The London School of Economics and Political Science

Imagining the State through Digital Technologies: A Case of State-Level Computerization In the Indian Public Distribution System

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Abstract

The study of e-governance in developing nations is informed by the idea that new technologies, reshaping the very nature of public services, can generate better outcomes in their provision. Beyond objective changes in governance infrastructures, the subjective perception of the state, as it is constructed by service recipients, is exposed to a parallel process of change, whose study has generated a novel research domain in the field of e-governance for development. With a view of contributing to this domain, this thesis studies the role of ICTs in processes of image formation on the state, as experienced by citizens in a developing country context.

The theory on which the thesis is developed views technology as embedded in its socio-political context, and conceives e-governance as implicated in the reconstruction of images of the state. This vision is applied to the computerization of the main food security programme in India, the Public Distribution System (PDS), as it has been devised and implemented in the state of Kerala. Through an interpretive case study of the object at the core of computerization, known as the Electronic Public Distribution System or e-PDS, the thesis investigates the ICT-led processes of image *construction* by the state, and the ways in which citizens, confronted with new images, structure their *perception* of these.

Through inclusion of front-end PDS services in existing infrastructure, and through the inscription of a clear problem-solution nexus in e-PDS, the state is found, as expected, to be using e-governance as a means to reconstruct its own image. At the same time, though, the *loci* of image formation that are found in citizens (direct experience, social networks, and political circuits) systematically escape control by governmental action, and seem to be, in fact, only marginally touched by the ICT-induced reinvention of governance. The thesis results, therefore, in an extension of existing theory in this respect: the capability of the state to reconstruct its image, through the usage of new technologies, is limited by the spaces of image formation which citizens experience in their daily lives.

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List of Acronyms

APL	Above-Poverty-Line
AAY	Antyodaya Anna Yojana
ANT	Actor-Network Theory
ARD	Authorized Ration Dealer
AWD	Authorized Wholesale Dealer
BPL	Below-Poverty-Line
CDS	Centre for Development Studies
CPI(M)	Communist Party of India-Marxist
CRO	City Rationing Office
EAS	Employment Assurance Scheme
e-PDS	Electronic Public Distribution System
FCI	Food Corporation of India
FPS	Fair-Price Shop
FRIENDS	Fast, Reliable, Instant Effective Network for Disbursement of Services
GIS	Geographic Information System
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IS	Information Systems
ISDC	Information Systems in Developing Countries
KAVERI	Karnataka Valuation and E-Registration Project
KSITM	Kerala State Information Technology Mission
KSWAN	Kerala State Wide Area Network
LDF	Left Democratic Front
NHFS	National Health Family Survey
NGO	Non-Governmental Organization
NIC	National Informatics Centre
NPM	New Public Management
PDS	Public Distribution System
RCMS	Ration Card Management System
SDC	State Data Centre
TETRAPDS	Targeted, Efficient, Transparent Rationing and Allocation Public Distribution System
TSOs	Taluk Supply Offices
UDF	United Democratic Front

UID	Unique Identification Project
UIDAI	Unique Identification Authority of India

1. Introduction

The topic of e-governance in developing countries, focused on how weaker governance structures can be transformed and strengthened through new technologies, is a central one in the domain of information and communication technologies (ICTs) for development. The potential for new technologies to improve governance has been widely recognized in the literature: as powerfully synthesized by Heeks (2001), e-governance has been viewed as the "ICT-enabled route to good governance", constructing ICTs as a tool to face the multiple problems generated by governance frailty. It is, in the first place, this problem-solving nature, sought and theorized in the practice of e-governance, that has made it highly studied with respect to developing nations: as a result, in terms of both theory and practice, e-governance lies at the heart of research in the domain of ICTs for development.

Over the last decades, the study of e-governance in developing nations has been informed by the idea that new technologies, through their intervention on government, have changed not only the functioning, but the very nature of public administration. E-governance has acted, as described by Bhatnagar (2004), as a tool for *transformation* of government, and of its interface with citizens: this transformation has been ruled by a results-oriented perspective, in which governments have sought to use ICTs in order to enact good governance in their administration and services. This focus on the improvement of outcomes, sought and conducted by means of computerization, has led to a vision of e-governance programmes in terms of the objective changes that they generate: the focus has been, in this respect, on how and how much governance structures have changed, in terms of their capabilities to manage internal processes and generate external accountability to citizens. The potential of ICTs to improve the outcomes of governance remains one of the main questions on which this domain has focused.

Still, when studying the transformation induced by e-governance, an important part of the picture lies in another process, which transcends the objective changes generated by ICTs. Indeed, when the nature of governmental processes is reshaped by technology, the subjective perception of the state, in the sight of service recipients, is exposed to change as well: this implies that e-governance may affect how citizens actually "see the state" (Corbridge et al. 2005), and form their own images about it. This process is cognitive in nature, which makes its appraisal a relatively complex one: only recently, through Madon's (2005) work on telecentres in southern India, has the study of images been formally inscribed in the domain of e-governance for development. Madon's research, which turns image formation from a

background dynamics into a primary object of study, opens the way for a new stream of literature, in which e-governance is observed through the lens of its effects on citizens' sightings of the state.

This thesis studies the role of technology in processes of image formation on the state, with reference to their vision through the eyes of citizens in a developing country context. The research is rooted on the recognition of a role for e-governance in this respect, since changes in the citizen-provider interface may affect the subjective sphere of actors' cognition of each other. To develop an investigation of this domain, the thesis relies on a theory of technology in image formation, which conceives e-governance as a means for governments to "recast their image" towards citizens (Kuriyan and Ray 2009): ICTs are viewed, in this respect, as image-makers embedded in their political context, acting beyond their main function as agents of improvement in governance. Starting from this vision, the thesis is articulated in the study of two parallel processes, i.e. image *construction* as a state-led dynamics and the *perception* of these images, reshaped by ICTs, by the citizens to whom they are directed.

