

Note from the editor

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The Brave New World of Big Data

Akos Rona-Tas

This issue is organized around the theme of Big Data as our new social world, one that has been taking shape thanks to three important recent advances in information technology, all accelerated in the last few years.

First, there has been an enormous increase in our capacity to gather and transmit data. *Sensor and communication technology* allows the inexpensive collection of vast quantities of information, aided by the fact that society has been enticed to communicate and run its everyday life more and more digitally. We don't write letters, only emails, and we do it on our GPS equipped smart phones that sense our location and transmit our messages instantaneously. Our cars and appliances have sensors that communicate with their manufacturer, and automatic license

plate readers can follow cars in many big cities and highways, while cameras in public spaces record every second they see. Many of these sensors work without us even noticing them, like high resolution satellite photos that can now deliver resolutions of 30 centimeters, while others, like our own digital cameras, require our active participation by taking the pictures and then uploading the digital images. Some sensors record physical properties, like heat sensors at airports picking out passengers arriving with a fever from abroad; others that scan barcodes and microchips are designed to recognize coded information we must first create and encode. Recently, many of these sensors have become tiny, cheap, as well as more sophisticated in their ability to detect whatever they need to sense. As commu-

nication technology improves, this vast quantity of data can move ever faster. The coming of 5G systems will increase broadband speed by a factor of 20 and decrease latency (wait time created by the way signals are processed) by a similar magnitude. This allows for the creation of the internet of things (IOT), where objects like self-driving cars can communicate with one another in real time without human intervention. Optical cables and broadband networks can now move the information from sensors to databases in milliseconds to make them available for use in real time and for storage in databases.

Our increasing *ability to store and process data* is the second technological advance. That capacity has grown exponentially following Gordon Moore's famous prediction in the April 1965 issue of *Electronics* magazine. The latest breakthrough in quantum computing by Google opens even more dizzying horizons.

And third, new *powerful algorithms* have been invented. There have been two important milestones in computer algorithms: machine learning and hierarchical artificial neural networks. The conceptual, mathematical breakthroughs happened in the 1980s and 1990s. However, in the last decade, a series of successful applications of machine learning and hierarchical neural networks (or deep learning) have generated unprecedented excitement. The first provided a new approach to computing that replaced expert systems trying to model existing knowledge with algorithmic discovery. The second offered an extremely powerful statistical tool to uncover existing patterns in data. A breakthrough in speech recognition came in 2010, two years later in computer vision, and in 2014–2015 in machine translation. These and other highly visible achievements have captured the social imagination and have created a new set of social expectations – some hopeful, others dystopic – that not long ago were confined to the realm of science fiction.

In this issue of *Economic Sociology*, the articles step away from the flurry of excitement and anxiety about the future and focus on the way new information technology runs up against the texture of economic, political and social life.

The five articles cover a wide geographic spectrum including India, China, the United States and the European Union. They show what happens when technology, which always changes the limits of what's possible, is deployed to produce a new form of digital and algorithmic governance.

Two articles discuss India and its effort to introduce Aardhaar, an information system that would allow every citizen to be incorporated into a unified database by assigning them a unique 12-digit number using their demographic information and three biometric identifiers, a photo of their face, finger print and iris scan. Reetika Khera, Professor of Economics at the Indian Institute of Management Ahmedabad and Ursula Rao, Professor of Anthropology at the University of Leipzig, describe how Aardhaar was originally introduced to improve the delivery of welfare services and then to promote financial inclusion, immediately encountering various problems and unintended consequences that they illustrate with powerful vignettes. Rao emphasizes the new form of governance Aardhaar aspires to deliver, while Khera connects it to a wider literature on the digital economy and politics.

The article on China's infamous social credit system by Chuncheng Liu, a doctoral student at the University of California, San Diego, provides a detailed map of the multipronged effort to create a nationwide system that assigns a score of trustworthiness to all Chinese citizens. While Aardhaar is intended to serve as a broad framework for the datafication of the

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population, the social credit system takes the next step: it attempts to combine available data to punish or reward and ultimately predict social behavior. Liu argues that presently the system is best viewed not as a dystopic, totalitarian imposition by the state but as a fragmented and incomplete project with deep historical roots and internal contradictions.

Unlike in China, where credit scoring was initiated by the state, in the United States the system of credit scoring emerged from market transactions. Barbara Kiviat, Assistant Professor of Sociology at Stanford University, describes how the current system of scoring creditworthiness has developed and how its reach has now extended well beyond consumer lending, offering a new measure of human worth and instrument of governance. Ultimately, these scores, like the social credit scores in China or Aardhaar in

India, are intended to create order, stability and predictability.

Finally, Karoline Krenn, a research associate at the Fraunhofer Institute for Open Communication Systems in the Competence Center for Public IT in Berlin, recounts the European Union's efforts to regulate data use, including its latest attempt, the General Data Protection Regulation. Her contribution highlights the importance of putting limitations on the purposes for which data gathered about people can be used. She shows how this concern emerged from a debate in Germany in the 1970s. Her piece underscores one of the main problems of algorithmic governance: as lived experience is turned into data and further processed, the original context on which its meaning so much depends disappears, opening a wide chasm between reality and its data shadow.

A new feature of ES, launched in this issue, is the OpEd, originally a shorthand for "opposite to the editorial page," where invited authors can comment.

Here the editor invites scholars to connect their recent research to topical concerns. We ask people to translate the findings of their research into the language of public sociology. In this inaugural OpEd, Jenny Andersson, CNRS Research Professor at the Center for European Studies (CEE), Paris, and author of the book, *The Future of the World*, shifts our attention from the present to the future and explains how to think about futurology, as a peculiar form of knowledge production about things yet to happen.

All six contributions stress that the new tools offered by recent technological advances are far from just describing existing patterns and making logical projections. They are not passive observers of social reality offering us an objective and superior vision of its underlying structures. These tools are formidable actors that are powerfully shaping our world present and future, yet as these articles remind us what they achieve in the end always depends on the social context in which they unfold.

Aadhaar: Uniquely Indian Dystopia?

Reetika Khera

Introduction

On 28 January 2009, the Government of India constituted the Unique Identification Authority of India (UIDAI) through a Gazette notification. The main aim was to “generate and assign UID to residents”, where UID refers to “Unique Identity”. The brand name “Aadhaar” (meaning “foundation” in some Indian languages) and a logo followed. The Aadhaar project came to be seen as one of the flagship schemes of the second United Progressive Alliance (UPA-2) government (2009–2014).¹

The idea behind Aadhaar was to provide each Indian resident a unique number, the uniqueness of which is guaranteed by biometric identification (and demographic details if need be). At the time of enrolment, people provide the following demographic information: name, gender, date of birth, parents’ (or husband’s) name, residential address and any other information that the government may prescribe (barring caste, religion and a few other sensitive attributes). They are also required to submit photographs, ten fingerprints and both iris scans. These are stored in the UIDAI’s Central Identities Data Repository (CIDR). For the purpose of generating a unique number, the UIDAI does a one-on-n match, i.e., each new enrollee’s details are matched against each existing person in the CIDR who has been issued a unique number. This is supposed to guarantee uniqueness.

In September 2010, the UIDAI began issuing Aadhaar numbers to Indian residents. With the impending threat of making Aadhaar compulsory for welfare programmes, and an incentive-based private agency led enrolment model, enrolment picked up quickly even though there was no legal framework guiding the project. The legal vacuum had serious consequences because a proper legal framework would have defined the rights of ordinary people vis-à-vis the state (e.g., give clarity about why their data was being collected and

what they could do if it is compromised). Over 800 million Indian residents were enrolled by 2015.

Initially, Aadhaar was projected as a *voluntary* facility for all residents. Although in the UPA-2 years the use of Aadhaar spread rapidly, it was more or less confined to welfare applications. This changed dramatically in 2016 after the Aadhaar Act was passed. Since then, it has been made compulsory for many services. What started as a voluntary ID gradually became compulsory, and there is a danger of it becoming the *only* ID for certain uses. Compulsory Aadhaar is a very different thing from a voluntary Aadhaar.

This piece discusses some of the troubling questions – legal, technological, and related to its application – about the Aadhaar project, its implications for privacy, civil liberties, surveillance and tracking, and how this impinges on the functioning of a democracy. In doing so, the paper seeks to make connections with ongoing debates in other parts of the world – debates that arise from the growing influence of technology and technology companies.

Why Aadhaar?

Over the years, the UID project has reinvented itself – as a welfare-enhancing technocratic initiative, a project for financial inclusion, an administrative aid against terrorism and for better tax administration, and, most recently, as a big data opportunity. Some of these narratives are outlined below.

The welfare façade and technocratic tyranny in welfare

The most morally forceful framing of Aadhaar was as an enabler of welfare. Identity and inclusion were the twin objectives that proponents used to sell the idea to the Indian public. The early media blitz (in the national and international press) was focussed on the “transformational” potential of Aadhaar. The claim was that having an Aadhaar number would enable inclusion. Non-existent (“bogus”, “duplicate”, “ghost”) beneficiaries were everywhere, according to this narrative, and Aadhaar, being centralized and unique, would sanitize beneficiary databases. By ensuring “inclusivity” and corruption-free implementation, it would be a “game-changer” for welfare in India. Early on, this understanding of the problems in welfare administration was shown to be flawed (Khera 2011), yet over time Aadhaar became *de facto* compulsory for accessing welfare benefits.

There is plenty of evidence (including in the government’s own data) of the problems associated with the application of Aadhaar in welfare. What is brushed aside as teething problems or rare implementation is-

sues are routine – not rare – occurrences: people have been shut out of their pensions, Public Distribution System (PDS) rations, hospital services, savings, and mobile connections, etc. In the poor state of Jharkhand alone, the use of Aadhaar has been made compulsory in the PDS and has resulted in the deaths of over twenty people after they were denied PDS rations due to Aadhaar-related failures (Khera 2019a).

Earlier, to get any social benefits, people needed to meet the eligibility criteria for the scheme in question. There were many hurdles along the way: learning about the existence of such schemes, figuring out eligibility criteria, running from pillar to post to understand application procedures, and the required supporting documents, etc. What Aadhaar has done is to add a few new hurdles at the finishing line, pushing it further out of people's reach.

The first new hurdle is getting an Aadhaar number. While it is true that only a tiny fraction now do not have Aadhaar, this can add up to a large number and can concern those who are the most in need of state support. For instance, in December 2017 I met Kapil and Savitri Paikra in Surguja (Chhattisgarh). Kapil Paikra has been bedridden since 2009 after a bad road accident. His PDS rations have been discontinued as he has not submitted his Aadhaar number. He has never been able to enrol for Aadhaar because he has been bedridden since before Aadhaar was launched. Savitri asked, "Can I carry his bed to the Aadhaar enrolment centre?"

The second new hurdle is linking the Aadhaar number with each new scheme for which it is made compulsory. This is not as small a demand as it seems: a single trip can be cumbersome for the elderly; in many cases, the task cannot be accomplished in one trip. In 2011, in Ranchi District, an old man was being forced to open a new bank account because the government wanted to route his pension to an Aadhaar-linked bank account instead of the local post office. The otherwise helpful banking correspondent had to turn him away because one key document was missing. A few minutes later, we saw the man squatting by the roadside on the road home, which was about a kilometre away. When we asked why, he said he couldn't walk any further – he was too exhausted from the excursion. In 2013, in East Godavari, the "pioneer" district in linking the PDS to Aadhaar, I met Jyothi, a young Dalit mother of twins. For some reason, which nobody was able to explain to her, the new system would no longer allow her to draw her rations. She broke down as she described the condition of her hungry twins.

The third hurdle is Aadhaar authentication when people are drawing their benefits. This fails for a variety

of reasons – connectivity issues, electricity supplies, biometric authentication failures, etc. Authentication by the

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beneficiary in person means that people like Olasi Hansda, who lives alone and has limited mobility, are simply excluded, despite possessing all documents, including Aadhaar. For others it means increased transaction costs in terms of repeated visits, longer waiting times, etc.

Enabling financial inclusion

There are many barriers to financial inclusion in India – lack of documents for Know Your Customer (KYC), limited reach of the banking system, costs of servicing new customers, etc.² The lack of KYC documents was singled out as the main cause of financial exclusion, and Aadhaar was again projected as the *only* – and best – way forward.³ Combined with "banking correspondents" who would act as extension counters of banks in areas where regular bank branches were not financially viable, this was another way in which Aadhaar was supposed to improve financial inclusion. According to the World Bank data on financial inclusion, between 2014 and 2017 the proportion of those aged 15 years and above who had an account rose from 53% to 79%. Almost half (23% in 2014 and 38.5% in 2017) had made no deposit or withdrawal in the past year. It is hard to tell from the available data whether this improvement is on account of Aadhaar, or the result of other government and RBI initiatives, or simply a function of time, or (most likely) the combined result of all these factors. Another potential contribution of Aadhaar is a reduction in the cost of acquiring new customers.

Some felt that Aadhaar would facilitate a transition to cash transfers (in lieu of in-kind transfers). Cash was viewed as a better option as it is believed to be less prone to corruption.⁴ Though cash was not explicitly pushed by the UIDAI, the early welfare claims and Nilekani's 2008 book (*Imagining India*) betrayed some indications of this. For instance, "interoperability" and "portability" (i.e., welfare benefits that can be claimed anywhere, especially important for migrants) were projected as desirable and only possible within the Aadhaar eco-system. Aadhaar, it was claimed, would eliminate intermediaries and thus corruption also.

Digital IDs and personal data mining

Internationally, the role of digital IDs for growth and development has been stressed considerably in recent

years. According to the World Bank, “Lack of identity is an impediment for poor people to exercise their basic democratic and human rights ... Digital identification can help overcome barriers to participation” (World Bank 2016). The narrative that was pushed in India mirrors the international rhetoric: millions of Indians are without IDs; more often than not, these happen to be the poor, whose lack of an ID deprives them of access to government services, and a new ID such as Aadhaar is therefore necessary.

No doubt IDs play a facilitating role in many ways, but it is worth bearing in mind that many countries without a national ID continue to provide good public services. A cursory look around the world suggests that national IDs are neither a necessary nor sufficient condition “for poor people to exercise their basic democratic and human rights”. The United Kingdom (UK) is a useful example. It does not have a national ID (not even paper-based), and its proposed biometric “Identity Project” was ultimately abandoned. There are many parallels between the UK’s Identity Project and the Aadhaar project in India, e.g., how the case for such an ID was over-sold, the scale of the problems that it could solve were exaggerated, the costs and technological issues were understated, and so on. Eventually, timely public debate ensured that the project was scrapped.⁵

The proponents of Aadhaar regularly refer to it as the equivalent of the Social Security Number (SSN) in the United States. To the extent that Aadhaar *is* like the SSN, it is worth recalling that the latter played a crucial role in helping to build credit histories of individuals, which in turn is associated with the rise of the credit and insurance industries. Both these industries have a chequered history of exploiting personal information for profiteering (O’Neil 2016).

Since 2016–17 there has been a concerted and single-minded focus on linking Aadhaar – the practice of storing the number permanently – in public and private databases. From cradle to grave, the government wants people to leave their digital footprint in every database. This opens the door for profiling of individuals – by state and non-state actors. Most recently, the Aadhaar project is revealing itself to be a mega data mining project. In the words of its promoter, Nilekani, “Data is the new oil”, and as someone on Twitter put it, “and Aadhaar is the drill to get it”.

Big data meets big brother: a surveillance infrastructure

The Aadhaar project is a privacy hazard from several angles (discussed below) – data security, bodily integrity due to the use of biometrics, personal integrity and personal data mining. While *any* centralized data-

base creates data security vulnerability, a unique number (“key”) such as Aadhaar linking all the data silos, *magnifies* those vulnerabilities. Of course, this is precisely what creates massive commercial possibilities from personal data mining – information on the nature and frequency of travel, who we meet or talk to, what we eat or buy, and so on – has great value for targeted advertising and other decision-making algorithms that are being used in more and more spheres.

The trajectory of the Aadhaar project – from voluntary to compulsory, from limited to unlimited use – raises serious questions for civil liberties and democratic practice. By linking all aspects of our lives (air and train travel, bank transactions, mobile usage, employment and health records, etc.), it is creating a mass surveillance infrastructure which facilitates tracking and profiling of ordinary citizens. Profiling and surveillance are known to lead to self-censorship (Greenwald 2015). Self-censorship of thought and actions severely hampers free thought and expression. The mining of personal data thus clashes in a fundamental way with civil liberties, a clash that lies at the heart of the Aadhaar debate.

The spectre of surveillance has generally been evoked in the context of government surveillance. The fact of, and dangers from, corporate surveillance are now beginning to emerge in the public debate (Schneier 2015, Zuboff, 2019, Khera 2019b). Corporate surveillance refers to the use of personal data for the purposes of targeted advertising and, as the revelations by Christopher Wylie in early 2018 about Facebook and Cambridge Analytica show, even in manipulating elections.

The proliferation in the compulsory applications of Aadhaar since 2016 creates the opportunity for both types of surveillance. When the same number is stored permanently in numerous databases in the country, tracking people and creating profiles of people by pulling in data from different sources becomes easier than ever before. Where and how I travel (by air or train), what I spend my money on (books, or clothes, or food), who I meet or talk to, etc., all this information can be pooled together to create a profile of me, to target products on the one hand, and to red-flag me on the other. In the world of algorithmic decision-making, frequent trips to rural Jharkhand are equally likely to be classified as those of a field researcher as they are as those of a Naxal supporter.⁶

The government asserts that since UIDAI itself collects and keeps very little information, the question of profiling, tracking and surveillance does not arise. Private entities, however, easily hand over our data to government agencies (e.g., mobile companies to the National Security Agency in the US, Google to governments requesting data on its users and so on) (Schneier 2015). Further, as the Aadhaar number is linked with

numerous databases, including many government ones, it is very easy for the government to pull in information from various sources. Another defence that the government puts forward is that metadata (which is what UIDAI primarily deals in) alone prevents collation of an individual's data from different sources. Again, they hide the fact that metadata can reveal a lot (for instance, information on the most frequently called number is as revealing as information on what the conversations were about). Further, data mining techniques are now sophisticated enough to match individuals across databases with greater accuracy, even when they were originally anonymized metadata (Narayanan and Schmatikov 2008). Having a unique identifier across databases will make that task much easier.

Traditionally, personal data mining techniques have been used for targeted advertising. Each click, or even hovering the mouse, allows tracking and analysis to understand preferences and needs and is sold to companies to enable "targeted" advertising. Data brokers facilitate such practices. "Predatory lending" thrives on it. For instance, ICICI bank functionaries sold insurance policies to unsuspecting customers, such as poor National Rural Employment Guarantee Act (NREGA) workers, Kisan Credit card holders, who it was clear would not be able to pay the premiums. Applications that correlate behaviour of individuals across data silos will create business opportunities in credit-rating, health insurance, even marriages, and blue-collar and other hiring, to name just a few.

The new avatar of targeted advertising is "digital kleptocracy", which is authoritarian as well (Kaiser 2018). Digital kleptocracy is a means by which rich tech companies mine poor people's data (steal them, in fact: in most cases the person is unaware of their data being harvested and used) for profit. As Nilekani himself put it, "The business models that will emerge in India will ... allow people to take their digital wealth and convert that into economic wealth, and that is the trickle-up." (Rai 2017). However, it is not necessarily a benign process. It can be toxic. Often, data are harvested and shared without our consent or knowledge (e.g., CCTVs or web browsing histories). When our data are used by opaque algorithms to make crucial decisions about our lives (e.g., shortlisting for jobs, getting health insurance, whether we were speeding), we cannot question these decisions (Khera 2019b).

Big data, big deal?

Much of the optimism around digital IDs such as Aadhaar stems from a rose-tinted view of what possibilities big data opens up with ever-improving data mining techniques. Recent years have seen significant

scholarship and events which should lead to a re-evaluation of how these possibilities are viewed. Social scientists have questioned the epistemological claims made by the big data advocates and arrive at the following sobering conclusion: such analysis can be reductionist, functionalist, and when it is context-free, anaemic and unhelpful (Kitchen 2014). Brooks (2013) cited in Kitchen (2014 9) contends that big data "struggles with the social ..., struggles with context ..., creates bigger haystacks ...; has trouble addressing big problems; favours memes over masterpieces ...; and obscures values." Ethical concerns have been raised and are beginning to be addressed.⁷

The existing literature helps make sense of the Aadhaar project. However, there are some uniquely Indian problems which have not been adequately emphasized. This section provides a brief overview of how Aadhaar relates to some of the debates around the themes of computing, law, privacy, technology and welfare.

Technology in governance: its promise and failings

Writing about the use of technology in welfare administration in the US, Eubanks (2018) proposes that as rights began to be enshrined in law and political will teetered, the response was to "unleash" technology to contain rising costs. Serious questions have arisen about biometrics (how reliable and secure they are). In the push for using biometrics in welfare, the similarity between India and the US is striking. Magnet (2011, 77–83) shows how the incidence of "duplicate-aid fraud" was exaggerated in order to expand the market for products of the biometrics industry. When no substantial savings could be established, savings estimates were manufactured. For instance, any reduction in the number of welfare recipients – even due to other reasons – was attributed to the use of biometrics. Both these problems – exaggerating the incidence of duplicate-aid fraud (the only form of fraud that biometrics can potentially resolve) and fabricated savings due to the use of biometrics – have been documented in the Indian case as well (Khera 2017).

