

Dealing with the Digital Panopticon: The Use and Subversion of ICT in an Indian Bureaucracy

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ABSTRACT

To what extent can information technology be used to eliminate government corruption? In this paper, I examine an ambitious experiment by a South Indian state in the use of Information and Communication Technologies (ICT) within a bureaucracy to reduce corruption. In this initiative, the senior bureaucrats built a digital network to remotely control the implementation of a public rural employment scheme. Focusing on the technology-based implementation for this paper, I show that centralization of implementation that the technology enabled could significantly overcome the endemic corruption that tends to happen in the local "last mile" of such schemes. I also find how technology designed for control can be subverted at the local level. My work suggests that the future of such government programs lies in incrementally resolving the conflicting forces and interests involved and that the move towards technical is as much a political project.

Categories and Subject Descriptors

D.3.3 [Human Factors]

General Terms

Management, Human Factors.

Keywords

Surveillance, Governance, Corruption, India.

1. INTRODUCTION

Very often, existing open government projects tend to exclusively focus on building better access to records by using technology to process the data and produce usable websites, and taking the data to the people by opening rural computer centers. The logic runs like this: open government project releases public records that increase transparency of the government functioning, leading to greater participation from people and thereby putting pressure on the state to be accountable to its people. This *If you build it, they will come reasoning* solves the accountability question by an access to information solution.

Theorists reflecting on the practice of open government across the world have drawn attention to the ambiguity of open

government and open data and called for a separation of the politics of open government from the technologies of open data [20]. The open government movement takes for granted that building the technology would foster participation and citizen action to supply the political work needed for better governance[19]. On the other end of the spectrum, there are state actors who use technology to further centralize control to increase the "legibility" of its citizens [1,11]. The two dominant ways that the "state" gets dealt with are through the metaphor of seeing, we are either "seeing like a state" or "seeing the state"[2,15]. There are also a growing number of anthropologists who look at the state and have begun to disaggregate the state [7,8,14].

In this paper, I look at an ICT initiative by the Andhra Pradesh (AP) state government in India that seeks to go beyond access-oriented initiatives to solve what they consider to be the "last-mile problem". The last-mile problem arises from the inability of higher-level bureaucrats to govern a vast expanse of the area in their jurisdiction due to the limited number of civil servants employed and a deep-rooted unwillingness to cede power to the locals. To address the last-mile problem, the higher-level bureaucracy has deployed various forms of surveillance mechanisms to control the practice of the lower-level bureaucrats, but this has been achieved only in part. Lower bureaucrats have found ways of circumventing surveillance as well as control – but imperfectly so.

I argue that the software system designed by the higher-level bureaucrats is an evolving panopticon that deals with resistance to the system by changing its design constantly. I argue that the struggle for the control of the panopticon persists as the lower-level bureaucrats find creative ways to thwart the intentions of the higher-level bureaucrat.

2. METHODOLOGY

The paper is based on an ethnographic investigation in Andhra Pradesh, India over an 18-month period between 2011-2012, of which 12 months were spent in the field. I used a variety of approaches to data collection. My methods include participant-observation, unstructured and semi-structured interviews, survey administered in fifty villages, content analysis of documents and archival work in the assembly archives in Andhra Pradesh.

First, I lived and worked as an unpaid daily wage laborer for a three-month period in three different village habitations in Andhra Pradesh. I also attended several internal meetings with the higher-level bureaucrats. Second, I volunteered as a government auditor for two months and "officially" shadowed the audit team, which did a door-to-door survey of the workers. Third, I attended more than 25 meetings - some of which were over twelve hours long, videoconferences, workshops, and political rallies at the village, block and state levels. Finally, I conducted over one hundred semi-structured interviews of individuals working at the village, regional, state and national

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levels. The data for this paper comes primarily from interviews and from my field notes.

The following section introduces the setting and discusses the problems that occupied the senior bureaucrats thus motivating the solutions that they came up with.

3. THE CONTEXT

The Mahatma Gandhi National Rural Guarantee Act (NREGA) of 2005 is a program by the Government of India whose main objective is to provide up to one hundred days of guaranteed wage employment to every household provided they are willing to do manual labor at minimum wage. While there are many public works in India, the right to work was legally guaranteed for the first time in NREGA, creating a historic opportunity to transform rural India. With the twin goals of building locally relevant assets and ensuring employment, the act bans the use of contractors and labor-displacing machinery and also mandates that the local village council choose the type of local asset to be built.