To investigate these processes, the thesis studies a case in the southern Indian state of Kerala, where ICTs are utilized to computerize the main Indian food security programme, known as the Public Distribution System (PDS). The PDS is based on the provision of primary necessity items – consisting mainly of rice, wheat, sugar and kerosene – at highly subsidized prices to poorer people: the programme works, as a result, as a nationwide anti-poverty net, articulated through the fair-price shops through which subsidized items are supplied in all states. The technological object of my research, known as the electronic Public Distribution System or e-PDS, has computerized the four main functions of the PDS in Kerala: the management of ration cards (documents of entitlement to the programme), the intra-district allocation of goods, the monitoring of the programme's supply chain, and citizens' access to providers on the web (WebPDS). This programme, whose module on ration card management is now being integrated with the biometric identification project known as UID/Aadhar, constitutes one of the first attempts in India to digitize a system that, implemented through the guidelines of the central government, is responsible for the food security of billions of households throughout the nation.

My study of the e-PDS in Kerala constitutes, therefore, a means to visualize the influence of technological mediation on the construction and perception of images of the state. The programme acquires, in this research, a value that transcends the objective transformation that it determines: the change at the centre of research is not that in governance structures,

but one that affects the reconstruction of images of the state and, in turn, its perception in the eyes of citizens. Madon's idea, and its utilization in the literature on e-governance for development, provide the gnoseological field in which my work is inscribed: the thesis constitutes, as it is constructed, a journey in the domain of image formation on the state, mediated through the state-level computerization of an Indian food security programme.

1.1. Motivation and Object of Research

Before detailing the structure of the project, focus needs to be set on the motivation of the study, and on the central unit utilized in the articulation of the problem area. The idea that informed the thesis was conceived in the course of fieldwork conducted in Kerala in June-July 2009, for an MSc dissertation in Development Management on the financial and social sustainability of telecentres (Masiero 2010). Work with telecentre users and providers, related to an e-governance project that had deeply modified the local provision of services, led me to identify a change that extended beyond the objective side of infrastructures: modifications, as embodied in respondents' narratives, were strongly related to their subjective perception of government, as it was newly mediated by telecentre entrepreneurs. It was at that time that my interest for image formation, as experienced by citizens through e-governance, was codified into an actual problem area: the introduction of this theme in the literature, operated by Madon just a few years before, determined an optimal moment to undertake a study of this kind.

The study of image formation on the state, as experienced by citizens in developing nations, is *per se* of substantial importance, and acquires even higher relevance in the present historical phase. Understanding image formation, as powerfully synthesized by Kooiman (2003), constitutes a key requirement for the study of governance: state-citizen interactions, which constitute the main object of governance processes, are indeed predicated upon the reciprocal formation of images. These processes transcend, therefore, the cognitive dimension in which they arise: image formation is conceived, in the Sociology of Governance approach that Kooiman puts forward, as a device that determines the very essence of political relations between state and citizens. At present, with its uptake beyond the Western world, e-governance can generate profound changes in how these processes are experienced by citizens in developing countries: this is what makes the study, beyond its importance from a Sociology of Governance perspective, a timely one with reference to the current historical moment.

Kooiman's Sociology of Governance, with its close examination of the formation of governing images, answers the question on the meaning acquired, in this study, by the very concept of *image*, which constitutes its central unit of investigation. The use of this notion is ascribed, as it is in Kooiman (1993; 2003), to Boulding's (1956) theory on human cognition: in providing a structured analysis of image formation processes, Boulding refers to the image as the "subjective knowledge" of the world, as it is continuously reshaped and reconstructed through the subjects' interaction with it. Working with images, conceived in this way, means assuming that reality does not constitute a fixed entity, amenable to be directly and objectively observed: what is taken to represent reality are, instead, people's constructions, appraised in the form of their images of things.

This notion is at the root of one key aspect of the research, referred to the close link between the concept of image and the epistemological position that it embodies. Observing the world through people's images of it, and taking them as the closest means to represent reality, means adopting a gnoseological position of social constructionism: this vision is based on the idea that reality, instead of existing in an objective form, is constructed out of our relations with the world (Sismondo 1993), and therefore, our knowledge of it can only be based on cognitive constructions. Since epistemology, beyond constituting the background of research, directly informs its theoretical and methodological vision (Crotty 1998), a social constructionist perspective has determined the key aspects of my work: it has led me, on the side of theory, to choose an interpretive perspective on information systems (Orlikowski and Baroudi 1991), and to inform my methodology on an interpretive form of case study analysis (Walsham 1995). Therefore the concept of image, as it is referred to here, embodies the perspective on which the thesis as a whole has been grounded.

1.2. Research Project

Here I present the main components of my research project, in terms of its theoretical framework, the study conducted on field, and the contributions produced in the thesis. This is functional to summarize the structure of my work, and position it in the domain of information systems in developing countries. The contents of the thesis are synthesized by the outline provided at the end of the chapter.

1.2.1. Theoretical Framework and Research Questions

The main object of my work is the role of e-governance in processes of image formation on the state, as it is experienced by citizens in a developing country context. The conceptual framework, devised to conduct this research, consists in the combination of two theories: a *theory of action*, which explains the processes at the centre of attention, and a *theory of technology*, which refers to the role played by technology in the processes in point. The two theories, considered in their own domains of origin, have been extensively applied in the respective literatures: the novelty, implicit in my work, lies in my choice to combine them, in a composite theoretical lens utilized for my research objectives.

A theory of action on image formation processes is viewed in the formulation by Corbridge et al. (2003a; 2003b; 2005): abandoning the Weberian vision of impersonality and "facelessness" of government, it argues that citizens "see the state" through direct encounters with it, in the form of its localized embodiments and representations. Beyond establishing the relevance of these encounters, the theory goes in detail of how they are structured: based on Rose's (1999) view of governance, applied to postcolonial development in contemporary India, Corbridge et al. explore the construction of state-citizen interactions through technologies of rule that structure a war on poverty. The discourse on state-citizen encounters as makers of images, coupled with the one on the form of anti-poverty technologies acquired by them, lead to an idea that is key to the research: images of the state, for citizens subjected to anti-poverty programmes, are structured through the means of the programmes themselves, which are a key mode for them to "see the state". Therefore, studying image formation on the state implies observing the technologies of rule through which encounters with it are devised.

The theory of technology, selected to observe the role of ICTs in image formation, finds its expression in the work on e-governance by Kuriyan and Ray (2009). This theory applies, to the domain of developing countries, a vision that is well-established in information systems at large: technology, rather than being exogenously determined, is embedded in its social and political context, and may translate the policy objectives and views of governors into practice. E-governance is conceived, as a consequence, as the byproduct of the policy targets of governments: one of these, which acquires increasing importance in the domain of developing nations, is that of transmitting an image of accountability to citizens, to generate trust in the state's capability to overcome its governance issues. In this vision, image construction on the part of the state – structured through the technologies of e-governance –

is openly theorized: instead, image perception on the part of citizens is contemplated, but not observed through the lens of a structured theoretical framework.