While Eubanks' (2018) and Magnet's (2011) work highlights how the axe falls primarily on the poor, in the Indian case the resulting disruption has resulted in tens of deaths, apart from other hardship. There is a question of technological readiness in India. For certain services, the government proposes to use Aadhaar to biometrically authenticate each time a service is used (e.g., purchase of subsidized grains each month). In a country where electricity supply is erratic, as is mobile and server connectivity, the wisdom and economics of such a move need to be considered. Fur-

ther, there are anxieties related to the appropriateness of making such technologies ubiquitous and compulsory. The Aadhaar “eco-system” demands high digital, technological and legal literacy. Yet it is being foisted on a society with low levels of literacy (according to the 2011 census nearly 30% of the population was not literate). This is irresponsible and undemocratic.

Moreover, the architects of Aadhaar envisaged that those who use this technology will use it in benign ways and remedy corrupt practices in existing systems (caused by corrupt intermediaries). Why those who mediate the Aadhaar technology would be any more or less honest than other government intermediaries, is a question no one asked.

Large-scale fraud at the enrolment stage has been highlighted in several cases (the government reported to Parliament that 49,000 enrolment agencies were blacklisted due to malpractices). As people link their mobiles and bank accounts, fraud at the user stage has come to the fore (Bhardwaj 2017; Mukherjee 2017). Hindustan Times reported that 200 students in Mumbai replicated their fingerprints on a widely used resin to fudge biometric attendance (Qazi 2017). Easy harvesting of biometric traits and publicly available Aadhaar numbers increase the risk of banking fraud (Brandom 2016; Kazmin 2017).

Civil liberties and the right to privacy

From the field of computer science, too, there are warnings. Data security expert Bruce Schneier (2015) warns of the harmful consequences (mass corporate and government surveillance go hand in hand with such an explosion of data, as it is used for consumer manipulation as much as it is for increasing consumer welfare). The emergence of data gathering on such a massive scale can be traced to the needs of advertising (Solove 2001), but the incremental value of more data for targeted advertising is suspect (Schneier 2015, 64–66). Other important work highlights the dangers to privacy, and related issues such as lack of informed consent in any meaningful way, in the data harvesting practices (Narayanan 2009). boyd and Crawford (2012) raise six fundamental questions in the age of big data: whether it changes the definition of knowledge, whether its claims to objectivity and accuracy are valid, whether big data is always better data, whether it loses meaning when it is not contextualized, whether accessibility can be equated with being ethical, and whether differential access to big data creates new inequalities.

In early 2018 we saw the revelations from Canadian whistle-blower Christopher Wylie about how our personal data was mined by Facebook and Cambridge Analytica. The episode demonstrated that once we

create a digital footprint, we are no longer able to prevent its misuse and abuse. This is partly because consent is either inadequately built in, where it is built in it is poorly understood, or sometimes even when it exists and is exercised there can still be violations. This, along with the Snowden revelations that came before it, has opened the world’s eyes to the dangers of data mining, machine learning (ML) and artificial intelligence (AI). In the past months, the integration of voter IDs – actual and planned – with Aadhaar leading to disenfranchisement has been reported. Fears of their integration with other data to profile voters were also voiced by political parties in the southern states of Andhra Pradesh and Telangana (Kodali 2019).

Law-making is compromised and the rule of law is weak. Remedy in case of violations, even when laws are adequately protective of people’s rights, is an onerous task. The illegal display of Aadhaar numbers on government portals or the sale of demographic data that were available for Rs. 500 in Punjab were violations of the law for which no real remedial action was taken by the government. The main challenge to the Aadhaar project in the Supreme Court was on the grounds that it violates the right to privacy. The Government of India argued, wrongly, that whether the right to privacy was a fundamental right was an unsettled question in Indian jurisprudence (Bhatia 2017). In August 2017, a nine-judge bench was constituted to deliberate on whether the right to privacy is a fundamental right. That bench delivered a unanimous and path-breaking judgment in favour of the petitioners, with implications not just for the Aadhaar case but also other matters. The judgment is important as it deepens our understanding of the meaning of privacy especially in the digital age.

Until 2016, the main sections of the population to be hurt by Aadhaar were easily neglected beneficiaries of social support. From 2016, however, the government began to make Aadhaar compulsory almost everywhere, and private sector firms also began demanding it. Thus, the better-off began to grapple with Aadhaar’s substandard eco-system – misspelt names, wrongly linked numbers, incorrect dates of birth, deactivation of numbers, demands to re-register biometrics, lack of accountability, etc. (Khera 2019a). Even the damage to welfare from Aadhaar has begun to be understood more widely. This has been possible partly because independent studies have documented the damage from the coercive use of Aadhaar in welfare (Chhatre and Bhardwaj 2019; Drèze et al. 2017; Malhotra and Somanchi 2018; Nayak and Nehra 2017; Somanchi, Bej and Pandey 2017).

By 2018, when the final hearings in the Aadhaar matter began, the public mood with respect to Aadhaar had shifted. The government found it tough to

make the case that Aadhaar is essential for welfare, one of its key arguments post the right to privacy judgment. An oft-repeated line by the government, in its defence of Aadhaar, was that it plays an important role in ensuring the right to life and rights under Article 21 of the Constitution. In the final hearings, the Attorney General's main line of defence was that the Court must "balance" the right to life of millions, which he claims is guaranteed by Aadhaar, with the right to privacy. It was perhaps the first time, even inadvertently, that the government acknowledged that the right to privacy is compromised by the Aadhaar project.⁸

Even if one were to grant (for the sake of argument) that Aadhaar played an enabling role in delivering welfare and therefore a trade-off existed between the two rights (to life and to privacy), Justice DY Chandrachud's privacy judgment in 2017 rejected that proposition outright: "Civil and political rights and socio-economic rights do not exist in a state of antagonism." In fact, he stated that the idea that one is "subservient" to the other "has been urged in the past and has been categorically rejected."

Solove (2001) argues that the privacy problem that arises with databases is inadequately captured by Orwell's "Big Brother" metaphor, where "privacy is invaded by uncovering one's hidden world", leading to "inhibition, self-censorship, embarrassment, and damage to one's reputation". He argues that a more accurate metaphor is "The Trial" by Kafka, which characterizes the problem as "the powerlessness, vulnerability and dehumanization created by the assembly of personal information". In the realm of welfare, the anecdotes amply demonstrate how the use of Aadhaar in welfare has disempowered the poor, leaving them at the mercy of centralized and invisible levers of control.

Industry hype and the role of propaganda

The hype surrounding the virtues of big data, ML and AI is second to none. It has been projected as revolutionary for both private profits and social benefits. Big data proponents proclaim the "end of theory", making "scientific method obsolete" (Anderson 2008 quoted in Kitchin 2014, 3), a method that is free of human bias. Does the economic potential of big data justify the social and political costs? Is the economic potential really as revolutionary as it is made out to be? It appears not.

At least some of the hype around big data is industry-driven. Metcalf, Keller and boyd (2014, 5) say that industry hype "frames big data as a new service that can be sold off the shelf", and other theorists have identified big data with the "end of theory" and the rise of hypothesis-free science". Kitchin (2014) also suggests that business interest is an important driver of big data, where business is "preoccupied with employing

data analytics to identify new products, markets and opportunities rather than advance knowledge per se".⁹

Some industry insiders, too, people who have used big data, are walking away disillusioned. An illuminating example of this is Cathy O'Neil's "*Weapons of Math Destruction*". Even with the best of intentions, algorithms can get it wrong, but the opacity of algorithms enhances their power (O'Neil 2016). Assumptions, based on flimsy evidence, get hard-wired into algorithms. Not only are the algorithms suspect, the data they process can be bad too. "Garbage in, Garbage out" is a recurring theme in O'Neil's work. Worse, she suggests (reaffirming Schneier's concerns), there is some evidence that they can be intentionally misused or abused.

Even in the mainstream, there have been calls for caution. The Economist's views are an important example of this. Writing about an upbeat industry report on big data in 2011, it observes that "Big data has the same problems as small data, but bigger. Data-heads frequently allow the beauty of their mathematical models to obscure the unreliability of the numbers they feed into them (Garbage in, garbage out.)" (The Economist 2011).¹⁰ By 2016, The Economist was writing about "fads" and a "herd" tendency among economists, that "fashions and fads are distorting economics, by nudging the profession towards asking particular questions, and hiding bigger ones from view." (The Economist 2016). In India, newspapers have reported entire villages enrolled with the same date of birth (Mani 2017), or the enrolment of dogs (PTI 2015), vegetables (Dharur 2012) and gods (PTI 2014). Data errors and fraud enrolments have serious consequences for those concerned as Aadhaar becomes compulsory in banking and for other day-to-day activities. For instance, a big mess that is attributable to data errors in Aadhaar may be underway in banking (Drèze 2018; Dhorajiwala, Drèze and Wagner 2019).

It is not possible to understand the progress of a project such as Aadhaar in a country with all the checks and balances that are present in a democracy – an independent judiciary, free press, elected representatives – without focussing on the propaganda around it. It is a study in how propaganda comes to the aid of industry interests, helps in manufacturing elite consensus to mute any possible challenges. (see Khera 2019c). On the one hand, propaganda helps to foster techno-utopic visions of society, and on the other it helps to suppress inconvenient facts and developments.

These alarming developments included undermining parliamentary processes. For instance, the Parliamentary committee rejected the first draft of the National Identification Authority of India Bill, 2010, yet in 2016 a bill was brought that did not address the concerns laid out in the committee's report. Further,

the bill was brought as a “Money Bill”, which allowed the government of the day to bypass the upper house of Parliament (Achary, 2015, Parthasarathy 2017). Judicial authority was also routinely challenged, e.g., the interim orders issued by the Supreme Court between 2013 and 2017 were regularly violated, and no contempt notice was issued by the Supreme Court. After the judgment, too, the government has brought amendments which go against what the Court had ruled. For instance, the Court had struck down access for private entities to Aadhaar, but that has been brought back through an amendment in Parliament (Khera 2019d).

Nilekani, who was charged with the rollout of the project, was well aware of the possibility of resistance to the project if a fair debate was allowed. When asked about his strategy to deal with the “opposition” to Aadhaar, he made the startling revelations that they employed three strategies: “do it quickly” (i.e., don’t give people time to comprehend the implications of the project), “do it below the radar”, and “create a coalition that wants Aadhaar” (outsiders who bat for the project). The strategy was to make it big swiftly, so that rollback would seem impossible. Advertisements, branding, labelling, damage control, planting stories, manipulating headlines, sponsored research were the strategies that were used. The most telling example of this is the almost entirely fabricated “potential savings” due to Aadhaar put out in a World Bank report (Drèze and Khera 2018). As a result of the concerted media strategy of the UIDAI since its inception, the favourable impression in people’s minds is hard to dislodge, in spite of the growing evidence of exclusion, denial and hardship.

The aspect of the co-optation of the government by industry interests has not been explored adequately – either internationally or in India. In the case of

Aadhaar, these commercial interests as well as the conflict-of-interest issues with the project are only just beginning to be documented (Kaushik 2016; Thaker 2018). Some business interests petitioned the Supreme Court in 2018, pleading that the Aadhaar project be kept alive to guard their businesses’ interests (the petitioners were asking for the project to be shut down entirely). An important illustration of conflict of interest is the role of the Vidhi Centre for Legal Policy (VCLP) in the Aadhaar matter. Set up as a legal think tank to aid the government on legal issues, VCLP describes itself as “independent”. It is, however, funded by large corporate philanthropists and earns revenues from government (e.g., it helped draft the controversial Aadhaar Act, appeared in the Supreme Court on behalf of the government to argue *against* the right to privacy as a fundamental right, and so on). What it is “independent” of is not entirely clear.

The Indian experience may have some lessons for other countries. For instance, the Jamaican court used the dissenting opinion in the Aadhaar case to strike down a similar project in that country. In Kenya, the trajectory of Huduma Namba (a biometric ID project like Aadhaar) so far mirrors what happened in India with Aadhaar (from voluntary to mandatory, an appeal to improving welfare administration, etc.). Apart from Pakistan and Estonia, which already have national biometric IDs, China’s social credit system, several African countries (Liberia and Morocco, among others) are also going down this path, with active support from the World Bank and philanthropies such as Omidyar Network and the Bill and Melinda Gates Foundation. There is a genuine concern that social, political and economic rights might be undermined by these technologies. The interest of governments, corporations and philanthropies in aggressively promoting such projects needs urgent attention.

Endnotes

This paper draws on the author’s book *Dissent on Aadhaar: Big Data Meets Big Brother*.

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- 1 Nandan Nilekani was appointed as the Chairperson of the UIDAI, and Aadhaar is widely perceived as his brainchild. See Parker (2011) for details.
- 2 Know Your Customer (KYC) is a requirement for opening bank accounts, the first step towards having access to the formal banking sector. See Sriram (2014) and Sriram (2019).
- 3 The Reserve Bank of India (RBI) and the Indian government have taken various measures to increase access to the formal banking

system. These measures included the opening of “basic saving bank deposit” (also known as “no frills”) accounts, simplification and relaxation of KYC norms, etc. For instance, in 2008–9 the Ministry of Rural Development (MoRD) decreed that NREGA wage payments could only be made through bank accounts and NREGA “job cards” were declared adequate KYC for opening no-frills or zero-balance accounts.

- 4 India has “in-kind transfers” such as subsidized grain through the Public Distribution System (PDS) or free school meals for pre-school and school children, as well as cash transfers (e.g., social security pensions).
- 5 There are other examples of such ID projects being initially heralded as transformative and revolutionary but eventually

- being scrapped – Australia’s anti ID-card campaign in 1987 is legendary (Davies 1996).
- 6 Naxal refers to communist revolutionaries, who believe in armed struggle.
 - 7 These techniques have begun to catch the imagination of economists, but here too the caveats are hidden by the hype. For instance, as a user of big data, Hal Varian (Google’s Chief Economist) cautions: “As with any other statistical procedure, skill, experience and intuition are helpful in coming up with a good answer. Diagnostics, exploration and experimentation are just as useful with these methods as with regression techniques” (Varian, 2014).
 - 8 The government was forced to cede some ground. It shared the high rates of biometric failure and exclusion resulting from such

- failures with the Court. The lawyer for UIDAI pleaded that the Court “should be like a doctor saving the patient”, clearly admitting that there was something wrong with the Aadhaar project.
- 9 Kitchin’s discussion juxtaposes business with academia. However, what is at stake with the current conception of the Aadhaar project is the need of corporations and the state’s desire to increase its own power on the one hand, and social or political aspirations of ordinary people on the other.
 - 10 Another article headlined “The Backlash Against Big Data” went further. It began thus: “‘BOLLOCKS’, says a Cambridge professor. ‘Hubris,’ write researchers at Harvard. ‘Big data is bullshit,’ proclaims Obama’s re-election chief number-cruncher.” (The Economist 2014)

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

Ursula Rao

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 in-

teroperability, 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 goals¹ formulated by the United Nations. According to Sustainable Develop-

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ment 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 2015²). It ought to ease access to financial services, employment oppor-

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 Dhan⁴), 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 inclu-

sive 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, seeding⁵ 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 subse-

quently 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 Lata⁹ 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 con-

venient 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 adaptations 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 alternative 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/PRmacLHkzL6fGJEUIVLo3H/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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Multiple social credit systems in China

Chuncheng Liu

Background

In 2014, the State Council of the People's Republic of China (State Council) issued a blueprint, the "Planning Outline for the Construction of a Social Credit System (2014–2020)" (Planning Outline), aiming to build a national social credit system (SCS) in six years. The Planning Outline claimed that many of society's current social problems, from food safety accidents to academic dishonesty, result from the lack of trust and strict regulation of those people who break social trust (*xinyong*). To solve these problems, an SCS is needed that systematically collects data about every person's and every institution's creditworthiness and trustworthiness and can serve as a basis for a strong reward and punishment system.

Since the Planning Outline came out in 2014, various projects have been generated in the name of SCS. For example, governmental agencies regularly publicize information of people on the "discredited judgment debtor list" (*shixin bei zhixingren mingdan*) on governmental websites and limit their access to things such as flight tickets. Some cities published their own municipal score system, which evaluates residents' trustworthiness, including data such as "attitudes toward parents," and gives people with a high score rewards like public transportation discounts. Many mobile applications launched their score systems and extend these scores' use into everyday life, such as on the dating market and for foreign visa applications.

Scholars and media in both China and the West commonly see these diverse practices as different aspects of one unified system. While the Chinese media respond predominantly with praise without critical inquiry (Ohlberg, Ahmed, and Lang 2017), Western media and scholars often depict the Chinese SCS as a centralized surveillance tool of governmental control

that collects people's biodata, online speech, and social networking. They view it as a crucial part of the Chinese technoscience dystopia that connects commercial systems with governmental datasets and makes automatic detection and punishment possible (Botsman 2017; Falkvinge 2015; Liang et al. 2018; Mosher 2019; Qiang 2019).

However, a closer look at the Chinese SCS would debunk these visions as misconceived and exaggerated. The Planning Outline did not propose "a" unified and ubiquitous SCS that covers everything, but rather various SCSs in different social localities. In practice, as many scholars' recent works have shown, different SCS experiments have been conducted and have resulted in a very messy and complicated reality (Ahmed 2019; Gan 2019; Kobie 2019). In this paper, I will show that there has never been a single and unified SCS in China. Instead, there are multiple co-existing SCSs at different levels and in different fields that often do not mutually aggregate. Meanwhile, the Chinese SCSs are still constantly developing and evolving, making changes in designs and implementations at different locations. The question we urgently need to answer is not "What is the Chinese SCS?" but "What *are* Chinese SCSs, and how do *they* work?"

The main body of current literature on Chinese SCS is conducted by legal scholars and based on the central government's published policy documents. They show a wide range of data collection, aggregation, and analytics plans with poor privacy protection in policy designs (Y.-J. Chen, Lin, and Liu 2018; Y. Chen and Cheung 2017; Liang et al. 2018). Some scholars also examine media and public opinions toward SCSs, both quantitatively and qualitatively,

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showing general support without any fundamental challenges (Kostka 2018; Lee 2019; Ohlberg, Ahmed, and Lang 2017). The multiplicity of Chinese SCSs has been more acknowledged in recent publications. Particularly, Ohlberg, Ahmed, and Lang (2017) identify two kinds of pilot program for SCSs (commercial and local governmental), which provide a useful distinction for this paper to further develop. Creemers (2018) offers a historical review of the development of multiple Chinese SCSs in different fields. Using data from Beijing's SCS websites, Engelmann et al. (2019) show

what kinds of behaviors the local government tries to promote and discipline.

Yet, when scholars discuss the multiplicity of SCSs, they often simply use examples from different places without systematically examining the whole landscape. They also lack a clear demonstration of the different logics and theories behind different SCSs, as well as relationships among them. Thus, they overlook the conflicting contested process of different institutions, from different governmental agencies to commercial entities, in the development of the multiple SCSs. To better understand current SCSs' social impact and future potentialities, we need to gain more systematic and accurate knowledge about what SCSs are doing. Based on the data I have collected from governmental policies (both central and municipal) and newspaper articles, I adopt a more realistic approach and goal in this paper. I aim to explore and articulate the multiplicity of current Chinese SCSs, examine diverse logics and operationalization strategies behind them, and then explore the relationships among them.

Currently, there are four main kinds of SCS emerging from two approaches. The first approach sees SCS as an infrastructure for economic and financial activities, which is led by the People's Bank of China (PBOC), China's central bank. PBOC designs and implements a nationwide governmental financial credit system. There are also commercial credit score and rating systems developed by private corporations, such as the Sesame score, which are under the supervision of PBOC. The second approach sees SCS as a potentially useful tool for social governance, which is led by the National Development and Reform Commission (NDRC), a macroeconomic management governmental agency under the State Council. SCSs created under this approach include nationwide governmental blacklists/redlists developed by different central governmental agencies and municipal governmental SCSs that are piloted at the local level.

I then historicize current SCSs and show that many elements and assumptions of SCSs after 2014 can be traced back to China's political history. Finally, I propose an alternative theoretical framework to understand Chinese SCSs as symbolic systems with performative power that is more than a simple repressive and direct political project.

Nationwide governmental financial credit system

The nationwide governmental financial credit system that PBOC has developed focuses on dealing with the risks and uncertainties that information asymmetry

brings in the economic and financial fields (Rona-Tas and Guseva 2018). When "social credit" was first mentioned in a Chinese national policy document in 2002, it was this more narrowly understood financial credit system that the Chinese government discussed. PBOC's credit system covered both natural persons and corporations. The first-generation financial credit system was launched in the early 2000s and produced credit reports that for individuals contained merely financial and economic information such as the number of credit cards, mortgage history, and delayed payment.

After the State Council published the Planning Outline in 2014, PBOC started to develop the second-generation financial credit system, which is to be launched in the middle of 2019. The second-generation credit system offers credit scores, like the FICO system in the United States. Both generations of this system collected most of their data from banks and other financial institutions and were only used in the financial field by lenders.

Commercial credit rating and score systems

Commercial credit rating for businesses had existed in China long before the emergence of credit rating and score systems for natural persons and the "social" credit system. Since the 1990s, credit rating companies, such as China Chengxin, Dongfang Jincheng and Dagong, were established to grant credit ratings for businesses in the market. Like their international counterparts, such as Moody's and Standard & Poor's, these credit rating companies merely focus on the market behavior of corporations and their ability to pay back debts.