NREGA is sponsored by the central government, but each state has to ratify the act and create its own scheme to guide the implementation. Andhra Pradesh has a three-tier structure of governance like the rest of the states, namely the District, the mandal and the village gram panchayats (village councils). Traditionally, the different levels of bureaucratic structure in Andhra and the rest of the country have operated on a top-down theory of management. The work gets decided at the state level and the money gets released from the top through the hierarchy while the work gets done at the local level. The programs are typically governed by *circulars* and *government orders* that are issued at the state-level to manage the program. These circulars provide guidelines in terms of what is allowed under each program. In 1992, there had been a nationwide decentralization of power to the local elected governments at the villages to undertake development works. The 73rd amendment of the Indian constitution allowed for the increased role of village councils or gram panchayats in rural governance. Decentralization did not automatically bring greater accountability. Corruption continues to be part of the reality of development programs in several ways [3].

Several newspaper reports and audits by the government's audit institution suggest that funds have been embezzled by fudging muster rolls, paying lower daily wages than the prescribed minimum wage, and by taking bribes to allot work. Andhra, like most of India, was no different; it had a weak record of implementing development programs. Research on a food-for-work program, a precursor to NREGA in Andhra declared the program to be a waste, where most of the free rice provided under the scheme had not reached its beneficiaries [3]. The report argued that:

One of the most disturbing findings that emerges from this research is that almost everywhere we studied, Panchayat (village) officials and sarpanches (local political head) were instrumental in the corruption of "Food for work" [predecessor to NREGA in Andhra Pradesh]. This calls into question the promise that decentralization holds for improved accountability and better service delivery.

The decentralization process that had devolved powers to the district and below in many ways bothered bureaucrats at the state level. The starting point of our analysis is the motivation and proposed solution to the political-bureaucratic and contractor nexus that used to rule development programs which

emerges evocatively from the way a senior bureaucrat summarizes the issue. In setting the stage he says:

I found three kinds of vested interests. Politicians who get the works sanctioned. They are bringing the works to the village so that they have a share in it [spoils]. Engineers and the contractors who implement the works and make the estimates have a share in it. I have found development programs in the past have been driven through and through by these vested interests. So, I realized that If NREGA has to run; we have to keep these three fellows out. We need to have a totally different business process. Same business process just will not work. Willy nilly, inadvertently also these people will come in and position themselves. We need to really to turn the whole thing upside down, and then only things will move. We need to take away the powers from everyone.

In the next section, I present my theoretical framework that informed my study.

4. GOVERNMENTALITY AND PANOPTICISM

Weber offers bureaucracy as a positive force to reckon with, despite the potential of trapping us in an iron-cage [18]. According to him, the office in a bureaucracy requires the officials to function along a pre-determined set of rules in order to escape from the arbitrary whims of the ruler [23]. Here, we see the higher-level bureaucrats sharing Weber's vision to govern using rules.

I use the themes of governmentality and panopticism to frame this paper [9]. The idea of governmentality, introduced by Foucault, refers to a form of governing seen as a "conduct of conduct" [15]. Governmentality is a form of rationality deployed to control the conduct of others, by controlling a detailed set of micro-practices or how people are persuaded to control themselves. Foucault was talking about the shift in the state's control over the power from a sovereign power to a disciplinary power and governmentality is how the new power was exercised by the state over the population [5]. While the general discourse around governmentality uses the concept as a state vs. population construct, I am going to deploy the idea of governmentality within the bureaucracy. Particularly, I see the higher-level bureaucrats exert power over the lower-level bureaucrats primarily through the lens of controlling their micro-practices. In essence, I show how a system designed to survey the population is turned into one to survey lower-level bureaucrats, thereby splitting the monolithic state internally.

Traditionally in India, the existing form of control that the higher-level bureaucrats exercised was through government orders and circulars. The circulars and government orders get manifested through paper-based documents that circulate through the hierarchy. Apart from rules and procedures that come down from the top, there were periodic reports that were generated at the field level and sent up. The actions of the higher-level bureaucrats can be seen as controlling the micro-practices of a program. These practices were very detailed and would govern every aspect of the program.