The two theories, combined together, constitute the conceptual framework of my research: yet, they play two different functions in the thesis as a whole. On the one hand, notwithstanding the interdisciplinary nature of the field of e-governance for development, my thesis carries out information systems research: therefore, the theory of technology is the one that directly informs my questions, responded by the analysis of case study data. The problem area outlined here had generated a quite open question, on if and how technology may influence the way in which developing country citizens form images of the state. My theory of technology, structuring the problem area in terms of the *construction* and *perception* of images, converts this broader question into the two following ones:

- Do new technologies provide the state, in developing nations, with a way to recast its image? If so, how does this happen?

- How do citizens receive new, technology-induced images of the state?

On the other hand, the theory of action is the one that informed the empirical study at the centre of research. Arguing that images of the state are predicated on encounters with it, structured through anti-poverty technologies of rule, leads to identify these technologies as the key space of image formation processes. This theory constitutes, therefore, the reason why I have chosen to focus on a food security programme, implemented in India at the national level, as a prism through which to observe the construction and perception of images of the state. In the case that I have studied, the anti-poverty programme has been recently computerized, and its digitalization has allowed me to observe the role of e-governance in the processes of interest.

1.2.2. Case Study

The theory of action utilized here, as noted above, has dictated the choice of the case study through which I have structured my research. What was required, for a study of this kind, was a programme in which citizens, interacting with the state, could form an image of it: it needed to be, in other words, a technology of rule through which people were enabled to "see the state", in Corbridge et al.'s sense of the term. Therefore, I have chosen one of the programmes that Corbridge et al. (2005: 63) see as most deeply involved in the image

formation processes of citizens, with particular reference to the poorer strata of the Indian population: that is the Public Distribution System (PDS), a programme based on providing primary necessity goods at subsidized prices, on the basis of rationed quotas. The programme, triggered in pre-independence India by the famines of the early 1940s, is articulated on two levels: first, goods are procured by the central government at below market prices, and second, these are distributed through fair-price shops throughout the whole nation. The central government, on the one hand, dictates general PDS policies and allocates PDS goods to the states: on the other hand, state governments design and implement distribution schemes at the local level.

The PDS was originally conceived as universal, and this exposed the system to two streams of critique: one related to the "urban bias" that excluded most rural areas from the programme (Howes and Jha 1992; Dantwala 2006), and an even stronger one pertaining to the cost of subsidy, which became, in the view of many commentators, unsustainable in the fiscal crisis of the early 1990s (Ahluwalia 1993; Radhakrishna and Subbarao 1997; Dutta and Ramaswami 2001; Umali-Deininger and Deininger 2001; Radhakrishna 2006). For this reason, in June 1997, the PDS was turned into a targeted system: this means that only below-poverty-line (BPL) households remained entitled to the full subsidy, whereas those classified as above-poverty-line (APL) were left with subsidies reduced to a minimum. Another measure, implied by targetization, made the allocation of PDS commodities, from the central government to the states, proportional to relative poverty incidence: the rationale for this was to introduce proportionality in allocations, for poorer states to receive higher quotas of subsidized goods (Tritah 2003).

Kerala, the state at the centre of my study, was recognized as managing, in the years before targetization, the best PDS system in India as a whole (Suryanarayana 2001; Swaminathan 2002; Khera 2011a). Since the first years of operation, PDS distribution catered to 97% of the state's population (George 79: 93), and, in spite of the additional problems caused by the state's food-deficit situation, its impact on the population's nutritional status was high and significant (Kumar 1979). Yet, with the introduction of targeting policies from the central government, the system started facing severe difficulties: these were due, in the first place, to the estimation of the state's poverty incidence at only 25%, which limited the quota of PDS goods allocated to less than 10% of the pre-targeting amount (Swaminathan 2002: 51). This reduction, and the concomitant minimization of subsidy to the APL, led to a factual collapse of PDS in Kerala: the drop in allocated commodities, and the massive abandonment of the system by those classified as APL, led many ration shops to close down, and the

system to stop working properly (Krishnakumar 2000; Nair 2000; Suchitra 2004). The state-level computerization of the programme, which constitutes the technological object of my research, is to be seen in this problematic context, as one of the measures adopted to reconstruct the functioning of the PDS.

The object of my research, known as the electronic Public Distribution System or e-PDS, resulted from a process of computerization, inscribed in the Keralite system of e-governance, which was articulated on three different layers. The first phase, started in 2001, consisted of the creation of a database of all PDS users in Kerala, so that their details could be accessed by administrative offices, known as Taluk Supply Offices (TSOs), throughout the state. The second phase, piloted in 2005 and rolled out to all districts in 2007, consisted of the implementation, in all TSOs, of a suite of software known as the Targeted, Efficient, Transparent Rationing and Allocation Public Distribution System (TETRAPDS): this software digitized the four main functions of PDS in the state, i.e. the management of ration cards (entitlement documents needed to access the programme), the intra-district allocation of PDS goods, the monitoring of the programme's supply chain, and the communication with users on the web (WebPDS). The third phase, still in course of implementation, consists in the integration of the ration card management system with UID/Aadhar, the national system that should provide unique identification to all Indian citizens, through a unique 12-digit number and biometric details. E-PDS is the artefact resulting from computerization of the biggest Indian food security programme, as it has been interpreted and conducted in the state of Kerala.

The choice of e-PDS, as a means to observe the processes of image formation at the core of research, is motivated by two main factors: first, as noted above, the PDS is one of the main devices through which citizens, and in particular the poorest among them, "see the state" in the context of contemporary India. Second, by digitization of the four main functions of this programme, e-PDS has provided an optimal paradigm through which to observe the role of technology on the processes of interest: while grounded on the theory of action detailed above, my case study has been designed to answer the questions based upon my theory of technology. My research questions have been responded through an adaptation of Riessman's (2008) thematic narrative analysis, centred on actors revolving around e-PDS: to understand the role of technology in processes of image construction and perception, I have used Bouding's (1956) theory of cognition, which articulates image formation in its main components. On this basis, I have carried out what I have termed a "historiography of

images": this consisted in analyzing narratives through their thematic content, organized through the inputs of image formation that appeared in each of them.

