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Techno-politics of Information and Communication Technologies (ICTs): Investigating Material Practices and Social Relations in Indian Public Bureaucracies

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Techno-politics of Information and Communication Technologies (ICTs): Investigating Material Practices and Social Relations in Indian Public Bureaucracies

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requirements for the degree Doctor of Philosophy

in Anthropology

by

Nafis Aziz Hasan

2021

ABSTRACT OF THE DISSERTATION

Techno-politics of Information and Communication Technologies (ICTs):

Investigating Material Practices and Social Relations in Indian Public Bureaucracies

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Doctor of Philosophy in Anthropology

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Professor Akhil Gupta, Chair

Over the last few decades, in many parts of the world, from Mali to Peru, Mozambique to Sri Lanka, Uganda to India, Information and Communication technologies (ICTs) have been employed to foster 'transparent', 'accountable' and 'effective' public bureaucracies. This dissertation asks what do ICTs do even when they do not meet these putative goals? How is the internal infrastructure of governments changing as ICTs encounter the material facets of public bureaucracies? The dissertation employs an interdisciplinary methodological approach, marrying ethnography of bureaucratic offices in southern India and archival research of prior programs to technologize public governance in India. It studies what new people, objects and institutions emerge as the materiality of public bureaucracy, historically predicated on paper, is being increasingly supplemented and transformed by new digital media, such as databases, mobile apps

and web dashboards, and the political effects of their mediation on bureaucratic power and knowledge.

Under the over-arching theoretical frame of techno-politics, this dissertation argues that the digitization of public bureaucracies point not just to the possibilities of improved governance but also its risks, as vulnerabilities and breakdowns in the digital system weaken the "iron cage" of bureaucracy and shift the responsibility of repairing digital records onto individuals. Second, this dissertation makes a call for taking seriously a hybridity of media forms, not simply as a transitory phase before a more stable media sets in, but as the material condition of the state after liberalization. ICTs do not simply dislodge paper documents, but paper seems to be undergoing some change as it encounters, articulates, effaces or is effaced by ICTs. Third, querying the relation between "the technical" as an assemblage of new technologies, people and processes and "the bureaucratic", this dissertation points to the material and discursive work undertaken to maintain the ever-shifting boundaries between the two, arguing that many expert practices are subsumed under an existing bureaucratic logic of authority and hierarchy. The dissertation concludes by pointing to how these arguments can be brought to bear on the dramatic surge of the digital during the Covid pandemic.

The dissertation of Nafis Aziz Hasan is approved.

Christopher M. Kelty

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Lilly Irani

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2021

TABLE OF CONTENTS

Introduction **1**
Research Questions and Theoretical Framework 3
Research sites and methods 18
Chapter review and structure of the dissertation 29

Chapter 2 : Digital archives, errors and slow violence **33**
A Paradigm Change? 33
A Fragmented Bureaucracy 39
Bhoomi Monitoring Cell *46*
'Records-as-Service' versus 'Records-as-Process' 50
Records-as-Process *55*
Citizen Responsibility Versus Administrative Responsibility 58
Conclusion 62

Chapter 3 : Mutating Records – the Social Life of Land Record Keepers in Southern India **66**
Beyond Representation – Digital Materiality 72
Beyond Representation – Communication and Performance 79
Knowledge about land *80*
Other Communication Forms *83*
Performing Records *85*
Conclusion 89

Chapter 4 : In real time: techno-politics of dashboards in Indian bureaucracies **93**
Time and technologies in/of the bureaucratic office 102
Generating Data from Bureaucracy 108
Any forward momentum 112
Preparing Future Bureaucrats 118
Conclusion 122

Chapter 5 : Cultivating Probity, Enacting Authority: App Based Orality in Bureaucracy **125**
Cultivating Probity on the Phone 133
The Case of the Exam *134*
Being Commissioner on the phone *138*
Assembling technologies for voice – the "aural materiality" of voice apps and mobile phones 148
Conclusion 155

Chapter 6 : Engineering bureaucracy, bureaucratizing engineering **157**
Recruiting Engineers 168
Being Engineers *175*
Engineering Practices 178
Conclusion 188

Conclusion to the Dissertation **190**

Bibliography **196**

TABLE OF FIGURES

Figure 1:1- Bangalore Rural District Commissioner's newly constructed office 23

Figure 1:2 - Datanagar's Taluk Office 25

Figure 2:1 - Land records managed across multiple institutions 44

Figure 2:2 - A printed copy of the digital RTC 54

Figure 2:3 - 'Computerized RTC Correction' document 59

Figure 2:4 - How a 'Correction File' moves 59

Figure 3:1 - Ode to a Village Accountant in the annual 'diary' 67

Figure 3:2 - A revenue record written in the revenue year 1997-98 74

Figure 3:3 - A computerized mutation record from the early 2000s 76

Figure 4:1 - A "clock" depicting work by state department 96

Figure 4:2 - A data collection kiosk versus a clerk's table 109

Figure 4:3 - The 'Disposal Index' generated from data collected in the kiosks 116

Figure 5:1 - KG's desk with the list of previous Commissioners on the whiteboards 140

Figure 6:1 - Krishna at work 157

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The idea of this dissertation was born in 2011 while conducting field research on *Aadhaar*, India's biometric identity project. Across cities, towns and villages, myriad government agencies were liaising with young engineers and software companies to organize the infrastructure of *Aadhaar* enrollments. It struck me that the social actors paid the least attention to in this arrangement were the state bureaucrats themselves. I began to re-think the direction of change purported by this mega use of digital technology. If digital governance is poised to change substantive elements of our citizenship, might it also be re-arranging the internal infrastructure of the mammoth, web-like, Indian government? I owe this spark of an idea and the hundreds of follow-up conversations to Ashish Rajadhyaksha for his infectious curiosity and prescient advice, first at the Center for the Study of Culture and Society in Bangalore and then elsewhere.

As these ideas travelled with me to other places and institutions, I began to investigate the organization of specific digital programs vis-à-vis the intricate structure of the Indian bureaucracy. For introducing me to these programs and to the kinds of research questions they could be approached with, as well as for the opportunity and resources to conduct that research, I am indebted to Sudhir Krishnaswamy and Narayana A at Azim Premji University, Bangalore. Sudhir was the first person to assure me that I *could* do a Ph.D., long before I considered doing one. Narayana's support throughout this Ph.D. program, from the proposal to the writing of this dissertation, has been critical and indispensable. His deep involvement in helping me find resources for my dissertation fieldwork and then taking out time from his busy schedule to discuss my progress has been critical for this project. As a friend and mentor he has helped shape many ideas in this dissertation. I owe him a huge debt of gratitude and I hope to continue collaborating with him on new projects.

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Ten years ago, my partner Neha and I quit our comfortable corporate careers to traverse a new path. Shifting tracks and staring a Ph.D. has been a mutual journey for both of us. Neha's involvement in every aspect of this dissertation has been vital to its fulfillment. This is as much her labor, as it is mine, and for that I love her all the more. The last six years have seen tectonic shifts in my personal life. I lost my father in 2017 and in 2020 our beautiful spirited daughter was born. As I complete this dissertation, I turn to Noor - a cuter and more animated 'project' than the one I have just completed.

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Hasan, N., H. Spivey & K. Card (2019). Frustrated Encounters in Leitner, H., Peck, J., & Sheppard, E. (Eds.). (2019) in *Urban Studies Inside/Out: Theory, Method, Practice*. SAGE Publications Limited.

Hasan, N. (2018). Meghalaya's' Anti-Railway Protests' Highlight Complexities of the Development Discourse. *Economic and Political Weekly*, 53 (3), 20 January.

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Introduction

It was late January 2019, when I was well into my fieldwork in the offices of the revenue department, a government agency in the southern Indian state of Karnataka. Conducting fieldwork in Datanagar, a town on the outskirts of Bangalore, I spent my days learning how new digital technologies were changing the way bureaucrats were working in the offices of the department. Given its proximity to Bangalore, India's silicon valley, Datanagar was undergoing a rapid transformation in its land use from being primarily agricultural to residential and industrial. As a result, the sections of the revenue department dealing with the filing and recording of land records through computers were often very busy. In the course of surveying various aspects of land related work, I came across a room, which took me by surprise. This room was like any other room in the office, with its rows of tables, loads of paper files and scribbling clerks. Yet, the content of work pertained to the correction of records that had already been digitized. These records were digitized under *Bhoomi*, a highly celebrated example of the use of digital technology for land governance, which had won national and international awards since its inception in the early years of the new millennium. *Bhoomi* marked a break from the purportedly corrupt practices of lower-level bureaucrats and involved the centralization of land records and their maintenance through strictly monitored software. The paper-based corrections of digital records in *Bhoomi* I found that day, suggested not just a failure of the project's aims, but also the material, organizational and personnel transformation of offices that *Bhoomi* had brought about which were very different from its avowed goals.

Since the mid-1990s, transnational development institutions have touted Information and Communication Technologies (ICTs)[1], such as software programs and internet based technologies, as ideal tools to reform government bureaucracies. From Mali to Peru, Mozambique to Sri Lanka, Uganda to India, ICTs have been employed to foster transparent, accountable and effective government bureaucracies. The Indian government launched a National e-governance plan (NeGP) in the early 2000s to improve transparency and accountability in the delivery of government services through ICT-enabled bureaucracies. *Bhoomi* and other land record databases were part of this plan. More than a decade later, Narendra Modi, the present Prime Minister of India, continues this focus, once again identifying ICTs as appropriate technologies. Modi's 2015, $20 billion 'Digital India' policy initiative sees the Internet as a prime enabler for governmental reform, seeking to allow unmediated access to government services through 'cloud' computing and spawning the use of social media and digital applications to make bureaucracies transparent.

As my fieldwork inside bureaucratic offices points out, ICTs, such as databases are not just an efficient means of governing records, but they also shift the location of bureaucracy, introduce new people and methods of holding on to and recording information and change the way "citizens" interact with the state in ways that often occasion the re-drawing of boundaries. Thus, even when ICT based policies "fail" they often produce effects that go beyond policy objectives.

[1] Many of the technological interventions I describe in this dissertation are of digital media, such as databases, mobile applications and dashboards. However, I choose to stay with the older terminology of ICT to describe these interventions to point to their historicity and sometimes to their source of origin. For instance, investment in databases for maintaining land records in Karnataka was partly supported by the World Bank's global investments in ICT for development, better known as ICT4D. Yet, the goals and objectives of ICTs for bureaucratic reforms are different from ICT4D as the latter was linked to the bridging the "digital divide" and "empowering citizens (see especially Schwittay 2008; Mazzarella 2010), " whereas the goals of the ICTs I describe are to make processual changes in bureaucracy.

Research Questions and Theoretical Framework

Such situations, in which ICTs, framed as conduits of reform ideology and practice produce effects that are beyond their putative goals, have not had sustained analytical attention in the literature. The focus has been on why bureaucratic reforms fail or how their adoption can be improved (see, for instance Fountain 2004; Heeks and Bailur 2007). Some recent studies have focused on the political conditions within which ICT-led reforms proliferate (see, for instance, Bussell 2012). Yet, the question of how to deal with the effects that ICTs spur, different from their goals, remains a central analytical challenge? How does one conceptualize the effects of ICTs that go beyond policy aims and which are not incidental but have serious consequences for the functioning of bureaucratic institutions? Drawing on multiple popular and scholarly accounts of the use of ICTs for reforming bureaucracy this dissertation is oriented to arguing that ICTs for bureaucratic reforms rarely meet their objective goals, and it asks what happens *otherwise* in such contexts.

I take bureaucracy to be a socio-material entity comprised of an assemblage of people, processes and technologies and entrusted with the ethical goal of equitable distribution of resources. My focus is on public bureaucracies managed by state actors and does not include private bureaucracies, as the entrenchment of ICTs in private bureaucracies is likely to produce effects very different from those in government bureaucracies. In asking what are the consequences of change in the medium of work for bureaucracies, this dissertation interrogates the materiality of bureaucracy, when old and new media encounter each other. This is a pertinent question because existing anthropological scholarship foregrounding documents as critical to the social and political life of bureaucracy, concerns itself exclusively with the realm of paper documents (see Hull 2012a for a comprehensive review of this literature). In contrast, this

dissertation seeks to fundamentally re-think the materiality of bureaucratic institutions as paper encounters ICTs, and, further asks, what are the socio-political effects of this emerging materiality? Like scholars who have centered their research on the significance of a transition to digital technologies, not just on work routines, but on social structures and practices (Bell 1976; Zuboff 1988, among several other), this dissertation aims to illuminate the effects of a material transition that is posed to change the nature and character of public bureaucracies, not just in India but in many parts of the world. Focusing on this transition is especially revealing of both what came before and what is supposed to come ahead not in the total submersion of one form by another, but in their hybrid effects. For instance, paper corrections of digital records in *Bhoomi* point to the continued, but altered relevance of paper in the realm of the digital. Transitions between analog and digital forms also embolden political claims about the future (Appadurai 2013). For instance, transitioning to ICTs allow governments to postpone the fulfillment of an expectation of improved governance and services to the future when bureaucracy is fully digitized.

The dissertation traces the effects of ICTs on public bureaucracy across a range of digital forms - databases, mobile apps, and dashboards in order to disarticulate the histories, desires and ensuing effects of specific digital infrastructures and to point to the plurality of forms that often get lost when clubbed together under phrases like ‘e-governance’ and ‘govTech’. It is also to center the analysis on material infrastructure and thereby, as I describe below, account for a techno-politics of ICTs. This is not a common research approach to the historical development of technology in India, which is most often presented as the mute effect of dramatic political choices. It does not also follow the trajectory of post-liberalization in India most often approached through a political economic lens of a withering state and emerging market and, less

often, as the cultural effects on institutions and the people who inhabit them. For instance, in Sukumar's (2019) book on the history of technology in India, technological interventions are always hand-maidens to the political choices of leaders or "computer boys" - technocrats close to political power in Delhi. An opposite example is Coleman (2017), who, through an archival analysis of the electrification of India, shows us how technological transformation has produced political opportunities for "wider debates over culture and community, political participation and national belonging across India's colonial and postcolonial history" (Coleman 2017, 4). In similar ways, in line with the question of what ICTs do, away from their putative goals, this dissertation aims to trace the effects of specific technological interventions on bureaucratic forms and practices.

Relatedly, the emerging materiality of bureaucracy is co-constituted by "the technical", which includes people, processes and technologies not associated with public bureaucracies, such as engineers and their design models. The dissertation further interrogates how "the technical" is constituted in relation to "the bureaucratic"? What boundary making practices (Bowker and Star 2000) are carried out to justify this distinction? Posing a distinction between the two forms the crux of reform interventions in public bureaucracies, so interrogating how that distinction is made becomes critical to an understanding of ICTs effects on bureaucracies. The argument that I trace in this dissertation is that "the technical" is never a stable category as the assemblage constituting technical interventions is bureaucratized as it encounters norms of hierarchy and authority. For instance, while engineers are hired to do work defined as technical, they complain that the gamut of tasks assigned to them includes work defined as bureaucratic, such as writing reports, making presentations and liaising between offices.

The overall theoretical frame within which I undertake a study of ICTs in bureaucracy is that of techno-politics. Techno-politics emerged as a concept to account for the ability of competing actors to envision and enact political goals through the support of technical artefacts (Gagliardone 2014). As such, techno-politics appears as a dynamic approach to studying the political effects of technologies and practices of adaptation and translation that undergird the deployment of technologies in places away from the sites of production. Techno-politics, as this illustrative list of citations shows, has attracted a range of scholars to study a multitude of technological arrangements at multiple scales (Barry 2001; Joyce 2003; Mitchell 2002; 2011; Von Schnitzler 2008; Anand 2011; Harvey and Knox 2015). Rather than neutral means to more substantive ends this scholarship foregrounds materiality as central to the multiple constitutions of modernity—fashioning socialities, subjectivities, and affective capacities. A techno-political approach also provides an opportunity to understand the inventions and interventions of designated experts and the forms of expertise they give rise to, insofar as they link expert practices to material projects having political effects (Harvey & Knox 2015).

What makes a techno-political approach to technical infrastructure different from other approaches to studying technologies is that, in this approach, technologies and infrastructures do not remain a mere symbol or tool for political expression, but themselves become a "political terrain for the negotiation of moral-political questions" (Schnitzler 2013, 671). In my study, the ICTs developed in the service of bureaucratic reforms are a terrain on which political choices are played out. For instance, staying with the example of databases, when the engineers and senior bureaucrats architecting *Bhoomi* decided to centralize land records into a database in Bangalore, they engendered a micro-political terrain, in which lower level staff (such as village accountants and land surveyors), who perceived a loss of discretionary power over their work, resisted these

changes through formal protests and informal critiques of computer-mediated texts. In centralizing records, *Bhoomi* plays a central role in vilifying lower level staff as nefarious and corrupt, a key impetus for senior bureaucrats to design reform interventions for bureaucracy. Further, the process of centralizing records in *Bhoomi* and haphazard processes of translation from paper to digital records, as I recount in chapter two, resulted in numerous errors in the text and numbers that constituted the records, leading to the initiation of correction processes which, I argue, stalled access to a range of resources for small landowners. Encountering errors led to lengthy paper-led correction processes, the onus of which was transferred from the administration to the record-holder. In this period, landowners lost access to an ecosystem of welfare services that were linked to the presentation of accurate records, negatively affecting their experience of substantive citizenship (Jayal 2013).

For over two decades there has been an unprecedented investment in developing sometimes highly sophisticated technologies for the poor and their presumed condition. In its early days at the turn of the millennium, a technological focus allowed a re-inscription of poverty as a problem of access to digital services and advocated for the use of more technology to "leapfrog" Indian society into the twenty-first century (Mazzarella 2010). The computerization of land records in the 2010s and changing forms of exchange between poor people and the state, from paper records to digital interfaces, suggests a different techno-political configuration. No more is it the politics of inclusion but an opportunistic individualization marked by devolved responsibility combined with centralized control.

While the concept of techno-politics has been productively used in relation to large engineering projects (Hecht 2011; Mitchell 2002), as well as in the more micro-political terrain of specific technologies, such as water meters (Schnitzler 2013), I use the concept to describe a

range of political effects from multiple technical interventions. I do not limit the concept to a single infrastructure or intervention but use the concept to describe a terrain of political effects emanating from a diverse range of interventions. Yet, a techno-political framing allows me to see commonalities in the origin points of multiple ICT interventions and the infrastructures, assemblages and political economies that are the conditions of their possibility. For instance, I highlight the centrality of the discourse of bureaucratic reforms as one origin point for the deployment of ICTs. Reform programs under which technical interventions coalesce include the New Public Management (Clarke and Newman 1997; Hood 1995) that originated in Britain; the recommendations of the Administrative Reforms Commission under the government of India that sees technology as a central tenet of the reform of bureaucracy (Mathur and Mathur 2017) and a series of national bills that enact rights to civic entitlements ranging from information and work to the delivery of public services (Ruparelia 2013). The dissertation locates a second origin point of ICTs in a form of an entrepreneurial spirit that following Irani (2019) might be called "entrepreneurial citizenship". Here the impulse for ICT use is found among specific people – senior bureaucrats, technologists and consultants, who are driven by a desire to change things and have the means and resources to do so.

A techno-political approach to studying the expanding use of ICTs in bureaucracy helps me make three inter-linked arguments that connect with a broader critical discourse in the social sciences and humanities of technology's use and adaptation and contribute to an ongoing discourse of technology's effects in specific cultural contexts.

The first is related to pressing concerns around technological risk as technology is adopted by states around the world to further both the "repressive state apparatus" (Althusser 2006) of securitization, identification and policing as well as more bio-political aims of

administrative control and governance. Literature points to technological risks or excesses in both domains. The former has led to the characterization of surveillance and concerns over the absence of privacy (see, for instance, the work of Lyon (1994) and Bennett and Lyon (2013)). The domain of administrative work poses greater challenges in identifying risks and has only recently been opened up to critical scrutiny. Scholarly work is increasingly showing us that digital technologies used and promoted by governments for mundane administrative work, such as the allocation of housing that can alleviate the problems of the poor, can instead end up policing and exploiting them (Eubanks 2018; O'Neil 2016). Like these scholars, who show very specific risks of digital technology on the poor, this dissertation throws light on multiple risks on social actors who depend on bureaucracy. One example, as I point to above, is the opportunistic devolution of the risk of keeping records up-to-date on to people who depend on those records. The human impact of breakdowns and vulnerabilities in systems like land record databases is disproportionately felt by marginal groups - poor women, lower caste farmers and small landholders. So how technological infrastructures of governance appease interests of particular social groups, while ignoring others, is of critical importance here for democracy and equity. As scholars have pointed out (Du Gay 2000), Weber did concede that the organizational form of bureaucracy is necessary to meet the ethical aims of a democracy (even as he recognized that democracy by its very nature is opposed to bureaucratic rule). Du Gay goes on to reiterate this position in his analysis of Britain's public bureaucracy. My contention is that the risks posed by ICTs enervate bureaucracy's democratic aims by off-loading the responsibility of managing data on to people.

Another crucial argument around the risks of technology that I make in the dissertation is that bureaucracy may be weakening as a result of digitization. Digitization proceeds in stages –

design of a system, including ideological claims about the value of market-based procedures versus more centralized designs, the actual creation of software and database technologies, the process of digitization, and then the subsequent error correction. This means that the location of bureaucracy is split across multiple offices, many of which are contracted, sub-contracted, and some of which are about the "agency" of the system itself (in the sense that software that is susceptible to breakdown or manipulation, requires maintenance that is not purely technical, and so on). This fracturing of bureaucracy is leading to a weakening of bureaucracy's formidable form of knowledge and control – the "iron cage" of modernity (Weber 1978), primarily because of the scattering of data and information across multiple nodes. This weakening is evident in conversations with senior bureaucrats, whose attempts at gathering composite information about the districts under their control, is marred by gaps between information recorded in the digital systems and what they find on their rare, but revealing, physical visits. Thus, in this dissertation I locate risks not only at the interface of bureaucracy and their clients, but also more internally, in the processes by which bureaucratic states produce knowledge about the world they set out to govern, such as in the realm of the governance of land. Further, I distinguish these risks facing government from the more sensational breach or hacking of digital systems, even though these could be related to the very same kinds of design flaws and engineering decisions that make a system vulnerable to sensational breakdowns: cutting corners, lacking standards or the poor expertise of the engineers. While attacks on the government's servers are getting the attention of politicians and the media (Times of India 2018; Government of India 2020), the risks brought on to its internal infrastructure by rapid digitization are more concealed but are equally, if not more consequential, for both states and people.

While connected to and inspired by the arguments that Eubanks and O'Neil make, the arguments about risk that this dissertation makes are necessarily inflected by the "cultural-technical situation" (Philip, Irani, and Dourish 2012) of public bureaucracies in India, in one important way. The application of ICTs to bureaucratic work is partial and work is never fully automated. These conditions arise from political choices and constraints, as Bussell (2012) and others have noted, and are circumscribed by both infrastructures and political economies of older technologies such as those of paper. This is not a problem of incompleteness, as senior bureaucrats would have it. It is not just a matter of time before everything is universally digitized and work becomes fully automated. For instance, I found that while mobile apps were used to digitize data needed by both higher bureaucracy and clients, such as a tri-annual collection of information pertaining to crops, this data was withheld from entering all the communicative channels of bureaucracy, as functionaries at multiple levels benefited from issuing documents such as "crop certificates" to farmers. In the case of a land survey app used to digitize and streamline work, surveyors protested against its implementation, as it would prevent them from choosing when to conduct surveys and for whom and to issue survey documents. Paying attention to the partial nature of the transition to ICTs also helps guard against "rupture talk' (Haigh 2014) and the "tyranny of the epochal" (Du Gay 2003) so easily associated with ICT interventions and which the literature pointing out the adverse effects of automation might be unintentionally portraying.

The partiality of digitization leads me to the second main argument of the dissertation. This dissertation calls for taking seriously hybridity of media forms not simply as a transitory phase before a more stable media sets in, but as a form of postcolonial "hybrid knowledge practice" (Philip, Irani, and Dourish 2012). Scholars of "postcoloniality", such as Akhil Gupta

(1998), point to the inadequacy of dualisms – developed/developing, traditional/scientific, in thinking through empirical situations in the Global South. Rather, they are attentive to hybrid, multidirectional communication that informs technological practice. Similarly, rather than pose paper and digital as mutually exclusive categories, I propose to think of the articulations across media as contextually more effective. My goal is not to simply bemoan the problems that arise when translation from one media form (paper) to another (digital) fails, but to understand existing media as always already processes of hybridization. Thus, what I relate to in multiple chapters of this digitization is that even when paper as old media re-asserts itself (Bolter and Grusin 1999), it does so in 'new' ways. That is, paper seems to be undergoing some change as it encounters, articulates, effaces or is effaced by ICTs.

In order to understand the significance of paper in present day bureaucracy, it is important to first empirically determine the status of multiple genres of documents and writing that are foundational to bureaucracy. Paper does proliferate in the realm of the digital as Sellen and Harper (2003) point out, but this proliferation is not homogeneous across genres of writing. Some genres (like writing of records) are neglected alongside the rise of digital databases, even as records stored in the database are printed out on paper in larger volumes than when they were hand written (a claim made by an interlocutor), confirming the trend that "rather than print and distribute, we distribute and then print" (Sellen and Harper 2003: 14). Some others (like field reports) are truncated in form as computer aided templates proliferate. Still others (like circulars) are produced on paper but their circulation is restricted to scanned versions through mobile messaging applications. A fourth involves the use of digital tools to increase the readability of paper documents, such as locative apps for reading colonial survey maps, a practice that following Gilbert Simondon may be termed "concretisation" of technical objects (Simondon

2017). The proliferation of paper is seen the most in the realm of bureaucratic approvals and authentication functions, situations in which bureaucrats have to commit themselves to a course of action (for instance, approving an action, passing a legal order). Here duplication between paper and digital is encouraged even if recognized as redundant.

My sense from observing the daily rituals of production of a range of documents – verification reports, records, notes, etc. is that text is encountering a kind of economization, that is a shrinking of a textual artefact in form and content in a bid to stabilize meaning. By economization I don't only mean the reduction in the volume of writing, which actually seems to be growing for some genres of writing, but a kind of existing or expectant change in the rituals associated with writing. One aspect that was repeatedly pointed out to me is change in the narrative form of certain documents There are multiple effects of this emerging phenomena and there seem to be many reasons for its emergence which is prompted by the turn to the digital but not entirely reducible to it. By economization of writing I mean the shrinking of certain documentary practices (at various degrees of intensity) and the complete neglect of some others. Thus, documents of daily communication - notes, circulars, orders, official memos, and field reports, continue to exist in truncated forms, but documents of accountability (like report writing) or some other village accountant books and registers (among the list of "books" that village accountants are supposed to make and maintain) are not produced with the urgency with which they were done in the past. Among those that exist, there is some amount of transformation in their form and content. Documents of daily communication are shortened, typed, templatized documents, in which the practice of writing by hand is reduced to a couple of set blank spaces or a set of yes/no options that require ticking and less writing. So there is less space for maneuvering, and these documents are produced more quickly than they were in the

past, a claim my informants make. One office manager put it like this – "we hand-write (*kai bari*) less now but the volume of paper has increased." This is telling, because a single focus on the quantity of paper used and produced would not suffice to describe the subtle changes that the electronification of writing has brought to paper. The manager linked this to the rise in the development and welfare functions channeled through the office starting sometime in 1990s. Other documents such as the record of rights (a document that consolidates in written form all the particulars pertaining to land which I mentioned above), is an example of a more complicated transformation. Just looking at the change in the writing of the signature reveals a certain kind of economization - from hand signatures in village accountant offices, to digital signatures, and to barcodes, these changes reveal a broader set of transformations that are represented in the writing and its economization. Another document, which repeatedly comes up as an example of shortened writing, is the field report that field staff (village accountants and revenue inspectors) have to write when they go on field verifications. These reports, it is claimed, once bore the authority and authorship of the bureaucrat. They have now been reduced to a set of yes/no questions that he has to tick against.

Crucially, encounters between media are not only located at the seams of paper and ICTs but also across oral and paper practices as well as oral and digital ones. Certainly, a prior moment of hybridity between forms can be located in the relation between orality and literacy. In an essay on folklore and oral traditions in India, Ramanujan (1990) contends that the text of epics like the *Mahabharata* and *Ramayana* gain salience because of the popular and commonplace phenomena of oral recitations inside Hindu homes, an argument that Cody (2013) also mirrors about a literacy project in southern India. In this dissertation, I describe new avenues of orality in bureaucracy as bureaucrats encounter digital technologies.

In pointing to hybrid media and the practices they engender, my goal is to broaden the analysis of bureaucratic materiality, so far centered on paper-led practices of documentation (Hull 2012; Gupta 2012; Mathur 2016), to a diversity of bureaucratic forms, which illuminate aspects of bureaucratic power and process (Hoag and Hull 2017). By bureaucratic forms, I am pointing not only to documentary forms of filing, recording and reporting, but also to social forms such as meetings that are constantly being pervaded by hybrid media. Further, spatial and temporal forms of bureaucratic institutions, such as the spatial layout of offices, the sequencing of protocols and the experiences of waiting and delay, are all affected by hybrid media. For instance, scholars have argued that the intricate documentary apparatus of governance by paper in the colonial period "mandated a chain of materialities and spatialities" (Sengupta 2020) that are to be found in the architecture of colonial offices and in the arrangement of furniture, which reflects bureaucratic power as much as practices of writing. In the offices I studied, steel and glass computer kiosks were located at the entry and exit of bureaucratic offices, with clerks and officers continuing to occupy the rooms of the office, revealing the spatial politics that gird ICT adoption. Such examples suggest that a study of post-liberalized states can no longer ignore the work of multi-media in ordering bureaucracy's documentary, social and institutional forms.

The third main argument that a techno-political approach motivates is related to the question of experts and expertise. Because ICTs are constructed as interventions requiring the application of technical knowledge, they necessarily involve the emergence of new people and processes on the landscape of public bureaucracies. This is also the case with the digitization of bureaucracy in India. The argument this dissertation makes regarding the appearance of technical expertise is that contrary to the expectation of engineering remaking bureaucracy in the image of speed and efficiency, twin goals undergirding bureaucratic reforms, these practices are subsumed

under existing bureaucratic logics producing effects. In this dissertation I meditate on the nature of experts and expertise emerging out of this subsumption of technical work into bureaucratic aims.

The main point here is to do with the meaning of "the technical" in bureaucracy and how technical work as a specific form of expertise is separated from bureaucratic work. While ICT interventions are justified because of their radical difference from inefficient bureaucratic processes, my observations reveal that "the" technical is not a stable category with specific boundaries, but is a label for all kinds of problems that cannot be solved through established processes. Bureaucrats who are responsible for hiring engineers constantly change the remit of what they call technical. While for some, this consists of familiar technical things, such as working with databases and dashboards, for others it includes the work of reporting, presentations, data entry, field surveys, monitoring and auditing and liaising between offices. By labeling things technical, bureaucrats can conveniently push work onto the plate of an engineer. This ever-expanding remit of technical work dissolves boundaries between "the technical" and "the bureaucratic", which in the first place is employed to recruit engineers as a distinct body of workers for ICT projects.

Bureaucracy is able to determine and change the contours of technical work because it can order experts along a graded hierarchy that revolves around a distinction between mental and manual work. Newer technical work such as operating a mobile app or typing text into a computer is seen as manual work and hence lower in status to intellective, inscriptional work. I found this distinction between the manual and the mental to pervade bureaucratic hierarchy. For instance, village accountants entrusted with surveying crops with mobile apps refused to work with apps, saying that handling devices was the work of 'Group D' staff, the lowest level in the

hierarchy of the office. In the end, the department employed "private residents", young contractual workers, to do the job. Village accountants did, however, agree to sit on their desks and "audit" the information collected on the apps. Expert labor is of multiple kinds and is itself hierarchized as it is employed at various levels to meet diverse technical needs. An army of labor, termed by the director of the Karnataka Labor Institute as a "parallel bureaucracy", consists of engineering consultants charged with the responsibility of overseeing digital interventions in multiple bureaucratic offices. Another category of experts is termed "operators" but consists of diverse work profiles. The lowest in the hierarchy are data entry operators. A second set are those who are attached to specific clerks for the daily work of typing, searching, sorting files and doing other odd jobs. A third set are those that staff computer kiosks, taking applications from people and feeding them into the computer.

The specificity and difference between technical interventions and bureaucratic work is further disturbed by the conceptual inadequacy of present technical interventions. The main point here is that more thought may have been given to the integration of ICTs to bureaucracy in the past, even as the present is marked by a surfeit of interventions. My sense from studying ongoing programs and from conversations with engineers is that what goes on in the name of design is the "replication" and "customization" of infrastructure to suit the needs of current requirements. The expertise of the ground level engineers thus emerges less from technical novelty and more from their ability to negotiate the demands made on them from their bureaucratic supervisors, as is the need to constantly perform that expertise and distinguish themselves from the group of operators who are lower in scale. This argument emerges from reflecting upon technical practices from the early days of digitization of government offices in India. At the National Archives in Delhi, I found three exclusive files dedicated to the computerization of India's Planning Commission.

This included the setting up of the NIC, which was, in its initial avatar of the mid-1970s, a UNDP-supported computer network to aid the Planning Commission in its data needs for the annual plans. At the heart of the design were more computer scientists than engineers, and these files carry many instances of the work of design that went into making the computer systems. Pages are dedicated to something called "systems thinking" – a conglomeration of information technology and organizational design. These files contain research papers, with titles such as Information Services in Administrative Agencies," "A User Oriented On-Line Computer System to assist Decisions and Analysis in Area Development Planning," and, "Fail-Soft Information Systems in Government," all written in direct and intervening language, meant to provide practical and yet transformative advice on how to technically change government for the future. Consultants describe in their communication to bureaucrats, "a new philosophy of information in government" and ways to operationalize that philosophy through the design of data and systems (Planning Commission 1976). The 'plug and play' mode through which engineers in the present work (as I describe in Chapter Five) seems conceptually different from the interventions by early consultants. From the vantage point of this archive, the present interventions seem conceptually slim even as the quantum of interventions has vastly increased.

Research sites and methods

Finding a site to study how ICTs are grounded in bureaucracy is challenging in two ways. First, because of the multi-scalar and dis-aggregated nature of the state, every location produces a partial perspective of the government universe, as others before me have described (Gupta 2012; Hoag 2011; Mathur 2016). With ICTs, the problem gets compounded because different levels of bureaucracies and different regions of bureaucratic work adopt and re-inscribe ICTs differently, even as ICT policy is pushed down the hierarchy in a command mode. What Chan (2014) says

about the absence of a universal internet and digital culture rings true for the ways in which different scales, levels and wings of government perceive and enact ICTs even within a confined geographical territory of the regional state. Sub-national comparative political science has shown that there are differences within political and bureaucratic "cultures" across states and across districts within the same state, producing different responses to the same policy (Mangla 2015; Bussell 2012).

The reason why ICTs have different careers in different parts of the same state has to do with both historical reasons concerning methods of administration, the political economy of resources as well as the enthusiasm of specific administrators. Karnataka, which is where bulk of the dissertation research was conducted, exemplifies these complexities. In 1956, the state was carved out of four distinct regions – the Mysore Presidency, the coastal region with centuries old links with the Muslim world, the hilly tracts of Coorg and the northwest Bombay presidency (J. Nair 2011). This immediately posed a challenge for a centralized administration, particularly for attempts to integrate diverse ways of recording and administering land, which continue to dog the state's administrators (Aziz and Krishna 1997; Nanjundappa et al. 2002). When it came to the digitization of land records, management decisions of uniformity were artificially imposed on what were seen as diverse ways of land ownership (Benjamin et al. 2007). The political and economic differences in regions have also produced a cultural narrative about the spread and use of ICTs. Echoing a stereotypical belief that regions geographically distant from Bangalore are technologically backward, administrators continue to expect economically poor regions to have a lackadaisical ICT uptake. For instance, a district commissioner expressed shock when he found out that a district within "backward" northeast Karnataka was more efficient in using a mobile app for crop survey than his own district closer to Bangalore. Yet, poor districts are replete with

examples of digital experiments that have only later taken up by administrators in Bangalore. For instance, a professor at the International Institute of Information Technology in Bangalore pointed out to me that the first experiment to digitize land records was conducted not in Bangalore but in Gulbarga, another district in the deprived northeast region. Sukumar (2019) points out that an early experiment at providing "rural digital services" was again not in Bangalore but in the coastal district of Karwar. Behind these experiments was the hand of enterprising administrators, who used whatever resources at hand to experiment with ICTs (in the case of Karwar, the district commissioner redirected the funds allocated for an office jeep towards buying computers and servers).

My initial plan was to conduct a comparative study between two regions in Karnataka, one close to Bangalore and the other further away from it. I planned to go back to a region in northeast Karnataka where I had conducted prior research. However, I soon realized that a horizontal comparison would not only reproduce the trope of difference that I allude to above, but also would not provide me the depth my research question warranted. Further, initial forays into fieldwork made me see the variety of digital programs underway, each requiring independent analysis. Thus rather than choosing to go from district to district, I chose to move vertically up and down the spatial chain of administrative bureaucracy to follow the trajectory of distinct ICT artifacts that had made their way into bureaucracy.

Districts have been the historical sites for interventions as old and recent scholarship has shown (Frykenberg 1965; Mathur 2016; Gupta 2012). Consider these statements from two different epochs in the governance of Karnataka, the first in a letter by a British administrator, P.M. Taylor in 1843 (1920) and the second by a bureaucrat at a public event in 2015, paraphrasing her conversation with a minister.

> These districts are in the worst conceivable condition...and you may well imagine the work of cleaning out and reorganizing the Augean stable of abuse and corruption, maladministration and every species of disorder.
>
> It's not me and my council of ministers who are corrupt, it's that man who is sitting in any of the offices, be it gram panchayat, taluk panchayat, district office, who is corrupt...

I chose to base myself in a rural district outside Bangalore, called Bangalore Rural, but close to it, for two reasons. Firstly, while Bangalore is governed by a district administration, it shares jurisdiction with other urban local bodies creating some lack of clarity as to which office does what. More importantly, in an initial survey of ICT programs I found many aimed at rural, agricultural populations (such as an agricultural land records database and mobile apps for crop surveys). Offices in Bangalore would not run these programs, whereas those marked as rural would. Secondly, I wanted to stay close to Bangalore, because it was here that technology companies that built for government were located, as were offices of higher bureaucrats, homes of retired bureaucrats and other researchers and activists interested in ICTs. I realized I would have to shuttle regularly between district offices and these other sites in Bangalore to seek responses to questions that the district offices, as users of ICTs, did not always have. I thus rented a house on the border of Bangalore Urban and Rural, a locality historically known for garment factories, but now giving way to a residential boom expanding from the center of Bangalore. It turned out that several employees of the taluk office where I spent most of my time lived in the same area, and I would often bump into them on the bus to their office. Gender segregation on Karnataka's public buses made it difficult to chat with everyone, but a nod of recognition or a wave of the hand signaled some amiability.

No government department exemplifies the spatial dynamics of a state more than the revenue department. The revenue department is large not only in the number of its employees,

but also in its institutional presence all the way from the village to the state capital. As a whole, the department includes the regulatory, development and welfare components of the state and these functions are replicated across institutional scale. While it began in the colonial period as the revenue generating arm of the state, managing land and taxes, its web-like institutional form made it the department of choice to channel development goals since the 1950s (Misra 1983), much to the chagrin of administrative reformers who have repeatedly advocated a separation between land management and the other functions clubbed within the department (Government of India 2007). Inside bureaucracy, getting a position in the revenue department accords some symbolic value as it is often referred to as the "mother" of all departments, both in terms of the material possibilities it affords (making money through bribes) and the challenges of getting into (which requires, it is claimed, bribing the members of the hiring body). Once inside, staff is subject to tumultuous careers, marked by frequent transfers, deputations, change in work profiles, and so on, sometimes connected to political pressures from the outside. I saw someone being shifted from her current job into a less significant one because she refused to serve a political party worker out of turn. Staff, in turn, point to the early deaths of their colleagues, stress, hypertension, migraine, and complications arising from diabetes, as effects of this "pressure" on them.

In the capital city Bangalore, the revenue department is materialized in "sections" that are individual offices (sometimes rooms in the same office) allocated different pieces of work. The biggest "section" is survey and settlement, which presides over an archive of revenue surveys, maps, and is responsible for conducting new surveys. In the districts, it is the district commissioner's office where the work of the revenue department takes place. More than the offices in Bangalore, the district commissioner's (or collector's) office epitomizes stately

presence, which led Cody in his fieldwork in Tamil Nadu to call it "a royal palace in the eyes of many" (2009). The newly constructed district office that I frequented closely fits this description. All the work of the revenue department was conducted through this office including running a revenue court (see Figure 1:1).

Figure 1:1- Bangalore Rural District Commissioner's newly constructed office

(Photo by Nafis Aziz Hasan)

A miniature form of the district office is found in the taluk office at the sub-district level, the subject of a recent historical study by Raman (2012) that I cite in multiple chapters. This office is the nerve center of all the work of the revenue department in the myriad villages that constitute the district and it is where ICT programs to digitize the state are tested. Naturally, this became a critical site for me to observe how ICT was being adapted to existing work rhythms.

I gained access to Bangalore Rural through a stroke of good luck. On arriving in Bangalore, I had networked with an ex-colleague and friend, who being a former journalist, had friends in the bureaucracy. Luckily for me, a bureaucrat he knew had just been appointed the district commissioner of Bangalore Rural. One evening in September, as I describe in chapter three, we visited the Commissioner in his large, plush office. After sizing me up from head to toe, and making a stream of optimistic statements about the work I would do, he agreed to let me base myself in his district and study the "whole thing". This was a critical permission, as without such a general approval no other office in the district would let me talk to their staff. I only learnt later from my friend (and I am still not sure why he concealed that from me) that he had already briefed the Commissioner about my coming, who had in-turn reasoned that because I was coming from California, I must have something to do with the technology world, and could possibly help him start a company he had in the offing. This was part of his 'exit' plan from bureaucracy because of a scandal which he was caught up in, as I describe in chapter three. The company he aimed to start was a home service for government related work. Fortunately, he never discussed those plans directly with me, but I got the sense many times that he always saw me as some sort of technology consultant, even though he was briefed about my dissertation research. A few months into my fieldwork, he asked me for a set of "recommendations" to improve the offices I was visiting, and I did send him my thoughts in a bullet-point document attached on email, which he did not respond to nor bring up in future encounters.

Having a general approval from the Commissioner carried both advantages and disadvantages. It gave me the freedom to visit any office under his jurisdiction (something I would not have got if I had approached him with a more specific request for studying a specific ICT program for instance) and talk to people across the hierarchy. I was quite clear from the

beginning that I did not want to confine myself to only those bureaucrats who worked with ICTs or whose work was being affected by technology. I aimed to dive deep into the organizational life of bureaucracy by acclimatizing myself with all that went on in its offices. After all, the question I was asking was what ICTs do to organizational life. I could not make much progress without locating myself inside the bureaucracy. The Commissioner's blanket approval went a long way in meeting this ambition. While I visited all the taluk offices in the district (four in number) and multiple offices below it, I spent most of my time in a town I will call Datanagar which had one taluk office and a number of other offices of village accountants below (Figure 1:2). The Commissioner had given me the contact of a bureaucrat in this office, who turned out to be extremely helpful and was up-to-date with everything that was going on. In classic bureaucratic style, he gave me a printout of all the "sections" and functions of the office, saying that I should start visiting each of them from the top and asking me to tick each as I progressed. Thus began my foray into office life.