In order to understand how higher-level bureaucrats transcend the material limitations of exercising power over the lower-level bureaucrats, let me turn to the concept of panopticon. Foucault helped popularize Bentham's idea of panopticon to effectively

have surveillance over prisoners. The architecture of the prison is arranged so that the prisoners do not see each other but are observed by an observer at the center. The prisoners thus discipline themselves without knowing when and if they are getting observed to prevent sanctions. While Bentham meant the panopticon to be a beneficial thing, it's hard to read the panopticon today without the shadow of Orwellian "surveillance society"[13].

Panopticon and micro-practices operate at two different levels. Panopticon exerts power through a disciplinary process where the "gaze" exerts power leading to adherence to the rules of the game. The micro-practices move beyond the gaze and exert control over the everyday rules of the prison.

To reiterate, the use of governmentality that has been dominant is to use it look at the state vs. the citizen context, but I am using the ideas of surveillance to understand the effects in the context of well-intentioned higher bureaucrats vs. the lower level bureaucrats. The more general statement of what I say can be traced to Weber where he believed bureaucracy marked a distinct 'life order' and that this had substantial social benefits [5,6,16]. The paper assumes that the higher-level bureaucrats implementing NREGA are not corrupt and gives a certain "will to improve" to the higher-level bureaucrats administering NREGA in Andhra [12].

The next section takes up the task of understanding how the software system was put in place and what the main components of the system were. Specifically, I show how the software system is at the center of the higher-level bureaucrats' vision.

5. THE HIGH-LEVEL SOLUTION: TECHNOLOGY MEDIATED ADAPTIVE PANOPTICON

One senior bureaucrat discusses the reasoning and the conceptualization of the solution that emerged in the following quote

The entire bureaucracy was top-down; half the time goes in preparing the reports and reports and reports. Because of this whichever functionary I asked them "what is the single most irritant [to implement the program] is", they told me it is the need to fill so many forms and send so many reports. I thought I must have a system where I should not ask anybody for any report. Another thought that occurred to me from day one, one simple transparency measure that is, give the worker a slip that he has worked last week for so many hours. He can then take it to the sarpanch (village head) or postal system or wherever to get his payment. The idea of the beautiful MIS, which you must have seen by now, occurred out of that.

The solution the higher-level bureaucrats identified, was both a political and a technological vision for the information system targeting the higher-level bureaucrat, the lower-level bureaucrats and workers. Firstly through its role as an "anti-politics machine"[4] to centralize power by taking away power from local politicians, who are seen as a corrupting influence. And secondly, helping lower and middle bureaucrats increase their efficiency in generating reports through a MIS and thereby garnering their consent in using the system. Having a software system makes it easy for the lower bureaucrats to meet the reporting demands that seem have risen because of the new transparency requirements in NREGA.

The fundamental premise behind surveillance is that monitoring of field-level bureaucrats by the senior bureaucrats leads to better adherence to rules. The need for surveillance emanates from a deep distrust on the part of the higher-level bureaucrats in the hierarchical bureaucratic form of governance. So, to get past the failures, one has to control implementation from the centre. Two different principles were put to work by the use of technology to centralize control: increase the visibility of work done at every level of the bureaucracy and to constrain micro-practices at the field level by enforcing and updating rules programmatically. The higher-level bureaucrat desired to build a digital panopticon by relying on incredibly sophisticated set of tools with various checks and counter checks to control their lower-level bureaucrats. The sections below provide some details of how the panopticon panned out by focusing on the production and circulation of one single document called the muster roll.

5.1 Seeing the Field Bureaucrat

5.1.1 Digitizing the Muster Roll

The muster roll records the number of days worked by a worker at a work site. The muster roll bears witness to the actions of the government.¹ The muster roll has a dual purpose: an accounting mechanism and a surveillance mechanism to track the work of the lower-level bureaucrats. Prior to the digitization, muster roll would never be seen by anybody other than the local field assistant and what concerned the higher level officials was the aggregate number of days generated for a region.

By digitizing the records, there is an effort to increase the granularity of the data visible to the higher-level bureaucrats.

