and potentially an entire series of commercial operators, such as travel agencies or credit scoring agencies. Thus, to quote Reetika Khera, "All the different silos of your life are connected via Aadhaar." She further says, "By linking all aspects of our lives (air and train travel, bank transactions, mobile usage, employment and health records, etc.), the UID project is creating a mass surveillance infrastructure which facilitates tracking and profiling of ordinary citizens" (Khera 2019).

The idea of surveillance today is a two-faced Janus: one side stands for the intelligence gathering undertaken by the State, and the other refers to the new practices of the corporate world (see Zuboff 2019), for whom "knowing one's customer" to the extent of profiling them offers opportunities. This is done by creating a profile of potential consumers and users in areas as varied as banking, health, insurance, domestic help engaged, and, of course, everyday household consumption—all areas that can be covered by what Brittany Kaiser, the Cambridge Analytica whistle-blower, calls "digital kleptocracy" (Kaiser 2019).

The second aspect will be considered first. That personal data is passed on to the private sector is clearly evidenced in the targeted advertisement that mobile telephone subscribers are regularly bombarded with—a sign that their consumption patterns have been finetuned by professionals extensively collating different files. These experts and entrepreneurs are known as data brokers. David Dupond, a domain specialist working at the World Bank, who has been cited earlier, explained how they have thrived in India by using Aadhaar data:

> The problem with the Indian system is that they stuck the same number on the Aadhaar card and they let all the service providers access this number. They opened a massive Pandora's Box. I'm a small service provider, I ask all my customers their Aadhaar number. I enter this number and refer to a data broker—who is not necessarily based in India and could be under a foreign jurisdiction and who has been supplied with a host of other information attached to the same number, that have been gleaned by other service providers. I press a button—all of it beyond the UIDAI's control—and I have a complete profile of the person. And this has enormous value for a whole range of services. (…) Telecommunications and banks again. But what I'm talking about is interesting for everyone—even the small service providers. So, by doing this, India has created

> a massive personal data black market. They've handed a deadly weapon to all service providers and data brokers for profiling. (Dupond 2020)

Apart from consumers, Aadhaar allows people to be profiled, particularly those whom others wish to employ in some capacity or the other. Thus, Usha Ramanathan reports that, in 2016, an Indian firm called "TrustID" circulated an advertisement offering householders and other employers information on the past record of their tenants, domestic help and other people whose services they might use based on Aadhaar data. The radio ad offered "India's first Aadhaar-based mobile app to verify your maid, driver, electrician, tutor, tenant and everyone else instantly" (Ramanathan 2019). Even if TrustID was bluffing, the fact that this kind of advertisement could be broadcast on radio, shows that there are potential clients who believe that a database like Aadhaar can be exploited for this kind of use. This itself reflects that the notion of surveillance has been internalised—which could likely lead to self-censorship, or even personal threats. In particular, these mechanisms were flaunted in broad daylight during the 2019 electoral campaign, when candidates pretended that they would be able to find out whom citizens had voted for in such and such locality, the underlying threat being that reprisals could follow if they didn't vote as expected …

Venkatesh Hariharan voices the same concerns while exporting Aadhaar abroad:

> Another thing I'm concerned about is the human rights aspect and what happens if it falls in the wrong hands. So you should obviously not put this technology in a dictatorial regime but if you put it in a good regime and then it changes and falls into a totalitarian system it's highly dangerous. Having a system of checks and balances is essential. I've been travelling a lot and there is a lot of interest in other geographies in how to implement Aadhaar and other means of digital ID and the issues of surveillance related to it. [But] one should have some human rights framework to implement it. (Hariharan 2020)

For some Aadhaar opponents, the risks mentioned do not concern only the countries to which Aadhaar could be exported, but India itself due to the rising power of population surveillance mechanisms, such as the National Register of Citizens (NRC).

Reetika Khera underscores that:

> NPR and Aadhaar are actually the same thing, except they were given different States although both possibilities were also made available (…) the software was the same. When Aadhaar was operationalised through the UIDAI and their contractors, the registrars were allowed to add extra questions. Like for example, the banks were allowed to add 'Know Your Customers'

> and government departments were allowed to add 'Know Your Resident' section, allowed to ask even for mobile numbers. Aadhaar, therefore, is very intimately linked with not only the NPR but also the National Register of Citizens (NRC). NRC is the second stage of NPR—this is very clearly stated in Government documents going back to 2003. This was essentially a national security project emanating from the Kargil War but, I think, they knew if they openly stated that then there would be questions raised; so the real genius of Nandan Nilekani was to package it as a welfare programme. (Khera 2020)