Figure 1:2 - Datanagar's Taluk Office

(Photo by Nafis Aziz Hasan)

Both Datanagar and other towns in the district of Bangalore Rural were in a tumultuous period of transition owing to heightened industrial activity and the reclassification of agricultural land for industrial or residential purposes. This process called "conversion" in bureaucratic parlance was one of the tasks carried out by people in the taluk office. I got a sense of how this change was affecting Datanagar through detailed conversations with a few "brokers" mediating the sale and purchase of land from famers to developers and builders. In Chapter one, I point to how this changing landscape of land relations is disseminating knowledge about land to a wide variety of people and is no more concealed in the record or with the village bureaucracy. These observations complement work on the dispossession of land by farmers, some of it located in Bangalore Rural itself (Goldman 2011).

Having the Commissioner's patronage certainly opened doors for me, but the flip side was that it made people in these offices suspicious of me. This is not surprising considering there is a long history of people spying for the Commissioner as his "ears and eyes" (Potter 1964; Raman 2012). So while everyone was courteous and welcoming, they did not want to say anything beyond a formal description of their roles. Others were genuinely scared. I remember once going into town on a Sunday to meet land "brokers" and I popped into the office because the gate was open and found a few clerks working on their desks. When I bumped into them the following week, they pleaded with me not to report them because working on a holiday was an offense. In this way, the work of building "rapport" took more time than it may have in another, less power-laden situation. Eventually what worked with a bunch of people was persistence. I showed up three or four times a week at the start of the day eager to chat with officials, or join them on field trips for surveys, visit other offices, attend trainings and meetings outside the

office, eat lunch with them and join them for tea breaks. After a couple of meetings some would be comfortable with me sitting around listening to them handle clients or talk on the phone (which they did a lot). Over time, some began to ask me for the "real" reason why I was there, often proffering their own explanations: to take the civil services exam; to advocate technological change to the higher bureaucracy; or to offer process improvements. Only a few were interested in the idea of research and they took it upon themselves to school me in various aspects of bureaucracy, a position I happily accepted. In any case, after the first three months, some of the earlier suspicion had melted away and most people were at ease with seeing me around.

Because I spent a long time with some people in the office of Datanagar, I learnt not just about the work they did, but also about their lives, their backgrounds and families, their interests and aspirations, and their fears and concerns. Even though the chapters do not make direct reference to all these details (because of the framework I choose), this hugely informs my understanding of the bureaucratic context.

Bureaucratic work in the revenue department is codified in law and has intricate procedures of recording, filing, inscribing, and adjudicating disputes, which are not visible from the outside. This has to do with the continuation of a large number of colonial categories of work, but also the complexity that land poses in its ever-changing form. I spent a lot of time learning these technicalities, talking not just to people in the offices of Datanagar but also to present and retired bureaucrats, and to lawyers and academics in Bangalore engaged with the work of governing land. There were two challenges I faced here. One was the difficulty in getting others to talk about these technicalities, the specificities of their work. As soon as an interviewee would learn that I was interested in technology, they would dumb down the complex

bureaucratic procedures and begin describing the ICTs at work to me. It was not so much that they did not want to explain things to me; it was an assumption that because I was studying ICTs, these other things were irrelevant to me. It took me some time to get them to see that I wanted to go deep into the categories that they used. With scholars, there was a different challenge. When they learnt that I was in an anthropology program, they assumed that I did not have the capacity to understand the technicalities of land recording or accounting procedures or the political economy of land governance, let alone have an interest in these matters. In fact, they didn't quite understand why I was bothering with the specificities. At the end of a meeting with an economist who had studied the system of land recording in Karnataka, I was left with this advice: "If you *really* want to study land, you should leave anthropology". The second challenge was of a more ethnographic nature: How deep did I need to go and when should I stop bothering with technicalities and look for bigger patterns? This was a question that stayed with me, and I was never able to resolve it fully, but as I began seeing repetitive instances of things (such as errors in land records, obsession with dashboards, and so on), the themes of the chapters emerged. In addition to studying Bangalore Rural, I spent three months visiting the office of Telemax and spending time with two of its representatives, whom I call Ram and Shyam. The District Commissioner had initially introduced me to Ram and Shyam and then I followed it up from there. They visited bureaucracies to sell them their mobile products and this is the subject of chapter three.

A third site I visited was the office of the National Informatics Center in Kurukshetra and Shillong, two cities outside the southern state of Karnataka. I had tried hard to get access to this government institution in Karnataka, but did not make much headway. Because of personal

contacts in both these cities, I was able to spend some time in Kurukshetra and an extended period of time in Shillong.

Chapter review and structure of the dissertation

Four out of the five chapters focus on specific technological forms and their effects on people and institutions. The fifth chapter is about the appearance of a specific kind of engineer in bureaucracy and the question of expertise. Technologies like databases, mobile apps, dashboards, are used not just in the offices I visited but are part of the broader discourse of ICTs in government. What I aim in these chapters is to show their specific grounding among people and institutions; in a sense "provincializing" them (Coleman 2010). I aim to show what the "mediation" of media inside bureaucracies produces multiple strands of politics (Mazzarella 2004). Each chapter is written as an independent unit with a specific argument, evidence and framing within the relevant literatures.

In Chapter Two, I study a land records database, to show the risks that it produces among its users. Fieldwork in the taluk office of Datanagar revealed a large number of digital errors in the database as well as the cumbersome paper processes to correct the records, something with which clients are burdened. The prolific literature on this database has not engaged with this aspect of errors, which is concealed from the public discourse about the database. This is partly because the identification of errors and their corrections are themselves glossed over as routine bureaucratic work. I read this situation in which even clients sometimes do not know that their records are compromised, as an example of 'slow violence,' which differs from other kinds of violence attributed to the state, including structural violence. One major reason for this violence, I argue, is the aim of the database architects to separate an atomized form of 'service' from the domain of offices.

In Chapter Three, I study what the implications of *Bhoomi* are for a set of venerated record-keepers. *Bhoomi's* emergence led to the removal of village accountants (VAs), lower-level bureaucrats of the revenue department, from producing and maintaining land records, a task that afforded them responsibility and power. The chapter asks how VAs cope with this loss in their social status as producers of land records. Given that scholars of bureaucracy have pointed out how bureaucratic writing makes state actors powerful, my data allows me to ask what happens when such actors are removed from their role of inscribing bureaucratic documents? Conversations with a multi-generational group of VAs reveal their strategies for coping with this situation, which includes their response to computerized records. This chapter points to the re-signification of bureaucratic documents in the age of the digital. Critically, it aims to disrupt a stable relation between writing and power with a description of a situation where VAs aim to keep power intact by devaluing the material aspects of writing.

Chapter Four is about databases and what opportunities they produce for both bureaucrats and politicians. In tracking databases of timely service delivery by the governments of Karnataka and Haryana, aimed to speed up bureaucracy, I find that databases "work" even as their architects agree that their goals have largely "failed". They do so because they meet a political expectation to visualize improvements in bureaucracy without actually intervening in ongoing bureaucratic work. This is achieved by showcasing the act of measuring itself as an improvement in bureaucracy and by holding future bureaucrats to their measurements, thus creating an expectation for bureaucrats to become as good as their standards. I locate this attempt to track time against prior attempts at tracking time in Indian bureaucracies, and aim to show what is novel about present interventions mediated by ICTs.

In Chapter Five, I study mobile apps, in particular, a mobile app for audio calls that became an instant hit with many bureaucratic offices in Karnataka and elsewhere. This chapter follows the career of the district commissioner of Bangalore Rural, who is credited with setting up the app, but who is also mired in a controversy regarding his appointment to the bureaucracy. My field observations and interpretive analysis help me see how his enthusiasm for technology and the public defamation of his image as Commissioner are entangled. To understand this entanglement, I introduce the well-worn (but out of vogue) idea of "organizational survival." The Commissioner's interventions in having the app running against all odds and his own ethical stance towards his predicament, reveals a techno-politics of bureaucratic power.

Chapter Six is about engineers who are hired by bureaucracy to do technical work. While some scholarly attention is being paid to the interventions of engineers from elite institutions, for example Subramanian (2019), or software professionals who work for corporations (Upadhya 2016), how do a significant number of engineers, from more modest backgrounds who form the bulk of engineering graduates in India, articulate and enact their technical expertise? The ongoing digitization of bureaucracy offers an opportunity to examine how engineering expertise is produced and differentiated from bureaucratic work. In Karnataka alone, there are about three hundred engineering colleges that have their own systems of recruitment and from where about eighty to ninety thousand students graduate each year. A majority of these colleges are ranked Tier 2 or 3 and they attract students from multiple socio- economic backgrounds. According to reports by India's National Association of Software and Service Companies (NASSCOM), less than 25% of India's one million engineering graduates are considered employable in the corporate sector. I encountered engineers who could not find jobs in the corporate sector and ended up with contractual roles in ICT projects in the bureaucracy. These engineers are hired for

their purported expertise, but once inside, they are made to do work they complain is entirely bureaucratic, such as reporting and liaising between offices. In such a scenario, engineers' expertise does not arise so much from some objective manipulation of the world, that is the kinds of work classically associated with engineers (Harvey and Knox 2015) but from the social relations they make and their own investments in marking boundaries. The chapter shows that technical expertise is eventually bureaucratized along lines of hierarchy and the status of work.

Finally, a brief conclusion to the dissertation points to the significance of changing material forms of bureaucracy and their effects on people and institutions, for an understanding of the contemporary state in India. I end with a note on how my analysis can be brought to bear on the dramatic surge of the digital in the wake of the Covid pandemic across the globe.

Chapter 2 : Digital archives, errors and slow violence

A Paradigm Change?

Nagesh Gowda paused to wipe his forehead with a towel slung on his shoulder as we stood talking one Thursday afternoon in February 2019 in an office of agricultural land records in a peri-urban town I call Datanagar. We were both waiting for a court session in the large meeting hall to begin at 3 P.M. Nagesh owned 3 acres of agricultural, "dry" land, on which he grew ragi with artificial irrigation, and maize in the winter season. Adjoining his plot were parcels of land on either side belonging to his brothers, all of them having inherited it from their deceased father. Nagesh wanted to sell his plot to a land "aggregator" who had approached him, aiming to reap benefits from the soaring price of land in fast urbanizing Datanagar. The aggregator planned to sell his land to real estate "developers" who in turn planned to create a residential layout. In order to sell that land, though, Nagesh had to first make a change in one particular land record - the Right to Tenancy and Cultivation or RTC, which since the 1960s had come to stand in as a single proof of land ownership (Shivanna 2006). Nagesh and his brothers had jointly inherited the land from their father, and even though they had marked individual boundaries, through a process called "podi" or the partitioning of land, they continued to share a single RTC with the survey number 27, their individual plots differentiated by an alphanumeric string (P1, P2, P3 and so on). The aggregator wanted Nagesh to have a separate, single RTC created, with just his name and ownership details in it, which would establish beyond doubt that he indeed owned what he proposed to sell and also hedge against potential disputes among the brothers.

When Nagesh first came to the office for this seemingly routine work, a few months earlier, I saw him through the tiny window of a room near the entrance of the office. In the room sat Maheshwari on her computer, taking requests from clients for changes to their land records. As Nagesh approached, she hollered out to him for his survey number and village name, the "primary keys" of the land records database called *Bhoomi,* on which his records were stored. Ruffling through the copies of documents he provided – copies of the RTCs from multiple years since 1968; a copy of the *Aakar Band* - a British settlement report; his father's

death certificate; inheritance documents to prove how ownership came to him, and a family tree to show the relationship between father and sons, Maheshwari, paused and said, almost inaudibly that there was a mistake. He leaned forward to hear what she said, shifting his weight, perking up his ears, as she ruffled backwards through his papers and stood up from her chair. Using the back of her pen to point out different parts of the papers in her hand, she said that there was an error (*tappu*) between information in the digital RTC and the copy of the *Aakar Band* he had provided. Handing him the papers back, she proclaimed, "go for corrections (*tiddupadi)*" and sent him down the hallway.

Nagesh spent *one year* trying to get this error resolved in the digital database of land records, an experience I name *slow violence*. *Bhoomi* rose from what its proponents describe as the rubble of paper records (Saxena 2005), opaque inscriptional practices by village accountants who controlled the production and maintenance of land records. In the late 1990s, a senior bureaucrat and his advisors decided to centralize records across all the villages in Karnataka into a single digital repository from where they could be seamlessly delivered to landowners who needed copies of the records for multiple transactions, like sale of land, taking agricultural loans or getting subsidies from the government. Bureaucrats in Datanagar pointed out that the transition of twenty million land records on paper to a digital database was carried out hastily, such that typographical errors crept into the records because people who were not trained in Kannada and Marathi (two languages of the record) were hired to digitize the records. The chief architect of the *Bhoomi* blames the persistent errors in the records on the village accountants, who he says stalled the digitization process by delaying, sometimes up to a year, quality checks on samples of the digital data sent to them. In the meantime, the status of the information in the record changed, leading to the digital record to be out of sync with reality from the very start.

Despite these errors, in an attempt to make the digital database compulsory for use, bureaucrats introduced amendments in the Karnataka land record Act that de-legitimized the production of paper records. They also took away the authority of correcting these records from village accountants and thrust them on higher-level bureaucrats, making the production and

correction of the digital records more stringent than was the case with paper records. Nagesh and others would recount how the village accountant could easily amend a paper record before *Bhoomi* and only in some cases did they have to go to higher authorities. The architects of *Bhoomi*, however, aimed at greater centralized control and monitoring of land records.

In transitioning land records into a digital form, introducing new institutions and procedures for the "delivery" of records to farmers, and introducing new levels of supervision, *Bhoomi* aimed to present land records as a form of service, divested from the ongoing, complex office processes within which the production of the record was contained. These processes saw records not as permanent discreet units of information, but as tenuous knowledge produced through a network of documents and long temporalities of cross-referencing and authentication. When an error in Nagesh's record was identified by Maheshwari he was essentially asked to leave the world of *records-as-service* and enter the world of *records-as-process.*

If electronic forms of governance, with its ambition of making governance devoid of sluggish and nefarious bureaucracy (Madon 2009), are positioned as an antidote to the "structural violence" of bureaucratic states (Gupta 2012), how do we understand the violence produced in the interstices of two contrasting forms? The re-mediation of paper in the age of the digital is an area of interest for scholars of media such as Bolter and Grusin (1999) and Haigh (2014), but in this chapter I pay greater attention to the risks associated with this transition. Like Eubanks (2018) and O'Neil (2016), who show very specific risks of digital technology on the poor, I hope to illuminate the kinds of risks this breakdown in the legitimacy of digital land records produces for the people who depend on it.

Errors in *Bhoomi* are not spectacular events like crises (Roitman n.d.) or disasters (Oliver-Smith and Hoffman 1999). Neither are they as stark as infrastructural breakdowns (Larkin 2008) or chokepoints (Middleton 2019). The effects they produce of a temporal vacuity, is not structural violence in the way used to describe state procedures (Gupta 2012), neither are they extraordinary events of spectacular violence (Chatterjee 2016). I propose to think of the temporary, circuitous low grade suffering experienced by people like Nagesh, as a form

of slow violence that scholars have begun to attribute to slow-moving temporalities of suffering. Rob Nixon's "slow violence" (2011), Lauren Berlant's "slow death" (2007), and Elizabeth Povinelli's "quasi-events" (2011) help unravel the kinds of affects that errors produce among people dependent on the digital archive of *Bhoomi*. As Chloe Ahmann notes, slow forms of violence "invokes a particular set of challenges. Neither spectacular nor instantaneous, and often proceeding at a speed that decouples suffering from its original causes, slow violence can be difficult to represent, even to perceive" (Ahmann 2018:144). The violence of errors in *Bhoomi* is so embedded in familiar structures that people sometimes are unable to distinguish the correction of a digital record from other bureaucratic processes they are mired in. It is also the near total concealment of these forms of harassment not just from the glittering story of *Bhoomi* and its star-studded bureaucrat and engineering architects, but also from the prolific research that the program has produced (Gatty 2009; Prakash 2008; Nayak 2015; Benjamin et al. 2007; Zasloff 2011), which makes this a case of slow, invisible violence.

I kept in close touch with Nagesh through the year, sometimes accompanying him to the taluk office in Datanagar or offices higher up outside the district of Bangalore Rural, where he met with clerks, advocates, brokers, and higher bureaucrats to have his case resolved. During these harried visits, in buses and auto rickshaws, Nagesh reflected not just on the physical harassment, but also the disjunction between the promise of a transparent, speedy, clear database of records and the substantive experience of vacuity produced in its functioning because of errors. But much of this complaining was aimed generally at the bureaucratic enterprise, in which, Nagesh often said, "nothing had changed". In these months, I was exposed to the intricate process of record correction, the large number of error cases that came into the office over a period of time, and the manner in which the bureaucracy had institutionalized the problem of errors, normalizing it as correction, thus removing from it any hint of violence. My observations of error identification and correction took me upstream, from the offices in rural Karnataka, my ethnographic site, to bustling Bangalore where the *Bhoomi* archive was located and to the engineers and bureaucrats who conceptualized it and their political and ethical conceptions of

government. It also took me in search of older, retired employees and to descriptions of the colonial configurations of land management in old and more recent literature on the material dimensions of land bureaucracies.

Sifting through this field and scholarly knowledge, I make three interlinked arguments about the violent effects of digital infrastructures aimed to eliminate structural forms of violence. The first, following the construction of *Bhoomi*, points to the fractured nature of bureaucracy. Because digitization proceeds in stages – design of a system, including ideological claims about the value of market-based procedures versus more centralized designs, the actual creation of software and database technologies, the process of digitization, and then the subsequent error correction – it means that the location of bureaucracy is fractured across multiple offices, many of whom are contracted, sub-contracted, and some of which are about the "agency" of the system itself (in the sense of software that is vulnerable, susceptible to breakdown or manipulation, requires maintenance that is not purely technical, etc.). *Bhoomi* thus opens up a way to think about a different spatio-temporal dynamic of bureaucracies undergoing digitization, one not entirely grasped by recent attempts to describe the socio-materiality of paper bureaucracies (Hull 2012b; Mathur 2016; Gupta 2012). These authors have shown that the state is composed of disaggregated agencies, but what I am aim to show is the fragmentation of work in a single office and its debilitating effects as ICTs aim to partially substitute paper bureaucracies. The temporalities of different elements that comprise bureaucracy vary across space, a disjunction that causes the split between speed and slowness, a disjunction that produces violence.

Second, at the heart of this fragmentation of bureaucracy are the different ways in which digital land records are conceptualized in the analog and digital worlds. Like many aspects of social life, digital records are also subsumed within the framework of "service". As a new "form of value" (Cohen 2019), service is an externally oriented, quantitatively inclined, mobile, discrete, transactable and most importantly, a speedy form of social engagement[2]. In this

[2] How does one conceptualize the ever-increasing hyphenation of life to service? From software-as-a-service to spaceflight-as-a-service, what are the conceptual resources to think about this emerging

records-as-service framing, land records are re-conceptualized as discrete units of information that have to be "delivered" from agents in a kiosk to a client in a waiting line for a fee. For service claims to survive on the monetization of bureaucracy placed firmly within principles of New Public Management and ICT-led reforms of bureaucracy (Hood 1995; Bussell 2012, 35), even as it is, in the specific instance of *Bhoomi*, supported by the state exchequer in many ways, as I describe in this chapter. This frame of service is a layer over a network of entrenched methods of record production that are sutured together through intricate forms of writing and audit, a frame I call *records-as-process*. When service breaks down, as it often does because of the persistence of errors, users of the database are left to navigate this dense paper world of process.

Third, a service-based approach to citizenship downloads bureaucratic labor onto individual clients like Nagesh, who have to invest their own time and energy in having their records-up-to-date. Correcting a digital record involves re-tracing the documentary history of the record across diverse institutions, urging office bureaucrats to act on this information and waiting for senior bureaucrats to pass their judgment on the fate of the record. Ensuring that correction progresses over time is the responsibility of the citizen-client and not the administration's. Bhoomi's architects recuse themselves from this responsibility by pointing to the fact that when land records were first digitized, all landowners were sent a copy of the record to verify and file for corrections, even as no one seems to remember how that exercise was undertaken and what its success was. More importantly, as I learnt sitting next to Maheshwari, the *Bhoomi* operator in Datanagar's Taluk office, one cannot simply look at a record and identify an error in it. Errors are identified when clients come into the office to make a change in the record and the information in the record is verified against other bureaucratic documents[3].

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orientation to how we engage resources in the world? This is something neither this chapter nor dissertation can answer in great detail, but is interested in thinking about.

[3] The NGO Landesa, which works on securing land rights for the poor, sees the "correction of land records… a priority in dealing with land issues" (Kumar 2017) also found that simply asking farmers whether their records were correct did not yield much, since errors are identified through processes of verification in a network of documents.

A shift in responsibility also has to do with the fact that knowledge and discretion needed for bureaucratic action is itself fragmented. The computer operator Maheshwari recalled instances where she made mistakes in typing online applications, but had no way to correct them as she was completely dependent on the engineers in Bangalore who control the database. The shift in responsibility from bureaucracy to clients is not so much a concerted effort at "responsibilization" for "governing-at-a-distance" (Miller and Rose 2008), but a haphazard outcome of speeding up the transition from paper to digital and cordoning off bureaucratic responsibility by pointing to the fact that the data is now visible to its owner. Seen another way, while not akin to other forms of extractive labor on the internet, like "re-captcha" (Foley 2014), *Bhoomi* as a "neoliberal" project (Benjamin et al. 2007) that makes 'real-time' information about land available to capitalist developers, depends on such a form of citizen labor. Already, senior bureaucrats had plans to scale up land management through digital infrastructures, of which the land records that *Bhoomi* contained were a critical component.

In the conclusion, I bring together these three aspects of the digitization of land records to bear more closely on the experience of slow violence in relation to broader attempts at electronic governance.

A Fragmented Bureaucracy

Perhaps the best indicator of the fragmentation of bureaucracy under the sweep of digital technology is found in the proliferating life-world that *Bhoomi* illuminated. *Bhoomi* is the name of a land records digitization "project", but there are also "*Bhoomi* computers", the name given to computers designated in offices through which the *Bhoomi* archive is accessed. What distinguishes these from other computers is their connection to the high speed, fiber optic, State Wide Area Network that links to the archive in Bangalore. *Bhoomi* is also the name given to local servers on which a copy of data pertaining to that office is stored, as "*Bhoomi* servers". A

"*Bhoomi* room" is the front office kiosk, which mediates between record holders and the centralized database in Bangalore. In this room sits a "*Bhoomi* operator" visited weekly by a "*Bhoomi* Consultant". In Bangalore, there is a "*Bhoomi* Monitoring Cell", a key institutional intervention that I describe below, a *Bhoomi* Deputy Director of Land Records, a *Bhoomi* technical head, and numerous *Bhoomi* system administrators. *Bhoomi*, thus, is as an amorphous relation of people, things, places, ideas and aspirations, revolving around the content of "*Bhoomi* Data"- land records databased in a relational database management system.

Bhoomi takes apart work processes and centers of decision-making and re-locates them onto other institutions and people. The specific ways in which that happens and its effects, as I describe in this section, points to more than the oft-repeated argument about the fragmentary nature of state institutions (Hoag and Hull 2017, 9). It is true that state bureaucracies work through a range of institutions at multiple scales and significance thus challenging any attempt to describe them as monolithic entities. And yet, as the organizational theorist Paul Du Gay (2000) points out, bureaucracies do achieve an internal coherence of purpose, related to what he sees as their essential ethical function of distributing limited recourses, fairly. This is a line of thinking also espoused more broadly by the anthropologist Albert Corsin Jiménez, as he aims to develop an analytic to study organizations. In Jiménez's terms, relationalities produce organizational arrangements ("re-institutionalizations") around "affect, power, knowledge" (Jiménez 2007, xiv) which in turn produce moments of "moral" upheaval. Taking this line, the question of how fragmentation caused by *Bhoomi* effects the ethical commitment of bureaucracy becomes pertinent, since the digital paradigm within which projects like *Bhoomi* are conceived claim to be ethically superior than ongoing processes, in so far as they claim to improve the delivery of services to citizens. Transparency, for instance, as Mathur and Bear (2015) have argued, is an

ethical public good. How such public goods change the ethical commitments of the bureaucracies they are delivered through thus becomes a question.

The fragmentation that *Bhoomi* brings about is not simply the reorganization of functions but the far more devastating split in the ethos of bureaucracy. The nesting of *Bhoomi* in institutional arrangements other than those entrusted with the ethical function of equitable distribution is the source of this split. This is the institution of the New Public Management or NPM, which I argue has a different ethical purpose than that of public bureaucracy, even as it aims to rejuvenate bureaucracy. NPM's ethos is captured in the amorphous, yet, powerful term, "efficiency", adopted over other models of institutional arrangement. NPM originated in the United Kingdom and was subsequently exported to the non-western world, as a set of principles to reduce the cost of running large public bureaucracies (Hood 1995). It included outsourcing public work to private organizations or some form of partnership, re-engineering work processes and using information technology to coordinate work and conduct relationships with the public (Hirst and Humphreys 2015, 1534). In India, an early moment for an NPM style of government reform is found in a conference of the bureaucratic heads of state governments in 1996, who got together to discuss how to instill an "Effective and Responsive Administration" (Government of India 1996). This contains a specific reference to work in the context of the then recent economic liberalization and argues that the state (and its functionaries) should now function as 'enabler' and 'facilitator', rather than as a direct provider of goods and services. Major sections of the document are couched in the language of 'customer orientation', 'participation', 'democracy', 'the rights of citizens to information', 'ethics' in government, and the public services. Around the same time, NPM style restructuring of public bureaucracies also became an inclusive part of India's central Planning Commission reports that began to use the term "service delivery",

and "customer satisfaction" for public services. A few years later in the early 2000s, the Administrative Reform Commission reports of the Government of India recommended a full-fledged adoption of NPM principles of service oriented public work. Efficiency, in the context of land records, meant a change in the structure of their archiving, maintenance and availability, a change that took technical and organizational forms. In this section, I describe how *Bhoomi*, as a database of land records took form through a number of institutions and people that fragmented the work of bureaucracy, and its effects on clients, like Nagesh, who depend on it for access to a range of economic goods.

The efficiency that *Bhoomi* proposed was based on the removal of a key local bureaucrat – the village accountant or VAs as they are referred to, from the production and maintenance of land records. Land modernization architects argued that removing VAs and introducing computers led to an improvement in "the quality of services" and it brought about "efficiency, accuracy, accountability and transparency" (Behera 2009, 23). This was a crucial change, as VAs for a very long period had been custodians of village land records, and by virtue of that position had developed social bonds with their clientele. The VA is a historical figure, memorialized not only in the minds of older employees of the office, but also in numerous scholarly and non-scholarly accounts of government revenue management (Potter 1964; Smith 1985). A poem inscribed in the work diary of VAs speaks to their social position in village, asserting that they "are well known and familiar to everybody", as does accounts of their embedding in village life (Raman 2012). The NPM inspired *Bhoomi* aimed to centralize the control of the records in a database in Bangalore, and have kiosk based computing nodes in villages where farmers, like Nagesh, could directly make applications for either a copy of the record or for a change in it.

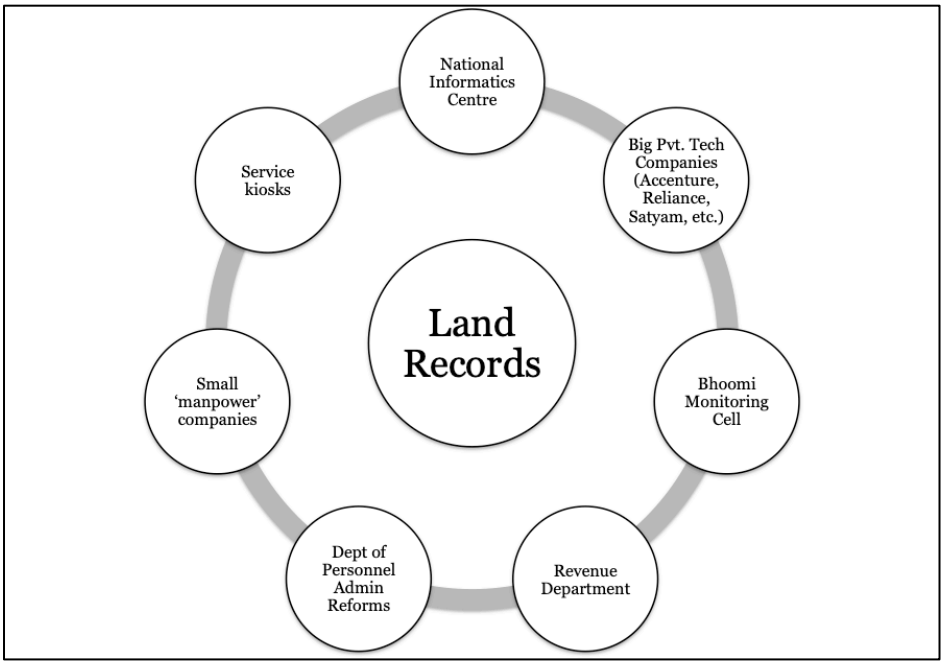
This vision required a series of personnel and organizational changes, which reveals the fragmentation of bureaucracy that *Bhoomi* brought about (see Figure 2:1).

In the late 1990s, *Bhoomi* first made political sense to three actors in particular – a politician who was seen by his critics as technology savvy and anti-farmer, saw in *Bhoomi* an opportunity to secure both his middle class vote bank and appease his rural voters with the aura of citizen services (Gatty 2009); a senior bureaucrat from a premier engineering institute in the country, who saw an opportunity to reform government through technical means; and a technologist, the co-founder of a company that had made its name digitizing voter IDs for the Election Commission of India, and was looking for another "big" digitizing project where he could employ the many data entry operators this prior project had trained[4]. Rescuing land records from a corpulent subaltern bureaucracy and presenting them as a form of a service was an attractive opportunity for all three. A symbiotic relationship emerged where the political head gave the bureaucrat "special" status in the bureaucracy and thus a free reign to design, manage, run the database and most importantly not be transferred out of that position for many years to come[5]; the bureaucrat, in turn, gave the head of the technology company an opportunity to use its prowess in digitizing 20 million land records of Karnataka, a task so massive, that when I spoke to the head of the company in August 2019, he said "we were the largest recruiter of contractual labor in the state at the time". But this arrangement was not to last very long. After the technology company had built the software, created the tables, bought server licenses to host the database tables, organized the digitization of twenty million records, and built the techno-spatial structure to deliver land record services packaged as "Rural Digital Services" the rules of the game changed.

[4] Personal Interview with chief architect Ravi Ranjan in August 2019
[5] Transfer of bureaucrats at the senior level based on politician preferences are a common phenomenon in Indian bureaucracies

Figure 2:1 - Land records managed across multiple institutions

(Prepared by Nafis Aziz Hasan)



In 2006, the Ministry of Electronics in New Delhi passed an order that made it mandatory for states to channel their digitization needs to the state-owned National Informatics Centre. The NIC, as its referred to, which began in the 1970s as a network of computers controlled from the Planning Commission, soon became a full-fledged organization of computer scientists and later engineers (who continue to be called scientists), that offered hardware and software services to government. Faced with a market crunch of the late 1990s and stiff competition from private technology organizations selling their wares to government, as well as bureaucrats' own penchant for contracting private companies (the most apparent reason given to me for this is the kickbacks they can receive from handing out tenders, which was not possible with the NIC), the ministry decided to arm-twist states into saving NIC from bankruptcy (while supported by the ministry, NICs ongoing attempt was to become a financially self-sustaining agency of the state). The private technology company that had built *Bhoomi* from scratch had to hand it over to NIC

overnight. In 2019, the chief architect still begrudged that move, claiming that the many possibilities of further developing *Bhoomi* for "analytics", or for "business intelligence", were snuffed out. He also claimed that the bureaucrat-in-charge found NIC's work to be not at par with their work. But as NIC took over the reins, a thick "friendship" developed between the bureaucrat and a "scientist" of NIC that called the shots for the next ten years. Technically, this was a dull decade for *Bhoomi*, since, as the architect had predicted, as an archive of twenty million land records, *Bhoomi* remained "just" a black box from where a few thousands of records were printed everyday (in 2019 that number was about one hundred thousand print outs a day). Yet, this was the period when the bureaucrat and scientist went to town outsourcing the many varied specific elements of running the archive. This brought in a lot of private interest, and kickbacks (allegedly) and competition, leading to a comical management of the archive, which a former employee of the original private company describes as such –

> In the state capital you had the data center that was operated by Reliance and a services provider who managed the physical space inside the data center that was Satyam, but Satyam did not manage the servers, the servers were managed by the Computer Maintenance Corporation, but the Corporation did not manage the software that was run by *Bhoomi* consultants hired from myriad small IT manpower companies, but the consultants did not own the software so they could not fix bugs, that was done by the NIC. And none of these folks got along with each other[6]

Then in 2014, the senior bureaucrat who had until then managed to hold on to the reigns of *Bhoomi*, mostly unchallenged, even when he moved between departments – from the Revenue Department, under which all agricultural land management takes place, to the Department of Personnel Administrative Reforms where he handled 'e-governance', lost his hold on *Bhoomi*. A new revenue Commissioner, in an attempt to resuscitate some of the original ambitions with which *Bhoomi* had begun, planned a revamp to revamp it in a network of archives called 'My

[6] Personal Interview with Kiran Jonnalagadda in June 2019

Bhoomi' where every single transaction in land anywhere in the state would be recorded. After a year of creating documents that made a case for the new system and laying out the technical requirements, budgets and time needed for completion, collectively called a 'Software Requirement Specifications', Accenture, the US headquartered consulting firm was hired for the job on a one hundred seventy million rupees contract. But they were soon at loggerheads with the state over mismatch between expectations and what they had agreed to do and the firm dragged the state to court. Still, the new Commissioner reimagined the governance of *Bhoomi.*

Bhoomi Monitoring Cell

The *Bhoomi Monitoring Cell* (BMC), which was until then a concealed backend of the telecentres that had hired a bunch of engineers to "liaise" with NIC running the main software, went through a major rejig. The New Commissioner along with his close technical associates from the BMC, took "back" control of *Bhoomi's* software development from NIC citing their incapability and dis-interest in transforming *Bhoomi* for the web. In a BMC's engineer's words –

> NIC developed *Bhoomi* was Windows app developed in Visual Basic 6.0. NIC was not able to implement into new platforms, since they don't have resources. Manpower issues, they don't have developers. They were not able to work on the 'huge" requests from the department. They could not implement changes on VB. They were not able to migrate into platforms also. Even though they have good domain knowledge, they don't have resources. They used VB from start to 2016[7].

The Commissioner was able to wrench away *Bhoomi's* control from the original bureaucrat[8] and NIC, by citing "technical" incapacities, an exception that the government order from the ministry allowed. *Bhoomi's* records were not even in *Unicode*, they complained, but in a vernacular font called *Noodi,* which made it impossible for it to be read across computer systems, a detriment to

[7] Personal Interview with a long-term engineer of 13 years in the BMC, Rajshekhar in December 2018. Rajshekhar represents a human archive of changes within the BMC, where no document exists.
[8] There was also the result of a rivalry between two bureaucratic camps based on affiliation and division.

the new Commissioner's expansion plans[9]. With the doing away of NIC and its numerous vendors, *Bhoomi's* management became in-house. BMC was also sharpened as an organizational tool to give more shape to the public form of citizen services. A cell is a bureaucratic arrangement of a specialized focus on a single program separate from the more general functioning of the department. At some level, a cell allows eager bureaucrats to escape the slow progress of bureaucratic procedure, by carving out an island of control and command from within the general functioning of a larger department. In recent years, bureaucrats have turned to the cell for the enactment of service, in for instance, a rural employee guarantee program (Mathur 2016); the right to information or even for e-governance in some departments. The BMC was connected to its parent department- the revenue department through its 'Director' who was also the Commissioner of the Survey and Land Records, but it followed its own recruitment rules and staffing patterns. In line with an NPM style method of reform, a small number of bureaucrats as managers (about 20) overlooked the work of a large number of engineers (about 100) whose main job was to fix bugs in the software, "improvement" of existing software, and rethinking the process through which records could be modified in the archive, a process which was historically termed 'mutation'. By 2017, the BMC had disbanded the telecentres and began channeling land record services through the myriad offices of the revenue department by itself through a system of controls, determined by a First In First Out or FIFO process, and instituting biometric and digital signatures for every transaction in order to preserve a history of transactions. To ensure that *Bhoomi* operators were depositing the fees collected into the bank, the BMC had set up a monitoring system in which operators could not log into their computers without uploading a bank receipt from the previous day's deposits. The BMC was a momentous

[9] In 2019, BMC was still in the process of buying a font converter from the Centre for Advanced Computing (C-DAC), so even twenty years after the program began the data's mobility was a serious concern among its users

deviation from the tripartite spatial hierarchy of district administration within which records were produced and managed since the early colonial period of the nineteenth century (Raman 2012).

As the upper echelons of bureaucracy modified to enact the public form of service, so were the many offices that were the sites for transactions on *Bhoomi*. Spatially, two additions were made to the architecture of the office, which until then was a classic office with rows of rooms. A room was created at the front of the office, in which a *Bhoomi* operator would receive applications to make changes in the records and enter them in multiple screens of the *Bhoomi* software made by BMC. The service request once created would then move into the "logins" of staff, literally located deep inside the office, who along with the regular staff were tasked with starting the bureaucratic process of "mutating" the records. Another room at the back of the office which had an outside entry handed out print outs of the records after the mutations or existing records. The BMC communicated with these offices through the documentary form of the office circular. Hundreds of circulars from fixing fees of records printed out, to handling bugs in the *Bhoomi* software, to the creation of new designations to work with *Bhoomi,* formed the content of these circulars. Another way the BMC communicated with its offices was through its *Bhoomi* consultants, engineers who acted as interface between the technical issues that the *Bhoomi* operators faced and the backend in the BMC. These consultants physically came to the offices every week and "solve" issues or raised tickets for solution with the engineers at the BMC. Common problems ranged from "hanging records" where an application would not progress, or a particular screen would not accept applications. The consultants were generally revered by the office staff and were always short of time having to move from office to office.

Bhoomi was presented as a self-sustaining digital archive of land records, through the fees generated in providing printed copies of the digital records. In reality it was a mix of

government funding and money generated from selling copies of the records. The original costs of setting it up were about two hundred million rupees, which was shared equally by the Ministry of Rural Development under the government of India's policies to digitize land records, and the Government of Karnataka's loan from the World Bank. The running costs which included the cost of the technical infrastructure (computers, networks), the salaries of the *Bhoomi* operators and consultants and many engineers as backend system analysts and coders, the stationary (buying paper to print the records on, whose quality complained one *Bhoomi* operator has deteriorated) and furniture for the *Bhoomi* rooms in the offices, were said to be about eighty million rupees whereas the "return on the project" was said to be about hundred and twenty million rupees. But, paying out the salaries of the permanent staff of the BMC continues to be out of the government coffers, something that a right to information query discovered, suggesting that even if the archive was generating more money than what went into creating it, it continues to be hugely subsidized by the government. Yet, in its service oriented communication strategy these details were excluded and *Bhoomi* was presented as a profitable enterprise that could run on its own money, in line with NPM-style agenda.

Maheshwari, the *Bhoomi* computer operator, who first told Nagesh that he needed corrections in his land records, often lamented that she did not have control over the records that she dealt with and had to depend on the consultants and the BMC backend engineers to make any changes for her. Yet, this loss of control, emanating from the fragmentation of bureaucracy across multiple institutions, did not affect her as significantly as it did the people who depended on her. Nagesh had no choice but to wait out, sometimes for months, decisions that were being made by people in distant offices, remaining all this while in a state of limbo. This situation was a far cry from the era when village accountants lived among their clientele and could be reached

out, even while accumulating some amount of hubris in the process that often translated into taking bribes.

'Records-as-Service' versus 'Records-as-Process'

This revised institutional arrangement in the form of a centralized BMC archiving and centralizing land records and the processes through which they are accessed and modified, changes the meaning of a digital record in relation to the analog one. *Bhoomi* archives two sets of records - RTC and MR. The RTC is the record of rights, tenancy and crops and is a kind of certificate of ownership cum identity card, which carries genealogical, biographical, topographical, and financial information about a piece of land and its owner. The MR or mutation record is a record of all changes to the multi-dimensional elements of the RTC. The RTC emerged in the 1960s as the first outward, owner-directed document, that gave the land owner a documentary proof of identity and ownership, which then opened up access to a rapidly emerging eco-system of welfare (land grants, agricultural loans, etc.). Prior to this, all documentary forms of evidence of land ownership were stored in office registers under the control of the bureaucracy and were almost entirely used for collecting tax on land. Thus the RTC already pointed to the emergence of a form of service, yet it was not hived off from a documentary apparatus of record making that characterized the land bureaucracy. The legitimacy of information in these records is drawn from cross verification with another set of records. These records draw their salience from cross-referencing with other records, a phenomenon which depends on the same information repeating in multiple records, that are then read against one another to produce authenticity of the records. A chunk of time each year is dedicated to this work of authenticating records by matching information in multiple records followed by their correction, an exercise even as an ideal-type, suggests that the onus of keeping records up-to-date

and correcting them is on the bureaucrats themselves. This has its source in what scholars describe as the colonial anxiety with having records up-to-date with events in the world (Raman 2012; Hull 2012b).

With *Bhoomi*, information is now held in individuated records, located in the rows of database tables disconnected from the network of other documents. In contrast to the multiplicity of the same information as a source for identifying legitimacy of a record, database designers and administrators strive to eliminate categories of duplicates in order to keep the number of database "columns" and "tables" in check, a process they term "normalization" or removing "redundancies". Database administrators are also very concerned about optimizing server use, which is directly connected to the amount of information in the archive. Since all information pertaining to an office must be stored on a single office server and every office in the state holds information in the same format on servers of the same size, cutting down on repetitive information is necessary to maintain this homogeneity. Offices are not given an opportunity to determine their server size, which was completely controlled by the BMC. Disconnected from other means of authenticating data, errors are identified only *after* an output, when a printed record is generated, transferring the onus of keeping the record correct onto the owner of the record, rather than bureaucrats.

Another characteristic of the digital record is the difficulty of re-inscription or replacing a data point with a new one, something that was achieved in the physical records by simply "scratching out" the old for the new. Changing information that is part of the records does not simply mean deleting one data point and adding another. A term I heard commonly used to describe *Bhoomi* by the operators who accessed it through software every day was "rigidity". If operators make a mistake inadvertently in, say, filling out the online application, they do not

have the option of deleting and starting over. Since re-inscribing the database can happen only in the backend, operators had to call and plead with their consultants multiple times to bring about these changes. Thus access to digital records in the office that needs it most is mostly out of bounds, unlike physical records, which were completely under the control of the office. Yet, rather than an unshakeable rigidity, this situation is better described as an ongoing tussle between operators' freedom to access, use and ability to modify the archive, and BMCs attempts at limiting freedom through technical and organizational controls.