China launched its individual credit score market on January 5, 2015, granting trial licenses to eight commercial companies, mostly tech companies, to build their own individual credit rating and score system. Sesame credit score (*zhima xinyongfen*), built by Ant Financial (*mayi jinfu*), a company affiliated with Chinese tech giant Alibaba, was launched on January 28, 2015, and has been the most commonly used commercial credit system to date. Alibaba has more than 800 million users for its two platforms: Taobao, the biggest online commerce platform in China; and Alipay, the biggest mobile payment platform in China.

The Sesame credit score, like some other commercial SCSs, differs in many ways from the PBOC's financial credit system and other governmental SCSs that I will elaborate on in the following section. First, it includes personal data, such as educational level and ownership of cars, in the credit score calculation. Us-

ers can upload their certificates and legal documents for Ant Financial to verify their information. Second, it includes one's social network relational data on Alibaba's platforms. Yet, contrary to popular claims that a Sesame score will be affected by a person's political views on social media (Falkvinge 2015), Ant Financial claimed that they do not have access to any content of an individual's social media posts (Hu 2017). Third, it includes detailed consumption information, which is incorporated into its model. A famous example is that diaper consumption would lead to a higher score while video game consumption would result in a lower score, as the former indicates more social responsibility. Lastly, its model is more complicated than PBOC's financial credit system and other publicized governmental credit systems, claiming to use machine learning to model more than ten thousand different dimensions of data (Li 2015), while governmental SCSs are still relatively primitive and based on points accumulation.

The Sesame credit score soon became extremely influential and widely used, with the company's large user base and extensive promotion. A high Sesame credit score would allow people such conveniences as deposit-free public bikes, hotels, or renting services. Meanwhile, it also became commonly used "off-label" (Rona-Tas 2017) in other social contexts, such as on online dating platforms and for travel visa applications, which were intentionally promoted by Ant Financial to increase the Sesame credit score's impact. However, such uses, alongside other issues, resulted in criticism from the PBOC, Sesame's supervisor.

After the trial period of the commercial individual credit system ended in 2017, none of the eight companies had their license renewed. PBOC's officials criticized these companies for lack of data sharing across different platforms, conflicts of interests, and lack of understanding of what should be considered as "credit" (Wu and Sun 2018). In early 2018, the National Internet Finance Association of China, a governmental agency under the PBOC, and these eight companies became funders and shareholders of one commercial individual credit score and rating company, Baihang Credit. It became the only commercial company to receive an official license for conducting business in individual credit score and rating in China. According to Cunzhi Wan, director of the PBOC credit bureau, once Baihang started to launch its services, all the current commercial individual credit rating services should be suspended. Although Baihang has not provided any products or services since its establishment, Ant Financial and other companies have already withdrawn their credit score's implementation in the financial market and shifted priorities away from scoring (Y. Zhang 2018).

Nationwide governmental blacklist/redlist systems

The nationwide "social" credit system that most people discussed after 2014, however, is a system that combines "discredited subject blacklist" and "credited redlist" (*shouxin hongmindan*). A new cyberinfrastructure, Credit China (<https://www.creditchina.gov.cn/>) was launched in 2015 to publicize information of people and institutions that are on different blacklists and redlists and to promote policies and news about SCSs and social trust. Its municipal versions, such as Credit Beijing and Credit Shanghai, have also been constructed. Currently, almost every city in China has its own SCS website.

Although the centralized cyberinfrastructure seems to indicate a unified blacklist/redlist system, again, there is no such single system. Various blacklists/redlists exist based on different central governmental agency jurisdictions, while NDRC oversees and/or coordinates their design and implementation. Each blacklist has different inclusion criteria. For example, the Office of the Central Cyberspace Affairs Commission (CCAC) proposed to include those people who spread rumors online into its "Internet service discredited subject blacklist." While the Civil Aviation Administration (CAA) put people who are disorderly on flights on its blacklist. The consequence of getting on different blacklists varies, even after 44 central governmental agencies signed an agreement in 2016 to share data and punish jointly people on different blacklists. Publicizing personal information, such as name, address, along with the reasons why the person is on the blacklist, on SCS websites might be the only unified punishment across different blacklists. Taking CCAC and CAA as an example, punishment for people on the CCAC blacklist is merely a limitation of their internet use, while punishment for people on the CAA blacklist could be limitation of their air travel.

Among the different blacklist systems, the first and most mature is the discredited judgment debtor list, which was launched on July 16, 2013 by the Supreme People's Court (SPC) to deal with the problem of the enforcement of court judgments. People on this blacklist are included predominantly in connection with nonpayment of debts in economic disputes after a court ruling. The typical case is a person (or business) who owes others money but refuses to repay, even though they have the economic capacity, after the court has ruled that they should. Courts, from local to the supreme, are the main institutions in determining who should be put on this list.

The maturity of the discredited judgment debtor list is apparent in many respects. First, it is the most

widely used blacklist system so far. In January 2019, for example, 215,582 people were on national discredited lists. Among them, 578 were on the railway corporation blacklist, 862 were on CAA's, and one was on the Tax Bureau's, while all the rest were on the discredited judgment debtor list. A study of public records on the Beijing SCS website also supports this point (Engelmann et al. 2019). Second, it has the most successful implementation of joint sanctions. In the beginning, the SPC already cooperated with different governmental agencies to impose joint sanctions to limit purchases by people on this list, including things like first-class train and flight tickets, real estate, and vacation-related expenses. Blacklist status would also influence a person's children, as they cannot attend private schools. In subsequent years, SPC and NDRC have built more connections and strengthened their power of joint sanction. Besides consumption constraints, rights related to working in the government or promotion in public institutions are now all limited in the new plan. In addition, people on the discredited judgment debtor list would even be called differently, as *laolai*, which means "very dishonest person who refused to pay his/her debts." No specific name is given to people on other discredited blacklists.

Discredited blacklists and credited redlists targeted both natural persons and institutions such as non-governmental organizations, business corporations, and governments. Institutions' legal representatives and key personnel in charge of the legal and financial obligations would also be affected. Taking the discredited judgment debtor list as an example, if an organization refused to meet a court ruling (usually nonpayment of financial obligations), the organization, plus its legal representatives and key personnel in charge of the legal obligation, might be classified as discredited judgment debtors. The most striking examples of the implementation of this system are in its application to governments. In April 2017, media found that more than 480 city, county, and country governments were classified as discredited parties (H. Zhang 2017). Governmental leaders of these places experienced punishments such as limitations on plane and train travel, while their governments' borrowing and investment activities were also significantly limited.

Municipal governmental systems

The central governmental agencies designed the national discredited blacklist and credited redlist system, constructed the cyberinfrastructure to publicize information, and built the multi-agency joint sanction cooperation to punish discredited people. Yet it is mostly local governmental agencies that implement

these policies: collecting and uploading data, classifying and punishing people. Enforcement has not always been very active. For example, one city had 11,000 discredited judgment debtors in the system, but only enforced punishment 50 times (Rao 2018). Some other cities are more active and innovative in the enforcement of the national SCS. For example, the court in Luoyuan, a small city in Fujian province, publicizes discredited judgment debtors' personal information (name, photo, address, and money owed) at the beginning of movies played at local cinemas. The court in Qichun, a mid-sized city by Chinese standards in Hubei province, even works with local mobile companies to give discredited persons unique ringtones so that people know from the tone if the caller is a *laolai*.

The multiplicity of SCSs is not only about the various ways to implement punishment for people in the discredited judgment debtor list. Many local governments also construct their own municipal SCSs and reconfigure the meaning of "trustworthiness" and "credit" in their local practice. Unlike the severe fragmentation among different agencies in the central government, local governmental authority can better coordinate (or force) different departments to work together at the local level. This difference is reflected in the organizational arrangements. While there is still no cross-ministry SCS agency at the central governmental level, municipal governments commonly establish a new municipal governmental agency, often named "XX SCS center/office," to design and implement municipal SCSs. Although some cities' municipal SCS for businesses is divided according to the different social fields under different governmental jurisdiction, the municipal SCS for natural persons is always united into one system on the local level. Some municipal SCSs, such as Ningbo's, produce credit reports, while the most innovating and arresting municipal SCSs are based on quantified scores.

Suining, a county-level city in Jiangsu, was the first city to construct a quantified SCS for natural persons. In 2010, Suining released a system called "mass credit" (*dazhong xinyong*), which granted each resident a credit score. Misconduct such as jaywalking would result in a score deduction. Suining's mass credit system soon faced a huge backlash from the domestic media, which argued that the government should not score their citizens in general and worried that such practices were abuses of the government's power. Some even denounced Suining's SCS as a system for rigid social control akin to the "Good Citizenship Certificate" (*liangminzheng*) issued by Japanese colonizers during China's occupation (Creemers 2018; Ju 2010). The county government claimed to have revised the system due to the controversy, yet it has not responded to any other inquiries since then.

Table 1. Chinese cities with municipal quantified SCS (by May 1, 2019; N = 21)

City	Province	Population ^a (million)	GDP ^b (billion RMB)	Launch date	Number of indicators
Rongcheng	Shandong	0.7	121.1	1/1/2014	391
Shanghai	Shanghai	24.2	3267.9	4/30/2014	N/A
Suzhou	Jiangsu	10.7	1859.7	1/23/2016	243
Yiwu	Zhejiang	1.3	124.8	8/10/2017	175
Wuhu	Anhui	3.7	327.9	11/1/2017	N/A
Weifang	Shandong	9.4	680.5	1/9/2018	N/A
Suqian	Jiangsu	2.9	277.1	3/23/2018	80
Suifenhe	Heilongjiang	0.1	1.1	3/26/2018	236
Fuzhou	Fujian	7.7	785.6	6/4/2018	68
Xiamen	Fujian	4.0	479.1	7/5/2018	750
Ankang	Shanxi	2.7	113.4	8/20/2018	210
Wulian	Shandong	5.1	25.8	9/1/2018	305
Weihai	Shandong	2.8	394.9	11/2/2018	1503
Hangzhou	Zhejiang	9.5	1350.0	11/16/2018	N/A
Fuzhou	Jiangxi	4.0	138.2	11/16/2018	N/A
Jiangyin	Jiangsu	1.7	380.6	11/19/2018	112
Ruzhou	Henan	0.9	43.4	11/29/2018	220
Taicang	Jiangsu	0.7	124.1	12/4/2018	54
Puyang	Henan	4.0	165.4	12/28/2018	83
Shenyang	Liaoning	8.3	635.0	1/15/2019	N/A
Ordos	Inner Mongolia	2.1	376.3	3/15/2019	49

Note: Data collected from the National, provincial, and municipal Statistics Bureau;

a Data date: 2017; b Data date: 2018, 1 RMB = 0.14 USD = 0.13 EURO

Rongcheng, a seaport county-level city in Shandong, became the first city to launch its own quantified SCS since the Planning Outline was issued in 2014, and with far less media exposure and controversy than Suining. More cities followed this kind of quantified SCS model. By May 1, 2019, 21 Chinese cities had published their own municipal quantified SCS, and 27 more cities were in the process of preparing quantified SCSs. We can observe a significant increase in the speed with which new municipal SCS turned to quantification: 16 out of 21 have been launched since 2018 (Table 1). The different municipal SCSs have commonalities as well as differences. Some municipal systems are more alike than others. For example, SCSs of Ruzhou, Ankang, and Suifenhe have largely adopted Rongcheng's 2016 SCS framework and indicators (Rongcheng updated its metric in both 2016 and 2019) with little local variation.

Cities with quantified SCSs are located predominantly in the east coast provinces (Figure 1). Most of them have a population of more than one million (17/21, 81%) and occupy critical economic or political roles. For example, Shanghai is the biggest city in China, while Suzhou, Xiamen, and Hangzhou are cities with the largest GDP in their provinces. Fuzhou, Hangzhou, and Shenyang are capitals of their provinces. Among the 21 cities, the majority (15/21) publicized their metrics and indicators. Fuzhou, the capital of Fujian province, only publicized its positive indicators that reward credit score, keeping secret its negative indicators that deduct from a person's credit score. The number of indicators in publicized municipal

quantitative SCS metrics ranges from 49 (Ordos) to 1503 (Weihai). Most quantified municipal SCSs also construct classification based on a person's score. For example, in Rongcheng, people with scores ≥ 960 , 850–959, 600–849, and ≤ 599 will be classified as A, B, C, and D, respectively.

Achieving good classifications or high scores in the municipal SCS will result in various benefits supported by governmental agencies and commercial organizations. The most common reward is public transportation discounts, increased borrowing limits in public libraries, and fast track for governmental services. Some cities, like Hangzhou and Weihai, also give loan discounts for people with a high municipal SCS score. Punishments for low municipal SCS

scores are smaller in scope and items. Most cities do not even elaborate specific punishments, and in those cities that do, punishments are mostly about honor and suspending promotions for people who work in public institutions. Suifenhe city government also indicates that it suspends or decreases social welfare payments for people with a very bad credit score.

Data sources of municipal SCSs are varied. Most of these municipal SCSs are largely based on the aggregation of pre-existing legal rules and regulations from different governmental agencies. Yet different municipal SCSs may include rules from different governmental agencies. For example, Yiwu's 2018 metric explicitly includes 41 governmental agencies and public institutions, while the SCS in Suqian only had ten governmental agencies and public institutions. Courts, the office of procurators, police departments, transportation departments, tax bureaus, and state-owned utility companies are included in all publicized municipal SCSs. Yet participation by health and education departments, for example, is absent in some municipal SCSs. In addition, some cities incorporate data beyond pre-existing governmental rules and regulations. The most salient example is Rongcheng, which extends to cover social and moral behavior such as "conducting activities of superstition" (deduct 10 points out of 1000) in its SCS metric.

The kinds of data collected in the municipal SCS vary. Still, most municipal SCSs focus merely on individual behavior and do not include socioeconomic or biological characteristics. Shanghai and Puyang, for example, explicitly claim that collecting data such

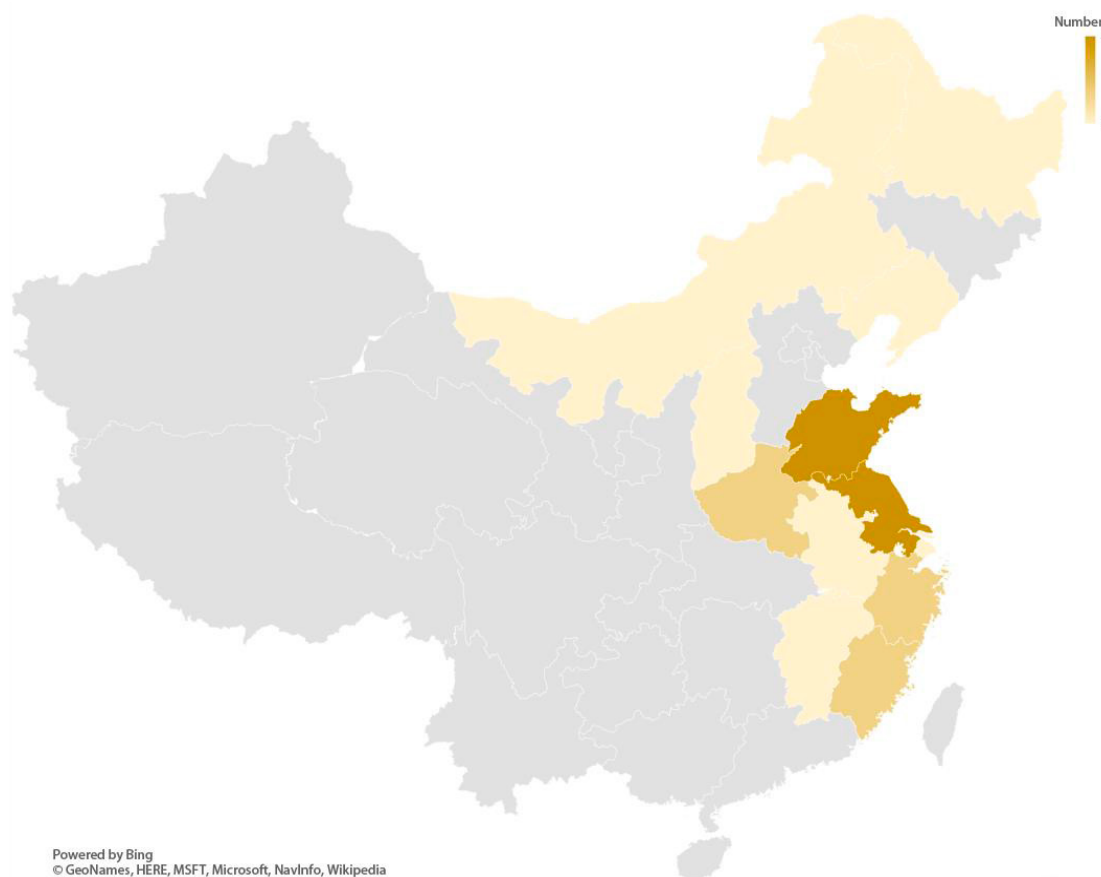


Figure 1. Number of Chinese cities with municipal quantified SCS by mainland China provinces (by May 1, 2019, N=21)

as ethnicity, religious beliefs, party membership, body shape, genetic information, fingerprints, and medical history in the name of SCS is illegal. Yet some cities, such as Taicang, collect individual education, employment, and marriage data. For Rongcheng and those cities that adopt Rongcheng's framework, party membership information, at least Chinese Communist Party (CCP) membership, will be collected, as there is a specific section in their SCS metric that regulates party members' behavior. Social relationships would not influence a person's score. The only exception is in Rongcheng SCS, which punishes the guarantor of another who fails to repay a loan. More social relation considerations were included in the reward section but were limited to family level. For example, in Rongcheng SCS, family members of a military person will be rewarded with 5 points; family members of a body/organ donor will be rewarded with 100 points.

Relationships among multiple SCSs for natural persons

In the sections above I presented the four main kinds of SCSs in two groups. These multiple SCSs are not

necessarily interconnected. In general, the nationwide governmental discredited blacklist, and particularly the discredited judgment debtor list, is more connected than others, mostly through data input to other SCSs (Figure 2).

Most of the nationwide governmental SCSs are controlled separately by different central government agencies and do not connect with each other. The only exception is the relationship between PBOC's financial credit system and the discredited judgment debtor blacklist. Discredited judgment debtor information would appear in the PBOC's credit report, which may influence the debtors' relationship with banks and other financial sectors that use PBOC's credit report as a reference. The relationship among municipal and commercial SCSs and the discredited judgment debtor list operates in the same one-way direction. If someone was classified as discredited in the judgment debtor list, in most municipal SCS rules, that person would immediately be reclassified into the lowest credit level with corresponding credit score deduction. For commercial SCSs, Chinese SPC has sent discredited judgment debtor information to Ant Financial since 2015, so the people on the list would have a significantly lower Sesame score. Yet low municipal or commercial SCS scores or levels would not influence the nationwide discredited blacklist system.

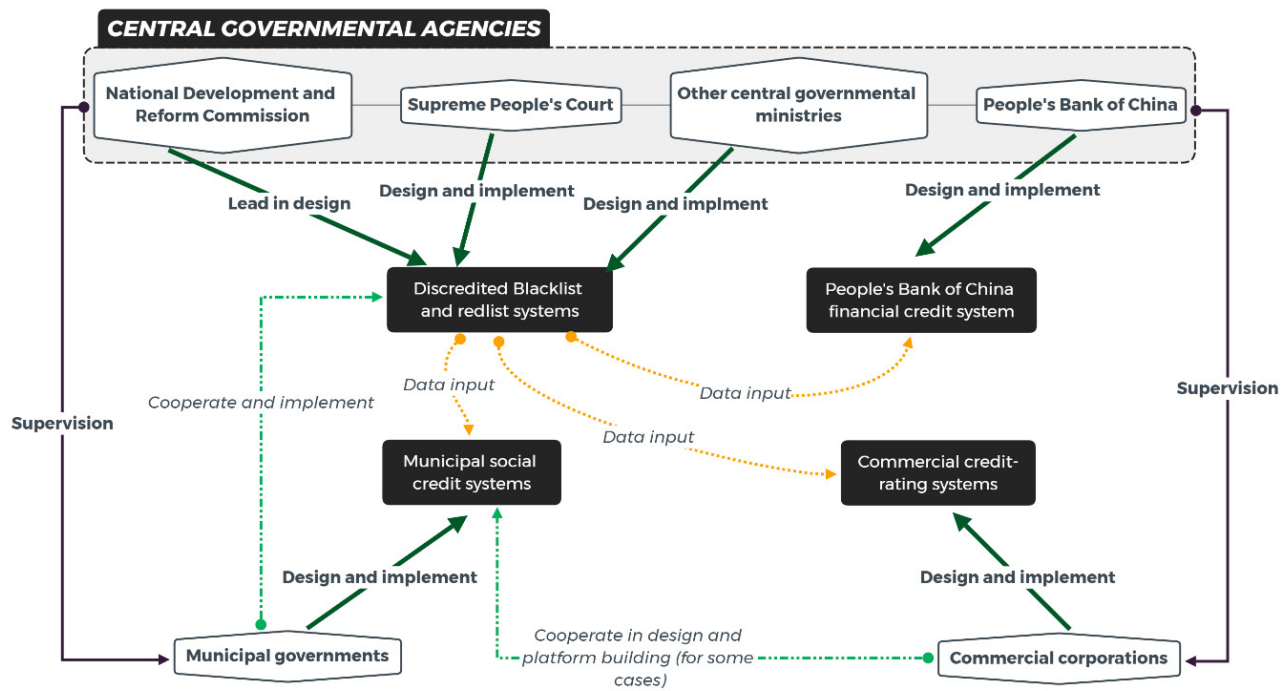


Figure 2. Relationships among social credit systems for natural persons in China

Relationships and commensurability among different governmental municipal SCSs are more complicated, given the diverse situations and metrics different cities have. This issue limits the implementation of municipal SCSs, and actions are now being taken to solve it. For example, Shanghai, Jiangsu, Zhejiang, and Anhui province published a cooperation action plan last year, which mentioned the building of a mutual recognition mechanism for different municipal SCSs (Shanghai Development and Reform Commission 2018), yet we still need more evidence to understand the process. Although some commercial companies, such as Ant Financial and Liulian Technology (Shenyang), helped different governmental agencies to build their own SCS models or cyberinfrastructures, there is no evidence that commercial SCS data is included in any municipal governmental SCS calculation.