1.2.3. Contributions

The nature of this work, as inscribed in information systems research, dictates the nature of the main contribution made by the thesis, which consists in an extension of existing theory of technology. As detailed above, the thesis works through the lens of Kuriyan and Ray's (2009) vision of ICTs in image construction: this identifies the role of technology as embedded in its political context of use, as a means for reconstruction of images of the state in the eyes of citizens. While detailed on the state-led dynamics of image construction, the theory in point is less specific on the side of image perception: indeed, it does not develop a structured view of this process, and leaves the researcher with a high degree of freedom in making sense of it. On the basis of my case study, informed by the research questions, I find an empiric confirmation on the side of image construction, and extend theory on image perception by structuring a way to study it.

The first research question, and the investigation of the case study through it, lead me to confirmation of existing theory on image construction. This is based on two mechanisms, retrieved in the contents of respondents' narratives: the first one lies in the inclusion of the front-end modules of TETRAPDS, i.e. the online application for ration cards and WebPDS, in the system of services at Akshaya, the telecentre project which has transformed the key space of state-citizen encounters in all the state. The second one pertains to a problem-solution nexus, embedded in the technology at the core of e-PDS: on the one hand, the behaviour of a specific agent in the programme's supply chain, i.e. the owners of ration shops, is depicted as the main cause of the illegal market diversion that constitutes the main issue in the programme. On the other hand, the current form of construction of e-PDS – as integrated with biometric identification through UID/Aadhar, and therefore capable of tracking transactions at the shop level – is depicted as the optimal solution to the problem, which unveils a novel image of the state as an efficient and accountable service provider. These two mechanisms, extracted from narratives, lead to confirmation of existing theory, as they portray the state in action while operating self-reconstruction through e-PDS.

The second research question, and the choice of reading respondents' narratives through a "historiography of images" conducted on their contents, lead me, conversely, to expand existing theory on image perception. Through this technique, I have elicited external inputs

(*messages* in Boulding's theory) to image formation from citizens' recounts: to structure my study of these inputs, I have classified them through their *loci* of origin, i.e. the physical and social spaces in which the roots of images are generated. This analytical process has led me to argue that images of the state, reconstructed through the means of e-PDS, do not seem to be taken at face value by recipients: they are, instead, rediscussed and re-elaborated by spaces of image formation that citizens encounter in their daily lives, which belong to the three *loci* of direct experience, constructions operated in the social public sphere, and mediations produced by local political circuits. This argument, and the classification technique that orders Boulding's messages on the basis of their spaces of origin, lead me to contribute to theory on image perception: data confirm, indeed, Kuriyan and Ray's view that the state reconstructs itself through technology, but its power, in doing so, is limited by the spaces of image formation that people encounter in their daily lives.

Doing research in the domain of information systems for development, with the moral and social consequences that this implies for the position of the researcher (e.g. Walsham and Sahay 1999: 45), leads the author to think of the practical implications, which can be extracted from the research, as a deeply important part of it. This is a piece of work that, as of Flyvbjerg (2002), believes in the idea of "making social science matter", closely observing the practical implications of what has been derived from theory: practical lessons, detailed in the conclusion of the thesis, are drawn with respect to both the PDS, and the domain of e-governance in developing countries at large. With respect to the PDS, the main lesson drawn from the research is that, for the food security system to function properly, the Government of Kerala needs to focus on practically enabling people's access to subsidized commodities: this involves the development of strong monitoring systems to combat the diversion of foodgrains to the market, which is the primary cause of unviability in the system. E-governance should act, therefore, towards the improvement of existing accountability mechanisms, for these to maximize people's capabilities to access the goods and services to which they are entitled.

Implications are drawn, as well, for the broader domain of e-governance, with particular reference to its application to developing country contexts. More specifically, three lessons are drawn for this domain, and their combination constitutes the contribution that the thesis makes to the field. First, the research finds a trade-off between the local government's reconstruction of its own image, and the actual improvement of programmes involved in its anti-poverty agenda: the thesis concludes that this trade-off, in contexts of institutional weakness, strongly calls to be solved in favour of the former, for actual improvement of

existing accountability mechanisms to take place. Second, I dispute the view of "good governance" implying a sheer roll-back of state intervention: in the case observed, "good governance" comes across as the ability of institutions to improve people's capabilities to access the food security system, which may be, as in the case of Kerala, achieved through strong direct involvement of the state. Finally, the vision of e-governance as an enabler of better institutional behaviour – which in turn is functional to maximize people's capabilities – is seen under the angle of development practice, and recommendations are given for e-governance design to be carried out with an explicit orientation to human capabilities.

1.3. Thesis Outline

The thesis is articulated in nine chapters. In the present one, I have illustrated the motivation that inspired my work, and the main elements of research design in terms of theory, empirical study and contributions. The thesis, inscribed in the field of information systems for development, investigates the role of ICTs in image formation on the state: this has led me, on the basis of theory, to explore processes of construction and perception of these images, through the prism of state-level computerization of an Indian food security programme. The rest of the thesis is developed as follows.

Chapter 2 positions the thesis in its research domain, that of information systems in developing countries (ISDC). The chapter starts by mapping the field according to the main theories utilized to read it, and then narrows its focus to the sub-field of e-governance for development, to which my contribution is directed. With reference to this, I look at how the Sociology of Governance introduces the theme of image formation on the state: I observe how this process opens a new stream of literature, in which e-governance is observed through the subjectivity of image formation processes. The chapter concludes by stating the problem area at the centre of my work, which the theory of technology, illustrated below, will convert into specific research questions.

Chapter 3 details my conceptual framework, which is constituted by two theories: a theory of action on image formation in developing countries, and a theory of technology on the role played by e-governance in this process. The theory of action, as noted above, coincides with Corbridge et al.'s vision on the role of state-citizen encounters in image formation: the fact that these encounters, in contemporary India, are informed through anti-poverty technologies of rule, leads me to conceptualize these technologies as the main structure of image formation. The theory of technology is a political application of the social embeddedness

discourse on ICTs, applied by Kuriyan and Ray to the process of image construction: e-governance is portrayed, in this respect, as a means through which the state can recast its image in the eyes of citizens. This theory has generated my research questions, in terms of the construction and perception of images of the state through e-governance: the theory of action, at the same time, has structured my empirical study, inducing me to choose an anti-poverty technology of rule as a means for observing image formation on the state.