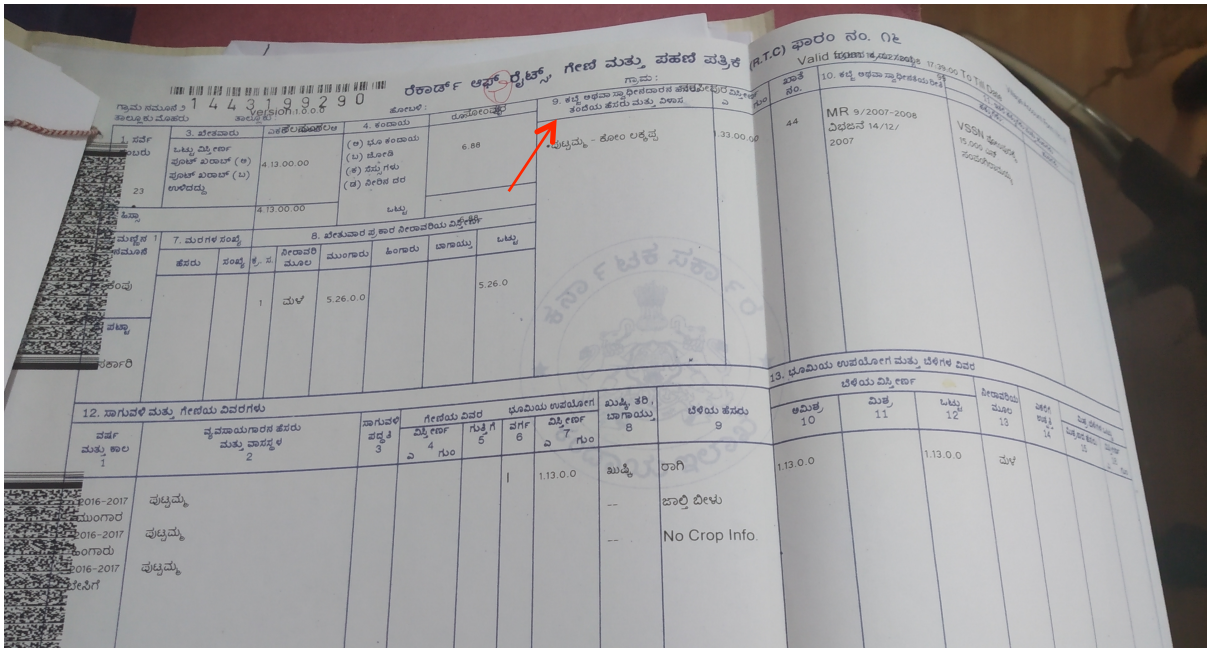
It is at the moment of identification of errors, *records-as-service* begin to be unraveled. Identification itself points to a different conception of the social meaning of records in the office. In contrast to the engineering of the record in *Bhoomi*, as an individuated piece of alphanumeric information separated from its source of production, records in the office draw their significance from cross-referencing other records, from, the practices of verification and authentication that involve what historians of colonial government have called "continuous writing". When Nagesh first appeared on Maheshwari's desk, she verified the information in the copy of the digital RTC with the *Aakar Band* or a settlement record considered a "bible" in the office. The *Aakar Band* derives is strength from a temporal certainty of being the first documented representation of the physicality of land. It marks the journey from the field to the bureaucratic table; it is in the first instance, the creation of a legal code in writing of something that before that is an unnamed physicality. It has no text as its source, but was formed through a series of original surveys that were conducted by British administrators first in the nineteenth century (Stein, Dietl, and Stein 1989). A mismatch between any data in the digital record and the physical documents is an error and calls for a bureaucratic chain of corrections. A digital record is said to be an error when parts of the record do not match each other, thus challenging the logic of the record. In

the ensuing documentation that the identification of errors engenders, errors are notated as “errors in the computerized RTC”.

Exploring why there was this mismatch in Nagesh’s record, takes us to the creation of the digital records and the origin of errors. First, the transition from paper to digital was done through the typing out of records being read out by people into computer screens. These newly formed digital records were then printed out and sent back to village accountants (VAs), village level bureaucrats of the revenue department to be “verified”, verification being the *sine qua non* of bureaucratic work. The technology head, part of the original trio developing *Bhoomi*, recalls how lower level bureaucrats “naturally" aimed to stall the progress of the digitization by delaying the verification of the paper print outs of the newly digitized records, since, he argued, digitization would reduce their power over the production of these records. In the time gap that ensued between the creation of the digital records and the eventual verification after coaxing VAs into submitting their revisions, the “status of the land record would have changed”. In other words, the biographical, geological, genealogical or historical information that the RTC or MR encapsulated would have undergone some change. This is because while the accountants were doing the verification, they were also at the same time changing the paper records based on demands from their owners. There was a temporal gap of at least a year, between the creation of the digital record and its use as the official record and the de-legitimation of the paper record. The recounting of this temporal divergence between the status of the digital record and “real” status of the land that it indexes, shows how digital records could have been out of sync with what they aimed to represent from their very conception.

Figure 2:2 - A printed copy of the digital RTC

(photo by Nafis Aziz Hasan)



This has resulted in a specific problem in the digital record. The problem begins with the content of the digital record. While exactly “mirroring” the physical record, so as to not “run into legal issues under the Karnataka Land Revenue Act”, one ostensibly minor change was effected in the presentation of data in the digital record. This was a re-constitution of "column 9" of the RTC (see Figure 2:2. The continued use of the word column for the location of a data point in the RTC, a single piece of document, itself points to the connections between documents). Column 9’s data comes from the ‘Records of Rights’, a documentary “register” in which were written the names of owners of individual land parcel and the amount of tax owed by each to the state (Shivanna 2006). From here, in the 1960s as documented above, emerged the RTC retaining the terminology of its founding document. In the physical RTC, column 9 only had name of the owner and the history of the lineage, whereas in the digital RTC column 9 was split into two columns, one with name and the other with extent owned by each owner. Column 3 contains information about the type of land within a single parcel or survey number (cultivable, non-

cultivable) with the specific extent against each type from the *Aakar Band*. For the RTC to be a valid one, the sum of the extent of cultivable land in column 3 would need to match the sum of the extent of land in column 9, that is the total cultivable land available on a single plot must add up to the total land held by its owners, in order for land to be bureaucratically accounted for. Yet, that rarely was the case. One reason proffered for this "3&9" mismatch was that names of new owners did not get recorded in the digital archive, because of the time lag in its construction that I started this section with. A second reason, that the lower bureaucracy recounted, was in the poor language capabilities of the data entry operators who undertook the digitization. In this version, the operators whom the technology company engaged to do the digitization had hired did not know Kannada, the language of the state, as they were "outsiders" and since all the RTCs were in Kannada, their translation into the digital was riddled with faults. This, they claimed, was more prominent with numerical figures in the records, as the numbers were all in the state's language Kannada, but the "extent of land", that is sub-column 9, only accepted numbers in Roman numerals. A person who ran a data entry operator training center, preparing young men and women to work for large projects like *Bhoomi*, conceded to a bias in hiring people from outside the state over "locals", since they were more likely to stick to the jobs he got them. In these two ways, the very act of creation of the archive produced errors.

Records-as-Process

If the identification of errors opens up thinking about documentary forms of verification, the correction of these digital errors opens up another side of process - the administrative-legal side of record keeping and rehabilitation procedures. In order for an error in the digital record to be corrected, it must first be made legible to the bureaucracy. This is done by re-inscribing it as a "dispute" between the owner of land and the head of the office to which the record belongs. A

dispute calls for a specific arrangement of documentary material with specific inscriptional work that I describe below. Once presented as a dispute it is put through a revenue court process in the office of a senior bureaucrat, higher than the head of the office in which the error, now dispute, is lodged. The court process takes its own path, ending up in an "order" that either accepts the applicant's request for correction or rejects it by asking for more "supporting" documents. If accepted it comes back to the office where a "mutation" process begins to make changes in the digital record. This entire process points to why a digital error cannot be corrected digitally, since an error is not identified simply as a typographical error, it becomes a legal problem.

Couching the rehabilitation of a record in the language and processes of legality is part of what Du Gay has termed "bureaucratic ethos". Rather than seeing these processes as antithetical to ethical life, Du Gay says that bureaucratic "impersonality", a personae needed to ethically carry out one's work, emerges out of such processes that treat individual needs as "cases" (2000, 12). The procedures of legality act as a "buffer between civic comportment and personal principles", without which "reliability and procedural fairness in the treatment of cases would not exist" (ibid, 15). Du Gay's descriptions help us think about processual bureaucracy not as a hurdle to a paradigm of *records-as-service* (as the land record modernizers would have it), but a necessary component of building the records and keeping them up-to-date. Yet, when the material artifice of procedural bureaucracy is engaged with, as colonial historians have done, the limits of a bureaucratic ethos are revealed from within. Bhavani Raman takes on this clash between ethics and practice in her account of early colonial bureaucracy in south India –

> The [East India] Company's bureaucratic state coincided with a time when the conceptual term "bureaucracy" acquired currency as a powerful organizational form of office holding, expertise, corporate management, and rule-based government. Continuous writing in these years became the idealized solution to the problem of managing trust and reliability across distance. The idea that writing could ensure political accountability and limit the abuse of power by

> making actions transparent and legible has since fuelled the moral steam engines of the bureaucratic state…" (Raman, 2013:2).

And yet, she shows, how this very obsession with "continuous writing" produced forms of discretion and duplicity of writing that led to more writing in an attempt to gain control. The production of land records must be seen within this unending desire for stabilizing the social through writing and juridical practices, which has continued into the present. In a continuous desire to produce juridical truth, land records are not stable pieces of information as the digital archive portrays them to be, but a form of writing that is constantly hedging against risks of duplicity. That is why their rehabilitation is put through a grueling process that I outline below. The "digital service" of maintaining land records is put on hold until resolutions are received. This is a critical moment of (re) connection with a past that was discontinued when the storage and dissemination of records became digital. And this happens everyday. A pause in digital records as service opens up the world of paper resolutions, its materiality, its organization and the people involved in working with it.

A central feature of the rehabilitation process is verification across a network of documents carried out not by one, but a hierarchically linked group of people, even though the error is first identified through the wetting process that the *Bhoomi* operator undertakes, which I described above. Verification is established through what Raman (2012) calls "sight reading " that is a visual, physical verification of documents followed by "continuous writing" through signatures and office notes by multiple actors at multiple positions that create a system of collective agency. This form of "continuous writing", segregated temporally and spatially is an important way to manage risk associated with authenticating claims. Both "sight reading" and "continuous writing" produces the need for physical paper to move from one location to another, a necessity that continues to exist in the present, and which forms the crux of attestation practices

that characterized colonial administration and now postcolonial administration. In this conception, a record is produced *as a result* of the attestation practices that emerge out of this paper movement. What is critical to my argument here is the centrality of these peripatetic attestation practices to the creation and correction of land records. The very spatial form of the offices, in the arrangement of desks and rooms that comprise the revenue department are designed to fulfill this function of attestation. Digital *records-as-service* are therefore necessarily subsumed under this operational-organizational logic as the continued operation of this logic through its paper forms is necessary for the digital records to be recognized as such.

Citizen Responsibility Versus Administrative Responsibility

A specific feature of the correction process is that the law on which the bureaucratic process is based makes it incumbent on the owner to prove to bureaucrats that there is indeed a correct version of the data that is identified as erroneous and take the responsibility of making the correction. Following the old colonial logic of managing differences in revenue, errors automatically transition into a dispute between the owner (the applicant) and the office (the defendant). When Maheshwari identified the error in Nagesh's RTC, it fell upon him to prove to the bureaucracy that he indeed was the owner of the three acres of land he wanted to sell, by raking out old records from the record room and submitting them to various bureaucrats as they "build" a "correction file". The owner bears the brunt of BMCs centralizing logic that draws heavily on the colonial logic of making an owner's rights presumptive on her being able to prove at every point in time that his records are indeed correct, in order to continue validating the authenticity of the record, an ethos of fairness that I spoke about in the introduction.

Nagesh first took his records to Manjula, the village accountant of the jurisdiction in which his land was located. Manjula looked over Nagesh's records, confirmed that there indeed

was an error and began filling out a form. This document, called the *Gaṇakīlikaita Pahaṇi Tiddupaḍi* (Computerized RTC Correction) form is representative of the dense inscriptional work of verification that goes on in rehabilitating the digital record. Below the title are two columns demarcating the existing from the incorrect textual and numerical data under two different column headings (Figure 2:3). The village accountant essentially "builds" the file, a term used to put documentary records together and make a case, and more importantly to authenticate some claims with signatures, which are placed at the bottom of the correction form. The form, along with copies of documents that Nagesh had brought along (such as old RTCs, copies of the colonial *Aakar Band, Index of Land* and *Record of Rights)* essentially forms the first sheaf of papers that constitute a correction file that by the end of the year had run into several tens of pages.

Figure 2:3 - 'Computerized RTC Correction' document

(Photo by Nafis Aziz Hasan)

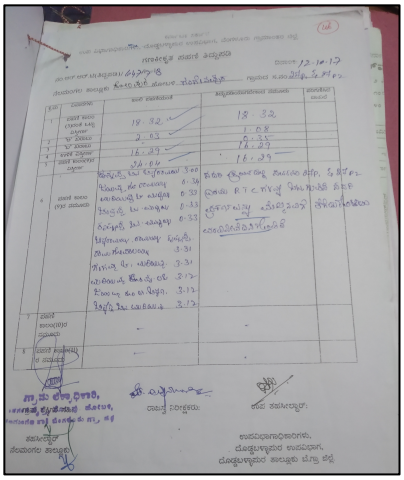
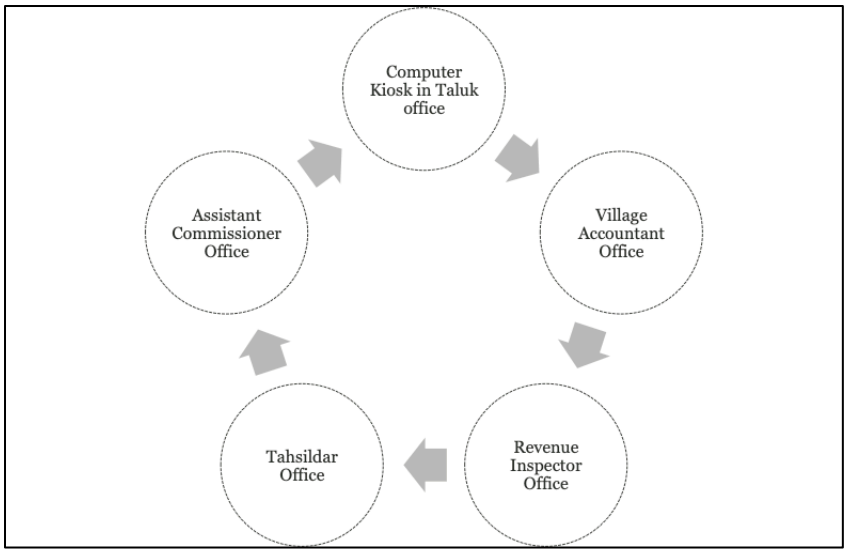


Figure 2:4 - How a 'Correction File' moves

(Prepared by Nafis Aziz Hasan)



Nagesh's file was then sent to the Revenue Inspector, the village accountant's supervisor, who puts his signature on the documents. It then came back into the office, where Nagesh had first come with the request to modify his RTC, to the clerks in a room, which was dedicated to the business of receiving applications for correcting records. This room consisting of tables, desks and loads of paper files, in other words, a classic bureau, was in the service of the digital archive of *Bhoomi*, representing the routinization of correction. Here the clerks attached a "notes sheet" to the file on which began a list of inscriptions authenticating the prior writing in the files. The note sheet was prepared for the *Deputy Tahsildar*, an office manager who affixes his signature at the bottom of the form next to the VA and RI. The file was now ready to go to the *Tahsildar*, the head of the office, for a correction order or to a higher-level court. Where the correction file goes from here depends on legal bureaucratic arrangements, which are created specifically for that purpose. During the period of my fieldwork, the District Commissioner had put into action a provision in the law that allowed for a Tahsildar order to be sufficient for a correction to be made and the record moved back into the mutation process. But this provision was meant only for a specific set of corrections that were relatively minor. For instance, correcting a spelling in the

name of a legal owner could be brought under the purview of the Tahsildar's jurisdiction, but correcting the extent of land or a "3&9" mismatch would need an order in a bureaucrat higher up the chain. This is where the office of the Assistant Commissioner, a level of bureaucracy under which many offices that are Bhoomi nodes come under, with its own court through which errors were channeled.

In Nagesh's case, since this was a "3&9" mismatch, it went to the office of the Assistant Commissioner as a dispute between the Taluk office and the Commissioner's office. As a consequence, correction of records involves chasing the file in a circular fashion as it moves from the village accountant's office, to the *Taluk* office, the *Taluk* court, then the Assistant Commissioner's office, back to the *Taluk* office where the Court order is affected onto the system (Figure 2:4 above). Sometimes because of a glitch in the system court orders cannot be affected onto *Bhoomi* software, requiring multiple phone calls to the BMC or a personal visit. Not every record holder makes all these trips. Sometimes these are mediated by brokers or advocates who represent record holders in the revenue courts, or by office clerks for a fee. Here we begin to see the consequences of dealing with a corrupted ethos[10]. Essentially, record holders have to strike a balance between bearing the burden of running around by themselves at the cost of loosing out on farm work or paying bribes to have it done for them. This depends on the socio economic status of the owners, with rich land owners (identified locally as people owning 15-20 acres of land) being able to afford the bribe and hire mediators to do the job. How soon a dispute will come up for hearing depends on how networked the advocate hired for the job is with the office clerks, and how much money the record holder is willing to pay to get the job done. Even when admitted, cases take multiple "hearings" to finally produce an order. In over fifty court

[10] This is not to blame specific bureaucrats for exploiting individual record holders, but to suggest the re-appearance of the realm of "structural violence" during the correction process, with corruption as a prominent component (Gupta 2012).

"sessions" that I attended, the Magistrate who is the Tahsildar or Assistant Commissioner, asks the record holder or his representative to return with more documents to bolster the file. Building the file is an accretive process, and the only way documents are accepted is through physical "submission" to the magistrate.

The *Bhoomi* operator, whose case I described above said that "caseworkers", clerks of the processual side of bureaucracy, do not work on these files quickly. For them it's just a "drop in an ocean of files", and they need to be adequately compensated for the job. Once an application is marked "dispute" it falls out of the FIFO system (a much advertised feature of *Bhoomi*), and then depends completely on the whims of the caseworkers. There is no accountability mechanism to track when an error file will come up for hearing and resolution, thus making people visit offices multiple times to check on the status. Many times court sessions are cancelled because the head of the office is busy with some other pressing work, but there is no way for record holders to know that unless one comes to the office and reads the notice board. As a result, offices teem with a large number of record holders hovering around the desks of office clerks in charge of "handling" the correction file or in front of the court room where, in performative fashion, the head of the office will receive documents from them to add to their file as proof of their ownership.

Conclusion

In a bid to wrest control away from lower level bureaucrats in charge of land records, a centralized digital database of land records called *Bhoomi* was established in Karnataka in the late nineties, as similar databases emerged in other parts of the country. Such a transition extracted records from the bureaucratic processes through which they have been produced, presenting them as a form of service, a motivation that has roots in a New Public Management reform of public bureaucracies. Records were institutionalized within a service paradigm, with

its attendant people and institutions. However, as a result of a haphazard and quick transition, and other ongoing problems, "errors" crept into the database and when farmers and land owners come into offices to modify their records, the responsibility of correcting these records is offloaded on to them. In a bid to increase control over records, the authority to approve changes in the records was taken out of the hands of village accountants into more senior bureaucrats, by re-inscribing errors as a dispute between a landowner and the bureaucracy. Correction thus involves a long and circuitous engagement with office processes that constitute both the elements of a bureaucratic ethos of fair and equitable distribution of services and the corruption of that ethos.

Scholarly work is increasingly showing us that digital technologies used and promoted by governments across the world to alleviate the problems of the poor, can end up policing and exploiting them (Eubanks 2018; O'Neil 2016) and that algorithmic governance is reproducing older class, caste, and race biases (Amrute 2016) . Yet, despite algorithmic decision-making conjuring up images of absent humans and endless machines, it is the "cultural-technical" situation (Philip, Irani, and Dourish 2012) that poor people in postcolonial contexts find themselves in, which need theorizing. This chapter has aimed to think through one such empirical situation.

The routinization of correction as disputes conceals the phenomena of continued errors in digital records from the broader discourse of e-governance. These are not spectacular events that garner the attention of bureaucrats outside the department, politicians or the media; even while breaches of the *Bhoomi* archive is enthusiastically covered.[11] Neither did I find civil society organizations that are interested in "exposing" the exploitation of people at the hands of office

[11] As gleaned from reports in local newspapers and other media discourses.

bureaucrats, concerned about errors and their resolutions[12]. I did not find any Right to Information application filed to determine the extent of errors and time taken for corrections. Very few instances of research on errors and corrections exist in India[13] and none on *Bhoomi*. Identification of an error happens in the office at the point of attempting to make a change in the land record. Just by looking at a digital record one is unable to point out errors as the identification of errors is driven by the bureaucratic procedure of cross-referencing with other documents. In this way errors are visible only to the bureaucracy, a possible reason for the shroud of silence around their existence. A second reason for their absence from public discourse is that the routinization of the correction process overlaps with other bureaucratic procedures. Disputes are a larger category of cases pertaining to intervention by third parties in an ongoing mutation, within which errors as dispute are located. Even record holders themselves were sometimes unaware that their records were being put through a process of error correction, particularly those who take the help of middlemen.

The concept of "slow violence" although developed in contexts very different from public bureaucracy does help in thinking about the situation of errors in the realm of the digital and their circuitous corrections in two ways. First, slow violence takes seriously the absence of a clear recognition of the disruption, folded as it is in "routinized experience" (Ahmann 2018, 2),

[12] Based on conversations with Hafiz, who was the editor of a hyper local newspaper in Datanagar called "Aadinaagalu" or "Those Days" as a reference to the past when bureaucrats, he claimed, were more honest. The paper's aim was to print full scape "exposes" of local bureaucrats.

[13] I found one instance in a study of digital land records in Maharashtra which makes the following recommendation about errors and corrections: "The first step in the digitisation of the ROR requires data entry. Data entry is presently being carried out by operators who have no prior knowledge of land records. We find that owing to this lack of basic knowledge coupled with inadequate training, the probability of errors in the digitised records increases. The burden of correcting these errors then falls upon the right holder(s). We suggest that technical training be imparted to data entry operators to increase efficiency and reduce unnecessary burdens imposed upon the right holder(s)" (Narayanan et al. 2017, 10). Echoing my point about the arbitrary nature of errors and their resolution, they also found in the sample sub-districts they studied that the "the average time taken from the receipt of an application for the correction of a revenue entry to the successful correction of the record is 137.25 days. In terms of the sample observed by us, this process may take as few as 33 days to as many as 311 days" (Ibid, 93).

which is not an "event" in the sense that it does not rupture routine. Such violence, as Nixon argues, "occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all" (2011, 2). Second, slow violence operates in time. The notion of time is central to the effects of technological mediation that I am talking about here. On one hand, the time of ICT led governance is shortened, pulsating, speedy time, which pervades service, in its organizational, personnel and spatial forms. On the other, the time of errors and their resolutions are slow, disjointed, with arbitrary effects on people who are engulfed into the realm of service. It is arbitrary because how and when an error might creep into the record is not predictable. And error resolution too has uncertain temporal rhythms with some clients waiting for longer periods than others. During this time, life is impacted in many ways. Some, who are unable to sell or mortgage their land because of errors in the records experience distress and anxiety. They have to take time out of their working lives to chase clerks and spend money in bribes to even make their files move from one office to another, let alone get a decision. The irony of this situation is that digitization was introduced in the name of making life simpler for rural people, but, instead, this chapter has aimed to show that in its pursuit of speedy service, digitization stalls daily lives.

Chapter 3 : Mutating Records – the Social Life of Land Record Keepers in Southern India

One afternoon in November 2018, sitting in the 'computer room' of Datanagar's *taluk* office[14], Meena, a computer operator casually pointed out that Village Accountants (VAs), a group of lower or street-level bureaucrats (Lipsky 2010) responsible for all forms of record keeping pertaining to agricultural land, are not required any longer to digitally authorize one set of records, called the Records of Rights, Tenancy and Crops or RTC. Before the digitization of land records in Karnataka in 2001, a program termed *Bhoomi*[15], VAs were the sole custodians of RTCs. Even after *Bhoomi*, VAs, who travel between the "field" and the taluk office, continued to come into the office everyday to provide biometric thumb approvals before changes in land records could be formalized, until they were finally removed from the process that November.

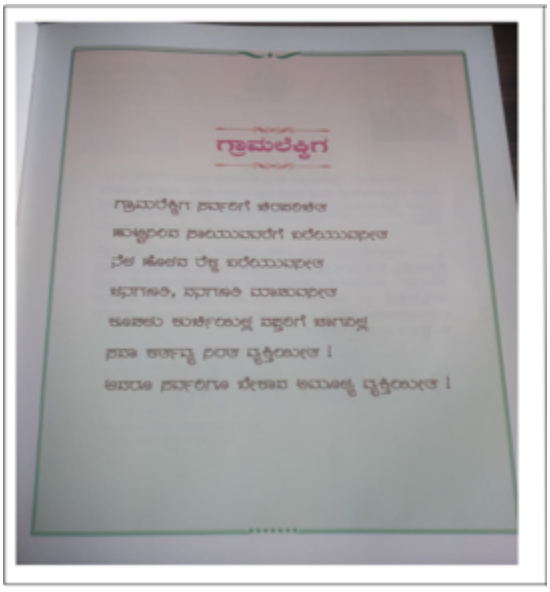
Meena's casual remark underplayed the significance of this moment. The VA is a historical, pre-colonial figure, who "stationed at the bottom rungs… kept the records that formed the linchpin of the entire revenue apparatus" (Raman 2012, 38) of the colonial empire. They are memorialized not only by employees of the revenue department, but also in numerous scholarly accounts of government revenue management (Potter 1964; Galanter 1984), including a poem celebrating them as writers inscribed in a diary published by the department each year (Figure 3:1).

[14] As I point out in the introduction to the dissertation, *Taluk* is an administrative and jurisdictional area in southern India since pre-colonial times (Greville 1795; Brittlebank 2016). A *Taluk* office also known as *Taluk Cutcherry* (Raman 2012) is a revenue office that comes under an administrative district and is headed by a *Tahsildar*. These revenue offices are part of a Revenue Department, a government department responsible for management of agricultural land (collecting tax on agricultural lands, making land grants to the landless, etc.) as well as a host of other administrative services and the delivery of welfare. Each section of the taluk office has multiple clerks called 'caseworkers' and are managed by *serishtedars* that act as deputies to the *Tahsildar*

[15] See chapter 2, in which I provide a detailed description of the setting up of *Bhoomi* as a land records database

Figure 3:1 - Ode to a Village Accountant in the annual 'diary'

(Photo by Nafis Aziz Hasan)



VAs are memorialized as sovereigns, as far as the village is concerned. As one VA puts it "a VA was to a village, what a chief minister is to the state". A VAs work includes accounting that is writing and tallying books of accounts, but also qualitatively describing land, writing field reports (a process termed "ground truthing"), conducting field verifications, and maintaining a large number of records of land and life in the villages under her supervision[16].

In the post-colonial period, with the state taking on development functions, the VA became the conduit for development policies (Khera 1964) even as they continued to manage the

[16] In the memory of the office staff, however, the VA is a milder version, both in commanding authority and in morals, of the prior figure of Shamboges. Invoked multiple times during my conversations, in generous adjectives, Shamboges are claimed to be original writers of revenue accounts and "books" introduced during the time that Hyder Ali and his more ambitions son Tipu Sultan ruled over a large part of the Mysore region in the second half of the 18th century. Even so, that November, after over 200 years, if office lore is to be believed, VAs lost their participation in an inscriptional practice of signing (albeit digitally through a fingerprint) changes in the records.

RTC, whose function began shifting from documenting tax and revenue liabilities to an identity document for farmers for access to various development goods (Shivanna 2006). In all these roles, VAs have held inscriptional authority over the documents under their custody through the authority of signatures in different stages of record production and on the copies of records that were needed by farmers to participate in a larger eco-system of document-led entitlements. The computerization of land records, as part of India's move towards electronic forms of governance, sought to centralize the maintenance of records, citing nefarious practices among the lower-bureaucracy, particularly the VAs. Reform of administration since the colonial period has in-fact, often premised on the "corruption" of the field staff and elaborate procedures of accountability, in the form of the very same records that are now being digitized, were set up, as Raman (2012) shows us. Yet, prior reforms aimed to reign in VAs, while computerization of land records aims to do away with them all together from the record making process, an ambition incrementally laid out[17].

This chapter is interested in thinking about what the significance of this loss of participation in inscriptional work is to VAs and their social identification as record writers. People in Datanagar's offices, mirroring Foucauldian notions of power and writing, link this waning participation in the writing of inscriptional records with a loss of "power" of VAs. Power is sometimes explained by them as *gaurava* (honor) and *sammaana* (respect), both pointing to its social forms (Mann 2012) and other times as *jawabdaari* (responsibility) pointing to its personal, authoritative forms. Yet, several months of conversations with and observations of VA life, show that they are not as dismayed about their waning participation in inscriptional events, as office

[17] Whenever an application for change on a land record is received by the taluk office, the VA under whose jurisdiction the land falls is required to verify the claims of the application and make a report (as described in chapter 2 for the corrections process). VAs continue to do that, but say that this is a routine function and they do not have much discretion in acting on their own as clients have higher authorities like the revenue inspector of Tahsildar to put pressure on them.

talk would expect them to be. It did not seem to matter that much to the VAs with whom I had been engaging regularly that other staff in the hierarchy or private computer operators moved in to do inscriptional work on the RTC (and other documents) under their former control. Rather, they pointed to a different reading of records, one not visible in the claims of senior bureaucrats who devised computerization policies. First, VAs pointed to the diminished quality of records in the electronic form as compared to hand-written documents, which they controlled. Second, they argued that records were no longer a storage device that congealed knowledge about land as it was scattered across a range of state and non-state actors. And third, they pointed to their continued work in generating and disseminating information higher up the bureaucratic chain, through channels other than written documents.

VAs have historically been responsible for the maintenance of village level records, and hold "power over local knowledge" (Smith 1996) through these documents. Historians studying the development of scribes and scribal activity related to state power in south Asia, have also focused on the social and material aspects of records and their record keepers (O'Hanlon 2010; Alam and Subrahmanyam 2004; Raman 2012; Green 2010). A handbook of Village Accountants, notes fifty-six records expected to be maintained at the village level (Government of Karnataka 2010). Of these, the RTC and MR has received a lot of attention by those rooting for the modernization of land records in India as well as scholars inquiring after its impact (Nayak 2015; De' and Prakash 2007). Yet, VAs do not regularly write all these records not because they are "lazy" or "corrupt", a justification presented to explain the need for computer technology (Chawala 2005), but because they claim that knowledge, particularly of the contours and transactions in land, once intermittently tied to scribal practices, has now dispersed across a host of actors and interests, owing to a rapid transformation in the political economy of land in

the peri-urban regions surrounding Bangalore (Goldman 2011). VAs point not so much to the absence of information in these records, but to the channels of circulation of this information now unhinged from the records, as well as performative events associated with their functioning, as a way to reiterate their own continued social position. These claims show that bureaucrats put to use multiple aspects of writing and documentation not tied to the function of writing only as a form of representation, to negotiate their social position within bureaucracy.

The anthropology of documents and bureaucracy has focused on the effects and affects of documents on clients and users of documents. Much of this work seeks to show that documents are experienced beyond their instrumental function of representation, through their material qualities and the processes of their construction and circulation (Hull 2012a, 254). But in these renderings, bureaucrats, drawing on Max Weber's classic theorization, are framed as actors attempting to give stable meanings to the world through acts of inscription (Britan and Cohen 1980; Herzfeld 1993). This is part of a larger absence of ethnographic focus on the materials and practices within bureaucracies, as Bernstein and Mertz (2011) and Hoag (2011) have pointed out. More recent ethnographies of bureaucracy have attempted to fill this void by situating themselves inside offices and studying what bureaucrats do and say (Hull 2012b; Mathur 2016; Bernstein 2017), although the focus on the experience of document producers continues to be sparse (Hull 2012a, 255). Like users, producers too are affected by the ways in which documents circulate and are grounded in the social. I aim to show how erstwhile record-keepers point to aspects of records outside their content to both explains their situation, and also to critique an ensuing documentary culture mediated by digital technology. If, as Riles (1998) has suggested, bureaucratic documents are not texts, and therefore their meaning making involves interpretive work, this chapter is interested in thinking about how VAs, as one set of bureaucrats, construct

meaning of the documents they produce. Further, if these bureaucrats interpret and present documents other than as instruments of writing, we would also need to reconsider Foucault and Derrida inspired studies of state bureaucracies (Das and Poole 2004; Gupta 2012) that insist on power emanating from acts of inscriptions. Here Cody's (2009; 2013) meditations on practices of literacy in southern India are instructive. Cody finds that neo-literate women in the Dalit village of Katrampatti are not content with inscribing their newly learnt "unsteady" signatures on a letter to a Commissioner, an act unparalleled in the history of the village, but seek a form of "performativity" in which they would like to physically hand the letter to the Commissioner, as a significant component of their newly established agency as literate citizens. Cody analyzes this situation to show that:

> there is nothing natural about an interpretive framework that would presume an isomorphism between written subject and social agent… the magical conflation of subject and agent that is supposed to inhere to the act of signing is thrown into question even further if we take into account the signers' own interpretation of events—interpretations that were shaped by logics of deference and visuality that escape dominant ideologies of the written sign (Cody 2009, 371)

In similar but also starkly different ways, VAs outpouring denouncing writing on the computer is destabilizing a familiar relation, drawn from Foucault and Derrida, between writing and power, even as the content of the writing had not changed very much between the analog and digital forms. The writing on the computer did not look like writing to them, because it lacked the material qualities that writing was *supposed* to have. Even in printed form, digital records were seen as less adequate versions of the past, as I describe below. Because it lacked these qualities, it did not symbolize for VAs power that they associated with the authority of writing. In this framing there is also the memorialization of a past in which writing did produce power, a framing necessary for invalidating the present. The absence of familiar material qualities of paper and writing is not experienced in isolation, but aggravated by a diminished documentary

culture in which recording information about land is no longer confined to the records, but congeals outside bureaucracy or in other media and channels of communication.

This chapter is based on detailed conversations with an inter-generational set of VAs in Datanagar spanning three generations - those holding office in the 1970s who retired in the early 2000s; those holding office in the 1990s and due to retire in the next decade; and those hired in the 2010s, a decade after digitization of the RTC and MR was initiated.

Beyond Representation – Digital Materiality

There is significant transformation in the material elements of the revenue bureaucracy currently underway. This is reflected in the medium of writing (computers and mobile phones over physical books), the type of writing (pre-printed formats over more subjective statements), the quality of writing (ticking yes/no boxes over writing longer descriptive statements) and the physicality of the office itself (kiosks manned by private staff and online services located in remotely held servers, over more informal work spaces). These material transformations cannot all be reduced to a digital transformation, emanating in the policies of liberalization of the early 1990s. My own perusal of a number of documentary records from over the last fifty years, point to evident material changes in the production of the record. The point is not to look for a date when things changed for good, but to point to the flux[18] that defines the work that VAs do and its multiple sources, including digital transformations, that is very much evident from observing the day-to-day life of bureaucracy.

This material flux provides an opportunity to understand how VAs view the act of writing and recording in the present. VAs do not write the RTC or MR records on the computers, a task they have been manually performing for eons before 2001, when a new set of '*Bhoomi*-

[18] Flux and transitory phases, are repeatedly presented as justifications by the higher level bureaucracy, to explain information technology's never completed, but always imminent goal.

operators' were hired for the job, but knowing the production process is said to be crucial to their social survival, as farmers depend on them (and others) to negotiate the system. Yet, VAs seem to be less concerned about gaps in their knowledge about the repeated (mostly unexplained) changes to the software system by bureaucrats and their staff in Bangalore, leaving the charge to 'computer operators' hired for the job. An anecdote helps explain this point. One day while having a discussion on errors within digital records, I asked how these errors appear in the first place. While a lot were errors produced during the original digitization of the records in 2001, apparently by the under-skilled, overworked, data entry operators in rooms in Bangalore, errors also creep in during present "mutations" to the already existing digitized records. 'Bhoomi-Operators' like Meena, make "human errors". In the past, one VA claimed that the software was such that it allowed for an error of this kind, if identified, to be rectified within the production process itself (by a re-entry of the data point). However, the present version of the software does not allow for this. Even if an error is identified mid-process, the mutation must proceed, only to become a dispute case when a higher-level officer rejects it. The second VA said that she was under the impression that errors could be corrected mid-process even now, and was mildly surprised to hear about this change. She clearly didn't know about this software change but did not seem very concerned about her lack of knowledge about it. Both VAs went on to complain about rapid software changes and their disinterestedness to keep up with these changes.

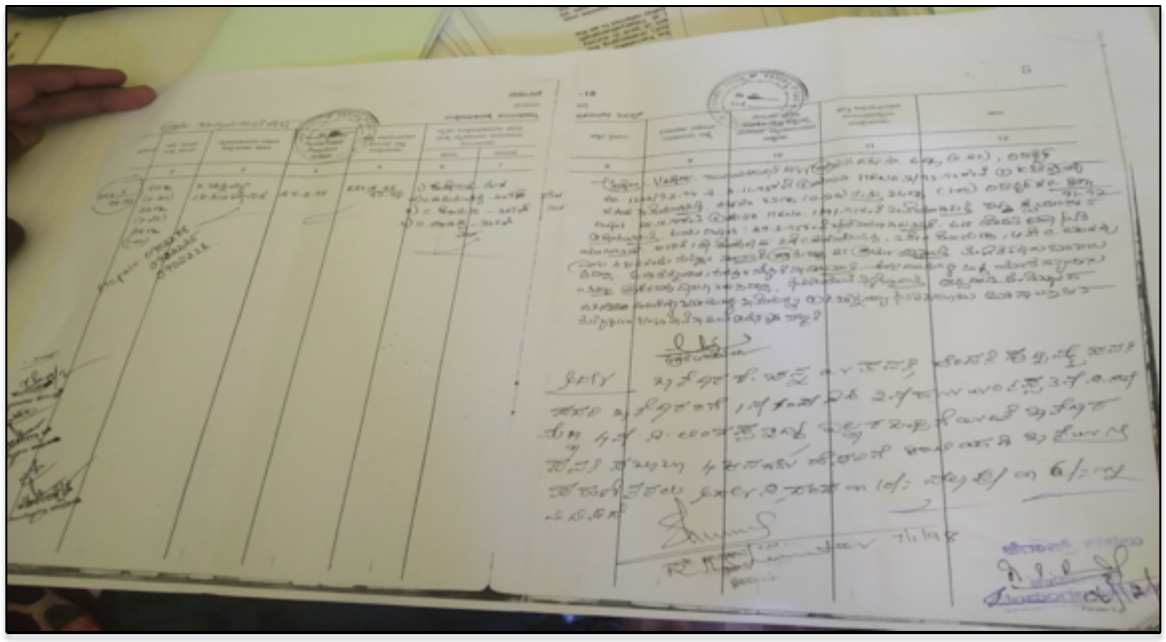
VAs instead spoke of writing in terms of rigidity, limitation, and lack of ability to maneuver the script. With the computer appearing in these parts, as the legal way of writing land records, higher officials, and not VAs, begin to have more control on the writing. This is an effect of the "rigidity" of the computer, as one VA puts it. Writing on the computer, on screens that are driven by software, concealed from the producer or the location of production, is a

frustrating activity. Writing on the computer is akin to not having space for authorial impacts, for being tied down by the software that is always beyond one's control. It means the use of strategies, beyond the writing, to get by, like having to call multiple people in Bangalore to have things corrected. Rigid also because it can only be done on specific computers assigned to people, through "login" credentials that require prior approvals.

An example is the mutation record. The mutation record or MR captures, or is at least meant to capture historical ownership and transactional information about a parcel of land. The record should tell its reader, how the land in the name of the present owner became hers, back in time. Older VAs, those claiming familiarity with the work of *Shamboges*, claim that the present day MR had a precursor during the colonial period called Record of Rights (RR), which in turn had a precursor during the period of Maratha kingdom and Tipu Sultan's rule called the Preliminary Record. While the function of the RR and the MR remain the same, there is a visible difference in its form. The RR is a large document, folded in to fit the standard A4 file. It has a number of columns (Figure 3:2), the last column being the *Shara* or statements, a space for VA and Tahsildar comments. An RR hand written in the revenue year 1997-98, the last year before the digitization of the records, has a descriptive set of statements by the VA on the top right hand corner of the document as recreated below with my explanation in square brackets.

Figure 3:2 - A revenue record written in the revenue year 1997-98

(Photo by Nafis Aziz Hasan)



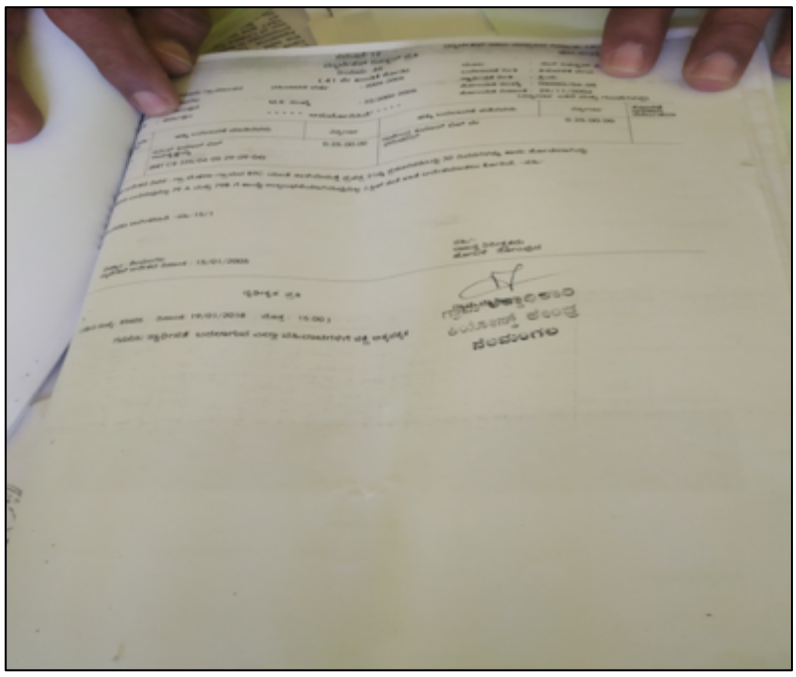
The village of Narayanarao palya, survey number 6(0-20), Reg. no. 1223/93-94, Date 3-11-93. Through *Kraya* [purchase], MR no. 3/93-94, *Khata* [ownership] has been made in the name of one K. Channayya.
Survey number 23(0-26) and 24(100) reg no. 874/91-92, date 25-7-91. Through *Kraya,* MR No. 1/ 91-92 *Khata* has been made in the name of K. Channayya.
These are *Swaardita* land parcels [bought by K. Channayya himself]
On date: 29-03-95, *Pavathi* [inheritance] has been made in the name of his wife, Puttamma [after his death the land was transferred to his wife through an 'inheritance mutation of the record']
Now, there are four sons, first Kempegowda, second Hanumanrthappa, third Somanna and fourth Lingappa. Notice served in the village through form 21. No dispute has arisen hence no dispute case is registered. All four have given their statements. No court case has been registered in the court.
This is a matching with the *Pahani* [RTC], hence the following order is requested – for the above survey number lands *Khata* should be made in the joint account of the four children of K Channaya.