Similar incommensurability could be found among commercial SCSs. Before Baihang Credit was established, each commercial SCS only used their own data and public records with models designed by themselves. As a result, different commercial credit scores are difficult to compare with each other. This is one of the critiques that PBOC officials made about commercial SCSs, and one of the important reasons why Baihang Credit was established. PBOC wants to aggregate data from all these companies to produce a single credit score/rating through Baihang. In an interview last year, a PBOC's official indicated that Baihang Credit, like PBOC's own credit system, would focus on the financial field and resist the potential abuse in other social areas (Y. Zhang 2018). The con-

nection with the blacklist/redlist system and municipal SCSs might, therefore, be very limited.

Historicizing social credit systems

As I showed above, although the SCS Planning Outline was published in 2014, many policies, platforms, and practices that were later considered critical parts of SCS were, in fact, proposed or enacted earlier. Looking further back in history could offer us some insights into SCSs. Scholars have connected current SCSs to the personal file system (*renshi dang'an*), a traditional governmental documenting practice that collects citizens' important information (such as education and employment history, award, crime and misconduct records, and evaluations from different institutions) into a file that is then stored in a government archive (Y.-J. Chen, Lin, and Liu 2018; Liang et al. 2018). While the connection between SCSs and *dang'an* highlights the data collection and surveillance aspects of SCS, this historicization does not capture another, and perhaps more important, of SCSs' functions: symbolically classifying people into different categories and granting different social labels and life opportunities.

Bourdieu (2014) argues that the state has "the monopoly of the legitimate use of physical and *symbolic* violence over a definite territory and over the totality of the corresponding population." One of the most important functions of the state, then, is to produce and canonize social classification. With this perspective, current SCSs are closer to the other two Chi-

nese systems: class of origin status (*jieji chengfen*) and household registration (*hukou*).

From 1950 to 2004, every Chinese citizen was assigned a “class of origin” label from a classification system that conceptualizes the individual’s class status, which included 45 labels such as “worker,” “landlord,” or “counter-revolutionist.” As a classification system, the class of origin system was directly connected to the political ideology of Marxism-Leninism that prescribed who should and should not be trusted. It was based purely on history and family relations: one’s class status was determined by the economic status and political activities of one’s family’s male household head before 1949 when the PRC was established (Treiman and Walder 2019). The state monopolized the power to classify people under different class status. People under different categories had significantly different life chances. For example, people who had “worker” or “poor peasant” class origins were able to access more social resources, while people who had “landlord” or “counter-revolutionist” class origins were highly stigmatized and did not even have the right to receive higher education during the Cultural Revolution (1966–1976).

Another significant classification system was the household registration (*hukou*) system, which was initiated in 1958. Every *hukou* had two pieces of information: 1) location of registered residence; and 2) “rural *hukou*” or “non-rural *hukou*” classification status. The initial information is based on place of birth. A person’s *hukou* information was hard to change after its assignment, although it was not prohibited (Chan 2019). Different *hukous* were associated with different social resources and welfare, such as medical insurance (Liu et al. 2018).

Both the class of origin and *hukou* classification had the function to manage populations and redistribute resources, yet they were also symbolic. On the one hand, their existence and implementation relied on the control of the symbolic violence of the PRC state: the government promotes such classifications in policy documents, newspapers, and public speeches with

the strategic use of the historical discourse and narratives. On the other, they had symbolic functions to sustain a specific social order and legitimate the governance of the CCP. On the individual level, being classified into different categories also had a significant symbolic influence on people. For example, being a “rural *hukou*” was not only about one’s place of origin. It also implies a backward, uneducated, and poor symbolic identity showing subordinate social status (Chan 2019). Class of origin classification faded from Chinese daily life after the Cultural Revolution, while the *hukou* system became less important after the early 2010s, and the distinction between rural and non-rural status was abolished in 2016. Their impact on Chinese social life still persists.

Discussion

It has been five years since the State Council issued the Planning Outline, and 2020 is the deadline that the State Council planned to establish the “basic legal and standardization foundation of social credits and credit infrastructure that covers the whole society.” In this paper, I have systematically reviewed the multiplicity of Chinese SCSs and interactions among them. This multiplicity reminds us not to mistake different SCS practices for parts of “the” unified Chinese SCS, but to recognize them as various SCSs that are produced and utilized in a specific social context. From national to municipal, from governmental to commercial, there are diverse SCS regimes with different criteria, scopes, and implementation (Table 2).

It is hard to foresee if a nationwide, unified, and quantified SCS that can cover every aspect of social life will ever be designed and implemented in the future. It is true that China is an authoritarian country that could forcefully mobilize various state apparatuses and the society to construct social projects no other countries easily could. The recent establishment of Baihang Credit and withdrawal of other commercial SCSs did show the government’s power and capacity to unify dif-

Table 2. Multiple Social Credit Systems in China

Category	Leading agencies	Main purpose	Subject	
			Natural person	Institution
Nationwide governmental	People’s Bank of China (PBOC)	Market infrastructure	Personal credit report and score	Corporate credit report
	National Development and Reform Commission (NDRC) and other central governmental agencies	Reinforce social governance	Discredited blacklist and credited redlist systems based on different governmental jurisdictions	
Municipal governmental	Supervised by NDRC, designed by municipal authorities	Reinforce social governance	Quantified score system or credit report system	Quantified score system for different fields
Commercial	Supervised by PBOC, designed by commercial companies	Market infrastructure and profit gaining	Credit score for individual	Credit rating for corporations

Table 3. Timeline for social credit system development in China

Time	Event
1990s	Many commercial credit rating companies for corporates established
2002	“Social credit” was first mentioned in the 16th National Congress of the Communist Party of China
2006	People’s Bank of China launched its credit report system for individuals and corporates
2007	“Social credit system” (SCS) was first mentioned in central government document
2010	Suining launched its quantified mass credit system and met with controversies
2013	Supreme People’s Court launched the discredited judgment debtor list
2014	Planning Outline for the Construction of a Social Credit System (2014–2020) published
2014	Rongcheng launched its quantified municipal SCS
2015	PBOC issued trial licenses for commercial personal credit rating and scoring business; Sesame score launched
2015	Credit China website launched; municipal credit websites followed
2018	Baihang Credit company established and received formal license for commercial personal credit rating business
2019	PBOC credit report system updated

ferent systems. However, we need to also remember that China’s authoritarianism is fragmented, especially after Mao’s death and the end of the Cultural Revolution: different governmental agencies have different interests, logics, and traditions that may not easily be aggregated (Lei 2017; Lieberthal and Lampton 1992). Every time the central government proposes some new but vague ideas or instruments, different governmental agencies try to maximize their own interests and power, and conflict with others. After all, all commercial SCSs are under the regulation of one governmental agency, PBOC, while governmental SCSs are influenced by political conflicts between multiple governmental agencies and therefore show discrepancies (Table 3). Different central governmental agencies keep proposing their own blacklists, while different municipal governments keep designing different local SCS metrics. The emerging mutual recognition mechanism for different municipal SCSs is more like evidence to show that the multiplicity of SCSs will last, rather than the trend of a potential unification.

Tensions between the two key governmental agencies in SCSs, PBOC and NDRC, further complicate the situation. They have different understandings of what “credit” is about and what a “credit system” should be. PBOC focuses on a narrow definition of “credit” and differentiates it from “honest” or “trustworthy” (Wu and Sun 2018), which is exactly what NDRC tries to promote through SCS. On the one hand, PBOC’s SCS and commercial SCSs under its supervision have a specific aim. Like other financially centered credit systems, scores produced by these SCSs are about the possibility of one’s debt payment behaviors in the future (Rona-Tas and Guseva 2018). As a result, indicators act as predictors in these SCSs. They are not necessarily normative or even directly associated with the outcome independently (such as diaper purchase history), as long as they make sense in a statistical way and produce useful results. In other words, these SCSs are “forward-looking.”

On the other hand, those SCSs under the NDRC’s lead reward good behavior and punish misconduct

and try to discipline people to be trustworthy citizens, yet they do not aim to predict a specific outcome in the future, as no clear definition of “trustworthy citizen” has ever existed. Scores and classifications in these SCSs are summaries of what people did in the past. In other words, SCSs under NDRC are “backward-looking.” As a result, each indicator in these SCSs has specific and moralized meaning and must directly associate with the general goal of these systems. Otherwise, people will challenge the legitimacy of specific indicators or even the whole system.

Chinese SCSs should be historicized not as simple extensions of the previous personal archive system, but as an attempt to classify people and regulate their social life. Of course, compared with the symbolic violence of the previous state classification, SCSs are significantly more humanized, flexible, and transfer the responsibility for one’s classification status from family to individual. After all, SCSs are based on people’s achieved, not ascriptive, qualities. They evaluate people based on their own behavior instead of unalterable family background; SCS metrics are more diverse than single political considerations, and the implementation of SCSs are not associated with severe social exclusion as previous systems were. Yet the fundamental symbolic characteristics in SCSs that are based on classification and quantification require a theoretical framework that is beyond mere toolkits for active surveillance for repressive authoritarian politics.

We need to conceptualize Chinese SCSs not as a dystopian technology that could only exist in authoritarian societies, for its fundamental assumptions, practices, and implications – quantifying, sorting, classifying, and treating people differently based on their scores – are not that far away from the Western democratic societies (Foucault 1995; Fourcade and Healy 2016; Lee 2019; Lyon 2018). Fourcade and Healy (2013) proposed the concept of “classification situations,” which captures the reality that prevailing uses of the market classification, particularly credit score, have produced a new social reality in which a person’s position in the credit market are consequential for

their life chances. As a result, the social classification may produce self-fulfilling prophecies and moralized inequality (Fourcade and Healy 2013; Rona-Tas 2017).

SCSs are not only tools that classify people into different categories based on seemingly objective metrics for rewards or punishments. These classifications are symbolic and performative: they not only classify what reality is, but also actively engage in changing society and the subjects they have classified (Callon 2007; Foucault 1995). Meanwhile, people under SCSs are not compliant subjects without any agency. Classification, after all, is about constant struggles (Bourdieu 1984), where dynamic social relations could be revealed. As Rona-Tas (2017) shows, the off-label use of credit scores may destabilize the classifications' legitimacy and finally destroy them.

We need more studies to engage in this field from different perspectives, and particularly more empirical research. First, we need more studies on how SCS policies were designed at different levels, in particular locally. How were the inclusion criteria of national blacklists/redlists established? How were different governmental agencies and non-governmental actors involved in translating regulations and moral standards into numbers and producing quantified metrics? What kinds of expertise and positionality were involved in

the process of operationalizing "trustworthiness," "creditworthiness," and "honesty"? How were various interests balanced? In addition, we need more studies on how SCSs were implemented by the governmental agencies and experienced by citizens. How do people understand SCSs and make sense of them? Particularly, what kinds of problems come up in these processes, and how do people solve them? While it is true that we have heard little about Chinese citizens' systematic resistance to SCSs, it does not mean problems do not exist. Do people game the system, or simply not care? The multiplicity that I showed in this paper further complicates these issues: How do different SCSs translate, and/or produce different life experiences?

More importantly, as sociologists, we need to ask what the social consequences of the SCSs are. How performative are SCSs? Do SCSs work as a self-fulfilling prophecy, not reflecting, but (re)producing one's creditworthiness? How may different SCSs (re)produce different social relationships and inequalities? We need to not think of Chinese SCSs as a unique case that is confined within the boundaries of a nation, but to connect its design and practice to increasing implementation of similar surveillance, sorting and classifying systems globally to understand the profound implications of such algorithmic governance.

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Credit Scoring in the United States

Barbara Kiviat

Introduction

Credit scoring is the paradigmatic example of algorithmic governance (Fourcade and Healy 2017; Pasquale 2015). Corporations take information about thousands of individuals, data mine it for patterns that predict people not repaying their loans, and then make decisions about future lending—who gets money, how much interest they pay—based on variables that predicted default in the past. This is not the only way to make lending decisions, but in the U.S. it has become the dominant one (Mays 2001). This article explores how that came to be the case and the ramifications it has had in order to provide a window onto the credit-centric U.S. economy and an illustration of how predictive algorithms take hold.

The article proceeds in four parts. The first section presents an historical overview of the rise of consumer credit data and early attempts at evaluating creditworthiness quantitatively. This section shows that credit scoring sits atop a complicated social infrastructure that took generations to construct (Guseva and Rona-Tas 2001). Only when personal information was sufficiently standardized, computerized, and rendered objective could scoring systems function at scale and achieve widespread legitimacy. The second section maps out how credit scores facilitated some of the 20th and early 21st centuries' greatest financial innovations. Yet at the same time, credit scoring and its close companion, risk-based pricing, helped undermine basic precepts of sensible lending and paved the way for financial firms to recklessly prioritize profit over loan repayment.

The third section of the article zooms out and starts to consider how credit scores intersect with so-

cial hierarchies, political struggles for economic inclusion, and power dynamics between consumers and corporations. The public policy debates presented here reflect long-time problems in U.S. lending, especially racial bias, as well as novel issues about how credit scores do—or do not—capture individuals, and the visibility of scores themselves. The final section continues to locate credit scoring in the larger ecosystem of American life by tracking the spread of credit scores into non-lending domains and detailing rapid expansion in the kinds of data companies use to create scores. The article ends with a discussion of how the techniques, assumptions, and justifications of credit scoring are now being replicated throughout the consumer economy as the commodification of personal data enables the mass adoption of algorithmic prediction.

Historical background

The story of credit scores in the United States begins in the late 19th century when East Coast businessmen created the nation's first consumer credit bureaus (Lauer 2017a). Credit scores themselves would not come along for another hundred years, but the long history of consumer credit information in its raw form brought important practices that laid the groundwork for the ascent of credit scores.

In 19th century America, retail life underwent great transformation, as it did in Europe (Calder 1999; Miller 1981). Merchants who had historically been embedded in the same communities as those to whom they extended credit increasingly lacked social ties to the people they let take merchandise ahead of payment. The rise of the department store, mail-order catalogs, and other innovations in mass consumerism meant that retailers had less information about their

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customers, which made it difficult to solve the thorny problem of deciding who to trust—of judging whether a particular individual was likely to pay off their balance (Carruthers 2009; Guseva and Rona-Tas 2001).

In the 1870s and 1880s, merchants started banding together through trade associations to share lists of delinquent and non-paying customers. Around the

same time, independent businessmen launched the nation's first consumer credit bureaus. These organizations collected information about individuals to sell to retailers, as well as to landlords, employers, and anyone else who might be interested (Lauer 2017a; Stuart 2003). Agents asked around about individuals' debts, as well as other details that might reflect on moral character, such as drinking and gambling habits (Lauer 2008; Sandage 2005). The premise: third-party information could speak to a person's trustworthiness just like direct social connections could.

This arm's length approach to information, the kind that would later support credit scoring at scale, was not the only solution companies came up with. The late 19th and early 20th centuries also saw the emergence of credit managers within department stores and mail-order companies (Lauer 2017a). The methods of these managers reflected long-standing beliefs about the importance of assessing borrowers' moral character, since just because a person can repay does not mean that they will. Credit managers met with applicants to ask about their financial and personal affairs, as well as to observe their comportment and dress (Lauer 2017b; Marron 2007). Advances in filing technology and record-keeping helped retailers systematically store and recall the data they gathered, and the spread of telephones made it easier to access the information credit bureaus collected (Lauer 2017a). Credit information was thus increasingly well-ordered and portable, important steps toward the development of scoring.

The first quantitative approaches to credit assessment appeared in the 1930s. Certain retailers, most notably the Chicago mail-order outfit Spiegel, as well as some banks and finance companies, introduced points-based systems for anticipating who would and would not pay their credit charges. Firms took information from credit applications and assigned points for a person's occupation, marital status, race, income, neighborhood of residence, and more (Capon 1982; Lauer 2017a; Marron 2007). Professionals earned more points than laborers, home owners more than renters, and so on. Companies then offered credit to those whose total passed a pre-set threshold. These early efforts at quantification marked the first steps away from a character-centric understanding of who was creditworthy, although as Lauer (2017a) notes, the designers of these points-based systems partly chose which characteristics to include based on what they thought indicated moral fiber.

The first application of statistical methods to the question of who would repay a loan is typically cited as a 1941 report from the National Bureau of Economic Research, a non-profit research outfit (Anderson 2007; Marron 2009; Poon 2007). In it, doctoral student Da-

vid Durand used a relatively new technique called discriminant analysis to analyze installment loan data from several dozen banks and finance companies. Some of the loans were "good" (i.e., being paid on time) and some were "bad" (i.e., delinquent or in default). Durand's task was to figure out which traits of borrowers best predicted the bucket loans would wind up in (Durand 1941). Fellow academics found the results interesting—down-payment size mattered more than income; women were better risks than men—but the approach was largely ignored by industry (Lauer 2017a; Sowers 1942).

Indeed, it took a lot of hard work to convince lenders to give credit scoring a chance (Lewis 1992). The company Fair Isaac, purveyor of the now-ubiquitous FICO credit scores, could barely muster interest in the late 1950s when it pitched the idea to 50 banks and consumer finance companies. Only one, the American Investment Company, responded, and for being game they got Fair Isaac's first custom-built scorecard, an easy-to-use decision-making rubric produced from a statistical analysis of the company's lending successes and failures (Poon 2007). Part of the resistance to credit scoring was cultural. Credit managers were loath to give up the idea that character assessment was the cornerstone of smart lending (Lauer 2017b). But there was a difficult technical reality as well. A large part of what Fair Isaac did in its early years was laboriously collect, organize, and digitize loan records kept on paper (Poon 2011). Before credit scoring could take off, personal data had to be computerized on a mass scale.

That began to happen in the 1960s, when organizations of all sorts—insurers, government agencies, health care providers, and so on—started to computerize the records they kept about individuals (U.S. Privacy Protection Study Commission 1977). Talk about the power and dangers of "data banks" became a national obsession, and Congress held a series of hearings, including one, in 1968, about consumer credit bureaus (Miller 1971; Warner and Stone 1970). The hearing included testimony from Harry Jordan, president of Credit Data Corporation, a California credit bureau that in 1965 had computerized all of its Los Angeles records—unheard of at the time—with an eye to growing the volume of data it could handle and expanding nationally (Rule 1974). By the time Jordan appeared before the House's Special Subcommittee on Invasion of Privacy, the company had computerized records on 20 million Americans. When Jordan said it took just two minutes to retrieve the contents of any of those 20 million files, members of the committee thought he was joking (U.S. Congress 1968).

An important shift on display at this hearing and the others which followed was that as credit bu-

reus aggregated and computerized personal information, they rationalized it as well. Using standardized categories and codes—such as ones to mark late payments as 30, 60 or 90 days behind—made it easier to collect and share data among thousands of lenders. It also funneled credit records into a format conducive to quantitative manipulation (Kiviat 2017; Liberti and Petersen 2019).

This enabled a growing distinction between data and analytic methods that were objective and those that were subjective or judgmental. As Harry Jordan told Congress, his company had no use for “qualitative opinion” (U.S. Congress 1968). The U.S. government reified such differences in new law and regulation. The Fair Credit Reporting Act of 1970, for example, labeled consumer reports that included insights from interviews, the stock-and-trade of credit managers, as “investigative” and applied additional restrictions (Fair Credit Reporting Act 1970). And in implementing amendments to the Equal Credit Opportunity Act of 1974, which banned using race, sex and other personal traits in lending, the Federal Reserve drew a bright line between “statistically sound” ways of making lending decisions and everything else. The government presented credit scoring as a way to make decisions consistently and without human prejudice, which pushed lenders toward credit scores as a strategy for deflecting accusations of discrimination (Capon 1982; Hyman 2011a).

By the end of the 1970s, when Fair Isaac president Bill Fair appeared in front of Congress, he was able to report that lenders used scoring in 20 to 30% of all credit decisions (U.S. Congress 1979). Credit scores were well on their way.

Changing business models and understandings of creditworthiness

Credit scoring changed the nature of existing lending decisions, but it also facilitated new business models and ways of thinking about who in society ought to have credit. In the context of the broader U.S. political economy and its increasing reliance on personal borrowing to provide for social welfare (Calder 1999; Trumbull 2012), it is difficult to say how much credit scoring increased lending overall (Federal Reserve System 2007). Nonetheless, certain characteristics of credit scoring, such as its scalability and seeming impartiality, put it at the center of some of the biggest changes in consumer lending over the past half-century, including those related to credit cards, risk-based pricing, mortgage lending, and securitization.