Chapter 4 illustrates the methodology utilized in the thesis, related to the social constructionist epistemology which is embodied in the structure of my work. Starting from this, the chapter explores the interpretivist perspective on information systems adopted here, which is substantiated, at the level of methods, in the choice of answering my research questions through an interpretive case study. On this, I focus on two lines of continuity between parts of the research: the first one goes from the theory of action to the case study selected here, since my choice of e-PDS is a direct consequence of Corbridge et al.'s view of anti-poverty programmes as spaces of image formation. The second one goes from my research questions to the methods utilized for data collection and analysis: the thematic content of narratives is analysed on the basis of inputs to image formation, as they are represented in the recounts of respondents. This method, based on Boulding's (1956) theory of cognition, allows me to develop a technique based on a "historiography of images", as represented in people's narratives.

Chapter 5 focuses on the case study at the core of the thesis. Having provided a historical perspective on the PDS, with respect to India as a whole and the specific case of Kerala, the chapter illustrates the technological object of the case study: namely, e-PDS, the state-level programme of computerization of the main national food security system. As noted above, the programme is constituted of three layers: first, a database of all PDS users in Kerala, accessible from TSOs in the entire state. Second, the software known as TETRAPDS, utilized in the TSOs to manage the four key functions of the programme: ration card management, allocation of commodities, supply chain monitoring, and communication with users. Third, the project, still in course of implementation, of integrating ration card management with UID/Aadhar, the system of biometric identification which should guarantee the tracking of transactions at the ration shop level. E-PDS, resulting from these three layers, is the object at the centre of my research, and is used to observe the making and reception of images through a food security programme.

Chapter 6 illustrates my data analysis with reference to the first research question, on the construction of images of the state through e-PDS. This chapter constitutes, as illustrated, a confirmation of the theory of technology that has informed my work: evidence of self-reconstruction, through the means of e-PDS, is found in two mechanisms in which the state engages. The first one consists in including e-PDS front-end services in Akshaya, the telecentre project that has, *per se*, reconstructed state-citizen relations in the state as a whole. The second one lies in the problem-solution nexus that is embedded in the e-PDS technology, which portrays misbehaviour of ration dealers as the problem, and secure identification through biometric ration cards as the optimal solution to it. These mechanisms, extracted from the narratives of actors around the PDS, constitute the practical channels through which the state goes beyond the use of e-PDS as a sheer device for e-governance, and crafts it as a means for the reconstruction of its own image in the eyes of citizens.

Chapter 7 analyzes my narrative data with reference to the second research question, on citizens' perceptions of the images reconstructed by the state. On this, differently from image construction, theory does not offer a structured process of understanding: to frame my data analysis, I use the technique of the "historiography of images", through which inputs to image formation processes can be identified and examined. The numerous inputs, retrieved in the representations of reality provided by citizens' narratives on e-PDS, have been classified in three *loci* of image formation: these belong to the direct experience of the programme, but also to its constructions in the social public sphere and political circuits. The main conclusion drawn from this finding is that citizens, in receiving self-reconstructed images of the state, do not take them at face value, but re-elaborate them through the spaces of image formation that they encounter in their daily lives: the real capability of the state, in reconstructing its own image, seems therefore to find a limit in these spaces of image formation.

Chapter 8 describes the process on which my theoretical contribution has been grounded, which consists in extending my case study findings to broader theoretical propositions in ISDC. The theory-building method, utilized for accomplishing this task, is substantiated in the process of analytic generalization described by Yin (2003), which involves two phases: the derivation of a conceptual claim, according to which case study findings bear upon a particular theory, and an extension of this claim outside the boundaries of the case study. Having focused on separating Kerala-specific aspects from those that can be extended to the field as a whole, I identify my theoretical contribution in terms of expanding existing theory on citizens' image formation on the state, through the study of a case of e-governance in a

developing country context. A broader theoretical contribution, in terms of the role of ICTs in development, identifies e-governance as a potential enabler of a more accountable institutional behaviour, which can be used in order to maximize people's capabilities to achieve a better quality of life (in this case, by improving access to the food security system to which they are entitled).

To conclude, Chapter 9 summarizes the thesis, and highlights how the notion of "making social science matter" has informed the totality of its construction. First, this notion comes alive in the practical implications detailed here, which reveal how my work, beyond its theoretical contributions, can be instrumental in informing policymaking on e-PDS, and on e-governance in developing countries at large. Second, this notion emerges in the directions in which the research presented here can be extended, viewing the intersection between e-governance and food policy as the natural destination for its development. Given the importance of this principle, as a guiding one through the entire PhD, I conclude the thesis by remarking how the notion of "making social science matter" will inform my future research.

2. Research Domain

My research is inscribed in the field of Information Systems in Developing Countries (ISDC), a branch of information systems research concerned with "how developing countries have attempted to benefit from ICTs" (Avgerou 2008: 133). In this section, the literature review that has informed my research is illustrated through a threefold process: first, I provide an overview of ISDC, as the field to which the theoretical contribution developed here is directed. Second, I focus on e-governance for development, the sub-field of ISDC to which my study belongs, and review the main themes explored by the literature in this domain. Then I observe, through theoretical insights from the sociology of governance, the introduction of a new theme in this literature, related to the implications of technology in citizens' processes of image formation on the state. This theme, as inscribed in ISDC, constitutes the main object of my work: the terms of the research questions, through which this area of interest is operationalized, are articulated in the next chapter, through the theory utilized to read it.

2.1. Information Systems in Developing Countries: An Overview

My research has been informed by literature on ISDC, which looks at new technologies as applied to developing countries, with the purpose of improving their economic and institutional conditions. The rationale according to which developing countries present a common denominator, that makes them systematically different from other nations, is debated in the literature: as noted by Corbridge (2007: 183), in fact, several scholars cast doubt on the need to theorize on the "developing world" as an independent domain of study. This is because, from this perspective, problems occurring in developing nations differ in intensity, rather than in nature, from problems affecting the rest of the world, and therefore lack the pre-requirement for constituting a separate field of analysis.