These statements provide genealogical information pertaining to how the present owner, Puttamma, became the owner of these lands through an inheritance from her husband, and how her husband had got these lands through a former purchase. The last sentence makes a request to the Tahsildar to make an order to allow Puttamma's four sons to inherit these lands from her, based on the genealogical information provided above.

A VA I had spent considerable time with, read out these lines to me with an intonation that is hard to capture in text. At the end of it, he looked at me and said, “All this is gone”. He meant that there was a loss of this narrative genre of inscribing genealogical information, when the computer generated MR took over in the early 2000s. He flipped a file and held a printed computer MR open for me to look at. In the Figure 3:3 below, one can discern what he was referring to. There is no place for statements by the VA or anyone else for that matter.

Figure 3:3 - A computerized mutation record from the early 2000s

(Photo by Nafis Aziz Hasan)



The table at the top of the page carries sparse information. In terms of content, while the RR carried genealogical information about past transactions, the MR is a more current document with information only about the present transaction. The statement below the table are conclusive statements. The first one says that the information here matches that in the RTC, and that notice was served for twenty-one days and no dispute was received. Historical information, which is present in the first one, is missing in the second, he pointed out.

Yet, the VA was not speaking in terms of a loss of information or the MR being an inaccurate representation of changes in land ownership that it is supposed to represent. He was acutely aware of how this document worked. Even though it does not carry genealogical information in the way the RR did, when linked to a network of MRs, it adds up to the same information. This is clear from the multiple MRs he has attached in the same file which he flipped through as we spoke. Earlier on, a 'technical consultant' working on the digitization of these records in Bangalore, had explained to me that the digital MR was based on a principle of cutting down on repetitive information. He said that since every mutation required an MR, by law, invoking the Karnataka Land Revenue Act 1961, there was no need to repeat information about past transactions of the land in every MR. Over the last few years technologists and senior bureaucrats have attempted to apply managerial principles of process re-engineering to the management of land records. One of the principles is to "streamline" processes, in order to keep them under supervisory control and prevent discretion in the writing of records. Another is to cut down, what they see as superfluous information that slows down processes, and takes up more storage space on the database's servers.

Yet, VAs insist on the appearance of the same data in multiple documents, as a key to a kind of documentary ethics. They believe that a "good" and "robust" document is one that has multiple lines of description in it. A sparse document like the MR does not carry the symbolic weight of a government document. For them, repetition of data is also a kind of diagnostic tool to cross-verify one document against another, as it is an impediment against arbitrarily changing data across documents. They hasten to add that these accountability mechanisms were embedded in the production of the document itself and do not need to be introduced through the computerization of these documents. To explicate this point, a retired VA, pointed out that the

Barah Nammume Lekha or twelve types of documents written since the time of the *Shamboges* constituted a kind of documentary network of various facets of the village, and had multiple data points repeating across the documents. The *Khetwar Patrike* he said was a kind of "mother ledger" that contained consolidated information of all types of government, private and common lands, as well as all types of lakes, storm water drains, forested patches, government trees and grazing areas. For all private lands the extent of tax to be collected was listed next to the survey number. But other documents, like the *Amrai Takhte* that had a description of all fruit bearing trees that the government owned, or the *Banjar Takhthe* that contained the extent of government land, carried subsets of the information already in the main document.

VAs also speak about the format in which documents are printed and the quality of the paper. Hand written documents are always on government pre-approved formatted sheets of paper. Generally the color of the rows and columns were blue, while the text is in black ink, showing exactly the work done by the VA in writing the document. Now, they claim, that pre-formatted computer templates can be printed out on any white sheet, and there is no difference between the colors of the format and the printed information. Older documents, they claim, were printed on "special" sized and quality paper, while now computer printouts could be taken on any *mamooly* (common) A4 sized paper. This they felt was de-valuing the document.

My interest lies in thinking about these claims as a response to the onslaught of computerization. What appears through these invocations of a rich documentary past is that truncated forms of writing, devalues writing for VAs, even when the information carried in the digital documents has not changed very much. VAs claim that more writing is good writing, pointing to the same kind of need of "visuality" that Cody's interlocutors looked for in their performance of signatures. Herein lies one explanation for VAs nonchalance towards loss of

participation in inscriptional events. Writing on the computer does not carry the weight (even if the message remains the same) of a government record, a point they repeatedly make by comparing the "thin" MR to the "thick" RR.

Beyond Representation – Communication and Performance

In the grey cabinets of VA offices are multiple "registers" with different names. These are records of different aspects of land - tax collection on land, extent and condition of land owned by the government in the villages under the VAs guard and also to the list of beneficiaries and amount of welfare emoluments, like old age pensions. A common aspect of these registers is that they are mostly empty, in pristine condition, with just a few marks of inscription, as opposed to chronologically older records stored in the taluk office's 'record room'. Some seem incomplete, the writing disappearing after a couple of entries. An occasional sign and stamp of a higher official is seen across these pages, but a general absence of regular writing is clear just by flipping through these records, as I did multiple times. They are also not on standardized government books, a specific format and color of stationary found sometimes in the offices. In the manner in which VAs spread these records out on the table for me to see, putting it back again after I was done, showed me that these were not documents of daily use. Rather sheets of A4 (letter) size pre-formatted paper, that VAs called verification reports, along with other files being worked on during the day, took up much of the space on the table. But VAs did not hesitate showing these records to me, in fact, given the fact that they allowed me repeated viewings and questions about the records, is suggestive of their attitude towards them. The absence of writing in these records was in direct contrast with the belief and assurance of bureaucrats higher up the chain, of the robustness of these documents. Several times, higher-level bureaucrats pointed out that knowledge of land congealed in the records that VAs

maintained, and that as a result of this documentary knowledge VAs had become too powerful and needed to be contained. Digitization of land records, starting with the RTC and MR, but with plans of extension to these several other records, was a way to curtail VAs discretionary power. When I pointed out that I had not seen VAs write detailed records, these officials would point to a seven volume *Handbooks of Village Accountants* and insist that these records *should* be maintained. This is not surprising, considering Smith's (1985, 181) description of the office manual as the central technology through which the writing of village records was controlled from a distance. The office manual came to replace the need for micro supervision of record keeping, making senior bureaucrats believe that records are maintained *because* it says so in the handbook.

Knowledge about land

In the time I spent in Datanagar, I heard multiple stories from VAs and other people, including brokers about land grabbing and fraudulent attempts at claiming ownership of land. VAs particularly claimed that they were caught in a difficult situation. They claimed that because the need to maintain registers around different aspects of land was not relevant anymore, owing to other channels of communication with the higher bureaucracy, as I describe below, their knowledge about transactions on land was limited. They went on to claim that it was not just them, but officials at large who had lost track of the various divisions of land and ownership. In their view, “imposters”, land grabbers, and brokers had up-to-date knowledge about transactions on land and were using it to elide any form of monitoring or overview. It was hard to validate such a claim, but a higher bureaucrat in Bangalore from the same department echoed this view of the government’s control over land, when he said that on visiting a village one would find a major difference between the information in *Bhoomi* about the extent of land owned by the

government and what a survey of the village would reveal. VAs also believed that part of a reason why they knew less about land than in the past, was because they had less to do with the maintenance of records and so it was easy for people to dupe them.

A VA in an employee association meeting recounted that she was not aware of a recent land conversion in her village, since the people involved had got direct approvals from higher up the bureaucracy, bypassing her. When she found a building being constructed on a piece of agricultural land in contravention of the revenue law, she summoned the people involved, who she reported, "laughed" at her for not knowing that a conversion for this parcel of land was approved. VAs fear that they do not anymore have the means to detect fraudulent activities on land, and yet are held accountable for it. This is more often than not expressed as fear, not as a loss of power, as other staff seems to talk about it. They feel exposed to complaints, inquiries, and action against them. If VAs describe their waning position as record keepers by pointing out to a diminishing document culture, they also experience its effects on their social relations with clients. Towards the end of my fieldwork, VA Gayathri, who I had been in touch with since the early days of my fieldwork, revealed to me a court case she was embroiled in. A year ago, someone, she still did not know who, filed a case against her and her supervisor, a revenue inspector, for signing on the papers that led to a transaction on what he claimed was his plot of land. The complainant charged Gayathri with approving a fake transaction in return for a bribe. Because it was a case related to employee corruption, it was lodged at the state's *lokayukta* or anti-corruption ombudsman in Bangalore. By the time Gayathri narrated this incident to me, one year had passed, and she had made several visits to Bangalore to appear before the *Lokayukta* and had spent over a hundred thousand Indian rupees (about $1400) in hiring advocates to represent her. In describing her predicament to me, Gayathri did not claim that she was honest

and this was a false charge, but rather the fact that the absence of regular record keeping had led to a situation where face-to-face contact with farmers in the villages under her jurisdiction had come down significantly. As a result, it was difficult for her to distinguish between fake and genuine clients just on the basis of the documents they brought, as she had less opportunity to gain the social knowledge that was built through the work of recording myriad aspects of land and the rights that people had on them. She said she acted on the documents given to her by the "computer section" of Datanagar's taluk office, without having the means to check for herself the authenticity of the transaction. She said she was "under pressure" from higher officials in the office to sign on files, and she was scared of refuting them. Whether or not Gayathri took a bribe to make that change is not the moot point here. What I am more interested in is her description of this case as a way to show the tenuous relations between VAs and their subjects of control owing to an enervated documentary system of writing records.

This incident also opens up another concealed aspect of technological projects like *Bhoomi*. VAs while being eliminated from the production and ownership of the RTC and MR, continue to be called upon to provide an authentication by signature that no person disputes the mutation of the record. This relatively minor role can lead them into trouble. If a mutation turns out to be "fake" or disputed for any reason in a court of law, VAs are and can be held responsible for the situation as per the rules in the Karnataka Land Revenue (KLR) Act 1964. This is exactly what has happened in Gayathri's case. While she no longer is in charge of producing and maintaining the village records, she still is burdened with the risk of authenticating changes in the records that she no longer controls. All the transactions on land were initiated through the kiosks that Gayathri and other VAs do not control and are in fact actively excluded from. The modernization of bureaucracy has thus led to the depletion of "scribal skills" (Raman 2012), of

an organizational structure tied to a mode of knowledge production and of the social relations of subaltern bureaucrats with their clients, while at the same time continuing to burden subaltern bureaucrats with the risk of authenticating transactions on records that they have very little control on. The law has changed to disallow the use of manual records, making sure that no VA is allowed to hold or provide copies of land records, but it has not changed with regard to the risk that subaltern bureaucrats have to take, a responsibility structure initiated in the colonial processes of establishing accountability through inscriptions.

Other Communication Forms

Conversations that surrounded my perusal of records provided important insights into what VAs thought about records as documents. One of the first points to emerge was that VAs thought of their records in relation to other kinds of communicative work they were engaged in and the technologies through which that work was undertaken. A weekly audio conference call with the District Commissioner was referred to several times in these discussions (the subject of chapter 3). A single call was made by the commissioner to his staff, including all VAs under his jurisdiction. The calls that I attended, lasted anywhere between 5-20 minutes per week. VAs were often the subject of the Commissioner's attention and sometimes the subject of his wrath. The Commissioner would focus on tasks that he expected VAs to complete before the next call or ask them for status updates on the previous week's tasks. Many times the Commissioner asked VAs to prepare data sheets pertaining to different aspects of the village. One time he asked them to go out into specific villages and identify land for a specific purpose.

> For all graveyards and solid waste disposal, through WhatsApp groups I will send you a list of villages in which this should happen… your *Tahsildar* will forward it to you. By next Saturday, you all should send a proposal to reserve land for graveyards and solid waste disposal, under KLR, section 71

Another time he asked for VAs to prepare a "list" of all beneficiaries for an ongoing old age pension scheme by visiting the households and verifying how many of those pensioners were still alive. The commissioner claimed that during a review meeting with the revenue minister, the question of whether funds were adequately used had come up, for which the minister recommended an investigation by VAs. He asked VAs to fill out this information in a specified template, a "format":

> I will send out the format. According to that, enter names of all the people who are not alive, but were getting pensions in installments. Find out their serial number in the voter id and their serial number in ration card and write it down in the format. In that you need to fill out all this information, we should not reject beneficiaries by mistake.

In the following week's call, a lively and complicated discussion ensued. A problem several VAs noted was that the number on the pension certificate given to a beneficiary did not match with any of the other identity cards (such as ration or voter id) that were available with them, making it hard for them to verify who were genuine pensioners. They complained, that the *Aadhaar* number, a unique number given to Indian residents in return of their biometric data, had not been completely "seeded" to the pensions database. One VA offered a solution that the Commissioner seconded. Part of the pension number did match with some part of the voter id number, so he suggested all to use this to identify beneficiaries.

VAs reminded me of these audio calls in the presence of their incomplete records to point to the sociotechnical processes within which this "data" was always in motion, even when it did not congeal in the records. They referred to this information that was supposed to be in the record, but now flowing through more immediate channels such as the weekly audio call and on WhatsApp, as data. Particularly, they spoke of the immediacy with which data about the villages under their administration was required to be produced and circulated through oral exchanges, excel sheets, or as Microsoft Word of PDF attachments through WhatsApp messages. They

showed me the various groups on WhatsApp they were part of, the rapidity and urgency with which data was demanded and sent. They said all this not to suggest that the registers sitting in their grey cabinets were inadequate storage devices for this information, but rather to point to the expanded social worlds and expanding actors and interests for which this information was necessary. VAs downplayed the significance of information in the records to point to the methods of production and the patterns of circulations. In other words, the registers in their cabinets were not insignificant because they did not contain much information, rather, it was their form and its accompanying limitations that prevented them from participating in a broader universe of exchange. VAs used this dissonance between the medium and channels of circulation, to critique a straightforward relation between them maintaining records and holding social power, as made out by their office colleagues. In VAs view, like in the view of some anthropologists studying the effects of documents outside their function of representation, it was not that information (or lack of it) in the registers undermined their significance as social beings in the office, but their position in the bureaucracy was determined by where information associated with the records travelled, through what mediums and seen and accessed by whom. VAs talk of and around records opens up an opportunity to think about the interplay between form and content in documents and the social meaning this gives to its producers.

Performing Records

The conversation around the records in the cabinet opened up a wider world of material exchange between different hierarchal levels of bureaucracy. Some of the records related to an annual settlement process called the *Jamabandi*, an age-old annual event, vividly described in Tipu Sultan's Mysore Regulations (Greville 1795, 3:175) that included a ceremonial function of signing the registers that documented taxes collected by an office during the revenue year. I was

part of the 2019 event, a day in February, where staff in the office was in an upbeat mood, looking forward to the lunch at the signing ceremony that was organized at a resort ten miles away from the office. Kumar, a caseworker, one of my interlocutors in the office, offered to take me in a car that his brother was driving, but that he insisted was his own. Earlier in the office a discussion about what *Jamabandi* was had ensued. VAs write three books of account throughout the year - the *Khathe* book that has the name of previous and current owners of a parcel of agricultural land and the tax due from the current owner. At the end of the document is a total for the village. The *Keerdi* book, which has an entry of the receipt numbers given to the owners on collection of tax from them and the *Recidi* Patta, which is the actual receipt book through which tax is paid. These books, first signed by the *serishtedar* or office manager are presented to either the Assistant Commissioner or the Deputy Commissioner on the day of the signing, also called *Huzur Jamabandi*. But Kumar clarified that this is how it should be done, not necessarily how it was being done. VAs do not any more go to villages to collect these taxes. Government land tax rules and depleting productivity of agricultural land, has resulted in marginal taxes. Kumar quipped that a one-acre land that he owned, only attracts a tax of five rupees (approximately 10 cents). In such a scenario, he claimed that VAs do not spend time and money going to villages to collect these small amounts of money, instead they just make these payments from their own pockets. Since the whole documentary system of the *Jamabandi* documents is based on a collection, balance, recovery model, the document produced in the absence of this is a pretense, the event earning the epithet *majabandi* (that roughly meaning a non-serious affair). Yet, VAs do not necessarily see it in that way. Irrespective of the content of the *Jamabandi* registers, they point to how these documents engender a transaction between them and their managers as well as the sociality of the event of signing. Multiple VAs told me that their manager in the office

charged them 5000 rupees (approximately $72) each to sign the documents before the day of the ceremonial event. This was presented not so much as complaint but as practical strategy to meet the demands of the event, without having to spend too much time on it. VAs said if the manager, well respected in the office for his knowledge about land matters, actually checked their books, he would find many errors. And so it was easier for them to pay this money and get his signature rather than worry about correcting their records. Many VAs do not even write these records themselves, rather depending on older retired VAs or their support staff, so having to make corrections, would require them to make further payments to these people. A one-time payment to a single officer, a transaction that would strengthen their relationship with him, was more preferable for many of the VAs I spoke to.

Rather than worrying about the content of the *Jamabandi* books, VAs were interested in talking about the ceremony of the *Huzur Jamabandi*, which in February 2019 was being presided over by the Assistant Commissioner. Driving to the event in Kumar's car, he asked if I would eat non-vegetarian food on that day. Apparently, given the large number of vegetarians in the office, separate arrangements in the form of a cordoned space were built for meat eaters. Kumar advised me to stay close to him, if I wanted to any of the chicken curry, since he new exactly where it was going to be served and in how much supply. VAs collect a significant amount of money from among themselves to put together this event. It also involves negotiating with a host of people, starting with the owner of the resort, to the caterers and the cleaners to get the event going. The driveway from the gate of the resort to the hall were the event was taking place was lined with cars of all shapes and sizes. At the end of the row was the assistant commissioner's car. Before I entered, a VA who I knew but had not spent much time with, welcomed me to the event, as a mark of respect, but also as a way to show that he was in charge. As I went into the

hall a row of officials were sitting on a raised platform in front of the audience. At the center was the assistant commissioner, two Tahsildars and a few other people. No VAs were on the raised platform. The office manager who had signed on the books the previous books, in return for money, was strolling outside the hall, chatting with the *Bhoomi* technical consultant who had been invited for the event from Bangalore. Prior to the signing, the AC office Tahsildar made a few comments in which he pointed to the historical roots of the *Jamabandi* and the need for VAs to maintain accurate records given the confusion around how much land the government owned. A queue of VAs lined up on the right hand side of the platform and one by one presented their *Jamabandi* books to the assistant commissioner for his signature. Books were being signed in quick succession and VAs moved out to make space for other people. Everyone from the office was there, but most people drifted to the dining rooms after a few minutes, where they sat on tables waiting to be served. The serving was also done by VAs. They took on the role of hosts. They made sure everyone had a seat and a banana leaf on their table and came multiple times to serve the food. Even though many VAs did not know me, no one questioned my presence there. In fact they treated me like a guest, as they would do to a guest at their house or wedding ceremony. Later, the assistant commissioner also asked me if I had eaten. One VA whom I'd come to know well, beamed in a silk sari with a golden border, something I had never seen her in before. She had just ushered in people into the dining room and I chatted briefly with her. "The event is going well", she said. It was particularly important to her to have everything in place, since she was the cultural secretary of the VA association of the district. She showed me pictures she had taken of the event with herself next to the assistant commissioner that she had already sent via whatsapp to several groups. She was distracted, and in a few minutes went back to

waiting on the assistant commissioner, who was now sitting in the non-vegetarian part of the dining hall.

I aimed to show in this section the fragmentation of information around land that was in the past, reportedly congealed inside a dense documentary apparatus of records affects VAs perception of bureaucratic writing and power associated with it. The dis-articulation of information and control away from these documentary forms is a source of disruption in the social relations that VAs are known to have with the people in the villages they are made responsible for, even as they have to bear the risk of this disruption in doing work they cannot necessarily vouch for. But the transformation in the capacity of the records is also impacted by changes in the communicative order of bureaucracy. Senior bureaucrats are relying on media different from paper, to gather the information they need. Much of this is itemized and atomized bits of information that gets relayed through specific templates and messaging apps. VAs point to these channels as evidence to suggest a diminishing focus on writing and paper. Finally, VAs continue to participate in bureaucratic rituals of record-making and authentication such as the annual record checking exercise called *jamabandi*, as ways to highlight once again, the reduced significance of the record as a form of representation but its continued significance as a performative element in the political economy of paper.

Conclusion

How does a focus on lower-level bureaucrats and their relation with bureaucratic writing in the age of digital transitions in Indian bureaucracies open up into larger questions about the post-colonial state? James Fergusson and Akhil Gupta have provided an influential analysis of how the state comes to be seen as an entity with spatial characteristics (Ferguson and Gupta 2002). Broadly, they argue that the state comes to be possessed by two spatial features, "verticality" and

"encompassment". Verticality refers to the image of the state hovering over other institutions in society and encompassment refers to the state's ability to present these institutions as a sub-set of itself. They show how both these spatial characteristics are enacted through "mundane bureaucratic procedures", located in practices such as "surprise inspections" and maintenance of "registers" by "local" state-workers. By maintaining a register of attendees of a child development program, village-level state-workers were displaying their position as "above" their subjects of development, and when higher officials came on inspections of these registers, they in-turn were displaying a position "above" the village workers. In other words, "mundane" forms of bureaucratic writing spatialize the state. In contrast, the descriptions I have offered in this chapter and those that appear in other chapters of this dissertation, point to other ways for the production of state space. Hollowed out practices of writing (exemplified by the empty registers I found) and farcical gestures towards inspection of records (as in the event of *jamabandi*) do not simply suggest a flattened state topography in which lower and higher levels meet seamlessly on a single platform though app based telecommunication or that *Bhoomi* as a source of bureaucratic knowledge homogenizes knowledge or access across institutional planes. What is possibly happening now is that ICTs may be offering an opportunity to temporalize the contemporary Indian state or as Lyon (2001) says, technological artefacts maybe "serving to hold together or "bind" time-space in different ways" (ibid, 18). Spatializations of states through writing, as a layered, temporally distinct, distance-producing activity, may be giving way to a temporalization of states in which distance is purported to be collapsed and the ambition of the disaggregated state being in homogenous time is propagated. Yet, this chapter has also shown that spatial difference reigns in more concealed ways, such as the lower bureaucracy bearing the

risk of fraudulent writing and having to travel to Bangalore from far-off locations to exonerate themselves from blame.

Aside from how states are produced in discourse as specific spatial arrangements, this chapter offers an opportunity to think about what a change in the practices of writing could mean for bureaucracy as the "iron cage" of modernity? If the practices of filing, recording, examining and inspecting documents that marked both colonial and post-colonial states are changing, what could that mean for an understanding of bureaucracy as the arbitrator of knowledge and control? VAs accounts (also seconded by some senior bureaucrats) of knowledge about transactions in land being scattered across other actors and other media, is indicative of this change. I have aimed to show that this loss of control on knowledge about land cannot be directly assumed to lead to a loss of power, as for VAs, such a loss is not limited to their own roles, but is an emerging feature of government responding to multiple demands and pressures. Even so, is local bureaucracy's hold weakening over the social it aims to control? One way to approach that question would be to point out that bureaucratic knowledge is always produced in a situation of "paradoxical authority and vulnerability" (Mathews 2011, 19). Even when officials speak authoritatively they are haunted by a lack of vulnerability. Andrew Mathews shows us in the context of Mexican forestry, bureaucratic knowledge is "curious, halting, and vulnerable power, always made in performance, always subject to being undermined" (ibid, 20). Further, while the sociology of knowledge, he claims, has pitted bureaucratic knowledge against the uncertainty of knowing the world, following science studies scholars, it is in the imbrication of knowledge and ignorance in which control resides. In the case of knowledge produced by the colonial government in India through its bureaucracies, of which VAs constituted a central part (Smith 1996), such a view about co-production would be supported by the Cambridge School of

colonial historiography, which saw collaboration between the colonial state and native intermediaries, as a motor of knowledge production and rule. This is a "weak state" thesis, that is, according to the proponents of this school, for instance Bayly (1999; 1988), colonial governance had very little domination on the ground, and it is its linkages with the dense networks of native knowledge and information was central to its existence. Even if one subscribes to this theory, the production of this knowledge involves an encounter between people and agents of the state. In their respective regions, both Matthews and Bayly point to multiple encounters across historical time and space. Yet, what VAs seem to be pointing to in my fieldwork is an emerging condition of absence from such encounters. They claim this is partly to do with emergence of forms that allows for the production of information by bypassing them. The database of land records, *Bhoomi* is one such example. Another is VAs saying that village residents now have the means to directly contact higher officials through the mobile phone and conversely, higher officials directly speaking with people without VA meditation. Even when VAs continue to be important conduits for the transfer of information, the forms in which they do so have radically changed. They do so not through the layered and timely processes of writing reports, but in temporary, standalone formats that higher officials send to them at short notice. Even if VAs and their subjects co-produce information, present VAs make a bigger point, by pointing to the absent opportunities for such knowledge production.

Chapter 4 : In real time: techno-politics of dashboards in Indian bureaucracies

The political imperative of good governance is often couched in the language of acceleration (Rämö and Skålén 2006), even when ethical government depends on the slow temporalities of bureaucratic work, as Du Gay (2017) argues. This chapter is about how such an imperative to accelerate governance is mediated in local contexts. How are the temporal rhythms of bureaucratic work, a critical focus of reform, materialized in specific technologies and what politics and discourses, in turn, do these technologies generate? The focus of this chapter is on dashboards, specifically, 'real-time' dashboards and its emergence over the last decade or so as an informational infrastructure of and for bureaucratic reforms (Bartlett and Tkacz 2017). Dashboards are increasingly becoming platforms for the dynamic presentation and visualization of indicators of reform, allowing for visibility by both state and the demos in multiple ways– politicians monitoring their bureaucracies, senior bureaucrats supervising the work of their juniors, clients keeping track of their demands from the state. Dashboards that display "attendance data" in government offices, Chief Minister's dashboards that contain composite government metrics, or the dashboards that were built by state governments to track time for service delivery by bureaucrats, which this chapter pays attention to, are all examples of the visualization of reform.

Dashboards, as interactive mediums have been noted for their ability to perfect connections (Tkacz 2009) that ushers in a "communicative objectivity" (Halpern 2015), which on analysis breaks down into many concealed truths (Solanki 2019). The dashboards I illustrate in this chapter also perform this objectivity through quantification, indicators and metrics (Merry 2016) to produce an "episteme" of speedy bureaucratic time (Bear 2016), even as bureaucratic practices do not match these representations. Yet, going beyond this gap between goals and

practice, even when the power of dashboards to meet the demands of government reform is not to be found in their purported ability to relay truths about the quickening of bureaucracy, it is their ability to make commensurate the political imperatives of reform with on-going practices of bureaucracies, which I aim to highlight here. Importantly, the dashboards that I describe in this chapter make possible the articulation of reform without rattling the status quo and at the same time are significant enough to shift the temporal gaze of reform from the present to the future. In doing so, dashboards reveal themselves to be artefacts of techno-politics, that is the ability of competing actors to envision and enact political goals through the support of technical artefacts (Gagliardone 2014).

The dashboards that I draw upon for this chapter emerged at a time when politicians were facing the threat of losing office, in both Karnataka and Haryana. In Karnataka, in 2011, the image of the leading government was at stake, caught as it was in high profile corruption case[19] and the party's senior leaders were looking for a way to change that image. Even though it was politicians who were incriminated in the corruption cases, the bureaucracy, particularly the lower bureaucracy was conveniently identified as a bugbear, leading politicians to take up the mantle of reform. Politicians sought to make their bureaucracies speedy, ironically, at a time when they were being accused of "wasting time", in the sense of the number of hours spent in making and debating policy had seriously come down in the last few decades (Jensenius and Suryanarayan 2015). For instance, "the Haryana legislature was the assembly in India with the shortest meetings, the fewest total meeting hours, and the least discussion about bills" (ibid, 868), even as

[19] In October that year, the chief minister of the ruling BJP was sent to jail for a big-ticket mining scam that rocked the country for its mammoth proportions. There was an interim chief minister in his place whose brief, given the impending elections in 2013, was to do something to change that "image" of the government.

its Chief Minister was aggressively promoting the use of data to improve the time taken for service delivery by the lower bureaucracy.

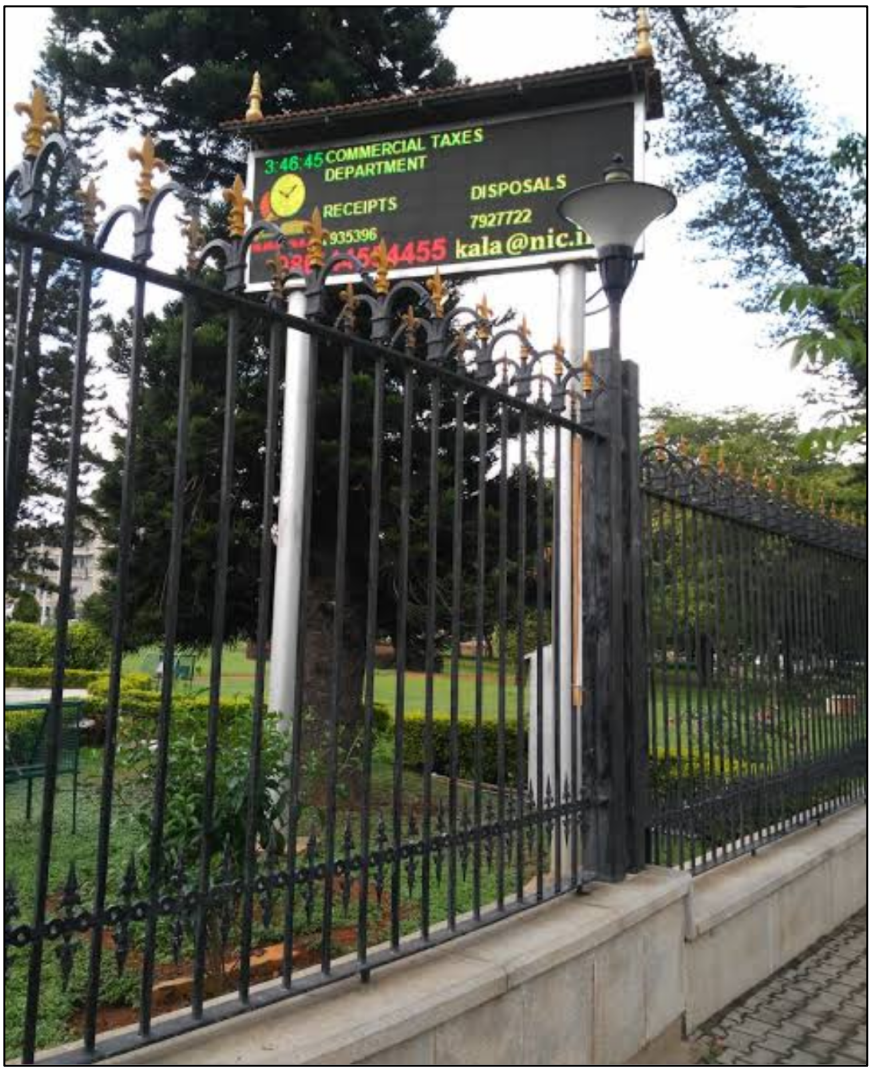
Technology, particularly the computer as an "appropriate technology" (Mazzarella 2010) of reform had been in vogue for a while now, but its novelty has reduced. Instead, a senior bureaucrat in Karnataka, whom I will call Kamala and her band of advisors who consisted of other bureaucrats, management consultants and technologists, proposed a rights-based legal guarantee of service program monitored through a real time dashboard, as a novel reform intervention.[20] This program drew within it a host of government services, assigned a time standard to each service and then proceeded to measure the delivery of every instance against that time. The accompanying dashboard hosted on a web platform displayed indicators, such as applications "received", "disposed" within and outside the prescribed time, and those "pending" beyond their stipulated time, as a diagnostic of the ongoing reform initiative. Data from the dashboard was used to generate analytics– ranks, indexes and temporal comparisons, which circulated among the senior bureaucracy, politicians and the media. At the start of the program, focus was on its legal features and its bold ambition to draw fines from the salaries of clerks who delayed services, but by 2018, when I re-visited it, no instances of these aggressive measures were in sight. Instead, focus had shifted to the massive amount of data that the program had generated since inception; the technical workflow of extracting that data and range of interpretive analysis it generated. Kamala, had become a popular public figure on the back of

[20] Many policymakers and activists are attracted to a rights based strategy to reform government in part because they see it as a useful way to reorient the language of governance– from ideas of patronage towards the duties of the state the justified claims of citizens. Rights not only theoretically empower citizens against the government, but also politicians and senior bureaucrats against the lower bureaucracy (Robinson 2012). Karnataka was not new in developing this legal mechanism, but was following other state governments (Sircar 2012). What was indeed novel about Karnataka was the bureaucratic arrangements put in place to execute the legislation.

awards she won for technical and process innovation in this program, such as a ‘Google Innovator Award’ and the ‘egovernance award’ from the government of India, and not so much for upholding citizen rights. Through the years, the dashboard and the media around it– monthly and annual reports and presentations to other national and international government agencies, caught the imagination of politicians across party lines, leading to the creation of a ministerial portfolio to oversee the program in 2019. Every day the dashboard was “refreshed” and fed into a ticking “clock” (Government of Karnataka 2011) - a counter, hoisted at prominent public places in Bangalore, as the material symbol of a timely bureaucracy hard at work (Figure 4:1).

Figure 4:1 - A “clock” depicting work by state department

(Photo by Nafis Aziz Hasan)



In a few weeks of observations in the offices of Datanagar in Karnataka, I realized the following inadequacies in the dashboard's modus operandi. First, in some cases, the time officially allocated for services was much higher than what was actually needed to service the application, leading to a situation when clients were waiting longer for a service after the introduction of the program, than before it. Second, even when a service was marked complete on the dashboard, it did not always mean that the output was handed to the client. In some cases, I found that clerks and clients spent time negotiating a bribe before the document changed hands, suggesting a

divergence between the time recorded on the dashboard and the time actually spent in delivering that service. Third, clerks sometimes arbitrarily rejected applications, which appeared on the dashboard as a "disposed" application, even as the client had no idea why a service was rejected. Through this examples, I am in no way trying to rehearse the argument that well-intentioned policies at the top are subject to destabilization as they move down the hierarchy, owing to a cultural divide between higher and lower levels of the administration (Kaviraj 1984) or point to a middle class anxiety about the innate nefariousness of the lower bureaucracy (Gupta 2012, 25), both of which, continue to propel the desire for reform, as the subjects of reform through the dashboards are mostly all lower level bureaucrats. If anything, the divergence between what transpired in an office and what was recorded in the dashboard, pointed me to the lack of care with which the policy itself was designed. Armed with this knowledge, I met with senior bureaucrats and their advisors who had designed the reform program. In conversations with them, I learnt that there were imperatives different from the ones of transparency and good governance that propelled the careers of these dashboards. That politicians wanted to present a good face of service delivery to their constituencies is one part of the story. What needs to be unraveled is why the dashboard, as technical interface, came to be the technology of choice. I outline three inter-related reasons as to why dashboards are attractive to both politicians and bureaucrats, which I develop in this chapter.

First, dashboards do not ruffle too many bureaucratic feathers. In other words, as I show below, data to run the dashboards can be generated without intervening too much in the working of bureaucracy. Unlike databases, which fractured process, or mobile apps, which produced an economization of inscriptions, dashboards did not purport to change office procedures to any great extent. This is critical, because, for all their rhetoric of speedy delivery and quickened

processes, bureaucrats know that bureaucracies must work in certain temporal ways. Dashboard architects did not really think that the dashboard would magically transform the working of the bureaucracy. For instance, Kamala had spent several years as a Commissioner of multiple districts in Karnataka and was acutely aware of the temporal practices of the offices she proposed to intervene in, not only because extending time was lucrative for some but also because time for some processes remained indeterminate. Both dashboards began with non-controversial services, which are simple to execute by the bureaucracy and which, some critics claimed, did not involve opportunities for kickbacks (Sircar 2012). Such a belief is supported by Jennifer Bussell's study, in which she argues that services which are valuable for generating money that fund politician campaigns are not prioritized for digitization (Bussell 2012). Further, a management consultant closely involved with building the dashboard told me that no "scientific" study was conducted to determine the standard time for each service, the benchmark against which quality of service delivery on the dashboard is calculated. Finally, as I saw for myself, the introduction of the dashboards had changed very little of the process by which clerks worked on the applications.

Second, despite this gap, dashboards offered what I am calling an opportunity to present some form of improvement without change. Bureaucrats and consultants argued that even when dashboards were not ushering in permanent change in their offices, they "at least" marked a beginning for the collection of data around the time taken to deliver services or "at least" lower levels were forced to encounter a tracking mechanism or "at least" districts were being ranked which might spark a desire to improve services. This framing was also used to point to the historically incorrect assertion of novelty– bureaucrats claimed that never before was work time of their office staff measured in this way. I point out below multiple, prior configurations of

technology and politics congealing around the concern with bureaucratic speed and time. Even so, dashboards made possible the visualization of incremental improvement without necessarily disturbing the rhythms of bureaucratic work. In this avowal of incrementality, we find the temporalization of state work as a series of forward movements, one not necessarily in sync with the celerity of reforms. The form of temporality that dashboards exude challenges a one-dimensional notion produced by the imperative of acceleration, as some recent scholars of acceleration have shown (Vostal 2019; Wajcman and Dodd 2017; Wajcman 2015; Sharma 2014). In this context of technology driven governance reforms, dashboards work because they produce an effect of what Wjacman and Dodd citing Walter Benjamin call "any forwards momentum"(Wajcman and Dodd 2017, 11), by which they point to incrementality over acceleration as a far more common phenomena by which people experience time. As such, my analysis of dashboards differs from recent descriptions of the Indian state being in "cyber time" (Nair 2019), which propose a much more grandeur and accelerated displacement of the state with the transformation of government in the temporal rhythms of start–ups.

A third reason why dashboards was the choice technology, again connected to the first two, was that when couched in the language of incremental improvement, dashboards offered a directionally positive vision of the future, where people could become as good as the numbers that represented their work on the dashboards. Here's an example. Kamala told me that Eric Schmidt, the former CEO of Google, in an award ceremony, once remarked to her that the success of her dashboard was not in the numbers it presented, but in changing the way bureaucrats work. "Just how", he asked, she claimed, "did you manage to tame your employees… today in America if I put even a small condition on my employees, they will go on strike. They just can't be tamed. What did you do? How did you get them to do this?" As she

beamed at the memory of that question, I began to see the slippage between improvement and change. At one level, this is a classic example of the power of numbers to produce effects that may have nothing to do with how the numbers are produced (Porter 2020; Tsing 2000). At another, even if the CEO's remarks were out of sync with what actually transpired in the offices, his praise is indicative of the belief that numbers and metrics on the dashboards could in fact produce the effects they were purporting to represent. Unencumbered from carrying the baggage of change in the present, bureaucrats were comfortable in pointing to a future in which incremental improvements will cumulatively lead to change. What is at stake here is not just the objectivity of numbers but their performativity as Sally Engle Merry (2016) describes with her work on indicators. Dashboards were made to perform this imminent future of reform, through a range of discursive techniques. Senior bureaucrats would use information on the dashboard to urge their staff to do better than the previous month or better than another district. As a consultant in Haryana put it - "The good ones are appreciated the bad ones build up… there are departments who are doing good, so there is no reason for some particular department for not doing good as well." Others spoke of "institutionalizing process", by which they meant getting people in departments to take charge of their own improvement. Still others urged that the dashboard would bring "behavioral change" over time as it inculcates a "culture of being measured". Through the dashboard as a mediating technology, time is employed resourceful as the present political achievement of a future desirable situation. In this sense, dashboards are *techne*, which Laura Bear (2016, 490) calls "intentional action", as they help accomplish, citing Tom Boellstroff, "a gap between the world as it was before the action, and a new world calls into being" (ibid).

In the rest of the chapter, I aim to show how dashboards are produced and how they in-turn produce the effects I point to above. But first, in order to better conceptualize how the control of time in Indian bureaucracies is imagined, I point to prior configurations of artefacts and politics at controlling time in bureaucracies. An interesting point of departure that dashboards have from these prior techniques, for instance, records, is their ability to represent a control of time without necessarily intervening in the work of bureaucracy. Records, on the other hand, were bureaucratic artefacts whose salience depended on the temporality of their production, as knowledge about the government was abstracted from them, and hence the control of time was internal to them.

Time and technologies in/of the bureaucratic office

In a recent essay, Du Gay (2017, 93) describes "bureaucratic ethos" as engendering a "pause in the impatience of things", as a way to counter the normative, universalist and context-free imposition of acceleration on all organizations. Du Gay's point is that analyzing or recommending speed for an organization must be undertaken only in relation to its precise goals and that decisions about slowing down or speeding up must be at a micro scale. As such, he argues, that many of bureaucracy's characteristics pertaining to its pace and insistence on process, which are framed as idiosyncrasies (Graeber 2015), are central to its fundamental ethical goals. While this is true, it is also true that the history of public administration in India is replete with examples of attempts to change its temporal rhythms, not only at the behest of politicians or management consultants but also by administrators.

The control of societal time, a key element of the colonial regime, manifested in modern material artefacts likes the railways and the telegraph. But government too was undergoing its own temporal ordering. This was done through the introduction of multiple technological

artefacts as tools that introduced an ethos of time different from the culture of administrative work that characterized pre-colonial bureaucracies. The typewriter, telephone and bicycles were some early examples of a changing materiality, as David Arnold points out.

> The advent of the typewriter signaled a significant, if small-scale, revolution in governance. Along with electric lighting, electric fans, call bells, telephones, and duplicating machines, the manual typewriter transformed the government office in India in the decade or two before World War I, giving it a new technological élan while making it (not unlike the automobile) more remote from the public. The type- writer brought a new speed, efficiency, and orderliness to government business, just as electric fans replaced the creaking, hand- pulled punkah, and the telephone made contact between officials easier and speedier (Arnold 2013, 153)

Also,

> Bicycles enjoyed a similar vogue among India's police and paramilitary forces between the 1890s and 1920s. Putting police- men on bicycles promised to improve their mobility, make speedy the transmission of messages and commands, and facilitate armed intervention (Ibid, 156)

In addition to the typewriter and bicycle, the clock and calendar, were two time-ordering devices that the British introduced in India, both as monumental display of modernity (as in the clock towers in the center of large towns and cities) and as mundane devises in the factories and offices of the colonial empire, aimed to order work routines.

Yet, beyond these visible technologies lay other, more micro mechanisms to order and control time in bureaucratic offices, which were introduced in the service of shifting political agendas. The management of time was made central to the work of the nested administrative government, as districts were connected to the central Indian government in Shimla or Calcutta, and in turn to the imperial government in Britain. Historians make clear the connection between the politics of British rule in India and the style of administration or the way in which district offices developed, by pointing out to the pressures on local administration to make transparent their workings through a continuous paper trail (Raman 2012). We know from Smith (1996) that

a key element of the paper trail was the frequent and standardized production of records and reports which worked to organize the rhythms of the district office as a source of governmental knowledge. The management of time through documentary artefacts affected the political relations between the British government in India and the Crown, itself having lasting effects on colonialism. Even between district offices and the government of India, "extracts" of recorded information was frequently demanded without notice or any kind of warning, with the effect of keeping records up-to-date in the local offices, which required adherence to a strict surveying and recording time schedule.