As a senior bureaucrat remarked,

Once all the applications are entered into the computer the job cards come; once measurements are entered estimates come. Once measurements are entered payroll data, muster rolls, measurement pay orders will come. So no decision needs to be taken by anybody, it will automatically happen. And once the program started running, it was on an autopilot mode, it was the MIS system that was running it.

In addition to having the raw data on the software system, there are a number of reports put up on the web by a software company contracted by the state government. These allow anybody, more specifically, the senior-bureaucrats to generate reports dynamically.²

¹ Historically, the muster roll remained closed and internal to the bureaucracy. MKSS, a social movement in Rajasthan, radicalized the document by removing the secrecy around it by forcing the document to be read out in public. Their struggles contributed to an act called Right to Information (RTI) in 2005, which among other things mandates the government to open up records for inspection by the public.

² It is a huge step forward considering that many states like Bihar haven't yet managed to get this step of reliably getting the data up on the web.

5.1.2 Live Capture and Updating the Muster Roll to the Cloud

The third aspect of the system is the ability to capture data right from the location of the field site using mobile phones.³ Every field assistant has been given a smart phone with an application to record attendance at the work site.

According to an official presentation:

The objective is to achieve complete transparency of NREGA by obtaining live data from the worksite to the website on a daily basis. It is designed to arrest distortions in the program like muster fudging, delays in payments, benami (i.e., bogus) wage seekers, fake measurement and work duplication.⁴

The interest in speeding up the data capture is a "natural" progression in the interest of the higher-level bureaucrats to be able to see the data as it happens to increase their power. This takes "legibility" to a new level, where the bureaucrats are able to at a glance tell the number of workers who show up to work that day across the state.⁵ The next section takes on the question: What does the new technology systems really enable?

5.1.3 Forcing Location Enhanced Muster Roll

One of the jobs of the supervisors is to visit the work site and provide a counter-check to monitor the lower-bureaucrats work. Until now, there has been no easy way to verify whether the supervisors have done their job or not. With the advent of mobile phones, there have been attempts by the higher-level bureaucrats to take advantage of the location-based tagging that is now possible with smart phones. Every supervisor has been given a smart phone with a custom application that records attendance. The supervisor is instructed to send the data from the field site so that the location information travels as metadata along with the attendance details. Making the supervisor's visit visible would put pressure on the supervisor to actually visit the work site, ultimately serving as a deterrent to the field assistant to not indulge in corrupt acts. Another example of tracking the supervisors is the production of a location-based deviation report to automatically harvest the trips that the supervisor makes to the field. This report gets automatically generated and produced before the district program director. The idea is to make it easy for the bureaucrat to follow-up based on "deviations" from the norm.⁶ The automatic generation of reports is particularly useful as visibility of deviations would have been too cumbersome to before the advent of the system.

The following section focuses on how the higher-level bureaucrats using the enhanced vision provided by technology, successfully deployed the MIS to remotely control the program.

³ The mobile phone data capture is in addition to paper records.

⁴ Benami refers to bogus names in lieu of workers.

⁵ Bureaucrats routinely logged on to the web portal in front of me to show the number of workers that have shown up to work that particular day.

⁶ The deviations assume that there has been location tagging of the worksite. Every time a new worksite is opened, a new process has been added, which is to precisely do the tagging of the work and to add it to the database.

5.2 Constraining Micro-Practices at Field Level by Enforcing and Updating Rules

5.2.1 Controlling the Document Remotely

One of the ways that the higher-level bureaucrats tried to keep control of the lower bureaucrats was to remotely generate documents. As an example, let us look at the case of how muster rolls were remotely generated. The main motivation for the exercise was to prevent bogus entries by centrally controlling various elements of the muster roll. Some of the strategies include: pre-populating many aspects of the form from the center and making certain aspects of the form read-only and requiring every worker to be part of a group by pre-populating the names of the workers in the musters before it reaches the field.

To further make this system 'fool-proof', the higher-level bureaucrats passed an order that mandates generation of the physical copies of the muster rolls in the state office and sending the forms to the various mandal (clusters), where each muster is digitally encoded, so that it can be counted and kept track of.