Conversely, a different school of thought, epitomized by the work of Brett (2003), makes a strong argument in defense of the field of "development studies" in its own right. This is based on the notion that institutional frailty, underpinning the need for stronger accountability mechanisms in public administration, constitutes a recurrent feature in less-developed nations, and therefore arises as a potential common matrix for referring to the "developing world". As I look at ISDC, I start by accepting the independence – or, in Corbridge's (2007) lexicon, the "possibility" – of development studies: the common matrix, on which this acceptance is predicated, is mirrored by the "politics of the governed" that

affect postcolonial developing nations (Chatterjee 2004). Chapter 3 details the choice of this theoretical perspective, and its conceptual implications for the study.

2.1.1. What Is Meant by Development?

Before looking at the domain of ISDC, through the main theories utilized to read the field, a space of reflection is dedicated to the highly-debated question on the meaning of development. This issue has been discussed widely, within different branches of the literature, resulting in a debate that has witnessed a significant historical evolution. Yet, as noted by Walsham and Sahay (2006: 15-16), the debate does not seem to be fully mirrored in ISDC, a sphere in which discussion on what is meant by development is often insufficient, and sometimes disconnected from the influences of technology.

As noted by Akpan (2003: 262), "development" means different things to different people. This concept was identified, in early post-colonial times, with a process of "modernization": this was conceived as the adoption, by less developed nations, of Western patterns of economic growth, which would lead them to economic prosperity. The main tenets of modernization theory were addressed by the "dependency" theory of the late 1970s: this position ascribed underdevelopment to the relation between a developed "core" and a developing "periphery", which resulted in systematic exploitative behavior of the former towards the latter. Dependency theory emerged, therefore, in response to the perceived incompleteness of modernization theory, which was unable to account for the adverse effects of asymmetries in the international economy towards developing countries.

On the one hand, dependency theory failed to maintain a dominant position in the post-1980s scenario of approaches to development (Akpan 2003: 263). Yet, on the other hand, some of its tenets were reinterpreted and re-proposed, with specific reference to the study of how new technologies could result into better outcomes for the developing world. The argument sustained by Wade (2002) belongs to this domain: it states that ICTs, rather than acting as a tool for economic prosperity, could result into a "new form of dependency" for developing nations, dictated by their lack of voice and control on international ICT standards. Wade's observations came in response to the approaches that, toward the end of the 20th century, strongly welcomed the use of ICTs in development: the World Development Report (1999), programmatically titled "Knowledge for Development", conceived new technologies as a means to bring knowledge, depicted as a primary source of capital, to developing nations.

In the aftermath of the diffusion of modernization and dependency theories, the early 1990s saw a strong affirmation of the neoliberal approach, based on economic growth as the one determinant of development (Madon 2005: 407). The recommendations implicit in this approach revolve around specific means for growth to be achieved, identified with measures of economic liberalization and programmes for the structural adjustment of economies. This approach, while adopted by the most relevant institutions of international aid, was challenged by several viewpoints in the field: for example, a basic-needs approach sustained that development should be concerned with satisfying the basic necessities of citizens, rather than with economic growth (Akpan 2003: 264). Another approach observed that neoliberal theory, while looking at national economic systems, did not take into direct account the participation (or, more often than not, the lack of it) of recipient populations to development, and resulted therefore into a partial account of the impact of economic measures on the quality of life of recipients (Chambers 2010).

Another challenge to the neoliberal vision of development comes from the work of Amartya Sen, and from his approach grounded on "development as freedom": Sen's view is that maximization of productivity, rather than constituting the main route to development, is just one of the ways for the poor to break down the barriers that constrain their existence. Real freedoms, in Sen's perspective, are to be achieved in a set of interconnected fields: each freedom stems, almost tautologically, from the removal of a "substantial unfreedom", in the dimensions of human development embedded in people's lives. In this perspective, development is equated with a condition in which people are free to develop their own life plans (Sen 2001: 7).

Most importantly, in Sen's work, the main carrier of development is embodied by institutions, which make the link between policy and practical intervention in developing country contexts. Sen (2001: 18-19) views institutions as a proactive agent of development, that plays a leading role in removing the "substantial unfreedoms" of poverty and destitution. Hence, if freedom is both an ends and a means to development, institutions are the primary mechanism for reaching it, and should be put at the core of action when elaborating poverty reduction strategies. As noted by Madon (2004: 4), human agency takes a leading role in Sen's approach, as people engage in direct action to develop their own life plans: this vision is known as the "capabilities approach", because it is through a polymorphous set of capabilities that people are enabled to fulfill their own life projects.

The multidimensional vision of development, conceptualized by the capabilities approach, has strong implications for theory and practice in ISDC, as the objective of technology-based interventions shifts from economic to human development. As explained below, the capabilities approach has been introduced in theorization on ISDC, by scholars that openly make the link between technologies and human development, in the pursuit of improvements in people's quality of life. By showing the relevance of Sen's approach in ISDC, these contributions illustrate the fact that technology-based development projects are inspired by the meaning of development underpinning them (Prakash and De 2007: 262), which makes the discussion on interpretations of this meaning a paramount one for the field as a whole.

The vision of development adopted in this thesis, through which the case of e-governance in the Indian food security system is examined, subscribes to the capabilities approach, building on the idea that the enhancement of human capabilities is the key means to achievement of a better quality of life. In the case examined here, people's capability of accessing subsidized food items is pursued through the means of institutional improvement: this is, in turn, achieved by the digitalization of the main functions of the Indian food security system. The core idea of development, lying at the basis of my work, lies therefore in Sen's vision of capabilities as the key unit involved in this process: it is in the light of this unit that I focus on e-governance, and draw a general contribution to theory on how ICTs may be put at the service of development. Theory on the relevance of ICTs to capabilities has been, therefore, particularly important in my approach to the research.

2.1.2. Theories in ISDC: A Synopsis

ISDC, by virtue of its composite nature, is characterized by coexistence of several theories, utilized to read the multiple links that may exist between technology and development. In order to map the field, and make sense of how it is composed, I provide a synopsis of the main theories within it.