Outside records and reports, we know from the work on scribes that in the early colonial period they became "more regularized officers", through the deployment of time management technique like time sheets (Bellenoit 2014, 908). Timesheets as an artefact of clerical temporal habitus recorded the ins and outs of clerical work and were often checked by supervisors as part of "daftars", an organizational term for filing, recording and supervising documents (Rangaswami 1984). Then there were office guides, handbooks and manuals written by the senior bureaucracy that served to introduce time discipline as part of the expectations of what constituted a "honest clerk" and that directly or indirectly sort to manage the time of expanding district offices from the mid-nineteenth century (Gandhi 1888). *A Handbook of the Village Accountant*, a low-level, but important functionary of the revenue department, I encountered in offices in Karnataka, aimed to make the village accountants accountable for her own time. It recommended that accountants maintain a dairy of their activities with the time spent on each activity and have their dairies verified (though a signature) by their supervisors every day (Government of Karnataka 2010, 11). Another recommendation was to adhere to the time ascertained for each job, and when time was indeterminate for a job, they were urged to "set a

time" by themselves and complete the task (ibid, 192). From a district office manual introduced by the ICS administrator, Richard Tottenham – one way to check on time was to set up a "calendar of check by supervisory officers" (Tottenham 1945, 10–11). Kalpagam suggests that the "temporal standardization of bureaucratic rules and procedures in which time is recknoned (sic) linearly in repetitive practices" through the techniques described above, helped the colonial state purvey an idea of modern, scientific, knowledge regimes trampling upon existing forms of knowledge making (2014, 155). In a Latourian fashion, for the colonial government, "disciplining" and "retraining" entities into modern temporalities was a key element of producing an image of modernity (ibid, 158). These examples suggest that there is a great precedent on controlling time through documentary interventions in district offices in the colonial period indexed to specific political goals.

The post-colonial period also saw focus on the management of office time by successive government. The seventy years since India's independence from colonial rule, critics complain, have seen too few attempts at reforming public administration (Mathur and Mathur 2017). Yet even these sparse attempts have all engaged with the control of office time. The first administrative reform commission in the 1960s, about twenty years after India's independence and the first attempt to deal with time, is deeply concerned with the question of managing the conduct of staff recruited either at the higher echelons of the civil service or at lower levels in the state and district offices – "the healthy functioning of the administration depends not only on the competence of its personnel, but also on the maintenance of a high standard of personal conduct and the observance of discipline" (Government of India 1969, 89). Conduct often took the path of monitoring time through multiple means, from taking stock of the total number of working hours of a government employee (1950 hours per year in 1966), to providing a calculative

justification for increasing it "marginally" (up to 1963 hours) (ibid, 103), to the reassessment and rationalization of holidays as in the 1960s each day of absent work resulted in "an extra outlay of Rs. 11 crore for the purpose of maintaining the level of output" (ibid, 104). Perhaps a more direct method of controlling time was the commissions' interest in deploying Taylorist methods of "observation and measurement" to establish "rational methods of carrying out the different types of work" particularly in the lower echelons of bureaucracy, which in turn could lead to "suitable work standards" and reduce time (ibid, 114). In order to materially monitor time in these offices, the commission ingeniously proposed the use of red ink to mark delays in "disposing" "papers"-

> An interesting suggestion was made before us for dealing with delays in Government offices. Notings on papers which are not disposed of within a prescribed time after receipt thereof, should be made *in red ink*. This will spotlight cases of delay in disposal and supervisory officers can take necessary action against those who have delayed papers without proper reason. At the same time, those who have to dispose of the papers will also be careful in avoiding delay. We commend this suggestion for the consideration of the Government (Ibid, 115, emphasis mine).

These recommendations, write Mathur and Mathur (2017) did not find favor with the political class of the day. But, this inability to make a dent in the public administrative culture of the day because of the untimely death of its chief proponent, Lal Bhadur Shastri, India's Prime Minister at the time, does not take away the politics that these time- mediating techniques supported and brought forth. By asking for a Hoover Commission style administrative reform in India in 1966, Shastri was responding to the need for a distinction between the good intentions of policy makers and unruly public bureaucrats, expressed by politicians and senior bureaucrats of his time. By commissioning a four-year study on what ails bureaucracy and soliciting recommendations for improvement, Shastri achieved in rescuing the political class from blame for the poor image of government (Mathur and Mathur 2017; Maheshwari 1993; Maheshwari 1972). Time was a stick to beat the district and subaltern bureaucracy with in order to show to the citizenry who was at

fault for the poor affairs of government. The problem of adequately measuring office attendance and monitoring absenteeism and delays in getting to office – things that have direct effect on the management of office time, apparent in the late colonial office manuals by Tottenham, have since become a fecund site for the practice of mediating technologies and the playing out of politics. More recently, biometrics has become a favored technology across government offices to account for presence and monitor absentees. A central plank on which the Prime Minister of India, Narendra Modi's image is produced is of reigning in an unruly bureaucracy. To be sure, in a few months of taking office, he made compulsory biometric attendance of all government staff in the central secretariat in New Delhi (taking this idea from a regional state) and the presentation of that information to both government supervisors and the public (Solanki 2019). The choice of biometrics was not original, but a strategic one. Biometrics with its image of instantaneity, its ability to transcend the messy local (Breckenridge 2014), was seen as a way to appropriately display the control of time, with the impression that as a government resource, time until Modi had been largely left to be squandered away. Nothing gave more heft to Modi's leadership than a show of controlling time, and biometrics gave it an instantaneous public appeal. If Shastri's was an attempt to mediate office time with the intention of rescuing the political class from blame, Modi's attempt at using biometrics to control office time aims to both name the problem and singlehandedly conquer it. The politics now is less about distinction, and more about the need to create an image of discipline and order through the total surveillance of bodies with technology (Mehta 2014).

Colonial and post-colonial attempts at managing time show that at different historical junctures, the mediation of time through documents and other artefacts becomes a resource for furthering diverse political agenda – colonial modernity, rescuing the political class from blame

for government failures or tackling the perceived ills of government in a show of technological authoritarianism. Dashboards continue in this line, but more so than past attempts, dashboards help visualize improvements and more than any prior attempts are public facing. As artefacts, dashboards offer new elements (numbers, graphs, charts) to present the control of time, one that does the work of producing a layer of homogeneity over disparate office work. What also seems to be different from the past is the link between bureaucratic knowledge and timely bureaucratic work. When local records, as Smith (1996) shows us, were the central technology for the knowledge about revenue for administrators, there timely preparation was critical. As I show in other chapters, bureaucratic knowledge is now dissipated across forms, and its link with timely work is tenuous. Dashboards do not help revive that link, neither are they called upon to do so.

A second aspect that dashboards bring is speed. Past attempts have spatialized the temporality of change, assigning to politicians and senior bureaucrats the space of decisions, action and intervention as a space of speediness while depicting bureaucratic offices as spaces of laxity and indefinite procrastination. Dashboards continue this spatial distinction, evident from the premise with which both the dashboards I discuss were brought forth, but add a further temporal dimension to the control of office time – a rapidity in showcasing the results of the material mediation of office time through multiple media, or the "success" of tracking office time. I discuss both these aspects of dashboards as mediating technologies in the section below, to understand how and what techniques dashboards employ, and what effects they give rise to.

Generating Data from Bureaucracy

In this section I look at the ways by which data on the dashboards is generated, to show that the production of data about services ran parallel to the processes that compose the service itself, without much of an overlap. This separation helped in the creation of data about services without

interfering with the regular bureaucracy that ran the services. Crucially, this was achieved by a physical separation between the computerized environment in which data for the dashboard is produced and the regular space of bureaucracy where files pertaining to the application are worked on, as in Figure 4:2 below.

Figure 4:2 - A data collection kiosk versus a clerk's table

(Photos by Nafis Aziz Hasan)

The former was occupied by poorly paid, contractual staff, sitting behind computers in cubicles taking applications from citizens and entering them into the computer. Applications involved large amounts of paper as "supporting documents" to prove one's eligibility for a particular service. These paper documents were stapled along with a print out of a "front sheet" that had an acknowledgement number, bundled together and moved out of the kiosk into the realm of the clerks who then "handle" the file. A copy of the acknowledgement was given to the client at the window. Different aspects of the file- verifying documents, signing on approval sheets, final signature on the service document, and so on, were worked on according to hierarchical levels, but after each "step", "office boys" brought back the files to the computer kiosks to "update" their status on the screens that tracked the application. In this way, multiple types of data were produced, some of which went into the dashboard that was for public viewing, others specific to

the client whose application was under process. But for the clerks and officials involved in working on the files, the subjects of reform, tracking applications did not change their work. They continued to work under the same "pressures" from local politicians and other socially powerful men and women, to prioritize their clients' work, or to approve a service outside the rules (such as giving an income certificate that suppressed income to allow for access to welfare goods). Operators who had worked for several years in the same office, curried a favor from clerks for their own clients, but by and large they seemed to be kept separate from the bureaucratic work of processing applications. I never saw a clerk enter information into the screen herself, some citing inability to use the computers, others pointing out plainly that it was not their job to enter data into the computers, echoing the distinction between manual and office work I point out in the chapter on engineering. The point I am trying to make here is that it did not really matter for the running of the dashboard that the subjects of reform had very little to do with the technologies put in place to usher in that reform. All that was needed was a regular supply of data, which the contracted operators, under supervision of engineers and bureaucrats, were compelled to generate[21]. Dashboards, as a mediating technology, allowed for this easy separation, as the forms of labor needed for its running could be assembled outside formal bureaucracy[22].

[21] Operators worked under harsh conditions. I saw some ugly scenes between bureaucrats and operators, in which they were shouted at rudely in front of clients and threatened. On the flip side, offices depended on them, they were extremely adept at typing, selecting options from drop boxes, finding gaps in the application forms. Many of the operators I met had worked for several years. Some of them had worked in Bangalore's infamous garment factories, where, they told me, conditions were harsher. The operators had also unionized and saw them selves as part of an industrial workforce, participating in their protests and pickets, such as those of the Centre of Indian Trade Union protests in 2018. The point I am making is that they did have some bargaining power even though they were not treated very well in the offices.

[22] At another level, studying dashboards shows the concealed connections between the labor of an army of poorly educated, largely "unskilled" workforce and the benefits reaped by a few politicians through the "image" created by these technologies of reform.

Another piece of evidence to show that dashboards could work without ruffling bureaucracy comes from the kinds of services that were tracked. Even as both dashboards have grown in scope from the time they were initiated, they continued to leave out services that were complicated in any way. A management consultant, part of Kamala's core team, rationalized the exclusion of services –

> The exclusion that was made was: anything that had budgetary implications would not be a tracked service. Because a budgetary implication means dependent on the finance department, not up to the individual department. Functions that need large budgetary allocations are kept out of it. Like requesting for a well to be dug in a village, versus requesting for the maintenance of the well, the latter is a tracked service but not the former.

His remark about not having control on the finance department, suggests a layer of office time concealed from the focus on dashboard tracking, one that is co-produced and dependent upon multiple, heterogeneous temporalities. This "slowness" caused by the need for multi-agency reflection and review, as Du Gay (2017) argues, is fundamentally important to bureaucracy, not something to be dismissed off, or ignored. Kamala, more aware of the density of time enmeshed in bureaucratic work, offers a different view of what it means to rein in time. After a vivid description of the program to track time, she conceded that it was minuscule in comparison to the quantum of problems facing government. Yet, she contended –

> our point was let us *at least* ensure that every application is track-able and we give some dates which may or may not be accurate, but *at least* an expected time line of whatever can be determined"

As one observer has noted, the dashboards have covered public services that lead to "entitlement to documents, and cash and services", but not "public services that are linked to enhancement of human capital (nutrition-food-health-education-secretary) or financial capital (employment-wage-loan-relief)" (Sircar 2012, 25). Yet, as I show below, this does not jeopardize the

dashboards' ability to create effects, as the form of representation (cumulative numbers for instance) conceals these absences.

Any forward momentum

Bureaucrats and consultants were quick to accept the gap between representations of work on the dashboards and what actually conspired in the offices. Yet, they insisted that dashboards offer a different opportunity than that of simply and automatically speeding up bureaucracies. This was an opportunity of indexing improvement, which unlike the logic of reform, was not tethered to a single, linear path of portraying speed. Empirically, this form of improvement is best captured in the phrase "at least" used several times in conversations about dashboards. For instance, Kamala, even while recognizing that there may be a gap between what dashboards represented and what went on, continued to point to incremental value of measuring time, saying, "even if citizens are paying a bribe, at least we can track the time in which they are getting services". Theoretically, this repeated avowal of incremental improvement is similar to Tania Li's "will to improve" (2007), where development experts were driven by a will to do things, even in the face of complexity. Dashboard enthusiasts echo Li's argument about the productivity of failure. Like Li's experts for whom implementing schemes was improvement in and of it self, for senior bureaucrats and their consultants, measuring the work clerks did was a form of improvement in itself.

As I went deeper into the construction of dashboards, I began to see how preference was given to generating data, over dealing with the messy contexts in which this data was produced. This becomes evident in the standards of time developed as a benchmark to measure daily performance. Dashboard makers were not concerned with how much time a service should take, the first step in developing the indicators that the dashboards presented. That decision was left to

other people. Some said that it was the undersecretaries of the department which host the service who decided the standards, which was only sought out as input "information" to get the dashboard up and running. In the words of a consultant –

> the under secretary was the one who defined the timelines. There was a nomination of some undersecretary from each department and he would be the one who would kind of gather the information and be the one who would do the negotiation between the us and the end department…. he was the guy to fill in the document and give it to us. We were never in the business of setting timelines. We were only in the business of measuring adherence to the time line….these timeline were not already something they adhered to…

Another consultant doubted whether much attention was paid in thinking about time lines, but he was not hugely concerned with what departments decided for themselves, as long as there was time information to measure -

> The time committed was bottom-up to the extent any undersecretary would have done (laughs).. and we know how it would have been. Even seasoned and well-meaning bureaucrats like Munish can't get bottom up done. It is what it is, right. So rather sit on judgment, I only meant that do we want to measure ourselves by meeting the timeline. If you wanted to take more time, take more time. It's okay. So its about getting that culture of being measured. You can't measure anything in government. Or, you know, they would only want you to measure what they want you to measure. Measuring something was kind of drastically new. In some months it went missing, because, you know how government functions. But at least the standardized report stayed, which is fairly a good one for us to take a statistic of what's functioning and what's not…

The first consultant went deeper in thinking what would need to be done to measure time accurately–

> In the block office in which you sat, today we don't even no what are roles and responsibilities for each and every official, the set of services what he has to do. If you want the system to work you have to do a time and motion study, basically, of each character, of each service and then map it out and say, if he's going to get 10,000 requests he's going to run out of time for meeting those targets…is someone looking at that from a management perspective…? I am not sure if that was done… we will have to see if any DC or undersecretary has undertaken that

> within his department… How do you define productivity? Productivity is better defined if you have a set of clear things. For example, why is this service requiring ten people to touch that file, you'll not make the system manageable, you need to do continuous process improvements.

Time for services was arbitrarily determined, in many cases much more than would normally be taken for that service by that department. In some cases, department representatives did come back with new timelines after realizing they had over committed and in other cases, departments incorrectly included steps of the service that did not belong to them, overshooting their self-prescribed time. In other words, the business of sorting out what time a service should command was not carefully determined as there was no established way in doing so, but that did not stop the business of measuring and month-on-month comparisons on the dashboard. A third consultant pointed not only to the arbitrary ways in which time standards were determined but also to confusion with how measurement should happen–

> There were so many departments that interpreted the API differently so they were sending wrong data, which gave us a wrong picture. For example, someone had put in an expected timeline of one year, so that they never actually exceed their prescribed timeline…. In other departments, there is an option, which still remains a problem for some departments till date - if the application is pending on a citizen, then basically you should stop counting the timeline, and resume it when the citizen has acted upon it. It should stop showing as a dependency on the department. There is a particular parameter that the departments while sending the information can take off, but some departments don't, because the technical officers [of the department] lack that understanding. In that case it will show more pendency then there actually is. Pending on citizen or when there is a lack of funds in the department itself, these are reasons where the official cannot be held accountable. But they continue to be called out because there is a technical problem, as the data is not sent correctly.

Following Bruno Latour (1987) on the processes of producing and accepting scientific knowledge (in this case indicator knowledge), one could ask what the sources of bureaucratic knowledge about the time a service must take to be completed was? In this case, my informants knew as little as me, and I did not get much help from the departments either, mainly because the

officials who signed off on the standards did not hold that post anymore. Thus, I ventured to look more in the past for some inkling as to how time standards about fairly determinate processes were determined. As I pointed out in the historical section, there was a recommendation for a time and motion study of bureaucracy to determine time for services, but there is no evidence to suggest that it did happen. District manuals and handbooks have some stray comments about time for particular services, for instance, the delivery of welfare services before a certain date every month, but I could not find any concrete information on how time for a service is determined.

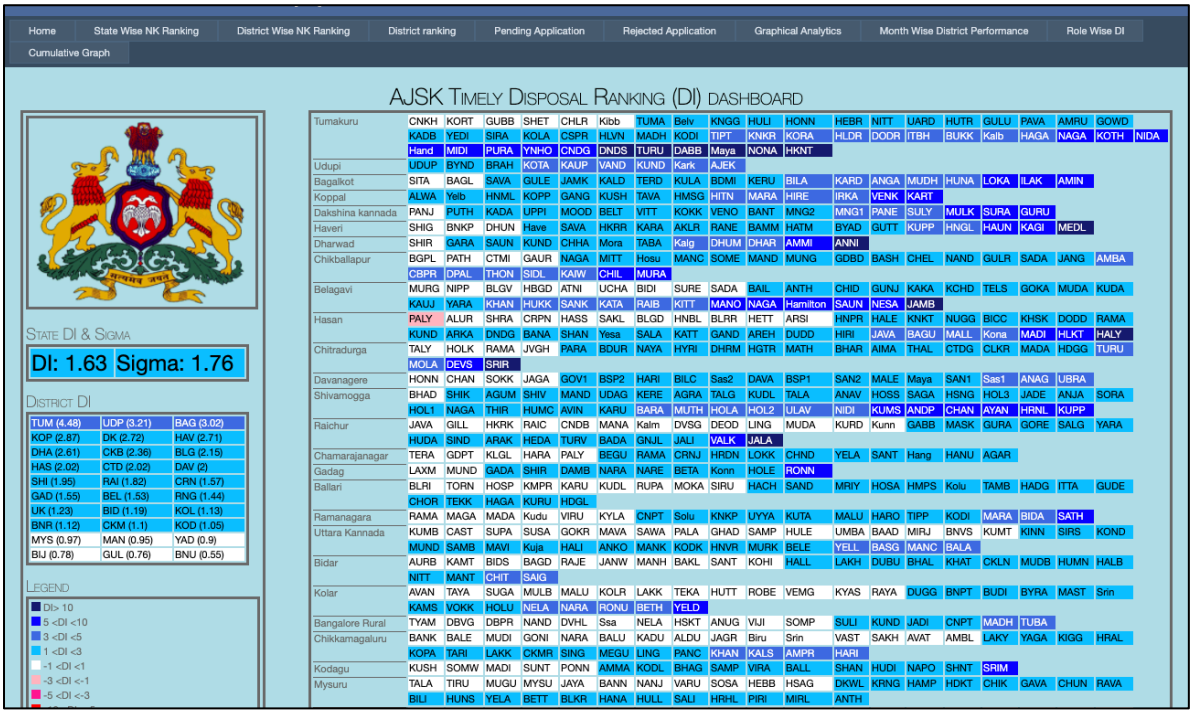
A second instance where the will to measure overtook any deeper analysis of what is being measured and how, is revealed in the ways in which the data was made to work. I am referring here to "comparisons", "rankings" and "scores" that were collectively termed "analytics". Analytics, which worked to show momentum in the delivery of services, was presented in multiple formats to an audience of bureaucrats and politicians at regular intervals. Yet, the interpretation of data was not always consistent with the dashboards own logic, suggesting, once again that it was less a concern with depicting the intervention accurately, as it was with depicting some form of improvement. An example of this is that even though data on time spent is tracked for every instance of a service delivered, the reports carried cumulative numbers in order to show progress and ignore inefficiencies in individual processes, showing as Sally Engle Merry says, "it is in the acts of aggregation and categorization that power comes into play" (Merry 2016, 77). In Figure 4:3 below, the dashboard calculates a "Disposal Index"[23] to rank districts. The DI represent "How many times faster than Prescribed" time for the listed services are the districts performing with negative value for delayed requests and Sigma, the

[23] Information about the District Index was gleaned from http://govtanalytics.karnataka.gov.in/disposalindexnk/District_DI.aspx

deviation from this prescribed time. The DI is calculated and color-coded for districts (shown in the left hand panel) and also for sub-district offices under each district (shown in the main panel) and a "State DI" is shown on the top left. Yet, even for the sub-districts, DI is a calculated ratio by adding up the time of all services without considering each service against its own prescribed time. As such, the dashboard reveals very little about how time taken to deliver services are improving, and yet presents an impression of improvement as a forward momentum.

Figure 4:3 - The 'Disposal Index' generated from data collected in the kiosks

(Photo by Nafis Aziz Hasan)



A second example is comparisons, as a way to determine ranks of the districts (with all its services clubbed together). This is problematic because even when the nature of services offered across districts is the same, the frequency of individual services differs widely across districts and it has got a lot to do not with other institutions, the environment and political economy of the region. For instance, in arid north-east Karnataka, service requests around the buying and selling

of land are very small as compared to the region I did my fieldwork in, which is southern Karnataka. Thus, ranking districts on an indicator such as "number of applications", found in a monthly report, did not accurately represent what was going on in the offices. In these ways, Merry's point about indicators is corroborated:

> The essential quality of an indicator is that it systematizes and simplifies a complex body of knowledge. Indicators typically refer to these bodies of information and procedures by which they are produced but do not reveal the details of those procedures or the compromises necessary to produce a simple number or rank out of the available data.(Merry 2016, 31)

One final aspect about the presentation of indicators on the dashboard concerns understanding the production of real time in a technical sense. Just like the operators feeding data to populate the dashboard, there is another set of technicians, located outside regular bureaucracy who are doing the work of keeping the dashboard running in real time, that is they are doing the work of producing momentum. This involves the work of moving data from the "transaction servers" to the "reporting servers", in order not to meddle with "original data" being generated by the data operators in the various offices. Further, some departments were not using the servers produced by the dashboard, but continued to use their own servers. Transitioning data from these servers onto the dashboard's reporting servers were not instantaneous, but required manual intervention. Another intervention involved the creation of APIs or programs to "expose the data" from the servers onto the dashboards to power the ever-ticking analytics. The APIs were usually automated for the dashboards I studied, because of the constant flow of data, but that does not mean they were without intervention. The code "breaks" as in the case with the consultant telling me about the problems in generating data. The point here is that being in real-time needs the backend work of "synchronicity" (Bruyninckx 2017), which the dashboard in its presentation of efficacy conceals.

Preparing Future Bureaucrats

Analytics circulated among the upper echelons of bureaucracy and the ministers they answered to, including sometimes to the chief minister's office. In this realm, the politics of incrementality gave way to the aim of making metrics and ranks the touchstone of bureaucratic productivity and progress. After all, they had no qualms about pointing out where the trouble with bureaucracy lay. For instance, a senior bureaucrat in a public event had the following to say about the lower level bureaucracy –

> It's not me and my council of ministers who are corrupt, it's that man who is sitting in any of the offices, be it gram panchayat, taluk panchayat, district office, who is corrupt.

Here the dashboard became the playing field of governance, in which bureaucratic subjectivity was being re-modeled for a larger field of competitive relations. No more would a clerk's efficaciousness be limited to the confines of a single office, but would be judged in a broader terrain. Even as the preparation for such a worker was afoot in the present, given all that has been said in the previous sections, this ambition was cautiously guarded as a "hope" and a telos of change was laid out. First, being measured would need to be "internalized" by the departments, a "culture of being measured", a "mind-set" would need to be generated, and the processes of data generation must become "institutionalized", then, a "behavioral change" would come. Dashboards are seen to augment human decision-making and reduce or eliminate the role of humans (Beverungen 2019) The dashboards I analyze in this chapter, however, can be thought of producing a different human-dashboard relationship. Its not so much the elimination of the human, but the human molded in the logic of the dashboard.

There were two ways in which I saw how data in the dashboards was used in the service of producing this bureaucrat of the future. One was a direct intervention by senior bureaucrats

chiding their sub-ordinates to mend their ways or face the ignominy of a sliding rank. For instance, the commissioner of a district who brought up his district's ranking on the dashboard every time they fell, reminded his sub-ordinates that he could "take action" against them if they did not stick to the timelines on the dashboards. Yet, everyone knew that given the rules of bureaucracy he could not do much to hurt them. Even so, the use of the indicators as a "soft law" (Merry 2016, 11) to reign in a recalcitrant bureaucracy was regularly employed. The constant nagging was used as a way to alter practice, in the hope that performance improved as time progressed.

Another, more personalized example of this, which Kamala herself employed, was sending official letters to specific lower-level staff, as a way to make them recognize their faults and make amends. Within a few months of the appearance of the dashboard and growing uncomfortable at the gap between dashboard metrics and practices in the office, Kamala began monitoring delays herself and sending out stern, questioning letters to people in myriad offices across the state, asking for an explanation. One such befuddled addressee far away from the Kamala's office in Bangalore read out the contents of the letter he had received for not meeting the deadline set out for services under his supervision. He was shocked at her accusatory tone and queried the consequences of not responding to her. He was held accountable for his office by Kamala, an official not only many levels up in hierarchy, but also from an entirely different department. Kamala, would later describe these attempts at molding bureaucratic subjectivity as "hits or misses". This particular bureaucrat did not care to respond back to her with an explanation because he was due to retire soon and could not be bothered. But she hoped that her personal initiative to instill a sense of responsibility would elicit change in the future.

A second, less authoritative way to prepare bureaucrats in the image of the dashboard

was by creating an atmosphere of what Rose and Miller call "responsibilization" (Miller and Rose 2008), by which they mean the new forms of governance that call for individuals to take responsibility of their actions. Yet, they say, this is done through the promotion of self-management or "government at a distance". While state agents are not often thought of individuals subject to new forms of governance, the affects that dashboards produced among their users did point to this. One example of this is found in the purpose of the displaying dashboard data in prominent public places, particularly near government offices as seen in the 'Clock' (Figure 4:1). As per the founding document, the purpose of the clock is -

> With the measurement of time growing every minute, the responsibility and expectation of every government official, elected representative and Administration is growing. They need to be aware and sensitised to the growing needs of people and a continuous reminder to serve the citizens of this state. In order to let the concerned officials, elected representatives & Administrators aware of their responsibility and keep them ticking, a clock is proposed to be installed at prominent public locations and Government offices. It is proposed that the clock works like the population clock that keep ticking when Applications are received and disposed. The Idea (sic) is to let everyone know how many people are waiting for Government services to be delivered by the minute (Government of Karnataka 2011)

Another example of this non-authoritative form of molding a new bureaucratic subjectivity was training. Development terms, such as training and "capacity-building" often used as a catch-all phrase to denote some form of lecture based instruction (Eade 2007), are common features in government departments. Karnataka, like other states, has a centralized administrative training center with multiple district training institutes, whose sole job is to organize cross-departmental trainings and publish manual and handbooks for department use. Like the publically visible clock, trainings around the working of time conscious programs and its manifestation in dashboards aimed to modulate "mind sets" and "attitudes", of functionaries who were being measured by the dashboard and its tracking devices. The training was aimed at a specific set of

people, who would then become "tutors" for the rest of their office staff. Even though in practice, the mechanisms I have described in this chapter were set-up to circumvent the work of clerks in order to avoid a real encounter with bureaucracy, trainings were a productive site to frame an image of a bureaucrat yet-to-come. The training modules, handbooks and manuals that followed the appearance of programs and dashboards to track and make bureaucracy speedy, produced a vision of an ideal employee, one that is "time-bound", "process-bound" and "citizen-centric" and asked its trainees to aim for that model. This model of a bureaucrat emerges not only through a didactic one-way process (which largely focused on the right to public service acts and its rules), but through "group activities" in which participants are asked to enact their future selves, quizzes that tested and prepared them for knowledge they will need, and "field visits" to "sample offices" to practice what they have learnt (Prasad 2013a, 32; 2013b, 60). And trainees responded to these demands on them. In a training of about thirty people, some employee welfare presidents, others, office managers from across districts in Karnataka, the following conversation transpired. One participant, who claimed to have been specifically told by the Chief Minister to spread the word of change at the back of the recently launched dashboard, asked the group, "are you happy about the way people look at you?" A resounding no, propelled him further– "do you want to change for the better?" One man from the group took this opportunity to say, "you know sir, my son came and asked me, is government servant an abuse?... someone addressed him as "Oh you son of a government servant"". Another person stood up and said, its not that all of us are bad. Just twenty per cent we know are black sheep the rest eighty per cent are hardworking. The first speaker changed gears to make his main point–

> today if I go and ask clerks in my district offices, how many applications are there, how many have you done in how much time, they have no clue. Because there is no documentation as of now. Let's document it and put it in one single portal, and prove to the world for anybody and everybody to see. That, look, I got

> so many applications and this is what my turnover is, this is my workload and this is what my achievements are.

They all agreed. Getting employees to see that the main problem at hand was an attitudinal, image one, of bureaucrats in the eyes of the citizen, which could be resolved through a presentation of data about the work they do, was a teleos visible in the many public engagements around the emergence of the dashboards. But *how* would this repeated presentation of data bring the change they all desired was not often the matter of concern. Dashboards helped conceptualize a future that was always imminent but not (yet) present.

Conclusion

Analysis of governance reforms, emanating from multiple milestone reform agendas- the New Public Management that began in the UK and exported to India and other countries in the global South, albeit unevenly (Desai and Imrie 1998), or the more recent reform at the turn of the twenty-first century, propelled by information and communication technologies (Bussell 2012, 8), has often ignored socio-technical dynamics of reform, paying attention exclusively to the political goals of reform or evaluating the gaps produced between practices and policies. In this chapter (and the dissertation at large), drawing on STS approaches that investigate artefacts as engendering politics (Winner 1980; Gagliardone 2014; Schnitzler 2013), I reverse that focus, to think about the affordances offered by different technical arrangement for reform. I do not take these affordances to simply mean their usefulness in seeing through pre-determined goals of reform, but rather how reform is conceptually determined in and through the material artifice marshaled to materialize it. Doing so illuminates what meaning reforms take, sometimes differently from their purported goals, and how they work, even as their proponents point to an enervation of their original goals. A focus on the socio-material, points to the highly stratified nature of reforms, one not immediately visible if analysis begins from its avowed goals. What

has been shown about development, (Li 2007), for instance, is also true for administrative reforms. Like development, reforms work even when they fail, dependent as they are on the conceptual framings and interventions of experts. Yet, experts in this case are not outsiders to government (such as the kind Du Gay rallies against), but a new layer of bureaucrats who, like other "entrepreneurial citizens" (Irani 2019), are working in a spirit of transforming the nation-state with "passion". These entrepreneur-bureaucrats are impatient for change and are seeking instant gratification through the relentless presentation of their interventions across all forms of media. They do consult other specialists, but are always in the driving seat, steering and controlling the direction of their projects. They also do cater to their political bosses, but never without a spin of their own. Following the socio-material terrain of governance reforms points to these entrepreneurs and their worlds.

Dashboards are one such socio-material terrain that have emerged on the Indian administrative landscape in response to a reform demand to introduce celerity in Indian bureaucracies. Dashboards are interfaces, and as such perfect connectivity among heterogeneous worlds. Yet, in their composite representation they also make possible a separation between the worlds they connect and the interface through which those worlds are apprehended. Tkacz puts it succinctly–

> The dashboard therefore begins as a separation, but it is a separation that enables an augmentation – of perception and driving. Following Hookway, this double act of separating and augmenting defines the dashboard as an 'interface'. Which is to say that a dashboard is first and foremost a relation (Tkacz 2009, 2).

Tracing how the relations are made possible is the work of illuminating the technical in the dashboard. In this chapter, I point to how data for the dashboards under review are collected, the translation of that data into interpretive knowledge about the working of bureaucracies and the

technical work of synchronization that produces the effects of real-time. Following the technical careers of dashboards reveals why they are technologies of choice for reform-pressed politicians and bureaucrats. I make and detail three inter-connected arguments to support this. First, the production of data for dashboards can happen without meddling in the existing processes of bureaucracy, thus avoiding the messy complexities that constitute practice. Second, the presentation of data on dashboards helps bureaucrats shift the focus from substantive change, to incremental improvement. Even when reforms fail to elicit significant change, bureaucrats point to the displayed data itself as proof of some improvement. In this way, they shift the demands of reform from a singular focus on speed to intermediate temporalities. Third, for senior bureaucrats and politicians the presentation and circulation of data via the dashboards, becomes the means through which a new bureaucratic subjectivity can be imagined. The materiality of the dashboards is used to inculcate a sense of "responsibilization" among lower-level bureaucrats, with the intention that in the future they become as "good" as their measure.

Chapter 5 : Cultivating Probity, Enacting Authority: App Based Orality in Bureaucracy

In August 2018, a forty-eight old man, who goes by the initials KG, became the commissioner of a district in South Karnataka. A few weeks into taking office he introduced a weekly conference call with over 300 of his subordinates, called grptlk (short for group talk) after the name of the mobile phone application (app) that powered these calls. Using a combination of classic leased line telecommunication and the flexibility of control offered by the app, KG used grptlk to speak to his myriad subordinates located in different parts of the district, all at once. Grptlk marked a number of transformations, which were recounted to me on several occasions. The best alternative to making a physical appearance before grptlk, was for the commissioner to have people gather around a large screen in an office room to videoconference with him. But since people were dispersed between field and office and their schedules hardly ever overlapped, these meetings were poorly attended[24]. Grptlk, on the other hand, was on the mobile phone, and all people had to do was to pick up the call in order to join their colleagues in a meeting with the commissioner. Given its ease, the frequency of communication between the commissioner and his sub-ordinates increased. Thus what distinguishes calls on grptlk from other office meetings, was both its form, particularly the mobile audience it could cultivate, and its contents, which I describe as emerging from a particular situation the Commissioner was embroiled in.

Encouraged by a Kannada newspaper describing the launch of grptlk, I urged an ex-colleague, whom I will call Ravi, a "friend" of the Commissioner's to "take me" to him. The first meeting was in his office, late in the evening. We had already waited for two hours, Ravi bitter over the fact that the Commissioner had made us wait for so long, doubtful that he'll come at all; worried about the research methods I had chosen. But soon enough we were seated on a couch in

[24] Thus what distinguishes calls on grptlk from office meetings, is both form (particularly the mobile audience it could cultivate) and content, as I describe below

one of the largest office room I had ever seen. A large distance separated the couch from the Commissioner on which he paced a couple of times in between giving his subordinates orders sometimes on the desk phone, sometimes on his mobile phone set to speaker mode and sometimes face to face. Wedged between Ravi and the wall, I watched his actions - trying out a couple of suit jackets his clerks had brought in, after a judge had chided him for not dressing up like a Commissioner earlier in the day; a clerk setting up an iPad, KG responding to the secret questions like it was a quiz; signing documents and dropping them with a loud thud, into a striking leather briefcase with a gold handle. But most of all, given that he aimed to pursue multiple things at the same time, it was his voice and the multiple registers he spoke in - care, pity, anger, shock, which caught my attention.

After a couple of further visits to his room, he gave me the necessary permissions to conduct fieldwork in the offices of a district and I stopped seeing him, except for bumping into him a couple of times in the corridors of a palatial new office that he and his staff soon moved into. I hadn't been seeing him, but I had been *listening* to him in the months of fieldwork that followed my first visit that late August evening. Grptlk first tottered as a large number of his staff did not did not answer the call KG made every week from the app on his phone, which he, in the initial days called a "behavioral problem". But given his relentless push, numbers rose in a few weeks, and soon he had an audience of 300-400 people every week on the call.

In the very same months that grptlk made a footing, the open secret of KGs unfair appointment as Commissioner was being feverishly discussed in local newspapers and among a network of bureaucrats, politicians and journalists. District Commissioners are appointed in one of the two ways - either recruited directly from the elite national civil services or promoted from the state cadres. KG was of the latter type, having joined the state civil services about two

decades ago and promoted to commissioner in August 2018. What was now coming into view was the fact that he and several others were unfairly given ranks they did not deserve in the state cadres, which led them to be promoted out of turn. The background to the case, as it appeared in the court judgments, pointed out that in the exams conducted by the Karnataka Public Service Commission, KG scores in the interview that followed the written test were "elevated" so that he ended up with a rank, high enough to land him the position of an assistant commissioner, the highest designation in the state cadre. This laid down the conditions for him to become District Commissioner in 2018. After a long and circuitous legal proceeding, the High Court of Karnataka passed a judgment that ordered the demotion of KG and others like him.

Yet, what was surprising to me over the next several months that I interacted with the bureaucrats that KG supervised is their indifference towards this instability of his appointment. A lot of them complained about the work KG gave them, how strict he was and the levels of accountability he expected from them, but rarely did I encounter anyone challenging his authority as Commissioner. The question I asked myself was how was he was able to *maintain* his authority as Commissioner, even as the court's injunction had stripped him of that power, at least in principle. My ethnographic position allowed me to make connections between the two parallel tracks– on one hand, I saw closely KG's voluntary use of voice and technology to make himself visible to his subordinates, albeit in a controlled way as I describe below. On the other hand, I was privy to a public take down of his image, from repeated reports in local newspapers and in a network of people who discussed his career through a combination of rumor and facts. Unlike his subordinates, I began to see these two tracks together. I began to see these calls less as practical ways of getting work done, and more as ways for KG to establish/re-establish his position as "the Commissioner". His involvement in a KPSC scam as it was often referred to, did

not materially effect is position as a Commissioner until the executive acted on the state government's orders, which they had conveniently (and cleverly) stalled until now. Yet, KG was interested in a self-presentation that made his presence felt beyond what was considered routine, as I describe below. Why he wanted to cultivate this personality was open to interpretation and several theories floated around: he had political ambitions and so wanted people to remember him; he was guilty about the unfair means by which he moved up and wanted to make amends by being seen to be doing well; the district he was made Commissioner of was a stronghold of the ruling party, which had propped him in the first place, so he had to come across as doing all he could.

KG's case offers an opportunity to re-think an old problem – separation of person from office and designation, with new tools. Sociologists and anthropologists studying the day-to-day life of bureaucracy have showed, contra Weber's ideal-type that bureaucrats are affected by personal attachments. After all, bureaucracies are embedded within a cultural, political, and economic context. They are not hermetically sealed off from society (Warner and Low 1947). Like scientists, they are expected to carry out their charge with objectivity and political neutrality (Hoag 2011), but it comes as no surprise that bureaucrats make affect-laden decisions (Lea 2008). Less obvious is *how* this separation between person and bureaucrat is achieved, in cases where it is desired, such as the situation KG was mired in. KG's attempt was to separate the thorny elements of his biography from the designation of Commissioner and I argue that grptlk offered him one set of tools to do that. These calls, ranging from 15 to 60 minutes every week with a captive audience, gave KG an opportunity to cultivate himself as "the Commissioner", an authoritative identity that was being diminished by the scandal he was embroiled in. I focus on three aspects of KGs weekly calls to highlight the discursive strategies employed by him to

bolster his image as commissioner, as he spoke with his audience. First, being on top of things by demanding an informational transparency from his audience. KG focused on "why" questions that the documentary apparatus was not set-up to answer clearly - why were records not updated? Notices not sent? Data not entered? The very reason, KG had noted to a newspaper journalist, why grptlk was installed in the first place, was to resuscitate information that should have distilled up from multiple sub-offices that constituted his district administration, but was stalled in the quagmire of paper. In this process, he followed a narrative arc that went from an expression of authorial voice that reprimanded his audience for falling short of his expectations, to empathy for the work they did, to finally encouragement for the future work they will do. A second discursive aspect was his commentary on the ethical responsibility of bureaucrats and the government, which he did by discussing cases of departmental corruption. KG did not out rightly criticize entrenched habits of bribe taking, but instead focused on moderating excessive desires in the name of being "human". He urged his staff to behave more like human beings and not nefarious bureaucrats without a heart. A third element was showcasing his views on a range of social and environmental issues – from de-silting lakes, to cutting down eucalyptus trees that harmed the fertility of soil, which did the work of presenting him as a visionary leader, someone who looked beyond staid processes of governance, to imagine a better world.

One track of scholarship on bureaucracy, which does deal with the question of what bureaucrats do to maintain their positions, is that of organizational survival. Drawing insights from his study of the organizational structure of the Tennessee Valley Authority, the sociologist Philip Selznick was the first to locate bureaucratic power not in the "formal" goals of bureaucratic organizations, but in the informal relationships that bureaucrats create and depend on to centralize control. He critiqued Weber for missing out on this aspect of bureaucracy:

> what Weber seems to have only partly understood is that the dynamics of the administrative apparatus itself created new personal influences - those of the administrators themselves seeking their own ends and engaging, as newly powerful participants, in power relationships (Selznick 1943, 50).

Selznick found that Weber's hierarchy of designations was in fact a hierarchy of "values', where, more than difference in paychecks, officials sought to differentiate themselves from their sub-ordinates by the kinds of work they did. He concluded, "they are always men who *want* to be officials" (emphasis in original, 52). In trying to become officials, bureaucrats become less concerned with mediating a form of ethical life (Weber's conducts of ethical life as the organizing principle of bureaucracy (Du Gay 2008)) and more interested in the "maintenance" (Selznick 1943, 52) of their positions as a source of social prestige and power. Years later, Britan and Cohen allude to this principle of bureaucratic action more directly, when they said, "the most basic goal of any bureaucrat or bureaucracy is not rational efficiency, but individual and organizational survival" (Britan and Cohen 1980, 11). KGs attempts at producing himself as an official, after his takedown by the court judgment can be seen as just this sort of repair and maintenance of bureaucratic position that Selznick identified as the essence of action in bureaucratic organizations. These theorizations of power differs from more external facing ones, such as Josiah Heyman's attempt at theorizing unlimited power in relation to clients as bestowed from the outside and proposing an anthropological agenda that studies the conceptual resources through which bureaucrats practice that power, which he terms "thought-work" (Heyman 2004).

Organizational survival is not simply the holding on to a position, but the production of power as a form of value. To be a bureaucrat is to differentiate oneself not just from clients but also internally, from subordinates and even peers, by deploying multiple strategies. These strategies as both Michael Herzfeld and Matthew Hull show are communicative ones. Drawing

on a rich scholarship in anthropology that points to the symbolic roots of power in modern, rational institutions (Cohen 1976; Kapferer 1988), Herzfeld complicates Selznick's distinction between the formal and informal, suggesting that bureaucrats produce power by invoking bureaucracy's formalism as symbolic power:

> A bureaucrat's ability to conjure up the image of rational devotion to public service may mask calculation of a more self-interested kind. The rhetoric of predictive formalism is the key here; the routinization of expressive form plays a vital role in the consolidation of power (Herzfeld 1993, 19).

Matthew Hull's description of the inscriptional work that bureaucrats do is a recent enunciation of this principle, through very different means. Hull shows us that bureaucrats create the condition of their survival through inscriptional practices, such that power is located "neither the agency of the individual nor the organization as given" (Hull 2012b, 129–30), but in a Latourian assemblage of people and things connected relationally. Inscriptions on and through the bureaucratic file become a central technology through which a bureaucratic collectivity is maintained that offers individual survival.