The pre-population of the muster roll restricts the flexibility of the field assistant to form groups arbitrarily and thereby prevents him from introducing bogus entries. Further, in order to reduce arbitrariness in the group formation, a worker, having joined a particular group has to remain in it for a year. The mobility restriction is intended to prevent the field assistant from fudging reports by shifting workers around in multiple groups, which makes it hard for the higher-level bureaucrats to easily track them. Another problem that the higher-level bureaucrats were trying to solve was based on a discovery that the workers were shown in the muster roll to be working on multiple work sites in the same week. To avoid this issue work assignment was centralized. This was done via a computer algorithm, which assigns random group to random work site. Thus, the muster roll tells first of all whether the worker has been assigned to a group and then to which worksite. This centralized allocation of work assignment has enabled the higher-level bureaucrats to mute caste differences and effectively force the upper caste workers to work on the dalit (lower in the caste hierarchy) land. The variety and changing goals of what the bureaucrats intend to use the MIS system needed a mechanism of system updates. In the pre-digital days, the purpose of updating the rules were achieved by issuing a circular and a government order.

5.2.2 Modify Circulars through Software Patches

The software system deployed by the higher-level bureaucrats to govern the program implementation makes it very easy to modify circulars through releasing software "patches". There is a clear rationale for appropriating the notion of the patch in the Andhra case. First, we are talking about software changes and second, the patch I am referring to is the idea that the bureaucracy intends to fix the government policies. In many ways, the idea of a circular and government orders are a means to do what a software patch is most ideally suited to do. The government order is usually concerned with a particular policy that the government is updating or fixing. Given the similarity, both in the structure and the functional purposes of what a circular ought to achieve, the transition to the material form of a software patch to achieve the same end is desirable, at least in theory.

In addition to matching the functionality and the structure of a circular, the patch increases the certainty of adhering to the rule. In the paper based circulars, one could deny having received it,

the lower-bureaucrats could misinterpret the circular, there could be communication delays in receiving the order as it travels through the postal system and through the hierarchy and finally the circular is up against the incentives of the local bureaucrat to actually take action on the circular.

One of the most contested claims in NREGA implementation in Andhra Pradesh is the appointment of the local field staff. His/her appointment is crucial. The local field staff is responsible for providing work, taking attendance, giving payment slips and measuring the amount of work done by the group. Traditionally, the appointment of the field assistant was done through the recommendation of the local elected political representative. To prevent the political interferences, the NREGA program director created an automatic computer algorithm to appoint the field staff. The computer algorithm restricts who could be appointed as field assistant. If the person were not in the “top” bracket in terms of number of days that he worked last season, he wouldn’t qualify for the position.

The state thus has leveraged the IT system, making all these decisions centrally as opposed to letting the decisions happen in the ground to eliminate local corruption.

In the next section I discuss how the technocratic system played out in practice. Specifically, I show, how the project is resisted by the lower-level bureaucrats and how that in turn caused changes to the software system to incorporate the resistance, which prompted new resistance and how it continues to be a constantly moving target. I do that by focusing on few of the claims that I made in the earlier sections.

6. WEAPONS OF THE "CORRUPT"

The higher-level bureaucrats had anticipated the panopticon to encounter resistance and had built in lot of features to circumvent the resistance. The section below discusses the unanticipated difficulties in carrying that project forward. The technology system, which lent the higher-level bureaucrats the power, also became the weapon that the field bureaucrats used to defend their interests.

6.1 Partial Digitization

Very often, digitizing means loss of information that exists in the physical form. What gets digitized and what gets left out is problematic. Reflecting on the digitization that had happened in this division, a senior bureaucrat wryly noted to me,

The only documents that seem to matter are the ones that is getting digitized and the rest of the documents are gathering dust in the offices with no effort to maintain them anymore.

She was referring to the supporting documents like measurement books, vouchers and the like, which aren’t digitized but nevertheless needed to be properly maintained. She was trying to make a renewed case for ensuring that all documents are properly maintained.