Stakeholder Theory. This approach, originating from management, is grounded on the work of Freeman (1984), which introduces a new theory of the firm. In this perspective, the concept of "stakeholder" replaces that of "shareholder", identifying an entity that has a stake in the firm, without necessarily owning a share of it. Considered together, stakeholders form a network through which organizations can be observed, and a paradigm through which decisional processes can be evaluated. Stakeholder theory has been used in e-government, paradigmatically in the work of Scholl (2001), who examines ICT-based projects in the

public sphere from a stakeholder perspective. The passage of stakeholder theory from e-government in general, to e-government for developing nations, has been marked primarily by Bailur (2006), who applies this theory to the governance model of telecentres,[1] interpreting an e-kiosk project according to the network of stakeholders around it. Thanks to its analytical power, stakeholder theory provides an important instrument for conceptualizing ICT-based projects in developing nations.

Actor-Network Theory (ANT). The theoretical approach coined by Bruno Latour (1987) has been used for studying information systems (Walsham 1997; Latour 2004), and has been applied to the subfield of ISDC as well. ANT revolves around the notion of "actor networks" centered on technology, and conceptualizes the ways in which network dynamics are conditioned by the influence of technology on them. Examples of ANT usage in ISDC include the work of Walsham and Sahay (1999) on Geographic Information Systems (GIS) in India, as well as those of Sayed and Westrup (2003) and Mosse and Sahay (2003), in which networks are counterbalanced by the concept of "counternetworks", complementary to the original one. As reminded by Walsham and Sahay (2006: 12), ANT allows conceptualizing technology itself as an actor in the network, which opens up new possibilities for interpretation.

Institutionalism. In North's definition (1993: 23), institutions are "the humanly devised constraints that shape interaction": in ISDC, institutionalism implies considering not only institutions *per se*, but also, and perhaps primarily, the ways in which these are reshaped by technology and the actors using it. One of the key pieces adopting this perspective is Miscione's (2007) work on telemedicine in the Amazon, where the interplay between two knowledge systems – mainstream healthcare, and local traditional medicine – is reshaped by the influence of technology. Other works ascribing to institutionalism in ISDC are those by Avgerou (2004), Silva and Figueroa (2002), and Madon et al. (2009) on processes of institutionalization in digital inclusion projects.

[1] As of Roman and Colle (2002), the word "telecentres" is an umbrella term, identifying spaces where ICTs are, in various forms, made available to the public. Proenza et al. (2001) distinguish "micro-enterprise telecentres", operating as standard Internet cafes for the profit of entrepreneurs, from "multipurpose community telecentres", devised to reach developmental objectives for communities of people. ISDC literature focuses more on the second type of telecentres, which are explicitly aimed at maximizing human development through connectivity.

Communicative Action Theory. This theory, firstly formulated by Habermas (1981), focuses on the identity of individuals as a concept in perpetual flow, constructed and reshaped in interpersonal interactions. As a result, the study of identity formation is indivisible from the study of communicative action, and centers on how images – of the self and of others – are constantly reconstructed through this very process. When used in ISDC, this theory leads to a deep exploration of the *meaning* of ICT-based projects, for the system of actors around them, and for the cognitive processes that occur in the minds of actors. A key example of Communicative Action Theory in ISDC is provided by the work of Kanungo (2003; 2004), where Knowledge Centres (a particular form of telecentres) are constructed as endowed with an "emancipatory nature", i.e. constitutive of processes of empowerment conducted through informatization. Another example is Puri's (2003) study on GIS in southern India, where knowledge integration is premised on the self-reconstruction of identity by communities involved in participatory mapping.

Capabilities Approach. Sen's vision of "development as freedom", as noted above, is key to contemporary thinking about the meaning of development, and this approach has significant implications for ISDC. These are highlighted, for example, by Madon (2004), who builds a model for the evaluation of projects in ISDC based on the key dimensions of the capabilities approach. Inscribed in the same stream of literature, Lunat (2008) creates a model of analysis of the Internet in the public sphere, which takes an approach to development with "political freedom" at its core. In the same perspective, Zheng and Walsham (2008), Zheng (2009) and Kleine (2010; 2013) use the capabilities approach as a theoretical framework to analyze empirical data, and explicitly introduce this vision as a new paradigm in ISDC. Furthermore, Smith et al. (2011) use the same paradigm to study the use of mobile technologies by developing country citizens: they argue that mobile phones, with their ease of use and massive rates of adoption, constitute a strong basis for achieving human capabilities through new technologies. These works clearly mark the introduction of Sen's approach as a theoretical tool in the field, rather than just as a background theory illuminating a possible meaning of development.

Mixed Approaches. In ISDC, *ad hoc* approaches are sometimes devised through combination of existing theories. A relevant example is provided by Puri's (2007) further work on GIS, which links the concepts of communities of practice, boundary objects, and participation, in order to make sense of knowledge integration in the dynamics of participatory mapping. Similarly, Silva et al. (2007), to investigate strategic information systems in a developing

country context, use punctuated equilibrium theory and integrate it with the concept of "deep structure", on the basis of its suitability for the specific targets of the research. These examples demonstrate the importance of flexibility and adaptation in the use of theory, especially when context-specific phenomena, such as those that pertain to ISDC, are to be analyzed.

The main theoretical approaches in ISDC, as identified in the present review of the literature, are synthesized in table 1 below. This review confirms one of the main assertions by Walsham et al. (2007): ISDC is a field that, while belonging to the domain of information systems research, relies heavily on external approaches, connected to domains as varied as anthropology, geography and development. Yet, notwithstanding the importance of heterogeneous perspectives, mainstream approaches in management and IS, such as stakeholder theory and ANT, are also highly relevant for exploring dynamics in this sphere.

Theory	**Contributions (selection)**
Stakeholder Theory	Scholl (2001), Bailur (2006)
Actor-Network Theory	Walsham and Sahay (1999), Mosse and Sahay (2003), Sayed and Westrup (2003)
Institutionalism	Avgerou (2004), Silva and Figueroa (2002), Miscione (2007), Madon et al. (2009)
Communicative Action Theory	Puri (2003), Kanungo (2003 and 2004)
Capabilities Approach	Madon (2004), Zheng (2007), Lunat (2008), Zheng and Walsham (2008), Zheng (2009), Kleine (2010; 2013)
Mixed Approaches	Puri (2007), Silva et al. (2007)

Table 1: Synopsis of Theoretical Approaches in ISDC

The polyedric nature of the field fits well with the theoretical framework of my research, which combines a theory from development studies with a view of technology as embedded system, as conceived in information systems research. As I subscribe to the capabilities approach, literature on how ICTs may be used to foster human capabilities has been particularly relevant in devising my theoretical view, and it at the root of the contribution that the thesis makes to the field of e-governance for development at large. This composite framework, explored in Chapter 3, will be applied to e-governance in developing countries, the sub-field of ISDC to which my research is dedicated.