The first general-purpose credit cards—those not tied to a single retailer—appeared in the U.S. in the 1950s and 60s. In 1970, 16% of U.S. households had such a card, a figure that grew to 68% by 1998 (Durkin 2000). While a number of factors, including interest rate deregulation, contributed to the growth of credit cards, credit scoring brought something crucial to the table: a faster, cheaper way to screen applicants. In the early 1970s, it took Bank of America about a week to decide whether to grant a person a credit card (Rule 1974). Staffers reviewed information on the application (income, education, bank accounts, current loans, etc.), pulled credit reports to look for negative marks such as defaults, bankruptcies, or tax liens, and, in some cases, called creditors and employers to fill out the picture of the applicant. With credit scoring, screening applications became quicker, cheaper, and more consistent.

Credit scoring also fueled a novel approach to lending: offering people credit when they had not asked for it. Early on, credit card issuers mailed people unsolicited cards (without enough cardholders, merchants will not sign up), but this often led to high default rates, since issuers did not have a good sense of the people they were soliciting (Guseva 2005). Issuers sought guidance from credit bureaus like Equifax and TRW (today, Experian), but how they did this—by querying bureaus with rules about who to include and exclude—was a blunt approach that eliminated many potential customers (Mierzwinski and Chester 2013; Poon 2007). The creation of a new type of credit score, one produced exclusively with credit bureau data, made this pre-screening process fine-grained and precise. Lenders could simply specify cut-off points for the scores, which had, effectively, become a tool of marketers (Poon 2007)

These “bureau” scores, which credit bureaus sometimes created in conjunction with Fair Isaac, marked another important development in that they only used bureau data. Lenders could now extend credit with literally no first-hand knowledge of a person. The social disembedding of credit was complete. Using only bureau data also meant the scores did not include the types of information lenders normally collected on applications, such as income and occupation (Hyman 2011a). Bureau scores thus eased the way for the idea that credit scores capture how people behave—whether they borrow a lot, repay their loans, etc.—and not where they stand in society.

Perhaps the most far-reaching change credit scoring facilitated was the rise of risk-based pricing, first in credit cards and auto loans, and then in mortgage lending, during the late 1980s and 1990s (Staten 2015). With risk-based pricing, a lender offers people different interest rates and loan terms based on how

likely the lender thinks they are to default. Credit scoring statistically sorts people into hundreds of groups, which helps discern a broader range of possible offers (Johnson 2004). The larger shift, though, is in the paradigm. A decision that used to be about whether or not to lend a person money becomes a decision about the terms under which to lend (Marron 2007). Instead of avoiding high-risk borrowers, lenders embrace them, albeit at a high price. Credit scoring brings more people into the market and expands the definition of who is “creditworthy,” but at the same time it demarcates new moral boundaries, such as the one between “prime” and “subprime” borrowers.

Importantly, default risk is not the only thing scoring can predict. Even if a borrower is calculated as unlikely to repay a loan, they may still prove a useful source of revenue from interest charges, late fees, and other products they buy down the road. That is to say, the chance that a customer defaults and the chance that a customer is profitable are two different things.

Since the mid-1990s, credit scoring has increasingly been used in this way, to predict and price in line with customer profitability (Marron 2009; Thomas 2000). The shift is a significant one, because it changes who companies see as valuable customers. High-risk borrowers who default are undesirable, but low-risk customers, who now pay little in interest, may be as well, especially if they fail to buy additional products or are quick to switch to competitors offering better deals. As Anderson (2007, 514) explains in his credit scoring textbook: “The ideal customer could then be described as someone who has a high ongoing balance, misses the odd payment but does not default, takes out credit insurance, and probably has a low bureau score. Indeed, they are often the messiest, and closest to the cliff’s edge.” This is the outlook that encouraged huge amounts of subprime mortgage lending in the 1990s and 2000s (Langley 2008).

That said, the central role of credit scoring in mortgage lending began not with lenders looking to maximize profit, but with government officials looking to make the allocation of home loans more consistent and fair. Since the 1930s, the U.S. government has played a key role in mortgage lending by buying loans from lenders so that they do not have to wait to be repaid to lend again. This means the government needs a way to evaluate (control, really) loan quality. In the 1990s, the housing agency known as Freddie Mac set out to make evaluations more consistent and reliable and, in a momentous decision, decided to do this in part by using FICO credit scores to classify loans. This was not the only way the agency could have achieved its goal, and in fact the decision, announced in a letter to lenders in 1995, caught Fair Isaac off guard. Over-

night, Freddie Mac institutionalized the use of credit scoring in mortgage lending, alongside long-time metrics such as loan-to-value ratio, and established a FICO score of 660 as the dividing line between prime and subprime loans (Stuart 2003; Poon 2009).

One of the most consequential aspects of mortgage lenders’ mass adoption of credit scoring was how it greased the wheels of private-sector mortgage securitization in the early 2000s—and the housing finance crisis that followed. The U.S. government had long securitized mortgages, which involves pooling loans and then selling off shares that entitle investors to a portion of what homebuyers pay in interest and principal reduction (Quinn 2019). In the hands of government, this is a way to add liquidity to the mortgage market. In the hands of Wall Street, it was a way to profit off of quickly rising house prices and drive demand for high-yield loans while plausibly claiming that risks were being properly managed. Credit scores contributed to this system by acting as highly legitimate, easy-to-articulate signals of loan quality (which bond-rating firms like Standard & Poor’s demanded)—credentials, essentially (Raiter and Parisi 2004). And they contributed to its collapse by failing to fulfill their promise of accurately predicting how loans would perform in the future (Rona-Tas and Hiss 2010). For credit scoring to work, the future must resemble the past, and when that is not the case, scores do not predict.

While credit scoring is central to U.S. lending, there is important nuance to note. Not all lenders use credit scores, not all lenders that use credit scores rely heavily on them, and credit scores are still subject to human interpretation and discretion. There are plenty of ways to borrow in the U.S. without crossing paths with a credit score—from the federal government to pay for college, from a pawn shop in exchange for collateral—and some types of loans give more weight to scores than others.

Moreover, in many situations, lenders can discount the significance of a credit score in light of other information or intuition (Stuart 2003; Anderson 2007). Studying lending at banks, credit unions, and community development organizations, Moulton (2007) finds that lenders often try to get the story behind a credit score, especially when it is middling or low. In addition to deciphering if extenuating circumstances are at play, lenders draw on behavioral clues that speak to personal character—showing up on time, being polite—in order to contextualize scores. “Bad numbers,” Moulton (2007:322) writes, “do not look as ‘risky’ when they are attached to ‘good people’” (see also, Kiviat 2017; O’Brien and Kiviat 2018). To a first approximation, credit scoring systems are mechanical. In practice, human judgment can easily reappear.

Bias, exclusion, and visibility

Consumer credit is not only about lenders figuring out whom to trust and how to make money when not everyone repays their loans. Acts of borrowing and lending also reflect and are shaped by social hierarchies, political struggles, power dynamics, and cultural understandings (Graeber 2001). In the U.S., where borrowing is typically seen as a pathway to self-betterment, questions of credit have often intersected with debates about racial and gender equality, and the importance of individuals being able to fully participate in markets (Quinn 2019; Trumbull 2012). As credit scoring has played an ever-greater role in the allocation and pricing of credit, scoring has been drawn into these debates, at times cast as a solution to long-standing problems and at times as a practice that quietly perpetuates them.

The U.S.'s shameful history of racial segregation and discrimination looms large in credit markets (Pager and Shepherd 2008). Lenders, often aided by government, have systematically denied African Americans loans that might have helped start businesses or invest in property, and steered minorities to borrow under high interest rates or other unfavorable conditions (Satter 2009). Early points-based systems for quantifying loan decisions codified the notion that blacks were less creditworthy by using race as a criterion and granting minorities fewer points. Into the early 1970s, lenders routinely used an applicant's race, both to allocate points—in one example, 7 for being white, 4 for being Hispanic, 0 for being black—and to flag applications for extra scrutiny (Hyman 2011b).

Access to credit emerged as a civil rights issue in the 1960s, for minorities as well as for women, whom lenders marginalized in other ways, such as by requiring a husband's permission to borrow (Krippner 2017). Formally, such unequal treatment ended in the mid-1970s with the passage of the Equal Credit Opportunity Act. The new law banned lenders from considering certain types of information, including a person's sex, marital status, race, and national origin. The hitch, as policymakers discovered, was that lenders could still use information correlated with prohibited traits (Hyman 2011b; U.S. Congress 1979). Postal codes, for example, acted as proxies for race, which effectively preserved the influence of race in lending decisions (Cohen-Cole 2011). Credit scoring, with its broad use of data and opaque statistical models, did not do away with such proxies, but it did make them harder to identify (Citron and Pasquale 2014).

The problematic connection between race and credit has not gone away. In 2007, 52% of blacks and 30% of Hispanics had credit scores in the lowest two deciles of the credit-score distribution, compared to

only 16% of whites (Federal Reserve System 2007). Yet the evolution of credit scoring has made these and other disparities easier to wave away by cementing the idea that creditworthiness is something people can control.

Over time, scores have increasingly relied on data about financial behavior—whether a person repays loans promptly, opens and closes credit cards, gets close to credit limits, borrows from different types of lenders, etc. Industry portrays these actions as decisions individuals choose to make, even though larger social forces may sit in the background (Gandy 2009). It is harder to maintain good credit when one faces precarious work, has no wealthy family members to turn to in emergencies, is sold predatory loans, and otherwise experiences the disadvantages minorities in the U.S. disproportionately do (Bradford 2009; Rugh and Massey 2010). Credit scores may seem to simply capture how individuals manage their finances, but that is only because social complexities do not show up in a person's score, a single number in which underlying inequalities “magically disappear from view” (Espeland and Stevens 1998; Fourcade and Healy 2013, 565).

In the mid-2000s, U.S. policy discourse around fair access to credit took a significant turn with the emergence of the idea that a core inequity of the system is that some people lack credit scores. About 26 million Americans do not appear in the files of the major credit bureaus (Equifax, Experian, and TransUnion), and an additional 19 million have files that are either too sparse or too old to calculate a score—so-called credit “invisibles” and “unscorables” (Brevoort, Grimm, and Kambara 2016). These people may have never borrowed, borrowed from lenders that do not report into credit bureaus (e.g., small banks, family members), or repaid borrowed funds long ago.

To make such people visible, a broad coalition of credit scoring companies, lenders, legislators, and financial regulators began working to supplement credit bureau files with additional sorts of information, such as bill payment records from utilities, cell phone providers, landlords, and cable television companies. The goal: to draw in enough new data so that people could be scored and, ostensibly, get the loans they needed but were going without (Turner et al. 2006; Wherry, Seefeldt, and Alvarez 2019). These efforts followed an earlier, international movement to expand the reach of credit registries (Miller 2003), though in the U.S. the endeavor took on a particularly moralistic flavor, with frequent claims that credit invisibles and unscorables were not getting the credit they *deserved*.

This re-framing of not having a credit score as a social problem further institutionalized credit scoring

as an official marker of creditworthiness. It also focused policy attention in a way that benefited large financial firms looking for new customers and sidelined other ways of thinking about financial inclusion. Having a credit score is not the same thing as having access to safe and affordable credit. In fact, a subprime score is a quick way to attract the sorts of loans that often get people in trouble (Wu 2015). Moreover, defining the public policy goal as the creation of scores leaves little room for conversations about whether some people would rather not be surveilled by consumer credit companies and why it is so hard for scoreless (or any other) Americans to get the goods and services they need without resorting to taking on debt.

While companies have long been eager to expand the information they have about consumers, they have until recently resisted individuals knowing much about the files they keep and the scores they generate. At a 2000 Congressional hearing on whether companies should have to disclose credit scores to consumers, one Congressperson after another argued that people ought to be able to see their scores and an explanation of why they were low or high, so that they could take steps to improve them and have power in negotiating loan terms. This approach to consumer protection—helping people be better market participants by eliminating an information imbalance that would, as one Senator put it, “make Adam Smith turn over in his grave”—spanned the political spectrum (U.S. Congress 2000, 7). Fair Isaac worried that if consumers knew how scores were calculated, they would game the system and make scoring less predictive (Marron 2009). But a California law requiring disclosure pushed the issue forward, and by 2003, Congress, too, mandated that consumers get to see their scores, albeit for a price.

One of the consumer data industry’s concerns about disclosure was that people do not have just one credit score. In fact, a person might have dozens or even hundreds, since lenders use various combinations of data and algorithms (Clemans 2013). Moreover, companies use scoring to predict different things. That complicates the idea that people can find out their scores and then take steps to improve them. A profit-scoring model, for example, might show a high score because a consumer is likely to miss payments and incur penalty fees, but this does not mean that consumer will get good terms on a new loan—in fact, quite the opposite (U.S. Congress 2000).

Selling consumers their credit scores and reports is now a billion-dollar business. Yet multiple studies have shown that even “educational” scores designed specifically for consumers can vary quite a bit depending on where they come from. A Fair Isaac

score is different than one from VantageScore, a rival scoring company created by the three major credit bureaus, which differs again from the scores individual bureaus produce (Consumer Federation of America and National Credit Reporting Association 2002; Consumer Financial Protection Bureau 2011; 2012). At times, differences are large enough to knock a person from prime borrowing into subprime. Consumer advocates and policymakers chide industry for such outcomes, arguing that it reflects inaccuracies in the data and leaves people not knowing where they stand.

The reality, though, is that variation is a feature of the system, not a bug. Credit scores speak to whether a person is likely to behave in a way a company wants him to, and different companies want different behaviors from different people at different times. Credit scores get attached to particular individuals, but that obscures the fact that scores are relational, reflecting both borrowers’ past actions and financial institutions’ current objectives. Risk scoring does not just detach the idea of creditworthiness from notions of moral character. Risk scoring detaches the idea of creditworthiness from any stable meaning at all.

The proliferation of credit scores and the future of data

In the U.S. today, it feels like credit scores are everywhere. Fair Isaac advertises during the national football championship to remind people to check their credit scores at MyFico.com (Poon 2012). Bank statements and credit card bills arrive with scores prominently printed at the top. The *New York Times* even reports that people ask about credit scores on dates (Silver-Greenberg 2012). Credit scoring—as a practice and as an idea—continues to expand its reach over Americans’ lives. This final section explores three main ways that is happening. First, companies besides lenders are using credit scores to make decisions. Second, novel sorts of data are being drawn into credit score calculations. And third, the lending industry’s blueprint for risk scoring is being adopted far and wide as the commodification of personal data enables countless new algorithmic predictions throughout the consumer economy.

Information gathered by credit bureaus has long been used beyond lending. Credit bureaus have sold their files to employers and insurers for more than a century, uses that were codified as “permissible” in federal law in 1970. Since lenders began scoring, the practice has migrated to other industries, facilitated by many of the same factors, including easier access to data, advances in statistics, and product-development

savvy at firms like Fair Isaac. These days, car insurers use credit scores to predict who will file insurance claims; landlords to gauge who will make rent; utility companies to anticipate who will pay the bill on time; hospitals to decide whose debts to try to collect; and more (Fremstad and Traub 2011; Rosenberger, Nash, and Graham 2009).

All of this “off-label use,” as Rona-Tas (2017) calls it, brings the potential for cumulative disadvantage. A person who falls behind on loan repayments is now not only charged more for future loans but is also charged more for auto insurance, required to pay a large deposit to rent an apartment (or denied it altogether), looked at more skeptically by potential employers, and faced with other challenges in non-lending markets. Through the sharing of data and spread of scoring, starting disadvantage (or advantage) in one domain of life carries over to others (Gandy 2009; Maroto 2012). Rona-Tas (2017) points out that this is especially pernicious since credit bureau data are riddled with omissions and mistakes. Policymakers and consumers have pushed back against some of these non-lending uses, but companies have averted major regulation with the argument that credit scores help predict behavior they are justified in predicting, such as whether a person will file an insurance claim (Kiviat 2019).

Credit scoring is also expanding its reach as lenders pull additional types of personal data into the scores they use to allocate and price credit. Consumer loan balances are at a high, and new data are a way to keep selling loans by scoring people who previously were not scored and by upselling those who have already borrowed (Andriotis 2018). Major players like Equifax, Experian, Fair Isaac, LexisNexis, and TransUnion are supplementing their scoring models with information about individuals’ bank account balances, cash flows, and bounced checks; utility, cell phone, and rent bill payments; employment and residential history, tax data, income, home values, and much more. Technology entrepreneurs, many of whom got into credit scoring as a way to put newfound data assets to use, are integrating even more far-flung information. Credit scoring models now might include information about college major, social media connections, and occupation; cell phone use, including how long people talk and at what time of day; the ways people use their computers, including how quickly they scroll through terms of service and whether they fill in forms in all capital letters; and much more (Deville and Velden 2016; Hurley and Adebayo 2016; Koren 2015; Reisinger 2015).

Credit scores thus increasingly rely on a person’s socioeconomic status, lifestyle, and habits, the exact sorts of information that went out of favor in prior de-

cares. The use of such data can be controversial, but companies defend their innovations by evoking images of scientific rigor and objectivity—algorithmic predictions produced from thousands of variables and the latest machine learning techniques. At the same time, credit scoring executives moralize people for the way they show up in the data. A person with worse grades in school is less likely to take his financial obligations seriously; canceling a prepaid wireless phone may indicate a person is trying to disappear from those he knows (Hardy 2015). This rhetorical combination of claiming both scientific and moral standing is a powerful one in establishing new practices as legitimate.

Policymakers are trying to figure out how to fit new sorts of data and models into existing regulations, but so far there are no clear answers. The Fair Credit Reporting Act, one of the U.S.’s few data privacy laws, requires companies to tell consumers when their credit files contribute to an “adverse action,” such as being denied a loan, insurance policy, or job, as well as the main reasons why. As credit scoring models become more arcane, giving an understandable answer as to why a model produced the score it did becomes increasingly difficult, if not impossible (Brainard 2018). And as information sources become more dispersed, it is not obvious how consumers can dispute inaccuracies in the data, another legal requirement.

Yet what is perhaps weightier than the expansion of credit scoring is the diffusion of the *idea* of credit scoring. Credit scores are not only financial and technological objects but cultural ones as well. Predictive analytics are in vogue, and the well-known credit score provides an easy mental model for how decisions can be reconstituted as problems that statistical analysis and consumer data can solve. For example, when Fair Isaac launched a new score to predict whether patients would take their medications as prescribed—of great interest to insurance companies—the company’s CEO explained: “We started thinking about how do consumers behave as patients. The problem, from a math standpoint, is not all that different from banking and other industries” (Parker-Pope 2011). To predict health behavior, Fair Isaac imagined patients as consumers and built a model from information about things like whether or not people own cars.

Credit scoring embodies particular epistemological assumptions and moral worldviews, and as the logic of credit scoring spreads, so do those principles. Credit scores teach that the right way to think about the future is to look at the mathematical patterns of the past; that the relevant standard is correlation, not causation; and that the important types of information to pay attention to are those which are easily rendered into discrete, quantitative fields. Moreover, the legiti-

macy of credit scoring rests on a particular rendering of fairness in which it is fine to decide what people get based on how other people have behaved (Kiviat 2019). This is the cultural apparatus of credit scoring, the beliefs that justify letting consumer-data-fed algorithms slot people into positions of market advantage and disadvantage (Fourcade and Healy 2013; 2017).

Finally, the culture of credit scoring trains individuals that the key to getting additional or better things from the market is to shore up one's own behavior. Scores are objects that elicit reaction (Espeland and Sauder 2007), and once people know their credit scores, they start behaving more as lenders

would want them to (Homonoff, O'Brien, and Sussman 2019). Individuals often cannot recognize themselves in their scores, thinking that they are more creditworthy than the number suggests for reasons not captured in the official data. Yet the reaction to this is not resistance, but a doubling-down on actions that might boost scores (Kear 2017; Wherry et al. 2019). Credit scores, and the algorithmic predictions that follow in their footsteps, render knowledge of the world in ways that suit corporations and other large organizations. This is among the many reasons why it is important to study credit scores closely and see where they go next.

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Bringing Context back into privacy regulation and beyond

About limitation on purpose as an (old) response to (new) data challenges

Karoline Krenn

Introduction

At the core of early privacy debates were state records, corporate records or survey data. The advancement of information technologies extended the availability of data. New technologies mediate many aspects of modern life and, thereby, enable data to be circulated. They provide access to very different types of data from very different sources. Along with that goes a strong power asymmetry between the individual users and the organizations involved in the industrial processing of data. The digital economy builds on access to individual data as fuel for its derivative operations, and government authorities respond with different directives to balance these asymmetries and protect the rights of citizens. The regulation of privacy reflects both a national and a supranational protective approach towards information infrastructure.