That bureaucrats are people with hopes and desires is also taken up in scholarship on bureaucratic states that take affect seriously. For instance, Begoña Aretxaga writes that the state becomes a social subject through "bodily excitations and sensualities, powerful identifications, and unconscious desire of state officials" (Aretxaga 2003, 395). The effects of state affects for Aretxaga are in the continued relevance of state practices in response to those positing the collapse of the state in the age of globalization. Others have also pointed to the "affective charge of the state" (Laszczkowski and Reeves 2015) in producing an idea, feeling, emotion, among its subjects. But, state affects can be also be produced by and directed internally, among bureaucrats and their staff. For instance, (Mathur 2016)finds that in addition to the "fear of reprimand"… "as well as a cultivated awe for state hierarchy"… "what was much more powerful

was a difficult-to-articulate affordance at play" (136)… "an affective charge to all of these practices, encounters, and moments", an affect that she locates in the feeling of "being *sarkari*" (133). In a similar fashion, what I saw KG do on these calls was create an affect of being the District Commissioner. Senior bureaucrats carry affect by virtue of their position, but what grptlk did was provide a platform for the grounding of this affect, for its repeated performance that had the effect, I argue, of distancing him from the messy reality of his appointment.

That KG used the form of voice to produce these affects opens up inquiry into the relationship between voice and bureaucratic power. As a culturally specific practice (Weidman 2014), a legitimate analytical category to interrogate social space (Kunreuther 2014), voice is sometimes used to describe how citizens petition the state, for instance, (Hirschman 1972; Hossain 2010), but hardly ever to describe the practice of state actors themselves (but see (Bernstein 2017)). In this chapter, I think through Selzinck's theory of organizational survival in KGs deployment of "voicing" - as an embedded practice shaped by culturally and historically specific social relations (Weidman 2014), alongside Hull's theory of materiality in the specific mediating technologies that allowed for the mediation of voice itself. While vocal exchanges may appear as direct and immediate, they in fact require multiple forms of mediation. To understand KG's vocal interventions through grptlk requires an understanding of the emergence and assembling of the specific material technologies and the conditions within which these technologies became available to public bureaucrats. Bringing over 300 people on a single call points to a technical ingenuity that was part of a larger circulatory field of ideas and strategies as also to the unpredictable and contingent nature of technologies (Larkin 2008). I aim to reveal the techno-social connections between people: entrepreneurs, politicians and bureaucrats; technologies: databases, leased lines, mobile apps, their economies of sale and circulation; and a

growing (re) emergence of voice based communication marking for some a market for new voice products.

The first section of the chapter delves into how KG came to inhabit the situation I found him in and the discursive strategies he employs on grptlk with this audience. This is based on reading of the court documents, conversations with people who formed the grapevine discussing his career and access to sixteen weeks of recorded grptlk calls. The second section looks at the materiality of grptlk as a way to think about how the affect that KG produces on these calls is mediated by specific relations between people and technologies. The second section is based on insights garnered from spending time over a period of three months with the representatives of *Telemax*, the company that built grptlk.

Cultivating Probity on the Phone

One afternoon in August 2018 I got a call from Ravi. He quickly explained- "KG has just become the District Commissioner of Bangalore Rural… this is a golden opportunity for us to meet him and talk about your fieldwork. When shall we meet him? Let's do it soon, since he won't last long with all that's going on with him". What was going on with him? In the period that KG was the Commissioner, two dates on a calendar, I became more concerned with the question of what was going on with him. As I listened week after week to the spectacle of his voice, an oral narrative developed through a combination of fact and rumor.

Outside the celebrated track of KG becoming Commissioner and instituting technology-mediated measures to display his skills at governance, ran a parallel narrative of the means through which he became Commissioner. This narrative appeared to me in bits and pieces through newspaper reports, court judgments and comments made by Ravi and others whom I met outside the bureaucracy. The discourse of corruption takes the form of a narrative point out Muir

and Gupta (2018) in their review of anthropological literature on corruption. The discourse around KGs appointment and accession was certainly bolstered through an oral narrative. Yet in this discourse, corruption, a term sparingly used in the court documents, juggled with other more animated phrases like "irregularities", "nepotisim", "casteism" and "scam". KGs subordinates and the social network of bureaucrats and journalists in which his case was discussed, hardly ever referred to his situation as corruption. KGs case was distinguished from everyday corruption as described later in this chapter, the more mundane, transactional necessity that equally pervaded internal relations within bureaucracy as it did relations between bureaucrats and clients. Part of the reason why it was not "simply" corruption has to do with the cultural value of a government job in India. And it all begins with taking an exam.

The Case of the Exam

At the heart of the controversy is an exam conducted by the Karnataka Public Service Commission (KPSC) meant for recruitment into the state civil services. In 1998, KG took an exam along with another "85598" people, to recruit for "415" government jobs (High Court of Karnataka 2016, 135), and ranked among the top few hundreds in the written exam and personal interview that followed in 2001. He joined office as Assistant Commissioner in 2006, from where, ten years later he was promoted into the national civil services cadre in August 2018 as a district commissioner. But even before his recruitment in 2001, complaints about "irregularities" in the exam began filling the courts, which explains the gap between his selection and recruitment. The selection process, which has the veneer of a logical flow from examination to evaluation to recruitment, was in fact far from straightforward. Apart from the temporal disjunction between stages (seven year gap between KGs selection and appointment in 2006; it took eleven years for the first investigative report to be filed after the complaints were launched

in 2000), this case defied a commonplace understand of exam stages, as different aspects of the exam were nullified by the court judgment. Further, while exams are meant to categorize and segregate, in which people who "fail" have no voice or means to re-enter the structure of the competition, it is quite the opposite in this case. Here the people, who have been left out, are central protagonists of the case. The first petitioners were the ones who did not get the rank they claimed they deserved. A group of examinees who had taken the exam but had failed to make it to the next level, claimed in a series of petitions to the high court "serious irregularities in evaluation of answer scripts in regard to the main exam and sought a direction for re-valuation of their answer scripts in compulsory subjects and for other reliefs" (ibid, 138). What started as a grievance of a few individuals, led to a deeper investigation of the procedures through which the KPSC conducted the exam and awarded ranks, involving a *suo motu* case against the KPSC for multi-year discrepancies in conducting exams, court appointed committees and external exam reviewers and finally led to the high court proclaiming –

> the procedure followed by the KPSC in preparing the list of candidates who are admitted to the written examination and the list of candidates who are called for the personality tests in 1998, 1999 and 2004 for the post of Gazetted Probationers (Group A and B Posts) is unconstitutional, contrary to the Rules and the Government Orders (ibid, 505).

Not everyone you took the exam was affected by this, instead the High Court asked for a segregation of "tainted/ineligible candidates" from the rest, to whom this order would apply. The High Court found that certain candidates were favored over others from the reserved category of schedule castes. KG was one of those given undue preference. In 2014, a new list was published after fresh moderation and interview, "the cadre of some of the serving Group ' A' officials [was] downgraded to group 'B,' while the rank of some the officials went up". KG was among

those slated to be demoted. From the language of ascension – "promotion", "elevation", talk soon descended into that of "demotion".

Between the high court order in July 2016 and the start of my fieldwork in September 2018, political parties at the helm had changed several times, each attempting different strategies to execute or delay execution of the court order. For Ravi and others getting a ringside view of the case, this was a cat and mouse chase, in which they drew pleasure from second guessing what each side – the KPSC and political parties on one side and the Courts on the other, would do next. Through the grapevine that Ravi was part of, consisting mostly of journalists, speculative accounts of KGs affinity to an old political party at the helm of the state, was routinely discussed.

When I arrived at KGs office the morning after our first meeting to meet the "consultants" he had offered to introduce me to he was not in his office. I learnt an hour later through a mobile call to a journalist friend that KG had to "urgently" accompany the Chief Minister of Karnataka for a "*janta darshan*"[25] at the Chief Minister's residence. The Chief Minister had only a few months ago taken up office after a bitter, vitriolic battle with his opponents, viewed all over the country with an admixture of shock and entertainment. KG was going to accompany him every month for this public meeting. This affiliation between the chief minister and KG reappeared many times as a way to explain what was going on with him. Divergent claims were made. KG was supposedly a family member of the political party and therefore had been given a top berth in the exam so that the political party could strengthen its political cadres in the district. Another version had it that he was not exactly a family member but a member of the community – the landed, dominant caste of *gowdas*, and furthering the

[25] This would translate literally into paying obeisance to common people since *darshan* is most often used in the context of a deity, but here translates to a chief minister's oral public meeting with common people mediated by his officials.

career of caste members was a common trend among political parties. Why KG was given preference over other members of the same community was explained by pointing to his abilities – his grades in the exam were not too low, so he did not need "too much" elevation or that with a prior degree in agricultural sciences he was more competent for the job than the rest. But these claims were not sustained by a description of how exactly these relations of affinity between KG and the political family translated into him securing a high rank in the exam. How was the chairperson of the KPSC, or the members who set the question papers, or the examiners who evaluated the exam, roped into achieving what the political family so desired?

KG himself did not directly engage with these claims on the calls or in his private conversations with Ravi and his friends. His own responses as relayed to me by Ravi, to his enfolding situation were in the form of an exit strategy. To avoid the ignominy of a demotion, he focused his attention on opportunities outside government, leveraging in some sense on the work experience he had accumulated inside government. One such was to build an intermediary company between rich land developers who needed myriad pieces of paperwork with the revenue bureaucracy. His idea was to use technology, to provide these services at home, such that clients who now depended on a set of brokers for different pieces of their work, could be serviced directly by one person. In other words, one of his plans, if he was ever demoted was to formalize the informal intermediation that clients' relations with public bureaucracies is shown to rest on (Witsoe 2012). Another of his plans was to join an unnamed technology company (which Ravi surmised to be the company that owned 'grptlk' based on the fact that KG mentioned their present involvement with him) as a director or president, to market their products inside bureaucracy. Here he invoked his social network inside bureaucracy, a network constituted as much as by caste affiliations, as by the collegiality among recruits of the same

"batch", emerging out of group events such as work trainings in the initial years of employment.

The grapevine was rife with speculation about where he might be headed. One that I heard for a while was the bizarre situation that he would be made the chairman of the KPSC, the very organization that had put him on the pedestal that he was on through the many "irregularities" that the judgment revealed. It was argued that because the position of the chairman of a state public commission is a constitutional one, the opponents of the political family backing KG, could not displace him for the entire tenure of six years. Another claim was that since his larger aim was to become a politician, he would soon join that political party that had "elevated" him.

In a context when multiple interpretations of the details found in the court judgment were possible, strategies to stymie any progress in actually demoting the bureaucrats named in the order, and the rich, speculative discourse surrounding these events, KGs voice mediations with their consistent, repeated and enforced clarity, was one symbolic strategy aimed to cut through the grid of rumor and ambiguity and produce a narrative of leadership.

Being Commissioner on the phone

At the same time that speculative accounts of multiple interpretations of the court documents were being circulated, grptlk' as a weekly event in which anywhere between 300 to 400 of KG's subordinates listened to his voice, was being firmly established as a communicative channel. KG's voice mediations were rendering a particular idea of "the Commissioner" as "good" and "strict", terms that were used to describe him in the months following the launch of grptlk. As Mathur (2016) describes, spatial metaphors are commonly used to describe the position of people in the government. As the head of a district, and therefore at the "top", the figure of the Commissioner is seen to be at distance from what happens "below". From the Commissioner's

point of view, governance works through mediations, either through the mediation of people like village accountants who are the "eyes and ears of the district collector" (Potter 1964) or the mediation of documents (Smith 1996). This is also because, unlike lower level functionaries like the village accountants who may remain in that position for most of their careers, the Commissioner's posting is a usually a short lived one. As the first posting of civil servants who join the elite IAS, it is seen as a sort of training ground from where they are eventually moved to more cushy positions most often in metropolitan cities. On the other hand, civil servants, who are part of the state cadre and eventually are promoted to the elite IAS, usually become Commissioner towards the end of their retirement age[26]. Yet a more important factor for the short tenure of Commissioners is the looming threat of "transfers". A transfer carries a negative connotation, usually the move out of a government employee from a desirable position to another less desirable one on the whims of a political entity (Bussell 2012). That a Commissioner's tenure is usually short-lived has become part of public lore. All through my fieldwork Ravi constantly urged me to "finish collecting data soon" before KG is "moved out". The ephemeral nature of the position is perceptively felt in the official environs of a senior bureaucrat. I felt it every time I entered a senior officer's room. On the back wall hung a large wooden board (in some cases it was glass on which erasable sketch pens were used) with the names and tenure of their predecessors (see Figure 5:1). Present commissioners could be on that list any time, with a new person in the chair.

[26] In this KG is an exception, since he still has got a chunk of his career left. This is as a result of him being "elevated" out of turn.

Figure 5:1 - KG's desk with the list of previous Commissioners on the whiteboards

(Photo by Nafis Aziz Hasan)

The period between being on the chair and being named on a whiteboard is marked by uncertainty[27]. In such an atmosphere of uncertainty, Commissioners rely more on mediation to supervise governance than direct involvement. In the months that I spent visiting offices in the district headed by KG, references were made to prior Commissioners from other parts of the

[27] For an outsider like me there was very little tangible material to hang that uncertainty on. There were no documents, letters, rules or books that determined the contours of that uncertainty. There were just voices. Voices of people I met who knew other officers speculating change, voices of people lower down the chain waiting for their bosses to be changed; voices of aggrieved clients waiting for a decision only to hear that the boss has been replaced. Officers in-turn challenged pressures through the register of voice. Take this comment by a leading Kannada writer on how he came to write *Bara*, a story about a do-good, bleeding heart liberal commissioner, torn between contesting pressures -

> Actually, the story was inspired by an IAS officer. When I was visiting him in Gulbarga, a minister phoned him to ask him to stop pursuing an illegal merchant. And the officer said 'There is some disturbance with the connection. The calls are not coming through properly, Sir. Can you please send me a note?' And, he then told me that the minister would not send him a note. I greatly admired his resistance (Ananthamurthy 2016).

state, but in impersonal ways. Commissioners were remembered for the processes they introduced, for their biases towards certain section of the people, for the powers they held, and also for their lost powers, as compared to the colonial period, but never through their personal traits. And most staff in these offices had never personally met of heard Commissioners they had worked under.

In contrast, beyond the possibility of technologically backed vocal mediations disrupting this characteristic distance between levels of government, which I discuss in more detail below, grptlk was creating the means to render KG as "the" Commissioner. I argue that beyond the aims of informational transparency for which grptlk was ostensibly set up, its more subtle ambition was to foreground the elements of his leadership week-on-week: force, care, empathy, ethical purpose, moderation. Among his audience, KG began getting associated with a particular style of commissioning, described through adjectives such as "strict", "honest", "clear". I am not suggesting that grptlk offered an opportunity at redemption, but rather that it allowed for a distraction, an alternate narrative of what being Commissioner could mean, different from the one muddled in the politics of recruitment. Vocal mediations, undergirded by mixed technologies, offered a new symbolic apparatus for the exercise of authoritative power. By erasing any mention of KGs biography from these calls, the focus was squarely on his stewardship, on sorting things out, on being productive within bureaucratically approved ethical limits. In effect, the authoritative power of the Commissioner was being reproduced through a symbolism of immediacy made possible by the deployment of digital technologies.

I focus on three aspects of his weekly calls to highlight the discursive strategies employed to build KGs reputation. First, the repeated evocation of the powers bestowed in his designation, worked as a tactic to remind his audience who he was and what he could do. I never came across

an instance where he actually carried out his threats, but the invocation of what he termed "initiate action" left its impact on his listeners, apparent from their affective responses. That he began each call with an assertive "*Ellaguru Namaskara, naan* KG DC *mātanādtini*" (Hello everyone, I am DC KG speaking), even when they all knew it was him, was a way to set the conditions for what was to follow from there. The repeated invocation of his designation allowed him to employ a wide array of discursive strategies to elicit the reactions he desired. Having reminded his audience his position on the "top" of the district hierarchy, he went on to reproach them for falling behind on multiple arenas of district-wise ranking that attempts at administrative reform under the 'good governance' agenda had brought forth (the subject of chapter 2). Here is one such example of a mobile app based crop survey that was supposed to be conducted by his sub-district offices, but in which they were ranked 28th out of 30 districts.

> Crop survey training has been done on yesterday and from Sunday the mobile app has been downloaded and activated…. For Tahsildars and PRs….Interestingly PRs have been selected by VAs. If you see the progress, we have 6%, we are in 28th position in the state. 30th is Kodagu, 29th is Udipi, 28th is Bangalore rural. Bangalore Urban is very high compared to us. In kodagu and udipi there were floods, crop losses, life losses, disasters, so they had problems. By God's grace nothing happened in our district. Even then our VAs have not taken this seriously. They have 6% disposals. Even our Tahsildars have taken this casually. This is a warning to all of you. By tomorrow evening if you don't make it 50%, " I have powers to suspend Tahsildars. Because, in 2007 in Mangalore, Poonuraju has suspended one working Tahsildar. *Invariably, mercilessly, I will send all Tahsildars home… Subsequently I will initiate action against RIs, VAs and PRs*. Tahsildars basic responsibility is crop updation, and making Khathe [land records updation]… If you are not in a position to extract work from your subordinates, there is no meaning in continuing in office. I am coming to all four talukas, tomorrow. I will check, who is not working. *Invariably* either VA or PR, will be suspended… I cannot suspend PRs, they are private residents. Those who recommended them for the post, I will throw those VAs and Tahsildars… *all of you will go home tomorrow*. On that welcome day, I said that I will be smiling and be soft, but I also mentioned that my pen is not soft. You are making the situation like that. Raichur has done 97% in one week! But here 6%... (my emphasis in italics to point out KGs use of English).

There are multiple aspects to this diatribe, which point to the production of the "powers" of the designation. When he compares his district to the rest, he makes the point that he is in-charge, and more importantly is taking responsibility for how his district fares in this public competition of ranks. Then the use of the possessive pronoun "our" (*namma*) to refer to specific designations, collectivizes the bureaucracy in ways that makes it common responsibility and makes it an internal problem to be collectively solved. A third is his invocation of power in the statement "I have powers to suspend Tahsildars" as a direct attempt at image building. This is a significant statement because, as one audience member later told me, that district commissioners have really very little powers in carrying out punitive action against erring employees[28]. The powers of suspension (that is temporary removal from office without pay) and dismissal (permanent removal from office) largely lie with designations superior to the district commissioner. Displaying whatever little control he had on the career of his subordinates shows not so much desperation but a verbal recognition, reminding his audience the characteristics of a Commissioner. Interestingly, he usually code switched to English from Kannada when making these threats. A few minutes after this outburst, KG's tone becomes more desperate than threatening – "all you VAs if you have any problems, didn't I give you my whatsapp or sms number to text me? But no one did!". Seizing this opportunity, a VA begins to placate KG by saying that despite the unreliability of the PRs, the contractual staff hired to do the surveying, and poor Internet connections that prevent easy access to the mobile app, they will have it done by the following Wednesday. After another few minutes KGs became encouraging, almost sympathetic, responding to the VA who had tried to placate him – "since the VA association general secretary has said this. I respect his words. He'll keep his words, I know". A similar

[28] This changes during special circumstances such as elections when new rules and powers apply, which I was privy to during the national assembly elections in 2019. But in most "normal" cases the Commissioner has limited powers related to dismissals.

narrative pattern, an expression of authorial voice followed by empathy and encouragement, appeared several times during my observations, particularly on work that was measureable and for which KG aimed to improve his district's rank.

A second discursive element of these calls, markedly different from what is described above, was KGs views on a bureaucratic ethos, which he expressed through narrating instances of departmental corruption. Unlike KGs involvement in the case described above which had a very public narrative, sensational within certain circles, corruption in the department was a more humdrum affair. Without my directly soliciting information on these practices, I was often told that corruption permeated all aspects of the social life of government employees from their recruitment to even drawing pensions after they retired. Drawing such an arc of corruption usually took the form of a "self-recrimination"(Muir and Gupta 2018, 8), to explain away the speaker's own necessity to take bribes in order to prevent any sort of disruption to their daily routines. People in the long chain of bureaucratic hierarchy saw themselves as both perpetrators and victims of corrupt practices, one necessarily tied with the other. In the course of the year, I spent amidst the staff of the revenue department I came across multiple examples of corruption charges initiated by aggrieved clients. But even as these cases went on, sometimes for years, staff spoke about them as processes they had to comply with, which had derailed their routine, but not as events that were out of the ordinary. With corruption and its consequences made so mundane in the daily life of bureaucracy that it barely occasioned surprise, hearing KG make a reference to specific cases of corruption and then offering a sort of critique, was perplexing. But his critique aimed not to out rightly mark corrupt practices as a total violation of norms, but instead to caution his audience against excessive indulgence and offer a call for moderation. KG only focused on extreme cases in which demands from bribe had gone way beyond what may have

been established practices. Even though corruption was at every level of hierarchy, he only ever talked about cases from the "field", where they seemed to be more discretion in demanding bribes. In an example of a land surveyor who had demanded for a bribe of twenty thousand rupees for a sketch of a plot, which should have otherwise cost only a few hundred rupees, KG said -

> A surveyor went to do a survey sketch... The applicant is a heart and kidney patient… he may die today or tomorrow. The surveyor has demanded twenty thousand rupees, and has already taken five thousand. This means that the surveyor's humanity is mostly dead. Between human being and other species there is only one difference, which is, *man has cognitive powers*, meaning *he has thinking capacity*. Between artificial intelligence and us, if there is no cognitive power and emotional power, then there is no difference between robots and us. Robots will be better. This is the only difference. If I get a complaint one more time, *I'll dismiss. I'll suspend that type of surveyors* (my emphasis in italics to point out KGs use of English).

In another example without specifying the details of the case, he pointed to a recent unearthing of a corruption nexus between a bunch of land surveyors and brokers to extract bribes from clients. He said that he got to know about this case, as one surveyor was "trapped" and this showed how "the system is bad". He concluded by asking surveyors on the call to "stop harassing people". In both these examples, KGs comments seem to stand somewhere between an open and complete disapproval of corruption and any form of tacit acceptance. He seems to be asking his audience to watch out, to draw some boundaries, either institutional ones (don't engage with brokers in corrupt practices) or ethical ones (think of the person's life situation before you proceed to extract bribes). Given that he was embroiled in a high profile case of violation himself, his calls for moderation may seem ironical. But that was not how his audience perceived it. In my private conversation with his staff he was described as being both "strict but caring", which I believe was an accurate representation of his views on corruption. People sensed

that as their Commissioner, he looked out for their best interests, even if he threatened to "take action" against them. Thus folded within his own attempts at transparency-making, was a realistic understanding of how organizational life proceeds, unlike the transparency-opacity dyad that bureaucratic reforms under the agenda of "good governance" has imagined. KGs conception of bureaucracy was not one in which corruption could or even should be eradicated, but neither could bureaucracy's ethical purpose of serving a diverse audience be done away with. Unlike, promoters of "post-bureaucratic" life (Du Gay 2000), who argue that bureaucracy should be eradicated because of its inefficiencies, KGs vocal mediations offered a workable, middle path, getting things back on track without excessively changing entrenched practices. Many times he reminded his listeners – "whatever we have done is history. Let's focus on what we have to do in the future". This is a kind of motif for his approach at being Commissioner, a kind of reminder to himself that he can undo the past by focusing on the future; a veiled reference to his ongoing predicament.

A third element of his discursive strategy was articulating a vision for society and the government's role in it. If his views on corruption made him come across as a practical strategist, more interested in the nuts and bolts of governance and its upkeep, than anything more spectacular, his views on a range of social and environmental issues – from de-silting lakes, to cutting down eucalyptus trees, did the work of presenting him as a visionary leader, someone who looked beyond staid processes of governance, to imagine a better world. Commentary about these interventions was not in a programmatic language with specific tasks or deadlines, but more in the language of participation for a common cause. Here he led by example. He told his audience that he toured the farms and gardens of his district every morning at 6AM to see if things were going well and if there were no hurdles to the bountiful production of vegetables in

his district. A pet project that he spoke about several times was "de-silting" lakes. De-silting, I learnt from conversations with members of his audience, was a process by which the lakebed is worked on with machines to remove excessive silt that comes in with the water. It is supposed to increase the capacity of the lake to hold water[29]. As I gleaned from hearing him and also from reports in newspapers, KG had taken de-silting up on a war footing and had worked hard convincing his subordinates to join him. Those who did were praised on his calls -

> I want to congratulate Deputy Tahsildar Balkrishna, for convincing Shantakumar to start the de-silting of Devrahalli lake. Krishna Byre Gowda, the district in-charge minister will inaugurate that lake. Balakrishna shows us how a small effort from a single person can result in a big thing. Similarly, Maheshchari our Devanhalli village accountant took responsibility and convinced Chetan Kumar to de-silt a 20-acre lake. All our deputy tahsildars, tahsildars and village accountants, you are not just humans…you are all forces. Others, just try for one week to convince people to de-silt lakes. If its possible with Balakrishna and Mahesh, then its possible with all of us. Maruthi, our Nelamangala village accountant, worked very hard for the Begur lake. Like that, please all village accountants, revenue inspectors and deputy tahsildars, try this. Its a right time to de-silt lakes. Yesterday, I was at a village from 6:30AM to 10:30AM and oversaw the collection of over ten lakh rupees. Today I logged into my Facebook account and wrote about this and how everyone in the village cooperated for this work. All of us, lets work in a progressive way for de-silting. Send me updates on Whatsapp about what you all are doing, I will also join, let's work together.

Another example was with eucalyptus trees. Here again he pursued this in the service of a greater common good. An "initiative" that was not mandatory but added another element to his profile, as one dedicated to causes beyond the work of the office. But rather than in a spirit of cooperation, here he empowered his sub-ordinates to deploy threat to prevent farmers from planting eucalyptus trees.

> All village accountants and revenue inspectors, please make farmers understand that eucalyptus trees should not be grown, because the consume a lot of water because of which the water level goes down. I am taking the initiative from Kundanagar and removing eucalyptus from 10 acres. If farmers are not listening, then till them you will mention their land as "barren land" in their records. Also tell them that if land is not cultivated for three years it will become government land. You tell them that their land will become a wasteland.

[29] De-silting had mixed reactions in the popular media. Some experts were for it, others not.

That these attempts at de-silting lakes and having land owners remove eucalyptus trees, added to his reputation as commissioner was apparent in the praise bestowed on him after he was transferred to a different post. What was celebrated was not the impact of his intentions, but the intention itself, and grptlk offered the platform for airing these intentions.

Assembling technologies for voice – the "aural materiality" of voice apps and mobile phones

What gives KGs voice this quality of being a mediator? As scholars of voice have shown paying attention to voice as a form of communication includes understanding the technologies that mediate it (Kunreuther 2014; Weidman 2014). Mediating KGs voice was grptlk, promoted by its makers as an "audio conferencing app", "a simple to use, and incredibly efficient group calling solution that allows you to host large audio conferences"[30]. As an app it offered "locative" possibilities that generated a new form of communication and "sociality, places, and publics through the affordances and practices associated with mobile artefacts" (Gerlitz et al. 2019) . But grptlk offered locative possibilities that were different from those usually described by mobile media scholars. Here was not the collectivity engendered by the simultaneous use of the app from myriad locations and at multiple points in time, but the possibility of corralling multiple people in myriad locations into an audience any time. Grptlk made communication mobile not by the simultaneous download and use of the app by many people, but by the powers to connect to multiple people through KGs use of the app. Powering the app was a technological artifice, consisting of the re-configuration of older technology of telephony with new digital media of platform and apps, developed by a company, which I call *Telemax*, specializing in voice based equipment for Indian and global organizations. *Telemax* bought a large number of leased lines from private telecom operators, bundled them into a package that allowed a caller to make a

[30] see website - https://www.grptalk.com/About-Us

single call to over a thousand people at the same time and connected one end to a database that could track time stamped information about the call. The web and mobile interface was used to manage calls through which the host could track prior calls, add and delete people from current call lists, download saved audio files of prior calls and monitor call attendance. One specific feature of grptlk, which the commissioner used to his advantage, were the differentiated rights given to users and the host. As the host, KG could control who spoke on the calls, for what duration and in which sequence. All participants would have to do would be to press zero on their phones to speak. KG used this to ask specific questions to people without interference from others.

Yet, it is not simply that grptlk's opportune appearance can explain the shape it gave to KGs career as Commissioner. Grptlk's emergence must be located in a broader array of connections and possibilities. How grptlk came to become the medium for KG to undertake his image-making mission, can be located in the techno-social relations among people: entrepreneurs, politicians, bureaucrats; specific technologies: databases, leased lines, mobile apps, their economies of sale and circulation; and a growing (re) emergence of voice based communication over text, seen by some as the rise of "new voice technologies". Following Brian Larkin, approaching grptlk as a media infrastructure opens up an opportunity to see how apps represent "cultural ambitions, political machineries, modes of leisure, relations between technology and the body, and, in certain ways, the economy and spirit of an age" (Larkin 2008, 2). Recent work on apps have also called for a move away from the interface to a focus on apps "infrastructure embeddedness", that is "their socio-technical embeddedness and situtatedness by foregrounding the technical and material dimensions of apps and, or in relation to, infrastructure" (Gerlitz et al. 2019). Considering the travails that bring grptlk, a "small mediating device"

(Schnitzler 2013), into fruition, offers an opening into larger questions, concerning the material foundations of bureaucratic survival.

The rapidity with which KG introduced grptlk, in the very first month of becoming Commissioner, is not characteristic of technology adoption in bureaucracy. Projects of incorporating technologies into bureaucratic processes run into years and a range of disputes that some times jeopardize their original aims[31]. A critical first component is the question of procurement. Procurement of technologies from "vendors", that is from organizations outside government is circumscribed by law, and even though bureaucrats are known to favor companies they try and stay on the right side of the procurement laws for fear of being pulled up later. I was told about loosing bidders making complaints to the superiors of the procuring bureaucrat about the technology specifications laid out in the request for proposals, which in turn could halt the procurement process. KG encountered none of these problems with grptlk because he stayed under the radar by meeting one criteria of the Karnataka Transparency in Procurement Act (KTTP), the law under which procurement is monitored in Karnataka. Ram from Telemax told me that since KG knew that the Act applied to projects beyond one lakh rupees, he entered into a pay per use contract with them and asked for invoices to be raised before the bill reached a lakh. That way if ever asked why he did not "put out a tender" before hiring *Telemax*, he had the alibi that the bills never crossed a lakh and therefore he was not legally obligated.

But KGs ability to do so was possible because *Telemax* was in a position to offer a pay per use model. The company charged him eighty paisa per minute per person on the call and included for free the work of dialing him in every week from his office and sending him an email with the list of attendees and their data after the call. A pay per use model was more profitable

[31] For instance, a longer running standoff between Accenture and the government of Karnataka, has resulted in the termination of a comprehensive digital project for land governance (Raghunandan 2017)

for Telemax as it could price higher than what it paid for the leased lines. But how did this business model come about? Grptlk's origin story is interesting because it brings together business and political interests and more precisely their points of intersection. In conversation over Skype with an HR representative of Telemax's in Hyderabad, where the company is headquartered, I gleaned the following facts.

In 1996, *Telemax's* current CEO, who had graduated with a masters degree found "the telecom sector booming" and started work for a UK-based telecom company in India where his interest in voice technologies for communication piqued. Soon with the "operational knowledge" he garnered here, he started 'Sms Country' in 2003, a company based in Hyderabad that specialized in "bulk SMS", offering companies the service of sending large number of SMS to their clients. From SMS they went to One Time Password or the ubiquitous OTP, a random string of digits that works as an authenticating code for access to personal digital information, and then to an Interactive Voice Response Systems (IVRS). This is the more familiar trajectory of the company's expansion also available on their website. But beyond these services, *Telemax* was working closely since 2011 with Chandrababu Naidu, a technocratic politician, then chief minister of the state, known for his affinity towards technology in government work, decades before the current digital India wave[32]. *Telemax* clandestinely developed a "call centre software" to direct complaints received on an app that Naidu was keen on using to get voter information from his constituencies. When a controversy over the nature of data collected by the app broke out several years later in 2019 (Lasania 2019), *Telemax* was no where named, but I was told that the software package it built called "Press 3" was critical to the eco-system of the data the app produced.

[32] Naidu is credited with introducing the laptop as a politician's accouterment, earning him the epithet 'laptop politician' (Mazzarella 2010, 795)

Soon after, in 2013, Naidu asked *Telemax* for an app with which he could use to speak with over 15000 of his party members at the same time. This is when grptlk took shape. *Telemax* proceeded to buy a large number of "telephone lines" from telecom providers and configure them to a single toll free number such that the bandwidth of a single conference call would massively increase and a large number of people could be on the call at the same time. This tweak in the way telephone lines are repackaged and connected to a server on one end, become the basis of a large conference call and is how *Telemax* differentiates itself from other providers of similar services. Unlike others like Skype, Zoom, and so on, grptlk does not operate over the internet, it relies on older technologies of telecommunications but is packaged differently. From the web version that was produced for Naidu's use (called 'Y" conference) *Telemax* soon realized that other large business and government organizations had the "need" for these large scale conference calling. Soon enough grptlk, the mobile version of *Y Conference*, was created which supports a smaller (yet significant) set of 5-1500 people on a call at a single time.

While being produced within an assemblage of shifting meaning, apps like other media trigger certain "modes of affect, desire, fantasy, and devotion" (Larkin 2008) in the spaces of their appearance and fields of their circulation. When grptlk began being marketed as a commercial product it did not immediately interest the bureaucracy. But a chance meeting KG had with a friend in Hyderabad got him interested. From there on it was the work of *Telemax's* marketers that took the app places in the Karnataka bureaucracy, a description of which I turn to now.

Sitting in their tiny office in the middle of Bangalore, Ram and Shyam would wait eagerly for KG to tell them when they should visit him to set up the call. Even though KG had contracted grptlk formally (I saw a signed contract) and should have, according to their

understanding, set up these calls himself, he preferred to have them over every week to do it for him. Ram and Shyam would ride 60 miles on their motorcycle to reach KGs new office. Yet, they never complained about this because according to them KG was their gateway to other government departments. KG introduced Telemax to a few other people that he knew, and Ram and Shyam would pursue these leads to expand their business[33].

Setting up the call would mean shuffling outside his office for unpredictable amount of time, waiting to be ushered in. Rushing in Ram would place himself close to the only window in the room, since that was the only place from where he could get a smattering of mobile data connectivity, which he needed for running the app. He would open his app, scroll down to the saved groups and dial "DC…" that would send a call to all the peoples saved in the group. As they began answering he would conference call with the KGs desk phone, so that KG could speak directly into the speakerphone, without having to hold a mobile phone. Soon, Shyam, who played the role of the business manager, letting Ram do the technical work, would raise his voice and ask the audience to wait patiently for KG. Ram would open a web version of grptlk on KG's computer, to make it easier for him to view the number of people entering, dropping or not answering the call on the dashboard built for this purpose. Later, an excel version of the final status of the callers would be emailed to him. On the other side, when people picked up the call, they would hear the standard recorded voice that said, "welcome to grptlk…" then a pause when Ram conferenced with the KG's phone and then Shyam's appeal to be calm and wait for the KG. This was the format for all the calls that took place. Things went out of control sometimes. Once, in the initial days the group call dropped but KG unawares continued speaking into the phone for a couple of minutes before Ram mustered the courage to tell him what was going on. At times,

[33] Between 2018-19 their business incrementally expanded inside Karnataka's bureaucracy, and surged during the Covid-19 pandemic's national lockdown. In July 2020, I got an emphatic message from Ram, saying "now every department is using grptlk!"

the static in the network would be loud enough to drown KGs voice. Many times, when KG urged people to press zero on their phones if they wanted to ask him something after a long monologue, their voice would not come through even as KG could see their name flashing on the dashboard.

The rapidity and the ease with which a voice app made its way into the phones and then the work schedules of bureaucrats can also be explained in part by the broader (re) emergence of voice in new digital media. Voice as a mode of engagement within digital infrastructure was not unfamiliar to KG's staff who coalesced around grptlk. They were already "voice texting" on messaging apps like Whatsapp, taking voice notes, and using the voice features on government apps to lodge complaints. Public commentators in India have signaled a return of voice in a new avatar in the digital era across domains. Some say that "in a nation like India, with many languages and multiple dialects, voice helps overcome the barrier of adoption (speaking versus typing) and hence will accelerate faster" (Mathais 2019) and phenomena like "voice shopping" is a reality as it creates a figure of the "talking consumer" through "voice activated apps". Others see "the immediacy of voice notes" as intensely appealing to a generation of users that has little patience with typing words (Desai 2018). These commentators are quick to make a distinction between traditional person-to-person voice calls from an older era of telephones and even mobile phones. Traditional voice calls from both these mediums have dwindled over the last decade particularly in rural areas according to the Telecom Regulatory Authority of India (Gupta, Tyagi, and Upadhyay 2018). Outside these new communicative possibilities, scholars have also pointed to the role of mobile phones in producing aural life, such as "the digital im/materiality of sound recordings, and practices of listening, sharing and storage" of music (Deo and Duggal 2017). A conference-calling app like grptlk offers a third possibility. While being different from

traditional person-to-person calls, yet drawing on an existing telecom infrastructure, it introduces communicative possibilities that share some features with other aural forms, like music apps. One central argument that Deo and Duggal make about the relationship between music and mobile phones is that "the coalescing of musical 'publics' is inextricably linked with the mobile phone's role as a music device". In a similar way, the possibility of grptlk bringing together a listening audience, the necessary condition for the Commissioner's attempt at image reconstruction, is inextricably linked to the continued role of the mobile phone as communicative device. These possibilities have been identified by scholars of the mobile phone (Doron 2013; 2012; Rai 2015) but not necessarily in conjunction with the infrastructure of mobile apps.

Conclusion

As a mobile app, grptlk offered an interface that could gather a large number of people on call at the same time. In its ability to give rise to a mobile audience, it became a platform for the enactment of Bangalore Rural's Commissioner's voice, where voice is thought of as a situational and politically mediated form. Analyzing the content of the Commissioner's statements points to a set of discursive strategies, which together provide a view of an image of "the" Commissioner he aimed to produce. The need for the production of such an image arises because of an upheaval in the bureaucratic order of recruitment, with the Commissioner in the line of fire, at least in principle.

Rather than locating this empirical situation in the literature on meetings in organizational settings (Brown, Reed, and Yarrow 2017), I have chosen to think of it as an example of organizational survival, which comprises a small segment of the literature on bureaucracy, as I lay it out in the introduction. This has to do with my ethnographic position of being privy to both the foreground of the Commissioner's actions, as well as the background that pointed to some of

the motivations of these actions. This position steered me away from understanding (or explaining) everything the Commissioner did as a rational outcome of the position he occupied. Rather, I began to see his use of technology and his weekly vocal mediations as constitutive of *how* his position as commissioner was being maintained, in a situation when claims to an official designation were being questioned. If scholars have shown that Weber's ideal-type is interspersed with modes of emotions and affects, that a "one-dimensional" (Marcuse 1964) organizational man is in fact "two-dimensional" (Cohen 1976), my analysis of the Commissioner's aim at separating himself as Commissioner from his enfolding biography takes this hybridity as a starting point to show *how* a separation between rational persona and personal biography is attempted.

Of all the chapters in the dissertation, this is the most open ended, not because of absent evidence, but because of the nature of evidence and the many possibilities of interpretation and the difficulty of surrendering to a single, overarching explanation. Yet, I find it a compelling contribution to a study of ICTs in public bureaucracies in India, because it is one of the few examples that throw light on practices of and with technology that are outside a top-down frame of bureaucratic reform.

Chapter 6 : Engineering bureaucracy, bureaucratizing engineering

A lasting image of engineers I met working on digital projects for bureaucracy is that of being busy. I often saw them with phone in hand, eyes glued on the computer screen, trying to sort out issues that a bureaucrat wanted resolved urgently, giving directions for a new process, or trying to get information that could be passed on to a waiting bureaucrat (Figure 6:1). In an early encounter, Krishna, an engineer whose work I describe later in this chapter, explained to me, disappointedly, that information pertaining to the number of services delivered by Bangalore Rural the previous day, the district he was a in-charge of, was incorrectly entered into a Microsoft Excel sheet he had in-front of him. That information was used to rank districts in Karnataka, and if senior bureaucrats, essentially the Commissioner, saw that the district's rank has slipped down, they would create trouble for him. The error was because someone in one of the four sub-district offices, which Krishna handled, had put in the number for a single day of services instead of a cumulative number, which had lowered the total and hence the rank. Krishna was on the phone for a long time to sort out the problem. Just the previous evening, the Commissioner had proudly addressed Krishna and other engineers he had hired as "my consultants", in a way to suggest some manner of differentiated expertise. What struck me as interesting was the divergence between what engineers did on a day-to-day and bureaucrats' presentation of their expertise, a divergence that persisted as I met other engineers through the course of my fieldwork.

Figure 6:1 - Krishna at work

(Photo by Nafis Aziz Hasan)

There are engineers who build states and there are those who support it from the margins. The former have some luminary examples. For instance, Visvesvaraya of the Mysore state, credited with engineering education and industry in south India (Nair 2011). The latter, however, is a heterogeneous collection of engineers not recognized by personalities. The application of ICTs to the functioning of public bureaucracies has lead to a rise in the latter over the former. A large number of engineers now working for bureaucracies are not permanent employees. These engineers are the "contractual" state's most visible form.

The first set of engineers who materialize the state's infrastructural ambitions continue to exist, and they have more "*sarkari*" (bureaucrat-like) ambitions than engineering ones (Mathur 2016, 133). This has mostly been the realm of the civil engineer[34], a figure most often connected with departments like Public Works, Irrigation and Water, often the subject of scholarly attention in old and new research on the workings of the state. Coelho (2004); Anand (2017); Björkman (2015); and Mathur (2016) all describe the practices of knowledge and ignorance within which these engineers operate, firmly ensconced within the cadres of bureaucracy.

[34] I am referring here particularly to engineers in the administrative domain of the state and not generally to all engineers employed by the state in its many pursuits, such as those for its 'public sector organizations' like space, aeronautical or mechanical engineers.

Since the mid-1990s many more engineers have entered public bureaucracy not only in the position of civil engineers but through the elite civil services exam as top-level bureaucrats. This is related to the fact that over the last two or three decades many more people have sought out an engineering degree than they did in the past. The proliferation of technical education in India, the "information revolution", the promise of "big data" (Mertia 2020), as also the cultural value of engineering as a profession, a phenomena that began in the colonial period (Subramanian 2019), has produced another set of theorizations. Instead of the civil engineer it is the computer engineer who takes center stage. Some scholars have studied the imbrication of higher castes with engineering and the chimera of merit that technical work produces (Subramanian 2019; Bassett 2016). Others point to the visions of elite engineers for society and the nation, manifesting through programs and designs (Cohen 2019; Irani 2019), whereas a third group points to the social life of well to-do engineers in a globalized world (Upadhya 2016; Amrute 2016). Because of the topics of this research, the focus in all these works has necessarily been on a certain type of engineer – socially mobile, relatively affluent and often trained at premier engineering institutes in the country or abroad.