6.2 Patches Interrupted

The system is constantly changing and in flux as evident by the hundreds of software patches that have been released. The software patches are usually linked with new government order, and circulars that help govern the program. Let us consider one example. One of the major shifts that the use of software patch accomplished was the elimination in the discretion of how the circulars were interpreted by the field staff. To give an example, if a certain type of work, say, a canal digging work, has been

found to be prone to be misused, a decision will be made to disallow that work, and a software patch will be issued by the higher-level bureaucrats to delete the work from the list of approved works in the system. Initially, the software patches often travelled via CDs and as mail attachments to the mandal computer centers. The first iteration of the patches mirrored the functionality of the circulars. In that, it required human intervention to install the patches. But, as the higher-level bureaucrats would find out, it depended on the field-level computer operators to actually install the patch. They found that the computer operators at the Mandal level would selectively install the patches. In my interviews with the computer operators, they told me that, upon receiving a patch, they would look at the list of changes by inspecting the metadata file that came with the patch, and if it has something they didn’t like, they would delay installing the new patch on to their local system.⁷ The discretionary power of the computer operators was possible because the patches had to be manually installed.

The higher-level bureaucrats made further changes to prevent the need for the explicit computer intervention by automatically updating the patch if the system detected an internet connection. The move to having the software on the internet solved the communication delays that were caused and the manual process of circulating CDs around and got the system to be updated instantly. But, this still created two worlds: an offline world and an online world of functioning. The offline-online separation caused multiple problems for the higher-level bureaucrats and opportunities for the lower bureaucrats. The software being offline meant that you could make changes locally and then upload it to the server. To counter the change from the higher-level bureaucrats, a few computer operators told me that they would disconnect the internet by pulling out the wire and would call and complain that they were not able to connect hence working off the older version. They would then use the “extra time” to process the pending cases and only then update to the latest version. Then again, the higher-level bureaucrats discovered this behavior eventually and have eliminated the offline functionality of the software. Now, to make any changes, you have to be connected to the internet. This illustrates the cat and mouse game that is happening between the different levels of the bureaucracy.

The process of uploading software patches to fine-tune the operations of a large government program gives immense and immediate power for the senior bureaucrat to control the shape of implementation on the ground. This fine-tuning has led to a tendency of the bureaucrats to make constant changes to the system, because it is easy and it guarantees results. In fact, one of the bureaucrats told me that this is the primary way through which they fix problems in the field. Local corrupt acts irrespective of the location get centrally detected and fixed and eventually end up as global software update, thereby strengthening the program.

6.3 Political Interference

The software system that was put in place to allocate field assistants faced challenges in implementation. I asked every program director (who heads the implementation at the district level) that I met in my field trips whether there have been any political interference to thwart their plans. The responses varied

⁷ The metadata file would tell exactly what the patch was fixing in plaintext just like a typical bug fix would tell you in the release notes.

depending on the place I went and the local political situation. In some cases, the Program director would tell me that the software changes have been really a boon because it gave them the opportunity to throw up their hands when a local political representative insisted on appointing their favored person. Lower bureaucrats did that by telling the politicians to appeal to the government as the computer process locked them and there was no way to locally override the rule. This strategy worked to some extent. In many cases, where the politician's choices were not honored, they blocked appointment of field assistants by using a clause in the act, which required the signature of the politicians in finalizing selection. This political resistance has resulted in field assistant positions not being filled in many places where the local political power is just too strong. Ultimately, the higher-level bureaucrats was forced to settle on a compromise, where the computer would still pick the top three field assistants, and the discretion to pick the one would be given to the local politician.

6.4 Hiding Behind the Computer

The automatic muster generations has created major headaches for the bureaucracy and for the workers who are silent sufferers of this situation. The process of generating musters centrally has inadvertently yielded more *agency* to the lower-level bureaucrats to hide behind the computer for their own transgressions. In interviews with me, workers complained that the field assistant would declare that the computer has not assigned them work. On further enquiry, it usually turns out that in many of these cases there were on-going conflicts between the field assistant and the workers. The point is that the selective openness allows the lower-level bureaucrats to enjoy more latitude and hide behind the computing system for some of their own doings. The system is thus both facilitating and blocking transparency at the same time.