In response to the challenges in the digital age, public and private bodies introduced a set of privacy principles aimed at protecting individual rights. In 1980, the OECD formed the first internationally agreed-upon statement of core privacy protection

principles, which were taken up and developed further by many governments and organizations (OECD 2011). By 2011, the International Organization for Standardization (ISO) had also published a privacy framework. The European Union Directive 95/46/EC from 1995 was the first serious attempt to implement privacy principles in a supranational regulatory framework. The first European Data Protection Law, the European General Data Protection Regulation 2016/679 (GDPR),¹ which has been in force since May 2018, is the EU's first comprehensive response to the challenges to privacy. It makes the common regulatory framework directly binding and mandatory and consequently more coherent for the member states.²

The core of all sets of privacy principles is limiting the collection, processing and storage of personal data to lawful and fair practices (OECD 2011). To those principles belong the specification of purposes for which personal data is collected ("specification of purpose principle") and the limitation of use to these purposes ("limitation of use principle"). The former states that the purpose of the information must be stated explicitly and the latter stipulates that data cannot be used for purposes other than those specified, except with informed consent or by the authority of law. The "data quality principle" concerns the accuracy and completeness of data. The "security and safeguard principle" points to the safety of data against unauthorized use. The "openness principle" requires transparency about developments, practices and policies with respect to personal data. The "individual participation principle" demands individual access to and the ability to challenge one's own data. And finally, the "accountability principle" expresses the operator's responsibility to comply with these principles. To a large extent these principles overlap between frameworks, al-

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though their semantics and combination vary. With regard to their structure there has been little attempt so far to address how these principles relate to one another and what principle should be applied first. Auditing methods for privacy protecting systems do prioritize specification of purpose, but without much explanation (Makri and Lambrinouidakis 2015).

In this article I will focus on the limitation on purpose principle (LoP). In the GDPR, the "principle

of purpose limitation” unifies two other principles: the “specification of purpose principle” and the “limitation of use principle”. In the following I will neither give a detailed account of how LoP operates in practice nor how it interacts with other principles. What I will do is to argue why LoP is particularly apt to respond to privacy challenges and what we can learn from the German debate about the impact of LoP. The purpose of data is an overall defining criterion contained within several principles such as specification of purpose, collection of data, as well as limitation of use. LoP is frequently singled out as an especially important principle, although it presents challenges in practice (Bygrave 2014). There are three particular reasons why I focus on limitation on purpose. First, it is particularly apt to define information domains avoiding the public-private distinction, which characterizes many privacy debates (Pohle 2015). This is particularly relevant with regard to online data for which it is often hard to tell if it is private, public, or both at the same time. Second, purpose refers to the context of data generation, which has relevant implications for the interpretation of what we can learn from data. This brings me to my third reason. De-contextualization generates a specific uneasiness because of the widespread use of data for (automated) decision-making by government agencies and businesses. A strong skepticism towards decision processes based on selected pieces of decontextualized information (“the data shadow”) already characterized the European Directive of 1995 (Mendoza and Bygrave 2017). The partiality and shallowness of such decisions were considered as dehumanizing and making fully automated decisions was forbidden.

LoP has been implemented in German regulation since 1971 and has shaped the European debate since then (Pohle 2018). Reaching back to the 1970s, I describe the “context turn” in the German debate and how it influenced LoP. The debate shows that bringing context back in, first, shapes the understanding of privacy, and, second, provides a methodological criterion for data accuracy. This focus is also reflected in the literature. Context has regained prominence as a theoretical framework for privacy during the last decade (Nissenbaum 2009), although with distinction from the purpose approach. Nissenbaum criticizes LoP for having “only indexical meaning” (Nissenbaum 2015, 291), lacking substantive criteria to specify purpose and leaving the protection to the controller’s discretion. Recent literature addresses this critique and explores a framework for LoP from a legal viewpoint (Grafenstein 2018).

This article will proceed as follows. After a discussion of the challenges in a digital society and how LoP responds to them, I will explain the stipulation of

LoP within the GDPR. I then turn to the German privacy discourse and regulation of the 1970s to show that data context was already perceived as relevant at this stage of information technology. In the section on digital mass data I examine the methodological limitations of de-contextualization. Bringing these two debates together opens up an additional perspective on the forms LoP can take and what constitutes its strength to control processes of information flow. The final section discusses the limits of the consent requirement for derogation from LoP based on recent cases of data repurposing.

Digital challenges

The challenges of the digital transformation of society have recently received increased public attention. Despite promises to facilitate social participation and advance transparency, societies are witnessing increasing inequalities. This has stirred debates identifying digitization as an actual driver of social inequality and rising social polarization. Initially the focus was on the labor market, arguing that a technology and skill driven economy is favoring capital and a minority of highly skilled individuals (Acemoglu 2002; Brynjolfsson, McAfee, and Spence 2014). The growth of tracking and surveillance technologies, sensor networks and compiled databases made information exchange a subject matter for critical debate. The volume of data generated and circulated is reaching the petabyte-scale, fueling various dynamics. These technologies themselves generate social differentiation (Gandy 2009, Fourcade and Healy 2013, Pasqual 2015, Poon 2016). New instruments for monitoring, sorting and profiling affect people on multiple dimensions: They segment markets and increase social inequality. They force cultural and political conformity, encroach on the moral autonomy of the individual, and threaten democratic principles.

Data is used for profiling and microtargeting in various domains. Microtargeting has long been a widely applied strategy in marketing. However, the digital infrastructure provided by online platforms and mobile applications has opened up new opportunities to record behavioral traces and differentiate consumers. It has created permanent surveillance (Zuboff 2019; Sevignani 2017). In addition to familiar market records from electronic payment data, customer profiles or loyalty programs, recent studies illustrate the extent of the tracking of basically every digital activity (or lack thereof) (Christl and Spiekermann 2016). Online participation and communication are turned into a huge profiling database. Clicks, likes, swipes, web searches, flows of communication

and geo-locations are recorded and compiled. Data are aggregated into categories, often designed as behaviorally defined risk groups, to increase efficiency and to predict outcomes, promising greater profits for commerce and protection against high-risk customers. The tech industry is driven by the prospect of monetizing data. However, business models that rely on data harvesting are most often opaque, and the flows of data are non-transparent to the average internet user.³

These efforts to detect patterns have a downside. Statistical profiling of online data is not a neutral tool but carries biases. An experimental study using a simulation tool that measured the use of information by web advertising algorithms and by personalized ad settings showed that, if information on the gender of users in search of a job was included, males were significantly more likely to receive ads encouraging coaching services for high-paying jobs than females (Datta, Tschantz, and Datta 2015). This is just one example of how digital profiling might systematically discriminate. Moreover, algorithmic sorting repeats existing patterns. Recommender systems expose digital media users to more of the same content and reduce new encounters. Thereby, sorting affects social connections and cultural experiences. This points to the cultural challenge of these new technologies.

The social effects of algorithmic sorting and profiling depend on the domain of application. It generates various kinds of classification situations (Fourcade and Healy 2013). Personalized ads and special offers can be annoying and price discrimination may contradict ideas of fairness. But there is also clear informational harm and inequality (Hoven 2001). The inclusion or exclusion from chances of market participation such as particular job or housing offers severely impact life chances of individuals. It reinforces existing inequalities between groups. And these classification situations generate inequalities on novel dimensions specific for digital technologies. These risks grow when data is exchanged between the private and public sector. China is an interesting illustration of a blurred interplay of those two. Its Social Credit System illustrates the extent to which such a punishment-reward-system can be escalated (Liang et al. 2017). There, recorded non-conformity to rather strict social norms and beliefs lead to exclusion from basic public goods such as education or transport.

There is also a political challenge. Unbalanced access to information and potential manipulation also conflict with the self-understanding and value system of a democratic society as they defy individual rights. Societies have to deal with new polarizations. This is quite obvious in the political domain where tailoring information encroaches on the autonomy of the indi-

vidual and threatens civil liberties and democratic principles (Hoven 2001). Microtargeting of potential voters, echo chambers in social media news feeds and filter bubbles pose major risks for the political opinion building processes. The Brexit vote and the US elections in 2016 are two of the best examples.

These challenges intensify with the proliferation of intelligent homes and urban spaces equipped with sensors, and with administrative processes becoming more and more tied to complex data. Consequently, they require a continued debate on “good” and “bad” data usage. Particularly, and aggravated by data driven automated decision-making, patterns of inclusion and exclusion are likely to be even more shaped by socio-technical arrangements in future digital societies.

As diverse as these challenges are, they are intensified by an unregulated repurposing of data. Information technology makes it easy to access and to combine different information sources and to compile data collected for different purposes and from many different contexts. This raises a general problem in a data-driven society: How to handle the multiple future usages of data whose use is not restricted at the moment of collection? This problem is made worse by the power asymmetry between organizations servicing the digital infrastructure and the individuals providing data.

The challenges in digital societies point to fundamental underlying conflicts of interest and values. The domain of information exchange is just one, albeit important, stage for potential conflict. Regulation responds to these challenges by limiting the processing of data. LoP is effective in particular because it regulates repurposing. The purpose frame allows linking the specification of purpose at the time of collection with those of further processing. It connects different contexts of usage (Grafenstein 2018) and provides a criterion for appropriate data use (Pohle 2015). Moreover, LoP not only addresses civil ideals such as informational self-determination, but, due to its link to data contexts, it also responds substantially to the main social challenges: the harms to the individual through the mixing of information from different social contexts. This conflation is a major gateway for the spread of disadvantage from one social domain to others, as has been shown for the off-label use of credit scores in housing and job markets (Rona-Tas 2017). And, as I will explain below in more detail, de-contextualization of data also compromises data quality and the accuracy of profiling. Hence, LoP also aims at ensuring adequate information quality and data processing results.

For sure, no single privacy principle is sufficient to tackle all privacy problems equally. The practical weight of LoP has a lot to do with its exact stipulation.

The more restricted its stipulation is with regard to the limitation to the original purpose, the higher the protection, but the options for future usages are reduced. The more liberal it is, the more flexibility there is, but also greater likelihood of inhering ambiguity with regard to the interpretation of criteria for derogation. Theoretically, there are three variants. Its most restricted form stipulates that data can be used exclusively for the original purpose (variant a). The most liberal form explicitly excludes specific purposes and contexts (variant b), while the more moderate version formulates exceptions from the limitation (variant c). The GDPR, like most regulation, follows variant c.

Limitation of purpose within the GDPR

The GDPR is a comprehensive supranational response to the challenges of balancing power asymmetries in digital information flow. The significance and presence of privacy rules within EU legislation is regarded as high compared to other countries.⁴ The regulation does not intend preventing the circulation of data, but aims to achieve that the flow of data does not infringe upon the human right of privacy and data protection (Nicolaidou and Georgiades 2017). The Recital (GDPR, Recital 1) sets out the right to protection of personal data as a fundamental right. Furthermore, it puts an ethical orientation upfront: “The processing of personal data should be designed to serve mankind.” (GDPR, Recital 4). The set of privacy principles is stated in Article 5 starting with the claim for lawful, fair and transparent data processing (GDPR, Article 5 (1a)). The limitation on purpose principle comes second. It reads as follows: “[Personal data shall be] collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes [...]” (GDPR Article 5 (1b)). There is also a strong correspondence between the EU Directive from 1995 and the five other principles that follow – data minimization, accuracy, storage limitation, integrity and confidentiality, and finally, the accountability of the data controller. Nevertheless, privacy principles were under discussion during the negotiations. A leaked version of an earlier draft of the GDPR proposed by the European Council in which the vigor of LoP was undermined by providing loopholes for incompatible purposes exposed the uncertain status of the principle (Grafenstein 2018, 31). And still, the stipulation of “legitimate” purposes and ruling out “incompatible” data processing is an opening for ambiguity in practice because it can be interpreted differently (see also Bygrave 2014).

Article 6 specifies the operation of the principles. With regard to LoP, it is also a source of further practical challenges. Parts of Article 6 have been criticized for their lack of coherence and lack of an objective scale to determine whether the requirements for circumvention of original purpose are fulfilled, and therefore for the absence of legal certainty (Grafenstein 2018). Article 6 defines the terms for a lawful data processing (and possibly repurposing of data) such as consent given by the data subject, compliance with the legal obligations of the controller, protection of vital interests of the data subject, public interest, and legitimate interests of the controller or third parties (as long as they don’t override fundamental rights of the data subject). Furthermore, where processing of data is not based on the data subject’s consent it is assessed as being compatible with the initial purpose so long as the interest pursued with the change of purpose outweighs the risks caused by it. Here, the GDPR allows member states to introduce specific provisions for some of those terms to adopt the application of the rule.

In general, the very fact that the member states came to an agreement is regarded as a strong signal that Europe is seeking a balance of responsibility between civil society, market and state (Dijck, Poell, and Waal 2018). Nevertheless, a year after the enactment of the GDPR, evaluations differ substantially between different groups. Enterprise lobbyists point to economic barriers. Data protection advocates indicate loopholes. For example, legal uncertainty in electronic tracking and profiling and in telecommunication services provided across IP networks (over-the-top telecommunication), predominantly the internet, is reported (Schaar and Dix 2019).⁵ And EU authorities lament the slowness of corporate compliance, the fragility of enforcement of the rules and the variation in the implementation by the member states.⁶ Stricter rules on what constitutes freely given informed consent and the active enforcement of transparency over the extent of data collection are called for in particular.

However, the overall aim of protecting EU citizens from privacy breaches is generally accepted. Moreover, by mobilizing its regulatory capacity the EU shapes policy choices and makes other countries adjust to privacy rules so as to participate in its market. Beyond sanctions and incentives, the European stance on privacy is becoming, as Giovanni Buttarelli, the European Data Protection Supervisor put it, the gold standard and raising the level of privacy protection on a global scale. For instance, the California state government passed the Consumer Privacy Act (CCPA) at the end of 2018, copying many aspects of the GDPR; several other states are working to introduce privacy laws, and calls on US senators to adopt these on the federal level have become louder.⁷

The German debate – Limitation on purpose as safeguard to privacy

The limitation on purpose principle has a noteworthy history for social scientists in the privacy field. The first recorded mention can be found in an expert report of the New York Law Commission in 1965 that identifies fully informed consent as necessary for the revelation of private information but simultaneously characterizes consent as always limited to context and purpose (Ruebhausen and Brim 1965; see also Pohle 2015). These ideas were carried forward in a very influential period in the German data protection debate during the 1970s. The marking of a nexus between privacy and context and the embedding of consent in a purpose frame were at the core of that debate.⁸

Recent literature illustrates the complexity of the debate, resulting in different constructions of privacy (Pohle 2018). Far from following a single line of argument, the German debate was characterized by a lasting struggle over the accurate definition of the social good to be protected and over the related reasoning over phenomena and practices threatening privacy. Briefly summarized, the influential juridical argumentation circled around the question of which right or principle the right to privacy might be derived from.⁹ The interpretation of the protected social good moved from the idea of an individual private sphere to privacy as a property of shared social spaces (Podlech 1989). Case-specific policy debates in the 1970s had a formative influence on leading privacy principles and its legal implementation. Three core positions entered data protection legislation during this period. Dealing with the design of a microcensus survey questionnaire, a judicial decision from 1969 stated that it was incompatible with human dignity to completely register and catalogue a person (BVerfG 1969, 6). Secondly, in an advisory report for the German Home Office published in 1972 legal experts amplified the factual scope of a misappropriation rule that had been formulated by the constitutional court before: Personal data should exclusively be processed for those purposes for which it had been collected (Steinmüller 1971). A detail I will come back to in the discussion is that the advisory report regarded LoP as independent from informational consent. And thirdly, in response to debates in preparation of a population census, a judicial decision from 1983 (“Volkszählungsurteil”) legally implemented the right to informational self-determination. The decision declared the limitation of data use to its organizational context as a protective goal.

The leading discussion within this formative period had a socio-theoretical nature. For Seidel (1970), who coined the idea of a right to informational self-

termination, the right to privacy is manifested in the protection of social engagements and bonds represented in data spaces. Although legal scholars such as Seidel dominated the debate, there was a short period of interdisciplinary exchange on privacy between 1972 and 1978 (Pohle 2018). Sociologists participating in the debate took up context as a key concept and applied it to a definition of privacy, with reference to prominent theoretical schools such as symbolic interactionism, role theory and social system theory. The claims of context-orientated sociology that social actions and expressions pointed to situations were adopted by role theory in which the exchange of information was regarded as context specific behavior. According to this theory, different information interests are regarded as tied to different functional roles. From this perspective, information exchange related expectations contribute to the stabilization of role structures and the social system as a whole (Parsons 1951). Drawing on role theory, Müller and Kuhlmann defined privacy as “the individual’s ‘visibility’ in varying contexts” (Müller und Kuhlmann 1972, 590). By that, they went beyond the common distinction between a private and a public sphere on which earlier privacy concepts were based. Pointing to the “the role-specific exclusivity of information” they allowed for privacy entitlements in public contexts (ibid, 595; see also Pohle 2018). Another twist was to use purpose and context as a looking glass to determine the sensitivity of data rather than the content of data (Lenk 1973; see also Miller 1969).

The boundedness to context was implemented as limitation on purpose within the German legislation. In an influential summary and interpretation of the debate Hoffmann (1991) argued that LoP is a prerequisite for informational self-determination when participating in public social life. He particularly stressed the threats of misappropriation of information through automated data processing. The subject matter of protection is no longer a type of data but context and the purpose of use targeted by the data subject. In particular, privacy was understood as valuable not just to the individual but to the community as a whole (Podlech 1989). Privacy is a quality of the way the communal information exchange is organized. Therefore, a toleration of de-contextualization of information harms communal exchange in general. For Hoffmann LoP is an equivalent to the preservation of context with regard to the targeted use (Hoffmann 1991). Therefore, LoP is regarded as the key mechanism to guarantee privacy.

These arguments from decades ago still pin down the core problem of privacy: the appropriate distribution of information. The socio-theoretical turn to the recognition of privacy as linked to participation

in public social life advanced a position, which again appears topical for the current challenges of information technologies. In this simplified historic reading, the accomplishment of purpose and context limitation is that they provide a criterion to keep different information (or communication) domains separate. The linkage of this theorizing on data protection to the theory of functional differentiation opens up a perspective beyond domains of information (Rost 2013). It allows seeing privacy as construct of modern society, an invention to justify the functional differentiation of information. An information industry, which has an increasing potential to intrude in context embedded activities and integrate and cross-reference data files that are deprived of context limitation, is making everything visible. This can be viewed as a somewhat newly generated “village situation” in which everyone knows everything about everybody else. However, it is not simply a regress to a pre-modern segmented social order because of a unique asymmetry. The intermediating institutions themselves are beyond scrutiny. Compared to a platform such as Facebook, in a village people meet at public spaces (in a modern village this would be the church, the pub or the market). The priest or the shaman might know a bit more than others about the villagers simply because of their roles. Compared to Google, in a village the stories of the villagers are recorded by the elder (the modern village might have a library). But all these positions are under public scrutiny and can be held accountable for what they do with their knowledge. The big digital platforms use their data without the public being privy to it. Privacy regulation balances this feature of the technological infrastructure. LoP is key for this maintenance of functional differentiation because it explicitly signifies the role character of information. LoP safeguards privacy and makes “the village” a city.

How de-contextualization jeopardizes accuracy

Through de-contextualization contexts disappear in different ways. There are two types. In a first variant, data is moved from one realm to another. What gets lost here is the meaning of the data created in the original context and shaped by its intended use. A methodological critique of this problem was articulated in the German privacy debate. It was reasoned that misappropriation of data carried the risk of distorted meaning. Different arguments were brought into the debate. One was context-related ambiguity of meaning. Literature drawing on symbolic interactionism

adjusted the focus from information to communication and argued that communication is not fully comprehensible when set outside its context, situation or social relation (Rüpke 1976). From this perspective privacy was to be understood as a shield against misunderstanding and false interpretation. The literature investigating administrative mass data identified the bracketing of context of data origin as a main source for error (Bick and Müller 1983).

A second form of de-contextualization concerns measurement and quantification. Calculative practices must drop information to make cases comparable and to fit them into categories. Here de-contextualizing means ignoring unique or relational characteristics. At the same time, the categories become essentialized. It is overlooked that classifications are dependent on the blurring of heterogeneity and on the enforcing of differences (Boltanski and Thévenot 1983, Zeruvabel 1991, 1996, Bowker and Star 2000), and that they make invisible the interventional character of measurement they depend on (Thévenot 1984, 2009, Porter 1995, Diaz-Bone and Didier 2016).

In the digital world both de-contextualizations tend to co-occur. Quantifying and categorizing over different data sources from very different contexts is the case for quite many digital data usages. Both variants of de-contextualization impact the accuracy of information to different degrees and affect the appropriate use of data unless they become re-contextualized.

Although the debate on data accuracy and context is apparently not novel, claims emerging with the proliferation of information technologies and big data methods make it highly topical (Lewis 2015, Marres 2017). These technologies lead to a new idea of “traceability” of social life, which often identifies data as facts. An often-cited assumption of contemporary data practices is that “with enough data, the numbers speak for themselves” (Anderson 2008). The faith in data can be observed in the commercial field and even in academia. It is the vision of computational social science that compiled data adequately explains the world and helps to achieve a comprehensive picture of patterns of individual and group behavior (Lazer et al. 2009). The main objections against the “data as fact” claim are with reference to context (Edwards et al. 2011). Collection and extraction of data never covers all information available. Usually they are themselves embedded in an institutional context and follow a specific purpose that determines the choices and decision throughout the process. This is nothing specific to digital data but is a general property of mass data (Baur 2009). Choices and interpretations through data collection are most often purpose-driven. This also means “different people in different contexts with different

goals will choose different answers as they construct their data models” (Shaw 2015, 3). At the same time data is continuously repurposed (Andrejevic and Gates 2014).