But outside these elite engineers, the engineering-turn of the 1990s has produced a large mass of engineers who do not go the famed Indian Institute of Technologies (IITs), not even to the better-known "regional engineering colleges", but to local colleges in small towns and cities, which have sprouted as part of the boom[35]. These engineers are not part of the over one million Indians who sit for the Joint Entrance Examination or JEE, which serves as a common, national, exam for all the IITs and several other private and government institutes (Bassett 2016, 3). But

[35] Between the IITians and these engineers there is another set of engineers popularly known as 'software professionals' (Krishna and Brihmadesam 2006) the subject of Upadhyay and Amrute's studies, many of whom aim to get management degrees and join the management ranks of corporates. IITians tend to do that too, but they begin at the top, and many are inspired to start their own businesses.

regionally, in Karnataka alone, there are about three hundred engineering colleges that have their own systems of recruitment, from where about eighty-ninety thousand students graduate each year. A majority of these colleges are ranked Tier 2 or 3 and they attract students from multiple socio economic backgrounds[36]. No more is getting an engineering degree restricted to the upper castes. According to Subramanian, the British believed that Indians did not have the practical sense for engineering, so when it was turned into a classroom discipline from the prior realm of apprenticeship and practice, they only offered it to the upper castes who they thought were the most "socially fit" to study engineering, though still not necessarily, technically fit (Subramanian 2019, 42). In this, Subramanian reads a historical caste bias for the upper castes in professional engineering as it was institutionalized in premier engineering colleges like the IITs. While the IITs may have managed to retain this caste bias, even in the face of increased affirmative action that reserves admission for backward castes, the IITs together represent only a very small segment of engineering graduates in the country today. If one looks beyond the IITs, no longer is the link between upper caste and engineering an obvious one. Engineering is no longer the prerogative of any single caste but has attracted people from across the spectrum. This is not to suggest either ease of access or equality in access, as social location continues to determine who can acquire an engineering degree even at a "low-ranking local college", as shown by Anirudh Krishna in his study of slums in Bangalore (Krishna 2013).

[36] This data is derived from the "seat matrix" of the common entrance test conducted by the Karnataka Examination Authority (kea.kar.nic.in/cet2020/R1/seatmatrix_engg.pdf) and from the website of the Consortium of Medical, Engineering and Dental Colleges of Karnataka (COMEDK) (https://www.comedk.org/comedk-uget-2020-counselling/ and https://www.comedk.org/wp-content/uploads/2020/10/BE_SEAT-MATRIX-ROUND-1_14Oct.pdf.)

Neither upper caste, nor from particularly well-off families, this is a floating mass of engineers who cannot find jobs easily[37]. The poor statistics around engineer employability suggests that the democratization of engineering may have led to its devaluation[38]. I encountered some of these engineers working on ICT projects in the offices of the revenue department. As temporary consultants, engineers first began entering bureaucracy in the late 1970s, with the Planning Commission hiring engineers to consult them on a database project[39]. Yet, it was not until the national e-governance plan under the Ministry of Electronics and Information Technology was rolled out in the early 2000s that many more engineers in these roles appeared as part of projects of digital governance.[40] Unlike civil engineers who begin and end their careers in a single department, contract engineers are often younger and can be shifted from one government program to another. They are sometimes called project "consultants", an amorphous term made to indicate many contradictory expectations as I point out below; technical programmers and analysts at salaries ranging from eleven thousand to thirty thousand Indian rupees ($150-$400) a month[41]. Many are on short, terminable, contracts, and even the ones

[37] According to reports by NASSCOM less than 25% of the ten-lakh engineering graduates passing out annually across India are employable. It has noted a dire need to improve their quality. Many engineering graduates take additional software certification courses to be even considered for jobs. Another survey says that 80% of Indian engineers are not fit for jobs (https://www.businesstoday.in/current/corporate/indian-engineers-tech-jobs-survey-80-per-cent-of-indian-engineers-not-fit-for-jobs-says-survey/story/330869.html).

[38] The caste bias may thus have shifted from earning an engineering degree to work opportunities that exist after the degree is earned, as Krishna and Brihmadesam (2006) seem to suggest. I do not trace these shifts in this chapter, but point to them in order to highlight the need to study the trajectory of engineering lives outside elite backgrounds.

[39] I found this in the archival work I conducted in the National Archives of India in May-July 2019. The file with this information is here (Planning Commission 1976)

[40] For instance, India's biometric identity project, Aadhaar (a component with the NeGP), employed a large number of engineers on a contract basis to run biometric enrollment camps across the country.

[41] This is not very different from the salaries entry level engineering jobs in large software companies like Tata Consultancy Services or Infosys attract. The point of this description is not to point to precarity (though their situation is obviously more precarious than settled engineer-bureaucrats), but rather to simply clear a space to identify a particular kind of engineer who is not an IITian or a 'software professional', and finds his or herself at the threshold of the state.

permanently hired by the government do not have the same security as the civil engineer-bureaucrats. They do not exclusively have computer engineering degrees, specializations not being a matter of concern here, since they are hired and vetted by third party "man-power" companies without much investigation. The settled civil engineer and these peripheral engineers do not often interact even though they often share the same administrative space (though I found one recent proposal to have the civil engineers supervise contract engineers (Nilekani 2013, 121–22)).

Beyond these structural differences between the career engineer-bureaucrat and the contract engineer, it is the nature of practices and relationships that the latter are mired in, which is of interest in this chapter. If engineering expertise is often premised on interventions that depend on an engineer's agency, what would expertise look like in a context when engineers are not in a position to determine their own course of action? The engineers I spoke to and observed at work led me to note a paradox. While, on one hand, bureaucrats sought out engineers for work they termed technical (differentiating them from another class of hires called "operators"), once associated, the specificity of interventions made by these engineers was hard to discern, for reasons I recount below. At a broad level, these engineers did not engage in any invention, design or development of technical products, that is the kinds of work classically associated with engineers. Levi Strauss, for instance, as Harvey and Knox recall, saw engineers working "with a more gridded understanding that isolates a specific problem and sets about finding a solution through innovation and experimentation" (Harvey and Knox 2015, 107). Subramanian also points to this view when she says that engineering became a white collar profession appealing to literate castes, distinct from other technical work, because it involved the "conjoining of the prestige of mathematics to the prestige of service to the state" (Subramanian 2019, 36). But even

if these are modernist caricatures, other accounts that focus more directly on practice also show engineers exercising some form of agency in manipulating the world, even if in limited, constrained contexts. For example, in both Bjorkman's and Anand's accounts, water engineers are key actors in the techno politics of Mumbai's waterscape, whose knowledge (albeit partial) and interventions determine access to water (Björkman 2015; Anand 2017). This is not only because of the civic nature of their work, but also because of the carving out a certain domain of technical expertise. Stephen Barley and Gideon Kunda, who offer one of the most compelling accounts of contract work in technical settings, point out that "technical contractors…usually introduced themselves by their occupation: software developer, technical writer, multimedia developer, systems programmer, and so on" (Barley and Kunda 2011, 8), suggesting a kind of "itinerant" expertise that they carry along with them. In contrast, the engineers I encountered did many things under the rubric of technical work, but not as specialized forms of cultivated expertise.

This chapter asks: why is it the case that engineers hired for their purported expertise are dispersed across a range of work and not channeled into specific interventions commensurate with their expertise? Following this, what forms of engineering expertise emerge here and how are they similar or different with established forms of engineering expertise?

To analyze the first question I offer three observations. First, for bureaucrats, the technical is not a stable category with specific boundaries, but is a label for all kinds of problems that cannot be solved through established processes. The bureaucrats who hired engineers constantly changed the remit of what they called technical. While for some, this consisted of familiar technical things, such as, working with databases and dashboards, for others it included the work of reporting, presentations, data entry, field surveys, monitoring and auditing and

liaising between offices. Engineers complained that some of these tasks were properly bureaucratic and that bureaucrats in-charge were shirking from carrying out their own work. Many of these problems labeled technical, arise from ever-increasing demands from the national and sub-national states for information from the bureaucratic offices of the local state, for instance, in the carrying out of national elections or in the creation of web portals to track the flow of welfare finances. By labeling something technical, bureaucrats could conveniently (and legitimately) push work onto the plate of an engineer. This ever-expanding remit of technical work dissolved boundaries, which in the first place was employed to recruit engineers as a distinct body of workers for ICT projects.

A second way in which engineering expertise as a specialized set of skills was made amorphous was by locating the work engineers do inside bureaucracy along an existing hierarchy. This hierarchy revolves around a mechanical-intellective binary, with the former marked lower in status than the latter. Mechanical work in bureaucracy, that is engaging in repetitive physical labour, for instance typing, conducting surveys with chains and rods or even with mobile apps, is lower down the order to work that involves risk and responsibility, like the inscriptional work of authorizing a job or approving decisions with a signature. Newer technical work such as operating a mobile app or typing text into a computer is seen as manual work and hence lower in status to intellective, inscriptional work. I found this distinction between the manual and the mental to pervade bureaucratic hierarchy. For instance, village accountants entrusted with surveying crops with mobile apps refused to work with apps, saying that handling devices was the work of 'Group D' staff, the lowest hierarchy of staff in the office. In the end, the department employed "private residents", young contractual workers, to do the job. VAs did however agree to sit on their desks and "audit" the information collected on the apps. Here is

another example of how this distinction is embedded in a ritual that I was privy to. The deity Vishwakarma, the god of craft and iron making (Bear 2016, 497), is worshipped every year with a communal *pujas.* I had seen several iterations of the *puja* in Bangalore among mechanics all kinds (cars, computers, electronics) and in offices, including corporate ones. Government offices also do this *puja*, so it was not surprising to find it happening in the revenue department. But what I found noteworthy was to see some of the engineers I was talking to specially felicitated at the *puja*, even as none of the operators (who were more technician-like) received the same honor. Engineers were supporting bureaucrats in their tryst with the technical, but were doing so as agents of the mechanical world.

One explanation proffered as to why bureaucratic "officers never type" but work exclusively with paper-based tools, is because paper affords bureaucrats social power, which digital forms may not (Marathe and Chandra 2020). This may be a distinction that precedes bureaucracy and is more socially permeated than is usually acknowledged. This reluctance towards a hands-on approach to technology may also have to do with a more fundamental distinction between mechanical and intellectual work that cuts across domains of life, as, for instance, captured in a novel by Allan Sealy, on the politics of work in India. Sealy finds that the workers he employs are disapproving of his involvement in their manual work, leading to the following meditation–

> It may start at the top, but its everywhere. The minister planting a tree will find the hole already dug for him, and expects to. The mortar pan on the head of the activist will have not a trace of mortar in it, and is not expected to. Its theatre, or rather magic, a mirror trick that leaves the drudge exactly where he was. The hostess at dinner will say: 'I put in a pinch of this and then I put in that.' She means the *cook* does, but sincerely believes the dish is hers…So the busy editor of the online magazine vetting a report on treatment of domestics as I sit across the desk from him, a man who has only ever entered his kitchen to set down a plate someone else will wash, can turn to me as say: So, *what do you do all day?* (Sealy 2014, 131, emphasis in original).

Subramanian points out that a distinction between "manual" and "conceptual" work was part of colonial and nationalist imaginaries (Subramanian 2019, 14), which, shadowing Andrew Abbott's distinction between work and craft (Abbott 1989), has continued into the post-colonial present. Her point is that technical work was seen as a form of unskilled labor, but the discourse of engineering in the colonial period allowed it to transition from a low-skill mechanical job to a high-status conceptual one. Yet, the bureaucrats I encountered seemed not to give the work engineers did, the same status that Subramanian finds accorded to it.

I say this specifically for administrative bureaucracies, which hire engineers for maneuvering a shifting terrain of technical work. In bureaucracies like the public works department, civil engineers may occupy both sides of the divide, some doing more power-laden work of making decisions, signing files, authorizing work, while others, lower down the chain, more manual work. Another way to look at this could be that unlike the United States where clerical work reduced significantly as a result of the "technization of work" (Barley and Orr 1997, 3), no such change has happened in Indian bureaucracies with over twenty years of computerization. Clerical positions are widely available and aggressively competed for, leading to a scenario where higher bureaucrats have an army of people to work for them (not just formally recruited clerks but contractual office boys and operators), a situation that a sociologist and present director of the Karnataka Labor Institute described to me in an interview as a "parallel bureaucracy". Engineers are located within this support base running parallel to bureaucracy above a certain designation, marshaled to carry out mechanical tasks.

A third way in which engineering as technical expertise remains undifferentiated from other work is related to what engineers do when they are doing what might be considered properly technical work. "Technization" of work has meant this:

> the emergence of work which is comparatively complex, analytic, and even abstract, because it makes use of tools that generate symbolic representations of physical phenomena and that often mediate between workers and the objects of their work. Controlling a nuclear power plant through an array of computer terminals is one example of such work; manipulating and studying the properties of cells using a cytometer is another (Barley and Orr 1997, 5).

But it could also mean, as I saw with my informants and as Harvey and Knox (2015) find in their experience with road engineering, building relationships with people and accommodating their views about what should be done and how it should be done. The debate about whether technical work is craft or science is not a settled one. In the context of colonial practices, Subramanian seems to say that engineering was firmly placed within the realm of science and continues to be so. However, a focus on practice may reveal, as it does for Barley and Orr that technical work is both craft and science, mental and manual, abstract and social.

When some engineers I interacted with said they designed dashboards and databases for departmental work, that meant spending a large amount of time in hanging out with bureaucrats and learning about bureaucratic rules and procedures, rather than working on "the technology". They did use technical words to describe what they do, but in practice, they pointed to easily available "aides" at hand to ease their work in the technical design of systems, acknowledging that the harder part was to excel in the "domain knowledge" of the departments or to figure out what the departments "really" want. Among their "communities of practice" they were recognized for this domain knowledge rather than for their software skills. Given the proliferation of 'plug and play' tools for the development of software, what I point out for

technical work in bureaucracy, may be true for many other non-government domains, so my argument here is in no way exclusive to engineering work with ICTs in the government domain.

Barley and Orr call the work that technicians do as some form of brokerage since –

> technicians serve as "brokers": they link nontechnical communities that use technologies to the technical communities that produce them…Brokers and buffers occupy a critical role precisely because they stand between the technology in which they are expert and the segment of society that the technology serves (15).

The engineers I met could in some sense be thought of as brokers because they did mediate the technical work that bureaucracy handed out to them. But their mediation was a highly controlled one, emanating not from their purported expertise but from what bureaucrats chose for them. The image of the engineer appearing from my fieldwork is one better described through a network of relationships rather than attributes of skills or knowledge. The remit of their work did not always encourage them to display specialized technical expertise, but rather forced them to engage in relations with other people– bureaucrats, operators, "vendors" of technological equipment, farmers, middlemen, in order to get their work done. In the rest of the chapter, I provide examples of the three points I mention above, as a way to describe engineering practice, concluding with how might these descriptions sit with other recent descriptions of engineering work.

Recruiting Engineers

The revenue department enrolled engineers in many diverse positions and geographical locations, given the spread of the department across different administrative spaces. But in each of these locations, there was a clearly established difference between engineer and office staff even as engineers are controlled by the rules of hierarchy that govern the institutional space of the office. I say difference and not distinction, because it is not always in the positive sense that

engineers are differentiated. Recruitment is an initial moment of differentiation; in this case a purposive one, as all the positions filled up by engineers were advertised as such. Bureaucrats actively sought engineers to do the work they envisaged as technical, which was a dynamic category of work with ever changing meaning.

Let me start with an example. The technologization of elections in India is not confined to the use of electronic voter machines, but includes a whole range of software that is brought into action months before the day of voting. In addition to sorting, randomizing, auditing, delivering and returning voting machines to their "strong rooms", work is required to track violations to a "model code of conduct" through web and mobile devices. Engineers are hired for these tasks as such tasks are named technical, but as I point out below, this is not a stable category, as engineers recruited in the name of the technical find themselves mired in work that was done by the bureaucrats in the office. Still, entry of engineers into the offices is linked to boundary-making technical as a specific category. At a district level, handling elections falls within the purview of the district commissioner, who channelizes his staff into different work to see that elections take place without any glitches. He is also given additional staff, one such called a 'technical programmer' or TP by the electoral office of the state. In 2019, I was told that the electoral office in turn had outsourced the recruitment of engineers to an information technology-consulting firm, in this case, Tata Consultancy Services. TPs were recruited by Tata and sent to district offices around the state.

Nanda Jain, a TP who served in the district that I was studying, had in March 2019 been recently poached by a telecommunications software company in central Bangalore, but was livid with the memory of her work in the district office[42]. Graduating with a degree in mechanical

[42] When I met Nanda she was working for Telemax, the firm that built "grptlk" in chapter 3. Being at Telemax gave her time and distance to reflect upon her experiences and it also made it easier for me to

engineering from a college outside Bangalore, she had worked for a few months before responding to the job call that Tata had put out for engineers. She recalls being thrilled at seeing the call, which was a general call for engineers without specifying the nature of the job, with the prospects of working for a company of high repute. As she took the test and interview she found nothing amiss since most companies had the same format while recruiting "freshers", as she referred to herself, that is, engineers with recent degrees and no work experience. She used the term as a form of critique, to point to the gap between classroom knowledge and the requirements of the market. I found such a self-description among other engineers and in a popular discourse on the value of engineering education in India in preparing students for jobs. Nanda had internalized this critique, and like many of her peers, did not think she was competitive enough. When the contract letter arrived she realized that she had in fact been recruited to work for a district bureaucracy as a TP and that the recruiting company was not Tata, but RG staffing, a company that handles recruitment of 'manpower' for information technology companies, to which TCS had further outsourced the work of recruiting. While she was miffed initially, she accepted the opportunity as it offered her "experience" of working in a real situation, as opposed to earning the engineering degree by attending classes. She made a distinction between "experience", gained from work and that of "training" derived from internship, which she did as part of her engineering degree.

Bureaucracy identifies problems as needing the technical prowess of engineers and outsources the responsibility of hiring engineers to organizations outside government. These organizations use their own strategies to attract young engineers into their fold and then depute them across various roles that bureaucrats have identified. Once inside, Nanda Jain's career of

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meet and speak with her on multiple occasions. Access to her time, while she was a technical programmer would have been difficult because of her schedule and the fact that her time was controlled by the bureaucrats she reported to.

one and a half years was marked by multiple shifts in what constituted the technical, as the technical was defined and re-defined to suit the needs and objectives of the bureaucracy. She didn't just handle the EVMs and the forms, but was entrusted with large amounts of work that involved reporting progress of different aspects of the elections, which even followed her many months after the elections were over. There were different forms numbered 6, 6A, 7, and 8, which were for approvals, rejections, inclusions into the electoral database. Nanda Jain had to collect the status of entries in these forms by calling up operators in the taluk offices, or sometimes physically visit them to provide daily reports on the progress to the district commissioner. She sent these reports on Whatsapp, and sometimes when she was delayed, the commissioner would call her up and ask for the update. She said that she was "the only mediator between the Election Commission of India and the Block Level Offices", and thus had to take charge of all "issues" that emerged anywhere in the chain. She would take print outs of screenshots of errors and "physically" go to the electoral offices to get it resolved. This form of communication took up a lot of her time.

Nanda complained that the reporting was earlier done by the staff even if it was related to elections but the new commissioner had made it her work as he claimed that "technical" jobs were outsourced to her. In 'First Level Checking' of the voting machines, a process that involved an audit of the machines close to voting day, a task Nanda claimed was supposed to be done in the presence of multiple bureaucrats from the district office, but for which "no one came", except one senior bureaucrat:

> As a technical programmer, they make us responsible and tell us that we have to do *everything*… in DC office people have a lot of knowledge. They know how to do it, but if they interact with the work then they have to do it… they don't want to take responsibility… since I am the technical person, I have to do it... managers will not come for FLCs, or for other things.. only the ADC and I were there.

What is important here is not that people are shrugging from their work and passing it on to others (which is a common phenomena), but work that is allocated as technical is legitimately pegged on to an expert as engineer, and then the contours of what constitutes the technical are made to change. This practice marks the position of the engineer vis-à-vis bureaucracy. On one hand, she is socially identified as an expert over people from other backgrounds with more general skills, but on the other hand, the blurring of the boundary between technical and non-technical goes on repeatedly.

Another example of the subtle shifts in what engineers are hired to do and what they end up doing is in the work of Krishna, a district consultant, with whom I started this chapter. Krishna an engineer from the district of Chitradurga was part of a team of engineers hired to work on informational workflows to increase the speed of delivery of services. His work involved making sure that operators in the taluk offices worked without glitches in inputting data into the workflow systems. He was also in-charge of communicating the introduction of new technological policies related to existing processes. For instance, when I first met him in September 2018, he was introducing digital signing among a group of bureaucrats whose job was to oversee the dispensation of authenticated land records to farmers. He recounted sitting up one whole night digitally signing documents that some bureaucrats in the offices under his district were supposed to do but had not. While he had given them a memory stick with their digital signatures on it, and all they had to do was stick it into a computer to access the signature, it had not happened as smoothly as he would have liked. One evening, the bureaucrat who had hired him in Bangalore asked him to "apply" the digital signature to a bunch of pending documents himself. The bureaucrat's chief concern was that the delay was causing the district, as a whole, to slip down in rank on the service delivery dashboard that had been assembled across the state. "It

was like a data entry job", Krishna scoffed, thinking about the night he spent doing this job. For engineers data entry jobs were done by a lower category of technical workers called operators, who engineers managed in some instances. So doing something like this was demeaning for Krishna. Even so, Krishna seemed to be in awe of the engineer-bureaucrat who had asked him to do it, and he enthusiastically recounted for me many digital interventions in the pipeline.

One apparent reason for why bureaucrats can bring these shifts in what engineers do, is that in most cases engineers hired by them are hived off from the organizations from where they are recruited, as was the case with Krishna and several others. Engineers have no recourse to any form of terms and conditions of the 'man power" companies from where they are recruited for bureaucracies, whereas the hiring bureaucracy has the rights to determine their work profile. I was told that this was a "new model" as opposed to an older model in which the recruiting companies would determine the nature of work and terms of contract with bureaucracies. Like the "staffing agencies" that Barley and Kunda (2011, 25) point out as crucial, yet understudied actors in bringing contractors and hiring companies together, the "manpower companies" that I heard about seemed to play an important role in presenting engineers to bureaucracy and negotiating their roles. Yet, unlike Barley and Kunda, who encountered them as physical, brick and mortar organizations, the companies that Nanda and others were recruited by, were not easy to identify. Nanda remembered having a telephonic interview with a representative of RG Staffing in Bombay, but did not know anything more about the company or their whereabouts. My attempts to track another company that went by the acronym CMS, did not go very far. I learnt from the engineers themselves that they had no connections with the staffing companies after they were assigned to bureaucracies, except that their salaries came from there.

One reason proposed for bureaucracy's ability to stake a larger claim on what engineers did for them is that there are a lot more engineers in senior bureaucratic positions, who are seen to have the ability to manage other engineers. In my meeting with Professor Rajagopalan at IIITB he identified an engineering turn in the elite civil services to the mid-1990s. In the early 2000s there was also a move by the government body that conducted the civil services exam to introduce more logical reasoning and math in the exam, a move many thought as a bid to attract more engineers at the cost of people from other disciplines, especially the social sciences and humanities. During my fieldwork, I encountered three top bureaucrats in Karnataka, associated with several technology interventions with engineering degrees, one of who (Krishna's supervisor) managed a large team of contracted engineers.

A third example of the slippage between purported role and role in practice is the case of engineers hired by land survey departments across Karnataka. Megha, a twenty-eight year-old engineering graduate, who I met on her first day on the job, became for me an important interlocutor to this work. The head of the department, himself an engineer from an elite engineering college, had sought out engineers to do the work of land survey which for decades had been done by people without professional degrees. He expected engineers to do surveys objectively and change the culture of bribes that surveyors were notorious for and more importantly spearhead a range of digital interventions he had planned. These engineers were given one-month training on survey methods and then deputed to different offices. Megha came to Datanagar, where I met her, and recalled the training to be superfluous because she claimed, several times, that because they were engineers, doing the work of survey was "easy" for them. The surveyors that Megha and her engineer colleagues were joining, were actively engaged in resisting, what they saw as technocratic interventions to control their work and discretionary

authority. They organized formal protests to channel their grievances and demand for a transfer of the head of the department, who they claimed, thought "only about technology and not about people who did the work". They demanded that an "automatic file allotment system" which the commissioner had put in place through computer systems be abandoned, along with the removal of a productivity tracking system that tracked surveyors' monthly surveys. At first, Megha appeared to revel in the role assigned to her, openly critiquing the corrupt practices of the office she was in. But soon, she was reigned in, because she realized that surveying was less about technical skills and more about social ones, as I describe later in this chapter.

Being Engineers

Even in the face of a declining relevance of the expertise for which they were purportedly enrolled into bureaucracy, engineers continue to distinguish themselves as a form of boundary making. In this way they continue to articulate their relevance to bureaucracy, even as bureaucracy orders them according to an existing logic and hierarchical structure, as I describe in the next section. For one, all the engineers I met were in the late twenties and just from their appearance looked markedly different from bureaucrats. They wore jeans over trousers; carried rucksacks with their laptops on their backs, instead of the bunch of files swinging by the waist characteristic of bureaucrats; they rode motorcycles and could be seen walking around with a helmet slung on their arm over using public transport, because their work required them to travel between offices much more than bureaucrats. Engineers also used English much more than the office staff, peppering their conversations with technical terms in English or conversing sometimes in English with some of their colleagues. Sartorial and linguistic differences between bureaucrats and a floating population of contractual support, have been remarked upon by prior ethnographers of bureaucratic offices in India who have pointed to their jarring affects in

institutional spaces (Mathur 2016). In my case, it wasn't so much that these engineers stood out oddly, or created some kind of discord by their presence, but rather their overt differences cleared a space for others to recognize them. For many office staff, though not higher level bureaucrats, these differences led to according engineers with some sort of recognition.

I began noticing these ways of establishing difference with Nagaraj, another consultant, hired to manage the database of land records, *Bhoomi*, in the Bangalore Rural district. During his visits to Datanagar's taluk office, Nagaraj would present a picture of urgency to the people in the office who needed his interventions. He would point to his busy schedule and come up with reasons to not prioritize their work, sometimes citing constraints posed by the bureaucrats who had hired him. One instance is telling. Maheshwari, a data entry operator urgently needed help from the backend engineers of the land database to sort out data she had entered incorrectly. She had raised a "ticket" through a newly instated software system that she was still quite unfamiliar with. Soon after she tried to speak with Nagaraj on the phone, multiple times, but he did not answer her calls, which she reasoned was because "he gets calls from a lot of places, so he won't answer my call". When he came to the office on one of his weekly visits, she, in her own words, "pleaded" with him again to work with the backend and solve her problem. But his response took her by surprise – "he told me engineers in the backend have a lot of important work and cannot spend their time resolving errors made by operators like me … the software and processes are good but operators are spoiling the system by creating errors…" He ended his diatribe by saying that "errors should not be resolved from the backend at all, but should go through the formal process of resolution", which would lead to Maheshwari having to deal with the wrath of the client whose data she incorrectly entered into the database. The zeal with which Nagaraj defended the work of engineers in this instance appeared surprising to me

considering his own marginal position in the district office and the huge constraints and demands that senior bureaucrats put on him. He worked on the orders of the district commissioner who handed out to him many different types of work, depending on what he needed done each week. Yet, in the taluk offices, his attitude towards technical work put fear in people's minds, and they were cautious of not slighting him.

A less common way in which engineers aim to establish their expertise is by imagining bureaucracy as a set of processes that can re-arranged for optimal effects. While this is often called 're-engineering', it does not necessarily lead to a re-arrangement of process. Rather, what I am referring to are casual references made by engineers about how processes can be shortened and made more effective, usually as a way to critique the way things stand. Rajshekar, an engineer who worked for thirteen long years for a technology 'cell' inside the revenue department (the only engineer I met to have such a long tenure), described to me the series of technology related transformations made in the department over the last two decades. What struck me was his ability to casually remark that certain bureaucratic processes, like the need for multiple signatures, could be done away with, because they were "repetitive" and "unnecessary". Here, the logic of efficiency aimed to speedup processes in contrast with the slow, circuitous logic of colonial paper bureaucracy. Yet, for all of Rajsekhar's claims of tightening bureaucracy, none of these technologies had really changed the flow of work as that was controlled by a legal code, which needed ministerial permissions to be changed. Not all engineers who spoke about re-engineering bureaucracy did it with the confidence Rajshekar exuded. Some, like Peri from the National Informatics Centre (a category of engineers to whom I devote more time to below), were cautious about their recommendations, but at the same time, they were insistent about it. The point I am trying to make is that engineers did not hesitate to claim that bureaucracy could

be manipulated in the pursuit of efficiency, and they did so as a way to signal different perspectives and position themselves in opposition to bureaucracy.

Engineering Practices

In the section above, I have said that engineers are actively sought out by bureaucracy to carry out tasks that are named technical, but as their association with bureaucracy progresses the remit of the technical expands to include tasks that engineers claim are properly bureaucratic. Reporting and auditing that engineers are made to do are examples of this, as is filling in for bureaucrats when they fail to do work they are assigned. I further said that in the face of this ambiguity, engineers themselves make attempts to mark their expertise. In this section, I want to develop the practice side of what engineers do on a day-to-day basis, particularly the relations they make and are forced into, as a result of the roles that bureaucrats envisage for them. Engineers' relations are formed as a result of being placed in a mediatory position in a range of projects, examples of which I point out through this chapter. Their position is less of "knowledge brokers" and more as information bearers and maintenance staff, sent out by bureaucrats that control them. Yet, because they bring information to sub-district offices that are themselves caught up in the muddle of many projects involving technology, staff in these offices gives them their time and attention. Over time they become valuable to both the senior bureaucracy and lower staff because of the recursive nature of tasks terms technical. When engineers cease to be mediators and instead take on roles, previously carried out by non-engineers like that of surveys, their relations with staff change.

In some ways, a focus on practices reveals the shallowness of their attempts to mark themselves as experts, as their relations over-ride all their attempts at standing apart. Yet, it is both these attempts and their indeterminacy in acting on their own that co-constitute their

experience. In these ways, the engineers I met have something in common with the engineers that Harvey and Knox (2015) describe. These engineers were able to partially implement their models of materially re-shaping the world by forging social relations with people having different worldviews around them, rather than by stomping out those ways of thinking, different from prior framings of engineers. Yet, one critical difference here is that road engineers in Peru were left on their own to implement their road design, during which they identified the need for forging social relations. The engineers I met on the other hand, entered into pre-mediated institutional contexts in which their ability to forge ahead their own ideas was severely constrained. Importantly, they were not called upon to share or implement a model of their own but were rather asked to implement ongoing projects that bureaucrats were spearheading. As such, it is hard for me to ascribe to these engineers any specific kind of engineering vision of the world (so easily pointed out in elite engineering practices). My inability to attribute a specific worldview to these engineers is not to suggest they did not have one, but rather I am more inclined to think that the conditions for its emergence were absent.

Engineers interact with a wide variety of people as they are made to do widely different tasks. They spend a lot of time on the phone speaking with operators in the taluk offices, asking them to fix things, or update their records so that they can consolidate and make their reports. They do a lot of work of overseeing the work of operators, liaising with them and the teams at the backend. Depending on the level of the bureaucrat, engineers are perceived differently and are made to do different things. For senior bureaucrats, engineers are foot soldiers, packed off each day with messages and instructions to relay among the bureaucrats in the offices lower down the chain. Consultants constantly shuttle between district office and multiple smaller offices depending on instructions from different people. They do not usually have a single

supervisor, but can be called upon to work on multiple assignments by different people in authority. Even when consultants are given fixed areas of work, those can be superseded if bureaucrats think necessary. An example was the Chief Minister's populist measure of a 'loan waiver scheme' in December 2018, in which multiple engineers were drawn out from their ongoing work to make sure that the loan waivers happened at least up till the time that the Chief Minister was making public statements about it. The department had a hard time filtering out borrowers who had multiple loans. The "scheme" was to waive one loan that a farmer took, whereas it was common for farmers to take multiple loans from different types of banks– commercial and co-operative. While the department had gathered information about all the loans given out to farmers from multiple banks, they needed to create an identification mechanism to make a list of unique borrowers. This was done on an Microsoft Excel sheet, by combining the Aadhaar number with loan information and removing duplicates, a technique devised by a senior engineer-bureaucrat. Engineers working in the district were deputed to collect Aadhaar numbers and also sort out cases where there was a mis-match between Aadhaar number and name. Engineers were also asked to visit the banks and "push them" to upload loan information onto the central database that the department had created. Elections are another example when the Commissioner has complete authority to re-arrange the work that all staff, including what contractual engineers do (in addition to engineers specifically hired for elections, like Nanda in the section above), assigning them to tasks like counting of votes.

Let me begin with an example of an engineer who mediates relations between bureaucrats and a particular office. Rajsekhar who I mentioned above, joined the land digitization program, *Bhoomi*, which I write about in chapter one and four, in 2007. He spoke with historical certainty about how the project changed over time. He seemed to be part of the

entire process. What I found interesting about his career was his relationship with the bureaucrats he worked with. He worked for a specific part of the organization that had its own hierarchy of office staff and bosses, who would be transferred out every few years and replaced by new ones. The official postings have remained a mystery not just to me but also to many people in the department. But even when the bureaucrats were transferred out, their ties with the program remain intact, and one of the ways they were able to do that was to maintain their relations with Rajshekar. Once, when I went to meet a bureaucrat who was no more connected to this program, but had in the past worked on it, we began talking about the types of digital errors this program had produced, and the ways in which they could be resolved permanently. Mid-way through our meeting, he pointed out that there were about twenty-five different types of errors, which are catalogued in the office. He then pulled out his phone and rang up Rajshekar confirming if he was right, and asking Rajshekar to send him a soft copy of the documents. I was surprised to find that he still had access to Rajsekhar, given that he had not been connected with the program for several years. With a smile he explained that Rajshekar was a "human database", the only person who knew every bit about the history of the program. More importantly, since he was an "outsourced" employee, bureaucrats felt comfortable in calling him up and asking for all kinds of information, without needing to make official requests. Another researcher, who had conducted fieldwork on the same program in 2010, recalls meeting Rajshekar along with a bureaucrat he was interviewing. That bureaucrat also was not directly supervising him anymore, but continued to have Rajshekar hang out with him. Rajshekar complied with all these demands. Along with keeping up with the social network of ex-bosses he was piled with a lot of work, essentially every component of the program from maintaining the database, to building new apps to interface the database, passed through him and his job was to get other, younger engineers, to

work on these various aspects. Rajsekhar in turn had to report to a technical manager, who I observed to be demanding in terms of accounting for work, as well as to the demands of bureaucrats associated with the program, who could ask him for any bit of information which he would need to retrieve quickly and present to them. Rajshekar was busy all the time, but he seemed to like his job and the attention he got from the many people. Everyone knew him, from senior bureaucrats to the consultants who visited the sub-district offices.

Another example that points to the relations formed between engineers and bureaucrats, comes from Nanda Jain, the engineer hired for doing the work of elections. Even, as she was bitter with the experience of not being paid enough for the large amounts of work she was expected to do, she did mention that after she left that job, she got multiple calls from the senior bureaucrat in-charge of elections, trying to sweet-talk her into coming back for an upcoming election. The bureaucrat offered to add a bonus to her salary from Tata, and since her biggest grouse had been working late into the night, jeopardizing her safety, the bureaucrat offered to send a car to pick her up and drop her home every night. Nanda was too disturbed by her prior experiences to even consider this offer, but she did recall this offer on several occasions as a way to suggest that her contributions were valuable precisely because she mediated work that bureaucrats themselves were less inclined to do. Eventually they did hire another engineer who called Nanda many times a day to understand how things worked, as he was in Nanda's words often "scolded" for not knowing his way around. Nanda was not missed for her technical skills, but her social ones. She had a working relationship with bureaucrats and operators in the district, as well as the offices to which she sent reports. She had already proven to be compliant with the demands of the work and the bureaucrat in-charge did not want to go through the trouble of finding and training someone new.

Let me turn to a third, detailed example of a working engineer's embeddedness in bureaucracy. The National Informatics Centre or NIC is a government organization that offers technical services to departments in states across the country for free or a subsidized cost, as it is funded by the coffers of the central government. NIC employees a large number of engineers, and calls all of them 'scientists'[43], organizing them at different levels within a hierarchical structure. Unlike consultants, who are a floating group of contractually hired engineers, NICs engineers are mostly all permanent staff of the organization. As one of its engineers described it, NIC's employees service the length and breath of the state, from the President's office in New Delhi to rural panchayats, and are always short of staff. Yet, even when its services are cheap, departments often contract private organizations for their technical work for multiple reasons, ranging from NIC's alleged poor quality of services to the opportunities for kickbacks from private companies. In any case, among all the engineers I met, NIC's engineers presented themselves as the most technically immersed, seemingly not concerned with other aspects of bureaucratic work and not complaining to me, like the consultants did, about the muddling of the technical with the bureaucratic. Yet, in trying to extricate a snapshot of what NIC's engineers do on a day-to-day, what they mean by technical work becomes clearer and rather than obvious differences with the work of consultants, I actually find overlaps and similarities in their practices. Many times NIC engineers would present the technical in abstract terms, but their very actions and my conversations with them would reveal that work on the ground needed other strategies to get done. Here's an example from my conversations with NIC engineers around the building of a database.

[43] NIC was the brainchild of Narasimhaiah Seshagiri of the Tata Institute of Fundamental Research in the 1970s, when computer scientists designed and ran digital programs for government.

My visits to NIC offices were always eventful. Often they would start with Perry explaining to me specific details of the database they were building for a treasury department, in abstract terms, but his monologue would often be punctuated by side conversations with other people on the phone or face-to-face, which would give me a glimpse of his world of practice. Perry was a NIC engineer who for a year before I met him was working out of the Treasury department digitizing their processes. Once when he was describing to me the architecture of a system called TreasuryNet, an online system to process bills made on the treasury department, a government department that handled all manner of budget and payments, a man walked in and identified himself as a consultant in charge of implementing the government of India's Direct Benefit Transfer scheme (a program that involved direct cash transfers to beneficiaries instead of subsidies). The consultant's main grouse was that NIC had not uploaded the list of beneficiaries eligible for cash payments on a central platform[44], whereas Perry's point was that this was not their job, but rather the job of the government departments. NIC had already created a system for the beneficiary information to be uploaded onto a web portal, and now it was the department's job to further transfer that data to the central portal. The consultant appeared frustrated, complaining that he was hired to work on cyber security, which is what he had specialized in during his engineering degree, but was now made to "run around" government offices trying to get them to upload this information. Perry empathized with him and told him that the central government should already have the beneficiary information, as another government agency had collected this information earlier. The consultant acknowledged this, but since he had been sent to make sure that this data is collected and uploaded, he had no choice but to do that. Finally,

[44] I learnt from Perry and other NIC engineers that the Modi government was trying to centralize control of information and money, thereby increase control. This was in line with Modi's aim at constraining the federal structure of governance, taking away as much power as possible from the states. This small example of Direct Cash Transfers can show how technology mediates Modi's politics.

Perry asked him to contact the state departments for this information. Such boundary-making conversations between the NIC engineers and the state departments and consultants occurred many times, pointing to the kinds of problems NIC engineers were mired in, which were beyond the remit of what might be considered technical work that involves only working with technology.

As my conversations with Perry and his colleagues deepened, I began to see the difference between the descriptions of their technical work and what they actually did. What they were describing to me was a kind of textbook account of how databases are built and what their best practices were. For instance, Perry often spoke of the criticality of the 'primary key' for the efficient functioning of a database and how creating it takes time because you have to think of scenarios. He explained to me, many times, that the primary key was a single column or a combination of columns in the database repeated across all the tables of the database as a way to connect them and draw information from one table to another. Perry was insistent that "designing a table without a primary key "is very bad" and it needed a lot of experience in order to conceptualize it correctly. Every time he spoke of the primary key in this manner, I assumed he was talking about technical expertise, the ability to work out the combinations of data that would remain unique and thus work as a primary key. But then one day he gave me an example of a primary key he had created for the treasury database. Since the system was built to ease payments based on bills received, the bill number was considered as the primary key. But they soon realized that after a certain point the bill numbers, which were in serial form, would begin repeating, and that could lead to all sorts of problems. So, three columns – bill number, Financial Year and Treasury or Sub-treasury code were combined and used as primary key. I asked Perry how he arrived at this and to my surprise he said that he spent a lot of time speaking with the old

employees in the department. It turned out that bills were already being classified and filed under these three heads in the analog form, so when Perry explained to the old staff what a primary key was and what it needs to do, they immediately pointed out these three categories as organizing criteria.

I began to see that much of the work of building the database was about getting an understanding of what Perry called "domain knowledge". Perry himself knew this well, so much so that he once quipped (to my repeated request to *show me* on the computer how the database is created), that the technology was the easy part. The hard part was getting an understanding of how bureaucracy worked, its rules and procedures, shortcuts and loopholes. Rules were not static, they changed from situation to situation and engineers had to make themselves aware of when that would happen. This was achieved not only through formal means, that is through the many documents they made in consultation with the department before starting with a project – like the Detailed Project Report, or the Software Requirements Document, but by hanging out with the department folks, which Perry had done a fair bit. When people at NIC pointed out Perry to me as the person with a lot of knowledge and experience, they were alluding to his understanding of the way finance and financial flows worked in the department, and less to his technical prowess. He was often referred to as the person who understands "finance" and because of which all the technical work for the finance and treasury departments were channeled to him. That NIC engineers spend more time understanding their domains is not unlike other software professionals learning about their clients' needs, for instance, while implementing enterprise resource planning (ERP) software (Chong 2018), though these engineers were less "product-centered" than their counterparts in other domains. This is poised to change as

technocrats advocating reforms in NIC style of functioning would like to see free floating "centers of excellence" developed for technological skills over domain ones (Nilekani 2013)

Soon I learnt that with rapid advancement in relational database management systems, building a database did not actually involve coding or writing algorithms. Database designers pointed to graphical user interfaces or GUIs, which were in-built into the database management system and "tools" available for free or a small charge on the Internet, which they used to build the database and manage it. The GUI for a PostgreSQL database which Perry was working on was called a PGAdmin, and it had a many different "modules" and a dashboard like interface which provided all kinds of information about the functioning of the database – the "load on the database", "how many concurrent users" and other analytical information. Even the entity relation diagram, which NIC's database engineers would point out as an "art" to make, as it involved thinking about how different entities in a database would relate to each other, was done using a "tool" or sometimes prompted by the database itself (like MySQL would throw up prompts – "do you want to link the tables?", "what is the common key?" and so on). Other technical aspects like querying codes, and front-end applications through which the database is modified or queried were borrowed from other NIC offices in the country. For instance, Perry told me that the online application of the treasury database he built was taken from NIC Pune. They "dumped their source code" onto NIC servers and Perry modified it with the rules of his treasury department.

Like consultants and other engineers that this chapter has described, NIC engineers also spent a lot of time working on making information from the database available to the department. Both NIC and the departments considered this a significant contribution of digitizing the manual process. Perry said, when the work was in manual form, "consolidating accounts", a task

conducted at specific time periods, would take "a couple of weeks". With the database in place consolidation happened quickly because they can "pull" data from different tables to create the cumulative reports. For this Perry created something called a "reporting database" also referred to as a "Management Information System", which was linked to an application webpage with filters that was supposed to be used by the department to download reports. There were multiple reports that are created and maintained by them and he claimed that requests from the department continued to change –

> a commissioner may call us and say they need a report like this…and then we design the report and give it to them.. based on the rules we make a query…sometimes we just query the data and give it to him in an excel sheet… but if it is a recurring request then we keep it on the database and he can log in and download it regularly.