It was in Assam first, where the authorities had been trying for thirty years to identify Bangladeshi immigrants, that the NRC was implemented. According to Supriya Sharma, this endeavour draws largely on Aadhaar:

> In Assam, there were efforts to gather Aadhaar information from the people for the NRC. For the first time, the government is asking people their Aadhaar information as part of NPR, which will take place in 2020. The pilots they've conducted ask people for their Aadhaar information, they say it's not mandatory to furnish it but because most Indians are unaware, they wouldn't think twice before disclosing it. We don't know how the government wants to use the Aadhaar information in the NRC and NPR but there are fears it will be used to exclude those who weren't included in the citizen register. So, if you haven't made it to the citizen register then your Aadhaar number could become the basis for your exclusion from government welfare schemes and services, deprived of voting rights. (S. Sharma 2020)

Apart from Assam, the decision in early 2020 to proceed to a fresh census for updating the 2010 NPR worried Muslims in India, given the Citizenship Amendment Act (2019): illegal immigrants from Bangladesh, Pakistan, and Afghanistan could henceforth acquire Indian citizenship provided they were not Muslims. Irfan Engineer explains that this law changed Muslims' idea of Aadhaar—as seen earlier, they did not hesitate to enrol under this system to be better recognised. And now the trap was closing on them, because now they had to prove their nationality.

> Only Muslims need to prove their identity through documents. In small towns where municipalities used to get 40 applications a day for birth certificates are now getting 60,000 applications each day. So there is a lot of panic. Bureaucrats are getting money, through bribes getting the documents faster. Also, by causing insecurity, saying that there isn't any information about the person in the database. (Engineer 2020)

Conclusion

At this stage of the study, three types of conclusions may be drawn regarding the extent of Aadhaar's technical success, to the winners and losers it has created, and its historic significance.

As far as its technical deployment is concerned, to reuse the metaphor of the map and territory used in the introduction, it can be said that the map has expanded considerably and today covers around 95 per cent of the territory. But while its expansion has increased, the range of information it contains still continues to vary a great deal. The aim of a finer understanding of people, by means of a detailed database on each person's activities, is again conducted differently by different players: the states, which each build their database with information on social policies and, sometimes, religion, caste, and domicile of people; the administrations, which surveil officials, including sometimes their political opinions if they are academics; the private companies that develop their customer database (telephone numbers, purchase history, transactions as far as banks are concerned), etc. All these databases also contain the national identifier of individuals, the Aadhaar number. Therefore, on the one hand, there would be a general map, created by the UIDAI, vast but not very eloquent, something like the contour map of a steppe, and on the other, with a multitude of layers on it: some juxtaposed, for the population of each state, some that cover almost the entire territory but contain isolated information, such as the telephone, big retailers, banks, train journeys, tax, etc. Compiling all these layers would make the project complete—and potentially dangerous for individual freedoms.

Which leads to the second point: the social consequences of the system in terms of winners and losers. The inconsistencies between the map and the territory—in the form, for instance, of errors in seeding an individual's bank account with the national identifier, or the erroneous declaration of death—are mostly borne by the people. Currently, the map is trusted more than the territory, and the territory suffers from it. On remembers that the goal of the UIDAI was to do away with "a person having two identities." For those who have been enrolled, this seems to have been well attained, and engenders some profit for companies, the states, and possibly members of the middle class. On the other hand, the aim of ensuring that no person is without an official identity, which is in keeping with the UN's Sustainable Development Goal 16, has not been achieved. Initially presented as a means of resolving the problems of the poorest by improving the distribution channels of social benefit transfers, isn't Aadhaar, ultimately, a new form of "technological solutionism"? It is clear that it is especially difficult for digital technology to resolve the problems of a country where infrastructure—beginning with electricity and internet connection—does not extend to the entire territory. Aadhaar seems better suited to the educated urban middle class, to which its promoters belong, rather than the working and rural classes. Its vision

of India and its social problems hence remain very socially located and, due to this, ill-suited.

Lastly, from the viewpoint of its historic significance, Aadhaar could be a terrible prototype of involuntary effect. Conceived in a perspective at best, inclusive, at worst, purely commercial, it could ultimately serve as a weapon against democracy by setting up not only economic but also political surveillance. It would thus be a form of surveillance analogous to that studied by Michel Foucault for modern times (Foucault 2009; 2010), but amplified today by the all-powerful influence of digital technology.

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Notes

1 UPA – United Progressive Alliance, is a coalition of political parties led by its main party, the Indian National Congress.

2 "The National Identification Authority of India Bill, 2010," Pub. L. No. LXXV (2010).

3 The Permanent Account Number (PAN), issued by the Income Tax Department, is the method used to identify Indian taxpayers.

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