The powerful effect of complex mass data comes from the aggregation of different data sources. However, the literature increasingly points to the challenges (and traps) in the way mass-produced digital data is processed. The key problem is veracity, namely, that “data are not generated from instruments and methods designed to produce valid and reliable data amenable to scientific analysis” (Japac et al. 2015, 849). Data used and transformed into data sets starting with the original source and ending in data warehouses are often by-products of other processes. Here we observe mostly de-contextualization of type one. When datasets are merged a series of processes take place. Data is reduced, parts of data are extracted and transformed into new variables by cleaning, aggregating, reformatting, recoding, matching records. These transformative steps rely heavily on technically complex processing (data mining, algorithms) and involve a high level of data interpretation (Japac et al. 2015). Due to the underlying assumptions about data along these steps, which are often not systematically reflected, literature talks about transformation biases (Baker 2017). Transformations don’t take ambiguity of meaning into account, question data validity and jeopardize accuracy. Other concerns question if these data actually measure natural behavior and point to the artificiality of platform designs. The specific configuration of software interfaces suggests certain actions and limits choices (Shaw 2015). Again other methodological concerns touch on the representativity of data. There is a systematic selection bias because some parts of the population are simply not online (population bias). Also, there are most certainly “holes” in individual data records. The handling of missing data in complex databases either by imputation or fusion techniques also runs the risk of reducing accuracy. In survey designs these common sources for error are systematically controlled for. For big data analysis they pose even bigger challenges (Baker 2017).

This leads us to de-contextualization of type two. What is relevant to data, is also relevant to the usage of statistical profiles. Those are based on data driven classifications on the assumption that digital infrastructures depict invisible patterns in society and “that we can know what people are doing in an objective manner, without biases, without lying, without kidding ourselves, of trying to present a different image than what we are” (Barabási 2012). However data science has to be aware of the (natural) boundary and measurement fallacies (Krenn 2017) discussed above. The objective appearance of classifications gives them

a strong legitimizing push for its usage. This insight is particularly relevant for complex mass data that also carries algorithmic bias (Crawford 2013). All these threaten the validity of data.

From this follows that complex mass data only produce valid results for appropriate contexts and require complex interpretation. The collection, as well as the aggregation of different data sources, demand special care to preserve data context. What kind of knowledge may be gained from digital mass data is a question that has to be discussed elsewhere. However, no matter what kind of data driven real world decision is made or how scientific data is used, safeguarding context preserves the pragmatic meaning that individuals attach to their own behavior. In other words, LoP is equally a protection against misinterpretation and distortion of the pragmatic meaning of participation in the digital community.

Discussion

The distribution of data remains the present and future challenge of privacy. Information technologies and supporting infrastructures build the substrate for tracking, compiling and classifying data. The design of these technologies and applications is highly asymmetrical regarding the way the exchange of information is organized and becomes comprehensible. Data protection regulation attempts to balance this asymmetry and to protect the weaker party, the individual user, who is exposed to these technologies unless they abstain from participation in digital services. Looking back to early discussion showed that from the early days of the development of information technology LoP and context attachment have been considered as principles to safeguard such values as privacy and accuracy. They provided an answer to the question of how to assess the appropriateness of data access and distribution. Since then de-contextualization and disrespect of targeted purposes mark the misappropriation of data. De-contextualization and disrespect of purpose define a violation of privacy and as a harm to accuracy they present a distortion of information. Hence, informational norms grounded in context are not just only a 21st century invention (Nissenbaum 2009), they might just still provide answers to contemporary challenges of informational asymmetry and be a valid guide for identifying privacy violations and false interpretations.

Pondering the implications of LoP brings us back to the various forms it can take. It is clear that the more liberal its stipulation is towards derogations from the intended purpose, the lower is the de facto level of protection. I would like to discuss this looking

at individual consent as basis of legitimacy for repurposing of data. From a theoretical viewpoint LoP is not necessarily intertwined with individual consent, as the narrative of the German debate has shown. In practice, consent often results in a potential loss of context. Let us picture this. In order to comply with GDPR requirements internet service providers have to obtain consent for data processing. In everyday practice this means that websites or apps often prompt data subjects to consent to quite hazy future data processing. For instance, food delivery platforms ask users for their consent to cookies that identify which restaurants they like, what food they prefer and where and when they like to have their meals. Moreover these platforms prompt exchange of data with third-party suppliers such as social media sites to personalize information. The recent retreat of the food delivery service Deliveroo from Germany exposed a serious question: What actually happens to such data, obtained with consent for such imprecise purposes, when the company goes bankrupt? Who hinders the liquidators from selling it for completely different uses? Also, specific configurations of app permissions are an opening for service providers to work around LoP. The majority of users consent to share digital trace data such as geolocations, app usage and access to contact lists. As a recent app-study showed, users hardly differentiate between the different data requests (Kreuter et al. 2018).

Another evocative example gives a recent report by Privacy International, which reveals that mental health websites in France, Germany and the UK shared information on depression with third parties (Privacy International 2019). This included information on web searches and depression test results. This is a serious privacy violation considering the impact it might have on profiling. In addition to undesired personalized advertising, such data could seriously affect major future decision processes in the job market or in other domains. For this reason, health data already belong to a special category within the GDPR and merit higher protection (GDPR, Recital 53). However, this targets the national health sector, and mental health websites are privately operated platforms. Most websites contained third-party elements such as tracking cookies or java script, making devices identifiable and saving data on website activities. Many of the observed websites didn't meet the GDPR standards for freely given, specific, informed and unambiguous consent with a clear affirmative action (such as a GDPR conform cookie banner). So, this might appear counterintuitive as an example of the consent requirement. However, as the study mentioned above showed, users hardly differentiate between consent requests. Hence, compliance might only be a part of the prob-

lem. This case also raises serious concerns about the qualification of consent the way it is implemented on most website as safeguard against overriding fundamental rights of individuals. Without doubt, consent is an important feature for information exchange. But it is debatable if consent alone should always be sufficient for deliberately repurposing data. This story about mental health websites demonstrates how important the specificity and context of information exchange are as basic principles. In the case of mental health websites an exception from LoP does generally not appear appropriate.

Another strategy of websites is to link consent requests with functionality incentives. Consent becomes a condition of using the website's services. These are just a few examples for modes of industrial data processing that use (more or less) informed consent to repurpose data in everyday practice. Not all purposes for which data usage is consented correspond with contextual meaning of digital traces and purpose. Of course, it is not always easy to determine what the purpose of the data is. And it is even harder to define once and for all what a good or bad use of data is. Given that almost all mass data from platforms or applications have to deal with this tension between the intended visibility of the user in an exclusive context and the translation of data to other purposes, be it consensual or not, the discussion on implementation of privacy rules will continue.

Considering the potential social impact profiling has on users, a more restricted form of LoP appears better qualified for balancing the power asymmetry between organizations and the individual user. It is worthwhile thinking about earmarking exclusive purposes for data processing as a feasible option – at least for some information domains. Implemented in such a way, LoP could become an even stronger anchor for testing and preserving the controllability of data flow. It might also allow dealing with situations where users are not aware of providing data and their consent is not asked for.

Conclusion

Many productive ideas fall into oblivion only to later experience a renaissance. Context appears to be just such an old concept that still provides answers to contemporary questions. The problem of participation and privacy in the new public informational realm is a contemporary challenge for the ordering of democratic societies. The strength of a context perspective is that it covers the distribution as well as the accuracy of data. Hence, limitation on purpose as the prime privacy principle has the potential to cover the core matters

for the regulation of information infrastructures. The limits of the imaginaries behind LoP as principle to control processes of information exchange are in its legal (and technical) implementation. National varieties show that things can be different. Any concrete

construction of privacy has to prove its potential to live up to transnational demands. The GDPR provides a legal basis for Europe on the key principle of LoP. Still, its impact is limited to the conclusiveness of bringing context back into the everyday use of data.

Endnotes

- 1 Regulation (EU) 2016/679 of the European Parliament and of the council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).
- 2 Sanctioning mechanisms of regulatory policies have also been strengthened. Breaches of the GDPR can be fined up to 4% of a firm or organizations' annual global turnover, which generates a strong incentive for compliance. An example is the record-setting fine imposed on Google in January 2019 (not to be confused with the anti-trust fine in July 2018) by French data protection authorities for illegal practices on mobile devices.
- 3 For example, only a minority of smartphone apps correctly declare data sharing policies. Privacy breaches are particularly serious in, for example, health apps passing on information on depression or smoking habits to Facebook or Google (Huckvale et al. 2019).
- 4 There are varying explanations given. From a socio-economic perspective the formation of data privacy regulation was influenced by the interplay of domestic policies regarding the consumer lending sector and transnational post-war globalization policy activism (Trumbull 2011). Institutionalist arguments focus on the leading role of national privacy authorities and regulatory institutions (Newman 2008); from the 1970s on they promoted privacy concerns at the European level through networks and coercive power. And another strand of literature follows more a cultural argument, seeing privacy standards as a reflection of deep-seated national values (Bellman et al. 2004). A recent continuation of the latter is given by an assessment of European policies (GDPR) as a sign for the upholding of "public values in a connective world" (Dijck, Poell, and Waal 2018).
- 5 The regulation of user tracking demonstrates the difficulties regarding the national implementation of the GDPR. Looking at Germany, there are different interpretations on the question of which guidelines to administer. Data protection agencies interpret the GDPR as overruling national law, which allows user tracking (Schaar and Dix 2019).
- 6 The national implementation of the GDPR gives countries enough scope to be an obstacle to the intention of the regulation as criticized by Verá Jourová, the European Commissioner for Justice. Speech on the occasion of the first anniversary of the GDPR. http://europa.eu/rapid/press-release_SPEECH-19-2697_en.htm (Last access September 7th 2019)
- 7 <https://www.cnn.com/2019/05/23/gdpr-one-year-on-ceos-politicians-push-for-us-federal-privacy-law.html> (Last access September 7th 2019) <https://www.nbcnews.com/tech/tech-news/california-bringing-law-order-big-data-it-could-change-internet-n1005061> (Last access September 7th 2019)
- 8 The German debate was in turn influenced by the debate in the US that took a lead role in the privacy debate (Pohle 2018). Likewise it's not only the German discourse that regards context. For instance, Brenton (1964) had already called attention to the risk of de-contextualization of private information through computer technology.
- 9 An early German source mentioned is Kohler (1880), who described the right to privacy as a fundamental individual right by the end of the 19th century. Shortly after, a first reference to privacy was published in the US by Warren and Brandeis (1890).

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OpEd

The Future Factory

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In Nathaniel Rich's novel *Odds Against Tomorrow*, a futurist by the name of Mitchell Zukor is born from the ashes of Seattle, the city devastated by fire. In the wake of the Seattle disaster, American corporations turn to a new industry, the future industry, no longer in the realm of assuring financial futures but in the business of insuring social and economic futures in the face of impending climate apocalypse. The point of futurists is not, as one would think, to predict the next disaster, but, rather more cynically, to give companies the insurance of having attempted to predict and foresee dangers to their environment – so that they can protect themselves against liable suits by arguing that they have protected capital and employees to the best of their future knowledge. In short, futurists help companies relinquish responsibility for disaster management. It's a smart and funny novel, following the reluctant futurist, in reality a postdoc in mathematics, as he accidentally finds himself employed in the quickly expanding offices of the FutureWorld consultancy firm in Manhattan.

As I started gathering materials and interviewing futurists, actual ones, for my book *The Future of the World* in 2011 and 2012, my main interest in them was one

of intellectual history and science and technology studies. The book makes the argument that futurology and futures studies emerged as subfields of Cold War social science in the 1950s and 1960s, and that they contributed in important ways to the making of social science imaginaries around the temporalities of the Cold War order, the logics of change in post-industrialism and postfordism, and the evolution of a larger political and social system. They disagreed on whether the latter was caught in equilibrium or prone to dangerous disturbances. While futurology seems like a quirky topic, future research was a most serious activity and also enacts, or so the argument goes, an important postwar debate about the scope of and limits to human rationality and about the possible malleability of and human control over coming time. As futurists struggled to shape the future, they turned prediction into a specific kind of social technology and market-making device. The long-standing logical problem of the self-fulfilling prophecy became a virtue as futurists discovered that images of the future could be used as ways of actively shaping perception and action. As forecasters at RAND set out to find the opti-

mal future preference, they gave clear priority to their own visions and tastes of what a post-Cold War world should look like.

This makes the activity of prediction a highly particular form of knowledge production, and the chapters of the book trace the surrounding epistemological, and political, debates about objectivity, facticity, subjectivity and expertise that this unleashed. However, the central argument of the book is that, equipped with modern tools of prediction such as the scenario tool or the less famous Delphi method, futurists turned themselves into experts – in fact into a highly specific and arguably new body of expertise in what might be called world futures.

World futures become knowable to futurists through a set of eclectic repertoires of 'knowledge', and through these repertoires of knowledge, futurists construct claims to influence and authority in modern societies. Most of these forms of knowledge, which include epistemic principles such as not only observation but participation, not only verification or falsification but influence on action, defy the scientific canon of thinking about knowledge. Over time, what was in the 1950s and 1960s an interesting debate in futures studies about the role and limits of human rationality within what others have called the postpositivist turn, has changed fundamentally and in sometimes disturbing ways. Future research – which in the 1950s and 1960s attracted key thinkers in the social sciences such as the economist Kenneth Boulding or the sociologist Daniel Bell – migrated in the 1980s and 1990s from the established fields of social science into the more experimental fields of risk studies, artificial intelligence, and neuroscience. During these decades, futurism also struck a deal with an exploding market for paid advice. Futur-

ists can be found in think tanks and consultancies such as the Washington-based Institute for the Future, where they monitor world developments, create artefacts of globalistic knowledge such as the so-called State of the World index, and use scenarios and Delphis as the basis of participatory, but usually expert-led, exercises in future creation. These can include hooking up global networks of experts on, say, governance issues, or conducting UNESCO workshops on how to reimagine the future with women and children in sub-Saharan Africa. Other futurists strongly resemble the futurist J. P. Yates of another novel, James P. Othner's *The Futurist*, who is described by Othner as "a Futurist. Which is to say he makes a very good living flying around the world dispensing premonitory wisdom, aka pre-packaged bullshit, to world governments, corporations, and global leadership conferences. He is an optimist by trade and a cynic by choice. He's the kind of man who can give a lecture on successive days to a leading pesticide manufacturer and the Organic Farmers of America, and receive standing ovations at both." I have met several Yateses in the course of my research, including one oil-drilling Texas consultant who did futures

work on global warming, and another who strongly argued that climate change was good news as it would push earthlings to colonize the universe.

Most futurists are more boring than that, however, and mainly involved in forecasting for governmental and corporate institutions, which means that they are involved in a form of future work that can be as disciplining as it is emancipatory and that somehow seems directly caught up in the governmentalities of neoliberal capitalism. The very lack of solidity in knowledge claims about the future give them a seemingly particular kind of influence in contemporary market societies. As Jens Beckert has shown in *Imagined Futures*, forecasts and other forms of future-making abound in our inherently unstable societies because these societies are desperately in need of forms of stabilisation, and we also live in societies that seem to prefer to postpone solutions to fundamental problems to the future rather than deal with them in the present. Both futurism and prediction are involved in this management of social conflict over time, with consequences that are hard to ascertain partly because the kind of expertise embedded in future prediction is opaque. To predict is not

to foresee the unexpected. To predict, and to forecast, is rather to set out guiding images and narratives of coming time so that forms of social and economic coordination can be achieved. By influencing the coming actions of others, one's desired image of the future can become real, whether that image is conducive to constructive human action or not. In this manner, it is reasonable to think that forecasts are not simply mere artefacts of the imagination, but also that in fact they are projections of socioeconomic interests and reflections of the power structures of global capitalism. After 1989, futurologists opened markets and collaborated with post-socialist regimes to create new civil societies in Eastern Europe, and contemporary futurologists are employed by structures of global governance ranging from the UN and the EU to the World Economic Forum and the world's largest corporations. In the financial markets a debate exists about the accountability of financial forecasts, shown in the aftermath of financial crisis to be involved in the manipulation of expectations in the name of stability. What forms of accountability should we ask from other futurists?

Book reviews

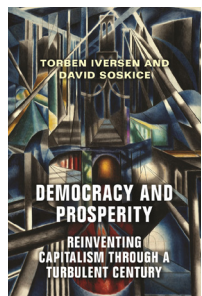
Torben Iversen and
David Soskice · 2019

Democracy and Prosperity. Reinventing Capitalism Through a Turbulent Century.

Princeton, NJ: Princeton University Press

Reviewer **Timur Ergen**

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Democracy and Prosperity, the new monograph by Torben Iversen and David Soskice, reads like your typical political science treatise. It contains a few regressions, data on attitudes from the *World Value Survey*, median voters, comparisons of party systems, short historical case studies from the OECD world, and creative theory transfers from the new institutional economics. However this style of presentation is deceptive. *Capitalism and Prosperity* is a powerful and provocative intervention in current debates on the past, present, and future of democratic capitalism. In a time in which the political economic debate is being

driven by titles such as *Capital in the 21st Century*, *How Democracies Die* and *How Will Capitalism End?*, Iversen and Soskice, two giants of comparative political economy, plead for relaxed optimism. Neoliberal policies and financialization? In truth, sound measures to unleash knowledge-based growth. Growing inequality? A problem of welfare states, not of capitalism. Financial and fiscal crises? Consequences of insufficient international coordination. The boom of right-wing populism? Primarily a problem of education and regional policy. To many post-2008 scholars of capitalism, this might sound somewhat bizarre. Structural crisis, immanent contradictions and gradual decay? No – even though democratic capitalism is in need of a number of repairs, it is overall *alive and well*.

The extensive connections to contemporary public debates conceal the fact that *Democracy and Prosperity* is a comprehensive intervention in the defining debate of political economy. From Locke to Marx to Hayek, the question of the compatibility and interplay between democracy and capitalism is the core issue of the discipline. And Iversen and Soskice have the rare ability to weave empirical research and theoretical arguments into a counter-argument that tries to stand up to widely-held theories of capitalism. In their view, economists' worries about the threat to free markets posed by too democratic democracies and social-scientific worries about the threat to democracies posed by overly free markets suffer from a similar fallacy. The relationship between democracy and capitalism is historically deeply symbiotic, not antagonistic. This theoretical intervention, however, is not the only – perhaps not even the central – contribution of the book. Along the way it develops suggestions for the improvement of some

long-standing deficits of comparative political economy. The book integrates recent economic geography and comparative political economy by including subnational political economies, it renews the theory of *Varieties of Capitalism* with respect to the secular rise of the service economy and the problem of the *middle income trap*, and it connects historical research on democracy, the welfare state, and capitalism. Many of these analytical moves have been tried before; but in its density and clarity, *Democracy and Prosperity* is nevertheless a remarkable book – challenging, provocative, and productively irritating.

An Equilibrium-model of Democratic Capitalism. Throughout the book, Iversen and Soskice underpin their argument with the observation that historically *advanced capitalist democracies* have been extraordinarily resilient. Since the First World War, early capitalist democracies have remained structurally stable – “apart from temporary German and Italian lapses” (p. 4). The development of a theoretical model explaining this resilience is the primary goal of *Democracy and Prosperity*. The form of their theoretical approach should not come as a surprise to connoisseurs of the work of the two authors. Iversen and Soskice develop an equilibrium model in which aspirational groups of voters, profit-oriented firms and growth-oriented nation states keep each other in check (Figure 6.1, called “The symbiotic relationship”, summarizes this model, see p. 259). The authors' claim that it is only thanks to this particular political-economic configuration that significant sections of the population, nation states, and firms – more or less deliberately – work towards the collective good of a prospering economy and robust democracy. Without intervention by nation-states, capitalists would

tend towards stagnation and rent-seeking; without aspirational voters, governments would degenerate into *predatory forms*; and without the creation of sufficient economic opportunities and state containment of ‘militant’ labor movements, populations would hamper industrial development. At times, the model seems a bit economic-functionalistic, which – to anticipate – it repeatedly is.

For this model to plausibly apply to the development of the rich capitalist democracies of the last 150 years, Iversen and Soskice have to revise a number of common assumptions from political economy. Their quite detailed thoughts on (a) the distribution of power between capital interests and nation states, (b) economic voting, (c) the politics of economic policy, and (d) the growth drivers of the last fifty years are undoubtedly among the most insightful passages of *Democracy and Prosperity*.

(a) Throughout the book, the authors attempt to expose as a misconception the belief that internationally mobile capital limits the capacity of the nation state. The opposite may be the case. Historically, capitalist production has become increasingly *skill-intensive* and geographically clustered. Iversen and Soskice have large agglomerations of the new service economy in mind, such as Boston, London, Hamburg, New York City and the Bay Area. To the extent that capitalist firms are dependent on the resources of these new clusters, capital is anything but *foot-loose*. And if it is the case that the balance of power between nation states and capital interests depends above all on the credible withholding threats of the latter, political action should generally be interpreted as the “democratic choice of autonomous governments” (p. 156). In its radicality, this conclusion seems somewhat absurd in

view of the library-filling research on the political influence of capital interests. However, it raises the exciting question of whether and when the tendency of new knowledge-intensive industries to form geographical clusters opens up an unexpected space for political action against corporate interests. Think, for example, of the recently unveiled, surprising capabilities of the American state to abuse large IT firms for its security policies.