In practice, given the mechanical-intellective divide, Perry and his colleagues continue to do the work of downloading reports for the department, as some bureaucrats claimed that the computer was out of bounds for them or they were short of time or in some cases there were errors, which prevented them from getting to the right reports. I saw video chats between staff and NIC engineers with screen sharing, with the NIC engineer working on getting the reports in order.

Conclusion

The kinds of engineers this chapter has tried to describe are not from a small number of elite engineering institutions that have attracted scholarly attention. Rather, situated at the lower end of the employment scale, these engineers hustle for jobs, and are "itinerant" (Barley and Kunda 2011) not because they carry specialized technical knowledge from firm to firm, but because of the nature of their temporary contracts. Yet, the spectrum of contractual arrangements by which engineers are hired and retained is a broad one, preventing a singular description of precarity. The ICT juggernaut sweeping government bureaucracies is one source of employment, which is

were I encountered the engineers described in this chapter. While, engineers are hired for their purported expertise, which I glean from practices of recruitment, that expertise is dissipated across a range of ever-changing tasks. This provokes a re-thinking of engineer expertise, from one linked to technical prowess, re-interpreting the world in the image of abstract logic, to one emerging out of making and maintaining relationships. Not that the two are always opposed, as Harvey and Knox (2015) point out, but in the case of engineers I studied, the latter is more perceptible than the former, with technical skills sometimes de-valued over social ones.

If one version of engineering expertise comes from "the technological Indian"(Bassett 2016) as middle-class, English-language educated, with an eye towards the West, whose technological imagination has been shaped by MIT (ibid, 4), what understanding of engineering expertise emerges from Indians acquiring engineering degrees in starkly different inclinations towards the world? The forms of expertise emerging from the descriptions I have provided in this chapter, emerge in a context, which is structured by repetitive, modular and yet unpredictable tasks involving technology, leading to the recognition of expertise as a form of experience and longevity, over specific technical knowledge. Bureaucrats, like Nanda's and Rajsekhar's supervisors, valued them for the length of the tenure in the roles they were hired for. These engineers were not expected to upgrade their technical skills or acquire new ones, but rather use their familiarity with technology and people, a familiarity generated in the course of work, to continue mediating an ever-increasing technization of work. In this sense, engineers like bureaucrats below a certain grade, are strategically placed in roles based on their experience, suggesting a bureaucratization of engineers in the proliferating engineering of bureaucracy.

Conclusion to the Dissertation

The dissertation has focused on India's ongoing attempt at digitizing its public bureaucracies. Every few years, for over a few decades, a new impulse to introduce ICTs in the functioning of state agencies finds it way into the landscape of bureaucratic governance. Many critical approaches aimed at interrogating these encounters have trained their guns on evaluating the success or failures of these interventions, falling in the trap of what Abrams (1988) would call studying the state on its own terms. Contrary to these approaches, this dissertation has asked what ICTs do in the bureaucracies they enter, even if they do not meet their putative goals. In each of its five chapters the dissertation aims to describe some form of action around technologies and people and what that means for different facets of bureaucracy.

There are other questions related to ICTs and states, which the dissertation does not address. For example, I could ask why ICTs continue to be marshaled as tools for a never-ending political investment in accountability, even when there is enough evidence to show that they fail in meeting those objectives. To investigate this question, I would have to spend time with politicians, senior bureaucrats and representatives of management consultancies and technology companies, perhaps in the corridors of the secretariat in capital cities. Or I could query the uneven spread and use of ICTs across different political and geographic landscapes, which would require a comparative methodology. I chose to stay with the question of what ICTs do because that opens up the possibility of exploring government offices and organizations in themselves and in relation to their use of ICTs. I wanted to study 'the state' through its practices, and prior fieldwork had shown me that ICTs illuminate state practices in interesting ways. I found it odd that even as bureaucracy was the object of reform in decades-old reform projects, we know very little about how these interventions has impacted bureaucracy as a conglomeration of people,

materials, ideas, and not simply as a medium for 'service delivery'. Research has focused on the citizen-bureaucrat encounter as the touchstone of bureaucratic reform, looking "through" rather than looking "at" (Hoag and Hull 2017) bureaucracy. I am not suggesting an artificial distinction between "the" bureaucracy and "the" people, which would prioritize one research agenda over the other, but simply pointing out that the former has been largely ignored in pursuit of changes with the relationship between people and states. Another reason to stay with the question of what ICTs do is that it best intersects with how anthropology has approached the question of 'the state'. Asking how ICTs intervened in everyday life of bureaucracies would allow me to engage and extend other ethnographic descriptions of bureaucratic practices made under different conditions. But beyond the question of synchronicity between scholarly analyses, there is also a question of episteme that is at stake in these choices. Choosing to study ICTs embedded in bureaucratic practices I conceive of states as relational entities in which human and material choices are entangled. By contrast, if I had chosen to stand outside a government office and asked every fourth person who passed me how their experience with state services had changed with ICTs, I would be operating under a very different understanding of states. I would be foregrounding the service delivery arm of states over the internal structure of bureaucracies. It is the latter, which this dissertation has aimed to grapple with.

The fieldwork and the writing of the dissertation has allowed me to make specific empirical observations about how bureaucratic offices, as lived sites for the enactment of states, may be changing and as a result how might an anthropological understanding of states need a revision. First, tracing digital technologies, such as databases on which bureaucratic work depends, show that the location of bureaucracy is fractured across multiple offices and technologies, many of which are contracted and which depend on forms of technical and non-

technical care. Engineers, bureaucrats and clients in pursuit of their individual goals struggle every day to synchronize these various parts. While prior approaches to studying state bureaucracy in India have relied on a distinction between its higher and lower echelons arguing that well-intentioned policies at the top are subject to destabilization as they move down the hierarchy (Kaviraj 1984; Chatterjee 1993; Madan 2009; Saberwal 1996), the work of synchronization brought about by practices in the wake of digital technology re-spatialize bureaucracy as the interconnection across institutional scales. In this interconnection, distance, on which the architecture of both colonial and post-colonial government is established, collapses. Government-at-a-distance, as a specific technology of governance in which interpretive knowledge flowed "up" the hierarchies of government (Smith 1985), is discarded for a politics of "immediation", where information produced is synchronously accessed across the hierarchy and across space. ICTs produce an expectation of control, as bureaucrats believe that the information on their fingertips *is* knowledge about their subjects and objects of control. Interpretive knowledge produced over time through records and reports gives way to instantaneous information. Thus, as a result of these bureaucratic practices, states in India may be getting re-spatialized as homogenous timescapes, different from spatializations produced across spatial disjunctions. Ferguson and Gupta (2002) point out in their influential article that mundane practices of writing "registers" in "local" offices and their examination by higher officials who arrive from far off places in jeeps, spatialize states as a vertical entity. As I point out in chapter three, when village accountants do not write registers and when officers de-prioritize inspections, or when contracted labor is sent out to collect information about land and crops through mobile apps and the data is uploaded simultaneously on servers in Bangalore, states are spatialized not through distance but through a time-space compression. The performance of hierarchy is

visualized not over space but over time. This is poised to get more intensive as suggestions for the use of artificial intelligence for state functions were being made towards the end of my fieldwork.

Second, new modes and techniques at generating data about the social world are producing a surfeit of information in bureaucracies, without always translating into bureaucratic knowledge. The colonial and post-colonial model of producing knowledge by distilling information from the village upwards through records and reports is now ridden roughshod by multiple, simultaneous instances of data collection. Yet, partly because of haste in collecting data, as a virtue in its own right, and partly because of incommensurability between technological and institutional forms, this information does not always yield interpretive knowledge. This has resulted in a weakened state control over its objects, as evidenced through multiple anecdotes I point out across chapters.

Third, new technologies, like real-time dashboards, produce a powerful representation of bureaucracies as speedy, to a diverse audience, at the same time removing the need to actually intervene in ongoing bureaucratic processes. Thus, instead of slow temporalities of bureaucracy as the over-arching frame of bureaucracy (Du Gay 2017), we are now encountering multiple temporalities of bureaucracy both in discourse and in material practice. I am not stressing on speed as temporally opposed to slowness, which technology is often credited with, but on the need to identify a heterogeneous mix of temporal experiences characterizing bureaucracy.

Effects produced by changing material forms of public bureaucracies have deep implications for policy and governance as welfare policies and programs are routed through the offices undergoing digital transition. First, as new media re-shapes the way citizens interact with the state, new opportunities for ‘petty’ and ‘grand’ corruption emerge. Given the fractured nature

of service delivery I observed in my fieldwork, gaps exist between successful narratives of an online service delivery and the lived struggles in accessing services. More shockingly, I found multiple instances of haphazard and hasty transitions from paper to the digital realm, resulting in a large number of data errors, with the responsibility of correction shifted on to citizens. Even as citizens find new interfaces to interact with the state, many of them, particularly the poor and vulnerable, experience this interaction through the cumbersome and costly process of repairing their faulty data. This dissertation makes visible these costs, and calls for thinking about ways to mitigate the risks of technology facing the poor who are dependent on state resources.

My primary fieldwork in Datanagar ended prior to March 2020 but from follow-ups I found out that there were many rapid changes as Covid related lockdowns set in. Empirically, there were multiple changes in the use of specific technologies that I encountered during my fieldwork. The app Grptlk, for instance, went viral in the bureaucracy with apparently every office using it for their daily communications. Ram and Shyam from Telemax (the company that built the app) were permanently stationed at the secretariat in Bangalore, setting up calls for different offices. Another app used for surveying crops changed its form, allowing land-owners to input their own data without a government appointee collecting that information from them. The revenue department began urging farmers to download the app and upload all their information in their self-interest. A third, which was an app used to survey land, was shelved, because the department decided that surveyor intervention to use the app was critical to its functioning, which could not be off-loaded on to the citizen.

Yet, beyond these empirical changes, the observations and analysis I have offered in this dissertation can be brought to bear on the dramatic surge of the digital during the Covid pandemic. The pandemic has given rise to novel techno-legal arrangements driven by

entrepreneurial forms of expertise, evident in an assemblage of digital infrastructure that include apps and dashboards and are in India collectively termed 'CovTech'. An alliance between senior bureaucrats and leading technocrats, which results in quicker and more tailored introduction of digital technologies into government bureaucracies, as I point out in chapter five, drives the digital infrastructures of pandemic management. The strategies to legitimize the use of apps, practices of data agglomeration, and control of space and mobility, which I point out in this dissertation are exemplified in apps such as India's *Aarogya Setu*, built to track the spread of Covid and certify that a person is healthy enough to access public utilities. In such a scenario, this dissertation calls for analyzing the future effects of a techno-legal and spatial intervention, particularly the often-concealed risks of exclusion that ethnographic research can point to. Specifically, the need is to look at the disjuncture between new infrastructures and older analog and digital forms of governance that they depend on, and to ask what this infrastructure purports to represent and what effects it has on the ground. What expectations are attached to this new infrastructure, by whom and what does the day-to-day life of these technologies tell us about politics in the age of the pandemic?

Bibliography

Abbott, Andrew. 1989. "The New Occupational Structure: What Are the Questions?" *Work and Occupations* 16 (3): 273–91.

Abrams, Philip. 1988. "Notes on the Difficulty of Studying the State (1977)." *Journal of Historical Sociology* 1 (1): 58–89.

Ahmann, Chloe. 2018. "'It's Exhausting to Create an Event out of Nothing': Slow Violence and the Manipulation of Time." *Cultural Anthropology* 33 (1): 142–71. https://doi.org/10.14506/ca33.1.06.

Alam, Muzaffar, and Sanjay Subrahmanyam. 2004. "The Making of a Munshi." *Comparative Studies of South Asia, Africa and the Middle East* 24 (2): 61–72.

Althusser, Louis. 2006. *Lenin and Philosophy and Other Essays*. Aakar Books.

Amrute, Sareeta. 2016. *Encoding Race, Encoding Class: Indian IT Workers in Berlin*. Duke University Press.

Anand, Nikhil. 2011. "Pressure: The Politechnics of Water Supply in Mumbai." *Cultural Anthropology* 26 (4): 542–64.

———. 2017. *Hydraulic City: Water and the Infrastructures of Citizenship in Mumbai*. Duke University Press.

Ananthamurthy, U. R. 2016. *Bara*. Translated by Chandan Gowda. Oxford University Press.

Appadurai, Arjun. 2013. *The Future as Cultural Fact: Essays on the Global Condition*. Verso.

Aretxaga, Begoña. 2003. "Maddening States." *Annual Review of Anthropology* 32 (1): 393–410.

Arnold, David. 2013. *Everyday Technology: Machines and the Making of India's Modernity*. University of Chicago Press.

Aziz, Abdul, and Sudhir Krishna. 1997. *Land Reforms in India: Karnataka: Promises Kept and Missed*. SAGE Publications.

Barley, Stephen R., and Gideon Kunda. 2011. *Gurus, Hired Guns, and Warm Bodies: Itinerant Experts in a Knowledge Economy*. Princeton University Press.

Barley, Stephen R., and Julian Edgerton Orr, eds. 1997. *Between Craft and Science: Technical Work in US Settings*. Cornell University Press.

Barry, Andrew. 2001. *Political Machines: Governing a Technological Society*. A&C Black.

Bartlett, Jamie, and Nathaniel Tkacz. 2017. "Governance by Dashboard: A Policy Paper." *Demos*.

Bassett, Ross. 2016. *The Technological Indian*. Harvard University Press.

Bayly, C. A. 1988. *Rulers, Townsmen and Bazaars: North Indian Society in the Age of British Expansion, 1770-1870*. CUP Archive.

———. 1999. *Empire and Information: Intelligence Gathering and Social Communication in India, 1780-1870*. Cambridge University Press.

Bear, Laura. 2016. "Time as Technique." *Annual Review of Anthropology* 45: 487–502.

Behera, Hari. 2009. "Constraints in Land Record Computerisation." *Economic and Political Weekly* 44 (25): 7–8.

Bell, Daniel. 1976. *The Coming of Post-Industrial Society: A Venture in Social Forecasting*. Basic Books.

Bellenoit, Hayden. 2014. "Between Qanungos and Clerks: The Cultural and Service Worlds of Hindustan's Pensmen, c. 1750–1850." *Modern Asian Studies*, 872–910.

Benjamin, Solomon, R. Bhuvaneswari, P. Rajan, and R. Manjunatha. 2007. "Bhoomi:'E–Governance', or, an Anti–Politics Machine Necessary to Globalize Bangalore?" *CASUM–m Working Paper*.

Bennett, Colin J., and David Lyon. 2013. *Playing the Identity Card: Surveillance, Security and Identification in Global Perspective*. Routledge.

Berlant, Lauren. 2007. "Slow Death (Sovereignty, Obesity, Lateral Agency)." *Critical Inquiry* 33 (4): 754–80. https://doi.org/10.1086/521568.

Bernstein, Anya. 2017. "Bureaucratic Speech: Language Choice and Democratic Identity in the Taipei Bureaucracy." *PoLAR: Political and Legal Anthropology Review* 40 (1): 28–51.

Bernstein, Anya, and Elizabeth Mertz. 2011. "Introduction Bureaucracy: Ethnography of the State in Everyday Life." *PoLAR: Political and Legal Anthropology Review* 34 (1): 6–10.

Beverungen, Armin. 2019. "Executive Dashboard as a Mediating Technology of Organization." In *The Oxford Handbook of Media, Technology, and Organization Studies*. Oxford University Press.

Björkman, Lisa. 2015. *Pipe Politics, Contested Waters: Embedded Infrastructures of Millennial Mumbai*. Duke University Press.

Bolter, J. David, and Richard Grusin. 1999. *Remediation: Understanding New Media*. MIT Press.

Bowker, Geoffrey C., and Susan Leigh Star. 2000. *Sorting Things out: Classification and Its Consequences*. MIT press.

Breckenridge, Keith. 2014. *Biometric State*. Cambridge: Cambridge University Press.

Britan, Gerald M., and Ronald Cohen. 1980. *Hierarchy and Society: Anthropological Perspectives on Bureaucracy*. Institute for the Study of Human Issues.

Brittlebank, Kate. 2016. *Tiger: The Life of Tipu Sultan*. Juggernaut Books.

Brown, Hannah, Adam Reed, and Thomas Yarrow. 2017. "Introduction: towards an ethnography of meeting." *Journal of the Royal Anthropological Institute* 23 (S1): 10–26. https://doi.org/10.1111/1467-9655.12591.

Bruyninckx, Joeri. 2017. "Synchronicity: Time, Technicians, Instruments, and Invisible Repair." *Science, Technology, & Human Values* 42 (5): 822–47.

Bussell, Jennifer. 2012. *Corruption and Reform in India: Public Services in the Digital Age*. Cambridge University Press.

Chan, Anita Say. 2014. *Networking Peripheries: Technological Futures and the Myth of Digital Universalism*. MIT Press.

Chatterjee, Moyukh. 2016. "Bandh Politics: Crowds, Spectacular Violence, and Sovereignty in India." *Distinktion: Journal of Social Theory* 17 (3): 294–307. https://doi.org/10.1080/1600910X.2016.1258586.

Chatterjee, Partha. 1993. *The Nation and Its Fragments: Colonial and Postcolonial Histories*. Vol. 11. Princeton University Press Princeton, NJ.

Chawala, Rajev. 2005. "Bhoomi: Online Delivery of Record of Rights, Tenancy and Crops to Farmers in Karnataka, India." In *Land Reforms in India: Computerisation of Land Records*, edited by H Wajahat and M Ahuja, 47–77. New Delhi: SAGE Publications.

Chong, Kimberly. 2018. *Best Practice: Management Consulting and the Ethics of Financialization in China*. Duke University Press.

Clarke, John, and Janet Newman. 1997. *The Managerial State: Power, Politics and Ideology in the Remaking of Social Welfare*. SAGE.

Cody, Francis. 2009. “Inscribing Subjects to Citizenship: Petitions, Literacy Activism, and the Performativity of Signature in Rural Tamil India.” *Cultural Anthropology* 24 (3): 347–80.

———. 2013. *The Light of Knowledge: Literacy Activism and the Politics of Writing in South India*. Cornell University Press.

Coelho, Karen. 2004. “Of Engineers, Rationalities, and Rule: An Ethnography of Neoliberal Reform in an Urban Water Utility in South India.” Tucson, Arizona: University of Arizona.

Cohen, Abner. 1976. *Two-Dimensional Man: An Essay on the Anthropology of Power and Symbolism in Complex Society*. Univ of California Press.

Cohen, Lawrence. 2019. “The ‘Social’De-Duplicated: On the Aadhaar Platform and the Engineering of Service.” *South Asia: Journal of South Asian Studies*, 1–19.

Coleman, E. Gabriella. 2010. “Ethnographic Approaches to Digital Media.” *Annual Review of Anthropology* 39 (1): 487–505. https://doi.org/10.1146/annurev.anthro.012809.104945.

Coleman, Leo. 2017. *A Moral Technology: Electrification as Political Ritual in New Delhi*. Cornell University Press.

Das, Veena, and Deborah Poole. 2004. *Anthropology in the Margins of the State*. School of American Research Press.

De’, Rahul, and Amit Prakash. 2007. “Importance of Development Context in ICT4D Projects: A Study of Computerization of Land Records in India.” *Information Technology & People* 20 (3): 262–81. https://doi.org/10.1108/09593840710822868.

Deo, Aditi, and Vebhuti Duggal. 2017. “Radios, Ringtones, and Memory Cards or, How the Mobile Phone Became Our Favourite Music Playback Device.” *South Asian Popular Culture* 15 (1): 41–56. https://doi.org/10.1080/14746689.2017.1351086.

Desai, Ketaki. 2018. “Hear! Hear! Voice Notes Are the New Texting - Times of India.” *The Times of India*, November 11, 2018, sec. India. https://timesofindia.indiatimes.com/india/hear-hear-voice-notes-are-the-new-texting/articleshow/66573840.cms.

Desai, Vandana, and Rob Imrie. 1998. “The New Managerialism in Local Governance: North-South Dimensions.” *Third World Quarterly* 19 (4): 635–50. https://doi.org/10.1080/01436599814172.

Doron, Assa. 2012. “Mobile Persons: Cell Phones, Gender and the Self in North India.” *The Asia Pacific Journal of Anthropology* 13 (5): 414–33. https://doi.org/10.1080/14442213.2012.726253.

———. 2013. *The Great Indian Phone Book*. Harvard University Press.

Du Gay, Paul. 2000. *In Praise of Bureaucracy: Weber - Organization - Ethics*. SAGE.

———. 2003. “The Tyranny of the Epochal: Change, Epochalism and Organizational Reform.” *Organization* 10 (4): 663–84.

———. 2008. “Max Weber and the Moral Economy of Office.” *Journal of Cultural Economy* 1 (2): 129–44.

———. 2017. “A Pause in the Impatience of Things.” In *The Sociology of Speed: Digital, Organizational, and Social Temporalities*, edited by Judy Wajcman and Nigel Dodd. Oxford University Press.

Eade, Deborah. 2007. “Capacity Building: Who Builds Whose Capacity?” *Development in Practice* 17 (4–5): 630–39.

Eubanks, Virginia. 2018. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. St. Martin’s Publishing Group.

Ferguson, James, and Akhil Gupta. 2002. “Spatializing States: Toward an Ethnography of Neoliberal Governmentality.” *American Ethnologist* 29 (4): 981–1002.

Foley, Megan. 2014. “‘Prove You’re Human’: Fetishizing Material Embodiment and Immaterial Labor in Information Networks.” *Critical Studies in Media Communication* 31 (5): 365–79.

Fountain, Jane E. 2004. *Building the Virtual State: Information Technology and Institutional Change*. Brookings Institution Press.

Frykenberg, Robert Eric. 1965. *Guntur District, 1788-1848: A History of Local Influence and Central Authority in South India*. Clarendon Press.

Gagliardone, Iginio. 2014. “New Media and the Developmental State in Ethiopia.” *African Affairs* 113 (451): 279–99.

Galanter, Marc. 1984. “Competing Equalities: Law and the Bacliward Classes in India.”

Gandhi, Sitaram. 1888. *A Clerks Guide for Subordinates in the Service and Those Seeking Government Employ*. Bombay: Education Society Press.

Gatty, N. 2009. “Information Technology for Governance Reforms: Land Records Computerisation in an Indian State.” United Kingdom: Institute of Development Studies, Sussex.

Gerlitz, Carolin, Anne Helmond, David B. Nieborg, and F. N. van der Vlist. 2019. “Apps and Infrastructures : A Research Agenda.” *Computational Culture – A Journal of Software Studies*, no. 7 (October). http://localhost/handle/1874/389140.

Goldman, Michael. 2011. “Speculative Urbanism and the Making of the next World City.” *International Journal of Urban and Regional Research* 35 (3): 555–81.

Government of India. 1969. “First Adiminstrative Reforms Commission Report: Personnel Admininstration.” New Delhi.

———. 1996. “An Agenda for Effective and Responsive Administration, (Discussion Note for the Conference of Chief Secretaries of States/ UTS) (Discussion Note for the Conference of Chief Secretaries of States/ UTS).” In . New Delhi: Ministry of personnel, Public Grievances and Pensions.

———. 2007. “Second Adiminstrative Reforms Commission Report: Personnel Admininstration.” New Delhi.

———. 2020. “Hacking of Government Websites - Lok Sabha Unstarred Question.”

Government of Karnataka. 2010. *Handbook of Village Accountants*. Mysore: Administrative Training Institute.

———. 2011. “Concept Note.” www.sakala.kar.nic.in.

Graeber, David. 2015. *The Utopia of Rules: On Technology, Stupidity, and the Secret Joys of Bureaucracy*. Melville House.

Green, Nile. 2010. “The Uses of Books in a Late Mughal Takiyya: Persianate Knowledge between Person and Paper.” *Modern Asian Studies* 44 (2): 241–65.

Greville, Charles Francis. 1795. *British India Analyzed: The Provincial and Revenue Establishments of Tippoo Sultaun and of Mahomedan and British Conquerors in Hindostan, Stated and Considered*. Vol. 3. R. Faulder.

Gupta, Akhil. 1998. *Postcolonial Developments: Agriculture in the Making of Modern India*. Duke University Press.

———. 2012. *Red Tape: Bureaucracy, Structural Violence, and Poverty in India*. Duke University Press.

Gupta, Subhashish, Kalpana Tyagi, and Rajkumar Upadhyay. 2018. "Twilight of Voice, Dawn of Data: The Future of Telecommunications in India." *DECISION* 45 (2): 161–83. https://doi.org/10.1007/s40622-018-0181-0.

Haigh, Thomas. 2014. "We Have Never Been Digital." *Communications of the ACM* 57 (9): 24–28.

Halpern, Orit. 2015. *Beautiful Data: A History of Vision and Reason since 1945*. Duke University Press.

Harvey, Penny, and Hannah Knox. 2015. *Roads: An Anthropology of Infrastructure and Expertise*. Cornell University Press.

Hecht, Gabrielle. 2011. *Entangled Geographies: Empire and Technopolitics in the Global Cold War*. MIT Press.

Heeks, Richard, and Savita Bailur. 2007. "Analyzing E-Government Research: Perspectives, Philosophies, Theories, Methods, and Practice." *Government Information Quarterly* 24 (2): 243–65.

Herzfeld, Michael. 1993. *The Social Production of Indifference*. University of Chicago Press.

Heyman, Josiah. 2004. "Deepening the Anthropology of Bureaucracy." *Anthropological Quarterly* 85 (4): 1269–77.

High Court of Karnataka. 2016. *Government of Karnataka Vs Petitioners*. Bangalore.

Hirschman, Albert O. 1972. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press.

Hirst, Alison, and Michael Humphreys. 2015. "Configurable Bureaucracy and the Making of Modular Man." *Organization Studies* 36 (11): 1531–53. https://doi.org/10.1177/0170840615593585.

Hoag, Colin. 2011. “Assembling Partial Perspectives: Thoughts on the Anthropology of Bureaucracy.” *PoLAR: Political and Legal Anthropology Review* 34 (1): 81–94.

Hoag, Colin, and Matthew Hull. 2017. “A Review of the Anthropological Literature on the Civil Service.” *World Bank Group* Policy Research Working Paper 8081.

Hood, Christopher. 1995. “The ‘New Public Management’ in the 1980s: Variations on a Theme.” *Accounting, Organizations and Society* 20 (2–3): 93–109.

Hossain, Naomi. 2010. “Rude Accountability: Informal Pressures on Frontline Bureaucrats in Bangladesh.” *Development and Change* 41 (5): 907–28.

Hull, Matthew S. 2012a. “Documents and Bureaucracy.” *Annual Review of Anthropology* 41: 251–67.

———. 2012b. *Government of Paper: The Materiality of Bureaucracy in Urban Pakistan*. University of California Press.

Irani, Lilly. 2019. *Chasing Innovation: Making Entrepreneurial Citizens in Modern India*. Princeton University Press.

Jayal, Niraja Gopal. 2013. *Citizenship and Its Discontents: An Indian History*. Harvard University Press.

Jensenius, Francesca Refsum, and Pavithra Suryanarayan. 2015. “Fragmentation and Decline in India’s State Assemblies: A Review, 1967–2007.” *Asian Survey* 55 (5): 862–81.

Jimenéz, Alberto Corsin, ed. 2017. *The Anthropology of Organisations*. Routledge.

Joyce, Patrick. 2003. *The Rule of Freedom: Liberalism and the Modern City*. Verso.

Kalpagam, U. 2014. *Rule by Numbers: Governmentality in Colonial India*. Lexington Books.

Kapferer, Bruce. 1988. *Legends of People, Myths of State*. Smithsonian.

Kaviraj, Sudipta. 1984. “On the Crisis of Political Institutions in India.” *Contributions to Indian Sociology* 18 (2): 223–43. https://doi.org/10.1177/006996678401800205.

Khera, S. S. 1964. *District Administration in India*. Bombay: Asia Publishing House.

Krishna, Anirudh. 2013. “Stuck in Place: Investigating Social Mobility in 14 Bangalore Slums.” *The Journal of Development Studies* 49 (7): 1010–28.

Krishna, Anirudh, and Vijay Brihmadesam. 2006. “What Does It Take to Become a Software Professional?” *Economic and Political Weekly*, 3307–14.

Kumar, Naveen. 2017. “Securing Land Rights for the Poor Is Key to Telengana’s Succes.” Https://www.landesa.org/blog-securing-land-rights-poor-key-telanganas-success/. August 8, 2017.

Kunreuther, Laura. 2014. *Voicing Subjects: Public Intimacy and Mediation in Kathmandu*. University of California Press.

Larkin, Brian. 2008. *Signal and Noise: Media, Infrastructure, and Urban Culture in Nigeria*. Duke University Press.

Lasania, Yunus Y. 2019. “SIT Finds Voter Data from Other States in IT Grids Possession.” *Mint*, April 23, 2019, sec. Politics. https://www.livemint.com/politics/policy/sit-finds-voter-data-from-other-states-in-it-grids-possession-1555997127548.html.

Laszczkowski, Mateusz, and Madeleine Reeves. 2015. “Introduction: Affective States—Entanglements, Suspensions, Suspicions.” *Social Analysis* 59 (4): 1–14.

Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers Through Society*. Harvard University Press.

Lea, Tess. 2008. *Bureaucrats and Bleeding Hearts: Indigenous Health in Northern Australia*. UNSW Press.

Li, Tania Murray. 2007. *The Will to Improve: Governmentality, Development, and the Practice of Politics*. Duke University Press.

Lipsky, Michael. 2010. *Street-Level Bureaucracy: Dilemmas of the Individual in Public Service*. Russell Sage Foundation.

Lyon, David. 1994. *TheElectronic Eye: The Rise of Surveillance Society*. Polity Press.

———. 2001. *Surveillance Society: Monitoring Everyday Life*. McGraw-Hill Education (UK).

Madan, T. N. 2009. *Modern Myths, Locked Minds: Secularism and Fundamentalism in India*. Oxford University Press.

Madon, S. 2009. *E-Governance for Development: A Focus on Rural India*. Springer.

Maheshwari, S.R. 1972. *The Administrative Reforms Commission*. Agra: Laxmi Narain Agarwal.

Maheshwari, SR. 1993. *Administrative Reform in India*. Delhi: Jawahar Publishers.

Mangla, Akshay. 2015. "Bureaucratic Norms and State Capacity in India: Implementing Primary Education in the Himalayan Region." *Asian Survey* 55 (5): 882–908. https://doi.org/10.1525/as.2015.55.5.882.

Mann, Michael. 2012. *The Sources of Social Power: Volume 1, A History of Power from the Beginning to AD 1760*. Cambridge University Press.

Marathe, Megh, and Priyank Chandra. 2020. "Officers Never Type: Examining the Persistence of Paper in e-Governance." In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 1–13.

Marcuse, Herbert. 1964. *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. Beacon Press.

Mathais, LLyod. 2019. "Voice Is Moving from Music Requests to an Integral Part of Popular Culture." *Mint*, November 20, 2019, sec. Companies.

https://www.livemint.com/companies/start-ups/reverse-pitch-voice-is-moving-from-music-requests-to-becoming-an-integral-part-of-popular-culture-11574233321840.html.

Mathews, Andrew S. 2011. *Instituting Nature: Authority, Expertise, and Power in Mexican Forests*. MIT Press.

Mathur, and Bear. 2015. "Remaking the Public Good: A New Anthropology of Bureaucracy." *The Cambridge Journal of Anthropology* 33 (1): 18–34.

Mathur, Kuldeep, and Navdeep Mathur. 2017. "Assessing Administrative Reform in India." *Chinese Political Science Review* 2 (1): 40–55.

Mathur, Nayanika. 2016. *Paper Tiger*. Cambridge University Press.

Mazzarella, William. 2004. "Culture, Globalization, Mediation." *Annu. Rev. Anthropol.* 33: 345–67.

———. 2010. "Beautiful Balloon: The Digital Divide and the Charisma of New Media in India." *American Ethnologist* 37 (4): 783–804.

Mehta, Pratap Bhanu. 2014. "Maximum Mistrust." *The Indian Express*, October 10, 2014, Online edition. https://indianexpress.com/article/opinion/columns/maximum-mistrust/.

Merry, Sally Engle. 2016. *The Seductions of Quantification: Measuring Human Rights, Gender Violence, and Sex Trafficking*. University of Chicago Press.

Mertia, Sandeep, ed. 2020. *Lives of Data: Essays on Computational Cultures from India | Sandeep Mertia | Download*. Institute of Network Cultures. https://1lib.uk/book/11187856/c9e744?regionChanged=&redirect=242663476.

Middleton, Townsend. 2019. *Limn Number 10: Chokepoints*. Independently Published.

Miller, Peter, and Nikolas Rose. 2008. *Governing the Present: Administering Economic, Social and Personal Life*. Polity.

Misra, Bankey Bihari. 1983. *District Administration and Rural Development in India: Policy Objectives and Administrative Change in Historical Perspective*. Oxford University Press.

Mitchell, Timothy. 2002. *Rule of Experts: Egypt, Techno-Politics, Modernity*. Univ of California Press.

———. 2011. *Carbon Democracy: Political Power in the Age of Oil*. Verso Books.

Muir, Sarah, and Akhil Gupta. 2018. "Rethinking the Anthropology of Corruption: An Introduction to Supplement 18." *Current Anthropology* 59 (S18): S4–15.

Nair, Janaki. 2011. *Mysore Modern: Rethinking the Region Under Princely Rule*. University of Minnesota Press.

Nair, Vijayanka. 2019. "Governing India in Cybertime: Biometric IDs, Start-Ups and the Temporalised State." *South Asia: Journal of South Asian Studies* 42 (3): 519–36.

Nanjundappa, D. M., A. Aziz, B. Sheshadri, G. Kadekodi, and M. J. M. Rao. 2002. "Report of the High Power Committee for Redressal of Regional Imbalances in Karnataka." *Bangalore: Government of Karnataka*.

Narayanan, Sudha, Gausia Shaikh, Diya Uday, and Bhargavi Zaveri. 2017. "Report on the Implementation of the Digital India Land Records Modernization Programme (DILRMP) in the State of Maharashtra." Finance Research Group, Indira Gandhi Institute of Development Research.

Nayak, Pradeep. 2015. *The State and Land Records Modernisation*. Cambridge University Press.

Nilekani, Nandan. 2013. "Report of the Expert Committee on HR Policy for E-Governance." New Delhi: Department of Electronics and Information Technology.

Nixon, Rob. 2011. *Slow Violence and the Environmentalism of the Poor*. Harvard University Press.

O'Hanlon, Rosalind. 2010. "The Social Worth of Scribes : Brahmins, Kāyasthas and the Social Order in Early Modern India." *The Indian Economic & Social History Review* 47 (4): 563–95. https://doi.org/10.1177/001946461004700406.

Oliver-Smith, Anthony, and Susanna Hoffman. 1999. *The Angry Earth: Disaster in Anthropological Perspective*. Routledge.

O'Neil, Cathy. 2016. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Penguin UK.

Philip, Kavita, Lilly Irani, and Paul Dourish. 2012. "Postcolonial Computing: A Tactical Survey." *Science, Technology, & Human Values* 37 (1): 3–29. https://doi.org/10.1177/0162243910389594.

Planning Commission. 1976. "Computerized Bank: File No. M-12038/3/76-M&I."

Porter, Theodore M. 2020. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton University Press.

Potter, David C. 1964. *Government in Rural India: An Introduction to Contemporary District Administration*. London School of Economics and Political Science.

Povinelli, Elizabeth A. 2011. *Economies of Abandonment: Social Belonging and Endurance in Late Liberalism*. Duke University Press.

Prakash, Amit. 2008. "Development Paradigms, Social Contexts and Patterns of Technology Use : Study of Land Record Computerization In India." Indian Institute of Management Bangalore.

Prasad, Amita. 2013a. *Training Manual on Karnataka Sakala Services Act, 2011*. Mysore: Administrative Training Institute.

———. 2013b. *Tutors Guide on Karnataka Sakala Services Act - 2011*. Mysore: Administrative Training Institute.

Raghunandan, PM. 2017. "Bhoomi Software Upgrade Project Stuck over Cost Escalation | Deccan Herald." *Deccan Herald*, February 25, 2017. https://www.deccanherald.com/content/598109/bhoomi-software-upgrade-project-stuck.html.

Rai, Amit S. 2015. "The Affect of Jugaad: Frugal Innovation and Postcolonial Practice in India's Mobile Phone Ecology , The Affect of Jugaad: Frugal Innovation and Postcolonial Practice in India's Mobile Phone Ecology." *Environment and Planning D: Society and Space* 33 (6): 985–1002. https://doi.org/10.1177/0263775815598155.

Raman, Bhavani. 2012. *Document Raj: Writing and Scribes in Early Colonial South India*. University of Chicago Press.

Ramanujan, Attipat Krishnaswami. 1990. *Who Needs Folklore?: The Relevance of Oral Traditions to South Asian Studies*. Center for South Asian Studies, School of Hawaiian, Asian, and Pacific ….

Rämö, Hans, and Per Skålén. 2006. "Time and Space in New Public Management Reform: The Case of Geriatric Care." *International Journal of Public Sector Management*.

Rangaswami, C. V. 1984. "British Settlement Reports and Daftars in Historical research in Karnataka." *The Journal of Karnatak University: Social Sciences* 20: 92.

Riles, Annelise. 1998. "Infinity within the Brackets." *American Ethnologist* 25 (3): 378–98.

Robinson, Nick. 2012. “Right to Public Service Acts in India: The Experience from Bihar and Madhya Pradesh.” *Policy Briefs. New Delhi, India: Accountability Initiative*.

Roitman, Janet. n.d. “Crisis : Political Concepts: Issue One.” Accessed October 14, 2020. http://www.politicalconcepts.org/issue1/crisis/.

Ruparelia, Sanjay. 2013. “India’s New Rights Agenda: Genesis, Promises, Risks.” *Pacific Affairs* 86 (3): 569–90.

Saberwal, Satish. 1996. *Roots of Crisis: Interpreting Contemporary Indian Society*. SAGE Publications.

Saxena, Naresh C. 2005. “Updating Land Records: Is Computerisation Sufficient?” *Economic and Political Weekly* 40 (4): 7–8.

Schnitzler, Antina. 2013. “Traveling Technologies: Infrastructure, Ethical Regimes, and the Materiality of Politics in South Africa.” *Cultural Anthropology* 28 (4): 670–93.

Schwittay, Anke. 2008. “‘A Living Lab’ Corporate Delivery of ICTs in Rural India.” *Science, Technology and Society* 13 (2): 175–209.

Sealy, Irwin Allan. 2014. *The Small Wild Goose Pagoda*. Aleph Book Company.

Sellen, Abigail J., and Richard H. R. Harper. 2003. *The Myth of the Paperless Office*. MIT Press.

Selznick, Philip. 1943. “An Approach to a Theory of Bureaucracy.” *American Sociological Review* 8 (1): 47–54. https://doi.org/10.2307/2085448.

Sengupta, Tania. 2020. “Papered Spaces: Clerical Practices, Materialities, and Spatial Cultures of Provincial Governance in Bengal, Colonial India, 1820s–1860s.” *The Journal of Architecture* 25 (2): 111–37. https://doi.org/10.1080/13602365.2020.1733861.

Sharma, Sarah. 2014. *In the Meantime: Temporality and Cultural Politics*. Duke University Press.

Shivanna, AG. 2006. *Record of Rights: The Law and Legacy*. Bangalore: Lawyers' Law Book.

Simondon, Gilbert. 2017. *On the Mode of Existence of Technical Objects*. Univocal Publishing Minneapolis.

Sircar, ASHOK KUMAR. 2012. "The Right-to-Public-Services Laws." *Economic and Political Weekly* 47 (18): 23–26.

Smith, Richard Saumarez. 1985. "Rule-by-Records and Rule-by-Reports: Complementary Aspects of the British Imperial Rule of Law." *Contributions to Indian Sociology* 19 (1): 153–76.

———. 1996. *Rule by Records: Land Registration and Village Custom in Early British Panjab*. Oxford University Press.

Solanki, Aakash. 2019. "Management of Performance and Performance of Management: Getting to Work on Time in the Indian Bureaucracy." *South Asia: Journal of South Asian Studies* 42 (3): 588–605. https://doi.org/10.1080/00856401.2019.1603262.

Stein, Burton, Gulshan Dietl, and Formerly Professor of History School of Oriental and African Studies Burton Stein. 1989. *Thomas Munro: The Origins of the Colonial State and His Vision of Empire*. Oxford University Press.

Subramanian, Ajantha. 2019. *The Caste of Merit: Engineering Education in India*. Harvard University Press.

Sukumar, Arun Mohan. 2019. *Midnight's Machines: A Political History of Technology in India*. Penguin Random House India Private Limited.

Taylor, Philip Meadows. 1920. *The Story of My Life*. H. Milford, Oxford University Press.

Times of India. 2018. "Over 22k Indian Websites, 114 Govt Portals Hacked between Apr 2017-Jan 2018 | Business Standard News." March 7, 2018. https://www.business-

standard.com/article/current-affairs/over-22k-indian-websites-114-govt-portals-hacked-between-apr-2017-jan-2018-118030700870_1.html.

Tkacz, Nate. 2009. “CONNECTION PERFECTED: What the Dashboard Reveals.” *Context*, 9.

Tottenham, Richard. 1945. *District Office Manual*. North Arcot Madras Presidency.

Tsing, Anna. 2000. “Inside the Economy of Appearances.” *Public Culture* 12 (1): 115–44. https://doi.org/10.1215/08992363-12-1-115.

Upadhya, Carol. 2016. *Reengineering India: Work, Capital, and Class in an Offshore Economy*. Oxford, New York: Oxford University Press.

Von Schnitzler, Antina. 2008. “Citizenship Prepaid: Water, Calculability, and Techno-Politics in South Africa.” *Journal of Southern African Studies* 34 (4): 899–917.

Vostal, Filip. 2019. “Acceleration Approximating Science and Technology Studies: On Judy Wajcman’s Recent Oeuvre.” *Science, Technology, & Human Values* 44 (4): 686–706.

Wajcman, Judy. 2015. *Pressed for Time: The Acceleration of Life in Digital Capitalism*. University of Chicago Press.

Wajcman, Judy, and Nigel Dodd. 2017. *The Sociology of Speed: Digital, Organizational, and Social Temporalities*. Oxford University Press.

Warner, William Lloyd, and Josiah Orne Low. 1947. *The Social System of the Modern Factory: The Strike: A Social Analysis*. Yale University Press.

Weber, Max. 1978. *Economy and Society: An Outline of Interpretive Sociology*. University of California Press.

Weidman, Amanda. 2014. “Anthropology and Voice.” *Annual Review of Anthropology* 43: 37–51.

Winner, Langdon. 1980. “Do Artifacts Have Politics?” *Daedalus*, 121–36.

Witsoe, Jeffrey. 2012. “Everyday Corruption and the Political Mediation of the Indian State: An Ethnographic Exploration of Brokers in Bihar.” *Economic and Political Weekly* 47 (6): 47–54.

Zasloff, Jonathan. 2011. “India’s Land Title Crisis: The Unanswered Questions.” *Jindal Global Law Review* 3: 11–29.

Zuboff, Shoshana. 1988. “In the Age Ofthe Smart Machine.” *Basic Book, NY*.