6.5 Location-Based Tracking Report is Waiting for Bureaucratic Follow-up

The location-based tracking report clearly shows to the higher-level bureaucrats the exact location in a map and the distance from the field site. The report, when I checked, showed that everybody except two (out of twenty) officers in the entire district did not go to the field site to verify. The representatives of the software company in-charge of building the system talked about how the field level bureaucrats were initially reluctant to use the tool, but they were forced by the higher-level bureaucrats. The initial set of reasons by the lower-level bureaucrats to not using the system revolved around the fact that the network connectivity was patchy in the rural areas. Subsequently, the lower-level bureaucrats quibbled that the location of the field site was not recorded properly and so the whole exercise was pointless, as they cannot trust the deviation reports. As a result, two different things were done: one was to go back and GPS tag the worksites again and the other was to come up with an ingenious software fix. The software fix enabled the phone to locally save the location irrespective of whether there was network connectivity or not. The fix enabled the supervisor record the fact that they had been to the field site, if they chose to save the attendance at the field site. The software fix essentially muted the network connectivity issue, because the attendance data is sent whenever the device detects the network, but original location was registered as metadata. Despite this, the reports that I saw in the field site showed many supervisors did not seem to care. When I brought this up to a senior bureaucrat, he said, it is one of the issues that he needs to

follow-up on. He said, "*If everybody is misbehaving like this, how many MPDOs [bureaucrats] can I suspend?*" It is clear that ultimately bureaucratic will (and of course political) needs to be there to solve these and technology doesn't do it by itself.

7. DISCUSSION

The section below organizes the discussion around how the paper speaks to the broader ICTD concerns of governmentality, technological determinism, and the political effects of technology.

7.1 Surveillance a Desirable Measure

The higher-level bureaucrats used surveillance on the lower-level bureaucrats as a way of controlling their micro-practices and thus reduce the last-mile corruption. Surveillance in this case, was within the bureaucracy itself and not on the population at large, and thus did not have the effect of curtailing their freedoms. I show how a system designed to survey the population is turned into one to survey lower-level bureaucrats, thereby splitting the monolithic state internally. In other words both the structure and the nature of the surveillance makes it possible to look at governmentality as a desirable force.

7.2 Technological Determinism

There are two shifts in materiality of the technology that I want to bring to focus: the shift from paper to the electronic form of control and a shift within the digital realm. While both reflected the intentions and the ability of the bureaucracy to eliminate corruption, I show that to understand the implications of what transpired, one has to look at the evolution of the changes of these forms. The phenomenon I am studying is a process in transition, particularly true in the case of material shifts in technology. So the criticisms that I have discussed in the paper could be seen as necessary problems of transition. However, I argue that some of these problems won't go away, even when the transition is "complete".

The use of software patches offers an instructive example to consider when thinking about the *paper to digital shift* and the subsequent effect on governance. Software patches were intended to augment the functionality of the paper circulars, but with a promise to eliminate discretion at the last-mile. As we saw, the software patches still had to be installed by the lower-level bureaucrats, which cannot be taken for granted. Once made to install, the systems did have an effect in terms of reducing certain forms of corruption. The idea of the patch helps us see technological intervention as something that can be mutable and changeable – and so subject to all kinds of influences, benign or otherwise.

We noticed that digitization was partial and it ultimately relied on bureaucratic and political priorities, leading to a certain disregard for how the paper documents were maintained. The mobile phone attendance did create an opportunity for faster tracking of attendance and potentially allowed for a random spot check on the same day. But the availability of the data minimized certain forms of corruption even if it did not immediately trigger action to be taken. Finally, the location-based reports while revealing that there were corrupt acts, did not automatically lead to corrective action taken just by knowing the transgressions.

Thus, the shift from paper to digital makes corruption more visible but doesn't necessarily curtail it. The partial nature of the digitization reflects the priorities of the bureaucracy rather than the transitional quality of the process under study.

In the second moment of the shift within the digital realm, for example the shift from offline to online mode is the adaptive nature of the system. First it should be acknowledged that the technical system of control makes it easy to adapt to new threats. But the constant tweaking of the system is also an acknowledgement that technical fixes continue to be subverted.

I argue that technology, which was intended for surveillance, could be used to deter or block surveillance as we saw in the case of the lower bureaucrat hiding behind the computer or when local politics were strong enough.

I also show that the directionality of technology is not pre-determined but is influenced by human actors and their intentions. My findings align with the amplification thesis that technology amplifies intentions of the humans constrained by their abilities that deploy them [17].