(b) Iversen and Soskice are also firmly opposed to the assumption that voters’ reasoning consists of short-term cost benefit-calculations. Instead, significant groups of voters reward parties having a reputation of being competent promoters of the *advanced sectors* of an economy. The reasons for this are personal and family aspirational dynamics, as well as a good deal of long-term rationality. The inclusion of meaning-based categories – such as expectations, reputation, attributions of competence and aspirations – in economic models of democratic elections is instructive and stimulating. In parts, however, Iversen and Soskice seem to overstrain the notion of rational choice. What prompts their meditations on the nature of economic voting is the ambition to harmonize the neoliberal reform wave of the eighties and nineties with a median voter model – Thatcher thus acted on behalf of, not in contradiction with, the enlightened interests of democratic majorities (pp. 167–171). The number of behavioral curves necessary to match model and reality, begs the question of whether an alternative model of representative democracy would not have been the simpler way – even if it would have entailed a reduction in the economy and elegance of the model as well as its normative thrust.

(c) Iversen and Soskice see a similar level of long-term rationality at

work in the emergence of economic policies. They criticize the widespread economic folk-wisdom that governments are short-term maximizers of electoral chances and that democratic governments therefore tend to act in “irresponsible” ways. Instead, they argue that parties try to strengthen their reputation as ‘responsible’ economic managers across election cycles. This analytical move helps the authors to explain why self-interested political actors would push through “painful reforms” that may be in the long-term interest of economic development. The authors point to a bundle of reforms matching this logic: the massive expansion of tertiary education since the 1960s, market-making reforms in the financial sector, the liquidation of ‘old industries,’ and the reduction of international trade barriers, i.e., the common canon of ‘responsible economic policy.’ The extension of models of democratic politics is packed with interesting observations and insights. Nevertheless, the question remains if the original explanatory problem does not emanate from a simplistic initial model of representative democracy rather than from the behavioral assumptions *within the model*. Here and elsewhere, Iversen and Soskice are fighting on two fronts to connect with two heterogeneous literatures, one from economics and one from the social sciences.

(d) Lastly, *Democracy and Prosperity* exposes as a myth the assumption that economic development emerges spontaneously from free enterprise and markets or from technological shocks – especially in the past five decades. In line with a growing literature in innovation research, Iversen and Soskice argue that the rise of the *knowledge economy* was and is a state-induced process: “Capitalism was reinvented by democratically elected governments” (p. 143). It was only

thanks to their education, investment and competition policies that rich democracies were able to develop technological inventions such as the microchip into catalysts for a growth regime. For readers familiar with recent innovation research in the social sciences, this is not too surprising.¹ In contrast to this literature, however, Iversen and Soskice do not focus on actual innovation policies, for example by the US Department of Defense, but on macroeconomic policies. The causal connection of many of these policies with economic development is not readily apparent. If it is true that financialisation has primarily pushed firms to realize short-term results, as documented by an extensive research literature, shouldn't they invest less, rather than more, in research and development? Similarly, the authors' assertion that Western states have tightened their competition policy regimes since the 1970s (p. 153) amounts to the exact opposite result of recent economic, legal, and social science research (Robert Bork influentially criticized *over-enforcement*, not *under-enforcement*, what notwithstanding might have been a boon to knowledge-based growth). Compared to the model of innovation from *Varieties of Capitalism*, in which 'radical innovations' – fitting the nineties – emerge in 'market-oriented' regimes, the more recent depiction seems much more realistic.

Equipped with these premises, Iversen and Soskice develop interpretations of four historical phases that fit in with their main thesis of a symbiotic relationship between democracy and capitalism: the emergence of capitalist democracies and Fordism, the emergence of the *knowledge economy* and the recent boom of right-wing populism. For all periods, the authors try to show that politically potent cross-class coalitions have formed to develop

and stabilize the respective political-economic regimes – to the advantage of democracy *and* capitalism. None of the regimes was essentially characterized by a simple class conflict between capital and labor; rather, alliances between the capital-owners, educated workers, and aspirational classes were decisive.

In early democratization processes, for example, they observe two typical processes. In countries with fragmented labor movements, coalitions between workers, the urban middle class and the industrial bourgeoisie formed that supported elite-driven democratization processes – especially to expand accumulation-friendly public goods such as education and sanitation. Iversen and Soskice call this democratization path *protoliberal* because it has led to majoritarian electoral systems and a comparably modest expansion of the welfare state. In countries with well-organized labor movements – called *protocorporatist* – democratization tended to prevail against the interests of elites, which explains why more comprehensive redistributive institutions and systems of proportional representation prevailed.

As usual in comparative political economy, the authors depict the golden age of cross-class alliances in Fordism. Fordist regimes relied on coalitions between the middle and working classes and on an arrangement between large manufacturing companies and a moderately redistributive policy. As a result, the interests between "urban and rural areas, between large and small cities and between different quarters in cities" were held in balance (p. 108). It is precisely these alliances of interests that have eroded in the *knowledge economy*. This erosion, however, had less to do with a counter-movement of capital interests than with a political reconfiguration of cross-class coalitions in response to tech-

nological change and the exhaustion of the Fordist growth model. Since the 1970s, the well-educated strata, urban regions, and their political representatives have split off not only from the lower middle class and lower class, but also from suburban and rural areas. Even if these new alliances were capable of winning a majority *and were* conducive to capitalism, they have created an opening for populist counter-movements. In this respect, populism is not a danger inherent to the new growth regime, but a problem caused by a lack of inclusive policies. Thus, more inclusive regional, educational and redistribution policies may send right-wing populist movements back into insignificance.

Broadband expansion, publicly funded tertiary education, *Coding Bootcamps*, and Scandinavian *flexicurity* instead of "Aufstehen!" Demands to finally support the losers in knowledge capitalism in their 'catch up' modernization are nothing new. However, Iversen and Soskice show a confidence that is rather rare in current debates that the winners of the *knowledge economy* will develop an enlightened self-interest to get less fortunate groups on board or to compensate them. And they are equally optimistic that the repair of contemporary democratic capitalism is above all a question of political will to better distribute its economic benefits. Such optimism presupposes that there are viable ways to sustainably compensate for the imbalances of the *knowledge economy*. And it presupposes that populist movements actually feed on a primarily material dissatisfaction. In fact, the regional examples of successful post-industrial restructuring selected by Iversen and Soskices stand in contrast to at least as many regions in which ambitious restructuring programs undertaken since the mid-1970s to cushion the damage caused by massive

deindustrialization have comprehensively failed. While the authors have by no means missed cultural fault lines in contemporary knowledge capitalism, they are confident that cultural fault lines play second fiddle. If it is the case that the new right-wing populism thrives on the basis of significant non-economic motives such as xenophobia and concerns about the loss of social status, appeals for material compensation and cosmopolitan inclusion would be of little help.

Democracy and Prosperity and the debate on capitalism. In my view, much of what can be criticized about *Democracy and Prosperity* can be traced back to the fact that Iversen and Soskice connect to extremely heterogeneous debates and literatures. Things that may seem particularly unrealistic to most sociologists are core assumptions of the economic democracy and capitalism debate. While the economic variety of the thesis of the incompatibility between democracy and capitalism rarely figures prominently in critical social science discourse, it is enormously influential both in international scholarly discussions and in political debates. The reference to this debate explains why the authors assume, without any further qualification, that innovations emerge from intensified competition, that the neoliberal reforms of the 1980s and 1990s were unambiguously necessary and economically appropriate, and that institutional regimes are stable when they sufficiently function in economic terms. The ambition to connect not only to social scientific, but also to economic debates had arguably already shaped the *Varieties of Capitalism*. And almost twenty years later, it is by no means clear that this was a profitable strategy for this now classic work.

It can thus be assumed that *Democracy and Prosperity* will be met with structurally similar

critique in the social sciences as *Varieties of Capitalism*. To some extent, the authors seem to anticipate such reactions. Passages that sound very economic-functionalist – in which the economic function of certain institutions is quickly cited as the reason of their emergence – contain extensive concessions that emergence only happened after extensive conflicts, irrational action, and political experimentation. Such decorations do not really change the explanatory logic. Given that Iversen and Soskice designed a model for the understanding of 150 years of political and economic history across the OECD world, their arguments are suspiciously clean and neat. One and the same logic of development fits Great Britain in the late 19th century and in the USA in the early 21st century? Critical objections will probably be forthcoming very soon. However, if *Democracy and Prosperity* were to succeed in sparking a debate as lively as the publication of *Varieties of Capitalism*, its pointed formulations and simplifications would have been more than worth it. If *Democracy and Prosperity* is understood as an argumentative quarry for future empirical research – instead of a last word in the debate on democratic capitalism – the book's potential becomes clear.

Endnotes

A German version of this review has been published with Soziopolis available at <https://soziopolis.de/lesen/buecher/artikel/crisis-what-crisis>

1 The 2011 anthology *State of Innovation, The U.S. Government's Role in Technology Development*, edited by Matthew Keller and Fred Block, and the monograph by Mariana Mazzucato, *The Entrepreneurial State, Debunking Public vs. Private Sector Myths*, published in 2013, offer a good introduction to recent social science research on innovation policy.

Sriya Iyer · 2018

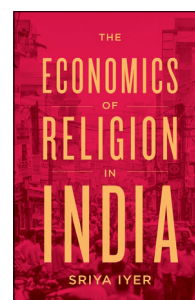
The Economics of Religion in India

Cambridge, MA: Harvard University Press

Reviewer **Josef Hien**

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The *Economics of Religion in India* comes with a fancy dust jacket. Gold letters on a red background will make it an eye catcher that shines out between

the more sober covers of the academic books in our offices. On the back it carries enthusiastic endorsements from several of the most central figures working in economics of religion and, running to 304 pages, it weights heavy in the hand of the reader. There are not many recent academic books on religion in India from top university presses and certainly none on the economics of religion in India. All this raised my expectations. I was so looking forward to this book so much that it is perhaps not surprising that I was disappointed on finishing it. The stakes were simply too high!

After first giving you an overview of the content of the book, I will then explain what are the highlights and the downsides of the book. Do not get me wrong, this is a solid book, and the author deserves all possible praise for pioneering the economics of religion approach in the Indian case – what I criticize are minor points that could be taken as points of departure for future research.

The book comes with a massive nine chapters, structured around the central questions of the

economics of religion approach. These chapters try to answer central questions on the connection between religion and conflict, the impact of religious conflict on growth, religious competition and the provision of religious services, as well as religious competition and the provision of non-religious services (e.g. schooling and welfare services).

The theoretical backbone remains the spatial models and assumptions that guide most of the economics of religion. These argue that, with higher density of different religious providers, churches are likely to provide more religious and non-religious services. In turn, this leads to attracting more followers, more worshippers and higher religiosity. These models were originally developed to explain the persistently high religiosity in the US, an outlier where levels of religious adherence remain high in a modern capitalist society. It is important that Iyer tests the power of these explanations on the Indian case.

The data on which the book is based comes from a massive survey that Iyer and her research team have conducted in India. The survey is a fantastic opportunity to critically engage with the major claims of the economics of religion approach. Iyer relies, surprisingly for an economist of religion, almost exclusively on descriptive statistics from her survey. There is only one regression table in the book. Hence, instead of causal claims each chapter has a lengthy literature review followed by a description of the relevant part of the survey. The literature reviews are exhaustive and detailed, but unfortunately unfocused, containing an endless series of paragraphs that are not crafted towards a clear-cut research question or towards the formulation of hypothesis that could be tested. From this it follows that the chapters' conclusions are also

vague, without taking a definite stance. This makes the book a descriptive and detailed data source for the study of religions in India that gravitates around the survey conducted by Iyer, but there is no testing of the major claims of the economics of religion approach. By mainly presenting descriptive tables, the book also does not make use of advanced econometric methods, the main power source of the economics of religion.

Luckily, the book has some other highlights that are more subtle and can be found on the fringes of the chapters. Especially interesting is Iyer's finding that there seems to be a huge discrepancy in the actions of religious entities before and after the early 1990s, which represent a watershed in liberalizing the Indian economy. After the 1990s, we see more religious service provision, more non-religious service provision by religious actors (welfare, schooling), more religious violence and riots and higher religiosity. Iyer points to the accelerated economic development and massive growth rates of India starting with the 1990s. Liberalization and de-corporation of Indian society led to growth but also to more inequality. Iyer speculates that inequality is the real driver behind the increased action of religious actors that she observes since the 1990s. This is only a fringe topic in the economics of religion approach so far and largely used only when it comes to the substitution effect, namely that state welfare is replaced by religious welfare if it declines or becomes insufficient (e.g. through massive socio-economic change). Exploring this topic in detail could have been the central unifying claim of the book. I think Iyer is right in calling out the connection between rising inequality and a rapidly changing social structure and the provision of religious services. Judging from historical sociolog-

ical studies on the evolution of the welfare state in Europe and its connection to religion, we can see that religious ideas and religious action on welfare accelerates when the old social fabric gets disrupted, like at the end of the 19th century in continental Europe. This leads in some cases to the formation of the welfare state and in others to a reinforcing of faith-based welfare provisions (van Kersbergen 1995, Hien 2012).

Unfortunately, Iyer is not able to delve deeper into the relation between economic development in India and religion since the book lacks a section on the socio-economic ideology of the different religions in India. Apart from a brief mention of Zakāt, there is no detailed description of what the different religions in India prescribe about welfare, economic competition, economic growth, the role of the state in the economy or whether their basis of society and economic action is the individual, the family, the male patriarchic breadwinner, or larger social entities. A look into the fruitful theoretical and empirical works of the scholars who developed the field of the economic-sociology of religion at the Max Planck Institute for the Study of Societies, like the path breaking works of Sigrun Kahl (2005), Philip Manow (Manow 2004, Manow and van Kersbergen 2009), Ipek Göçmen (2013), and to a lesser extent Josef Hien (2017, 2017a), would have helped. The book is so rich with data that a more thorough engagement with the prescriptions and expectations of different religions in India could be a great point of departure for Iyer's or other colleagues' future work.

Besides these points, which should be seen less as criticism than as encouragement for future work and expansion of the arguments, there are some great passages triggering aha moments

in the book. These include the mentioning of temples that have a stock of 800 cows that can be rented out in times of drought or economic hardship to peasants in the surrounding villages as a form of religious welfare provision. Such passages are eye opening for a scholar of the economic sociology of religion in Western Europe, since they show you how narrowly one thinks about the topic. Also insightful was the fact that many of the rites used in the European literature as indicators for the decline and substitution of religion with third wave practices like yoga and Ayurveda are in the Indian case actually core parts of religious practice. Just these points alone would have made reading this book worthwhile!

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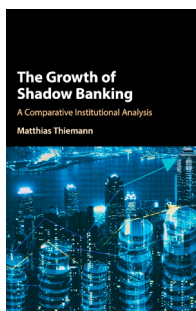
Matthias Thiemann · 2018

The Growth of Shadow Banking: A Comparative Institutional Analysis

Cambridge, UK: Cambridge University Press

Reviewer **Dylan Cassar**

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The financial crisis of 2007/08 threw into sharp relief the complex system of credit intermediation that had developed over the span of several decades in global financial markets. Widely known as shadow banking, or market-based finance in technocratic discourse, the system disrupts the vertical-hierarchy organisation of bank-based finance into a chain of entities that together perform

the activities of a traditional bank. Crucially, even though banks became heavily involved in it, this system remained outside of banking regulation as the activities which constituted it were kept off-balance sheet. What were the conditions that allowed for this, and what to make of so much national variation in exposure to the shadow banking system?

These questions are at the heart of Matthias Thiemann's *The Growth of Shadow Banking: A Comparative Institutional Analysis*. Drawing on eighty-five interviews between 2010 and 2016, the work centers on the dialectical unity between the regulator and the regulated. The two have opposing interests, where the latter seeks to circumvent rules while the former reacts in degrees of regulation. Yet there is a sense in which each requires the other to exist and this factor influences their decisions. In addition, the structural and institutional context in which this exchange unfolds needs to be appreciated, particularly in how it structures behaviour. This nuanced approach stands in contrast to literature that blames bankers' agency in regulatory capture for widespread regulatory laxity. Though it is not excluded in certain instances, this theory is deemed as lacking in explanatory power to provide a comprehensive picture, not least to explain the variation on a national level.

The first half of the book explores the growth of shadow banking, focusing on a central market – the asset-backed commercial paper (ABCP) market in the US. It attributes this development to the growing competition banks faced from non-bank entities and international banks in the 1950/60s. This pushed banks to embrace their competitors' practices by shifting from traditional credit towards off-balance sheet financing. In a crucial decision in 1988 by the Basel Committee, short-term liquid-

ity facilities were deemed as low-risk, hence remaining free of capital charges. This fuelled the growth of ABCP conduits sponsored by the banks themselves; conduits which in actual fact harboured long-term assets and were thus credit facilities *disguised* as liquidity facilities. As Thiemann argues, while a faction of the US Federal Reserve voiced its concern about the risks involved around these practices, it was overruled by those pushing a deregulation agenda firmly entrenched in a belief of self-regulating markets. In spite of this, in a clear case of regulatory agency, the pro-regulation faction within the Fed later exploited the global negotiations for Basel II and succeeded in regulating the bank's credit exposure to these facilities in the US.

It was the Basel Accords themselves, contends Thiemann, which created the structural conditions that shaped the regulators' agency, especially in Europe. The Accords established a set of common international rules for banking services, resulting in competition resurfacing at the margins of these rules. National banks could only remain internationally competitive if they were allowed to engage in off-balance sheet activities. Crucially, since Basel did not cover these practices, the latter's regulation was left to the discretion of the national regulator. This structural disjuncture between the international and national level gave rise to an alignment between the interests of the banks of a particular jurisdiction and those of the *national* regulator. For the banks, any additional (national) regulation over and above the international ones would impact on their global competitiveness. The national regulator thus put these concerns at the forefront of regulatory decisions.

Thiemann presents in impressive detail a comparative analysis of three European national

systems that vary in terms of regulation and exposure to this market – France, Germany and the Netherlands. He argues that the structural disjuncture between the national and international level, one which is largely overlooked by current literature due to its over-emphasis on international regulations, led to a regulatory race to the bottom in Europe. Despite this general trend, there were a few exceptions. In France, for instance, the government's protectionism of its banking system before liberalisation and the oligopolistic structure that ensued thereafter, ensured that the French banks were internationally competitive. This freed the French regulator from its concerns about banks' competitiveness, and thus it was possible to push through regulation.

While important, this structural element is "*only a necessary but not a sufficient condition*" (p. 142) to explain the three cases' variation. The institutional embeddedness of the regulator in banks' activities and rule compliance is a further factor which influences its intervention capacity. Thiemann gives particular attention to the interaction order of the actors by drawing on the social studies of finance and the literature on experimental governance and regulatory dialogues. The first evident case of this is in the context of accounting standards in 1998, where transnational pressure impacted on the institutional role and embeddedness of the regulator in the area of accounting. While the German and Dutch regulator failed to be included in the policy network, in France it established a firmly embedded and institutionally legitimate role that allowed it to tighten accounting standards.

Beyond standard setting, the regulations' effectiveness is determined by the regulator's capacity to enforce their interpretation and compliance. It is here that the em-

phasis on the regulator's embeddedness can be best appreciated. In Germany, the regulator performed off-site mechanical checks using information provided by the banks themselves and only monitored by auditors. This detachment led to the regulator's decision to eschew further regulation. The Dutch regulator enjoyed discretion in banking regulation but was cut off from accounting standard-setting and supervision. The regulator thus accepted the industry's claim that conduits carry no risk, and applied no capital charges. In contrast, the French regulator maintained a strong presence and dialogue with the banks and auditors. This allowed it both fine-grained knowledge about bank practices as well as the capacity to shape banks' interpretations of rules.

In diametrical opposition to literature that is critical towards the closeness between the regulator and the regulated, this finding implies that rather than resulting in regulatory capture, proximity to and regular dialogue with the regulated can be key to regulatory effectiveness. Though a compelling argument, it remains to be seen how this regular and close interaction can be prevented from degenerating into regulatory capture – principally into cognitive capture – in cases that are conditioned by the national–international structural disjuncture. In other words, what mechanisms can be put in place that grant the regulator not only the authority and clout to push through its demands but also the motivation to do so as it interacts with the regulated? This is one question that could spur further discussion between the literature that denounces the regulator–regulated interaction and literature such as Thiemann's that sees interaction as an important element of regulation.

Matthias Thiemann's *The Growth of Shadow Banking* is a highly insightful contribution that

provides a fresh perspective on what led to the spread of shadow banking. While scholars interested in markets and their regulation will find in this book a rigorous study that seamlessly blends sociological debates and approaches with those drawn from political economy, practitioners will most certainly value the meticulous fleshing out of the multi-faceted shadow banking system. Yet there

is another more urgent reason why it should concern scholars and practitioners alike. The book ends on a rather ominous note. The structural factors that permitted the shadow banking system to grow largely unfettered are still in place today, a decade on from the crisis. In this respect, the book might not only serve to provide insight into the historical trajectory that led to the crisis. It should also

prove useful as a forward-looking appeal for the recognition of the yet unresolved foundational weaknesses in our financial system. Immediate pre-emptive measures may be required in this regard, and those concerned would undoubtedly benefit from the normative recommendations with which the book closes.

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