7.3 Technology and Politics?

The main argument in this section is that technology has now become the main object of politics even though it is deployed with an explicit anti-political discourse and that the system affects people differently depending on the power they enjoy with respect to their ability and intentions to control the technology. Technology helped the higher-level bureaucrats to control corruption, thereby amplifying their intentions. The lower-level bureaucrats who were forced to use technology find some benefits in that it makes their life easier to some extent to use software to maintain records as opposed to manually filling forms. The burdens of maintaining adequate records have increased with the transparency mandates of NREGA and a recent study in Uttarakhand argue that the extra paper work has created disincentives for the bureaucracy to take up NREGA work [22]. So, computerization did make it easier for the lower-level bureaucrats to do their job. Technology was also used to monitor the lower bureaucracy.

However, lower bureaucrats have found ways of circumventing surveillance as well as control – but imperfectly so. Unexpectedly, the use of technology has also created new opportunities for the lower bureaucracy in their dealing with the beneficiaries: They can now “hide behind the computer” and not do what they do not want to do.

In the process, the IT system has been created in such a way that it is disempowering for the beneficiaries of the program who are not consulted in the technological design. Technology has become a black box beyond the understanding and control of the beneficiaries for whom all of this is supposedly created. The obvious question here is whether the workers could be consulted in these technology initiatives so that they can adequately prepare for these outcomes. Does it then go against the centralization of what the top bureaucracy is trying to do? In other words, the technology makes the program more centralized, in that, there is a tendency to assume that the bureaucracy can indeed govern from the center. But, the high-level bureaucrats find that they cannot completely control from the center, and instead have to deal with continuously changing the technology to cope with the ever-changing demands. The bureaucracy does not totally rely just on the technical system and rely on public auditing of the works. But that is also a glaring admission that there are definite limits to what technology can indeed accomplish. The technology system is not meant to monitor the workers, but only the lower-bureaucrats, in other words the panopticon does not include the worker. Hence, I argue that the governmentality is intended to

be a positive force, intended to ensure that the workers get adequately compensated for their work by eliminating corrupt acts by the lower-bureaucracy.

Another discussion point is where technology use renders itself as an anti-politics machine [4]. Ferguson’s study of Lesotho alleged that technologies and expert knowledge are used to naturalize and camouflage politics, so making the practice of technocratic development an “anti-politics machine”. In the Andhra case, there is an explicit attempt by the higher-level bureaucrats to create an anti-politics machine (by centralizing control through technology). So, in contrast to the Lesotho case, here there is an intentionality to build a technology system to smooth out a certain type of politics right from the beginning. For example, in the case of using an algorithm to appoint field assistants, an attempt has been made to use technology to avoid politics of a certain kind. But, there are two responses: one is that it is first a form of politics in that the higher-level bureaucracy is trying to push forward a certain different form of politics and secondly, I argue that the intention of the bureaucrats to avoid the local politics is a desirable one, in that, the algorithm at least ensures that another constraint gets added. But, here is the case where “messy politics” cannot be preferable to what the bureaucrats from the center is trying to do and here is the case that technology at least helps them to play an arguably desirable set of politics [21]. I argue that the deployment of technology is inherently political even when the goal is to eliminate a certain form of politics.

8. CONCLUSION

This paper examined the idea of the use of ICT in a public works project in rural India, revealing how higher-level bureaucrats exercised power using digital technology to control the functions of the lower-level bureaucrats. The use of ICT (databases, SMS, phones, etc.) was intended to amplify the gaze and thereby control the micro-practices of these lower-level bureaucrats. The purpose of the surveillance by the top bureaucracy was to control the lower bureaucrats and eliminate corruption, but this has been achieved only in part. Lower bureaucrats have found ways of circumventing surveillance as well as control – but imperfectly so. For the scholars of ICTD, this paper serves as a corrective to the limited empirical research examining the use of ICT in particular configurations within the state. The paper makes the case of the not-so-negative use of surveillance in managing public works projects in that surveillance need not always have Orwellian big-brother connotations. The problem is not that there is too much governmentality or that ICT creates a panopticon, but rather the question of whether or not ICT can reduce corruption and clientelism bureaucracy. I argue that ICT was used to reduce corruption and create a more “Weberian” bureaucracy but with clear limits.

9. REFERENCES

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