2.2. Sub-Field of Research: E-Governance for Development

From the overview of the literature on ISDC provided above, the heterogeneity of theories and discourses arises as a main characteristic of the field. At the same time, this domain features multiple objects of analysis: there are, indeed, numerous channels through which technology can foster development, and these can be appropriated in different ways depending on context. Within the macro-sphere of ISDC, my work looks at the sub-field of e-governance for development, centred on the application of technology to state-citizen relations in developing nations.

2.2.1. Governing with New Technologies: Which Rationale?

Several scholars (e.g. Heeks 1999; Ciborra 2005; Bekkers and Homburg 2007) relate e-government directly to New Public Management (NPM), a philosophy that introduces, in public administration, the "managerialist" principles of the private sector. For how it is constructed, New Public Management marks a change in philosophy with respect to Weberian bureaucracy, as, being market-oriented in nature, it focuses on outputs rather than procedures (Hood 1991; Osborne and Gaebler 1992), and entails a conceptual shift that makes the citizen a "customer" of government (Ciborra 2005).

Seeing new technologies, and in particular, information and communication technologies (ICTs) as "carriers" of the objectives of NPM leads to a specific policy agenda of e-government, as synthesized by Heeks (1999). The first objective, for which ICTs are utilized by governments, is that of efficiency, intended as an improvement in the relation between government outputs and the cost and/or time of production. Many governmental operations, through adoption of new technologies, can be carried out in a quicker way, which minimizes human intervention and discretionality: by doing so, new technologies help overcoming the bottlenecks of Weberian bureaucracy, whose rigid procedures, while aimed at ensuring legality, tend to slow down the mechanisms of delivery. A powerful image, in this respect, is that of the efficiency gains introduced by computerization of public services, a field in which informatization has significantly reduced the costs and waiting times experienced by citizens at public offices.

The second objective is that of decentralization, through which governments apply ICTs to re-designing intra-systemic levels of power, and, by doing so, delegate fiscal and administrative responsibilities to lower layers of administration. ICTs can, therefore, be used

to transfer tasks at levels of government that are closer to citizens, and this leads to significant power redistributions within the sphere of public administration. This is one of the aspects in which the literature on e-government reflects, more explicitly, an IS theme, epitomized by the work of Markus (1983): namely, the role of new technologies in redesigning power levels within organizations, and redistributing responsibilities as a result. Indeed, if ICTs are utilized to decentralize responsibilities, what changes is not merely the configuration of technologies, but the distribution of power among different levels of administration (Madon 1993; 2006).

The third objective is that of accountability, interpreted here, with Brett (1999: 54), as a function of the leverage of citizens on government. ICTs, by introducing the traceability of actions to specific individuals and agencies in government (Bhatnagar 2004), and by moving discretionary power from street-level bureaucrats to an impersonal system-level (Bovens and Zouridis 2002), can enable accountability in a strong and durable way: therefore, new technologies are widely used in programmes of institutional amelioration. Furthermore, the emergent phenomenon of governance through mobile devices – or m-governance – is gaining relevance in terms of accountability: by providing information on existing services, and sometimes enabling a two-way relation between government agencies and citizens, mobile phones can be used in order to maximize the responsiveness of the state (Donner 2008; Bhatnagar 2009; Smith et al. 2011). Although the effects of ICTs on government programmes are mixed (Bhatia et al. 2009), their application to accountability has a clear rationale, aimed at leveraging the potential of new technologies to enhance transparency.

The fourth objective is referred to as “marketization”, as NPM is aimed at introducing market incentives in the public sphere, avoiding the heaviness that constitutes the primary downside of Weberian bureaucracy (Hughes 2003). The introduction of market mechanisms in the public sector is enabled by ICTs through diverse channels: primarily, new technologies are used to re-design the modes of delivery of public services, and to create new modes of delivery that, diverse as they can be, are unified by the common denominator of identifying citizens as clients. The purpose of these operations is that of reconstructing the role of service beneficiaries, conceived as the “customers” of public administration.

NPM Objective	Operational definition	Role of ICTs
Efficiency	Improvement in the ratio of government outputs to cost/time of production	- Computerization of back-end mechanisms of government - Enactment of e-government within public administration
Decentralization	Transfer of responsibilities to lower levels of government	- Re-designing layers of responsibility in the public sector - Reconstructing power distributions between the diverse levels of action
Accountability	Function of leverage of citizens on the government	- Making actions traceable to specific individuals - Moving discretionary power away from street-level officials
Marketization	Introduction of market incentives in the sphere of government	- Re-designing modes of delivery of public services - Creating new modes of delivery, based on the conception of citizens as customers

Table 2: ICT-based routes to New Public Management objectives
Source: adapted from Heeks (1999: 7-21)

The table above synthesizes the roles of ICTs in public management which have been explained so far.[2] These constitute a synthesis of the modes in which technology can be utilized for improving governance, being adapted specifically for the objectives of NPM. In particular, there are two assumptions implicit in a neoliberal understanding of e-government, which can be observed in the perspective provided by these functions:

- That ICTs, utilized in government, can promote an idea of "good governance" (Heeks 2001), and make it come alive in the form of tangible technologies. "Good governance" here is to be intended, as discussed below, in a normative sense: the term refers, in this domain, to a situation in which the state is rolled back, and market mechanisms are free

[2] Heeks recognizes a fifth role of ICTs in the pursuit of NPM, i.e. improved resource management. This can be considered as a consequence of marketization, since ICTs are seen as a tool to create new performance information, and deliver it to decision makers.

to operate in state-citizen relations. A governance model in which the presence of the state is minimized is enabled exactly by the four principles of NPM: by increasing efficiency, decentralizing its operations, optimizing accountability, and introducing explicit market mechanisms in its functioning, the state adopts the market-based model that NPM prescribes. This model is viewed as optimal to ensure efficient ("good") governance, and ICTs are conceptualized as functional to this purpose.

- That good governance, in developing nations, does not constitute an end in itself, but a route to development, to be followed by needful nations to obtain better economic and political outcomes. In this respect, minimization of the role of the state is seen as an operational means to development: introducing NPM mechanisms in public administration, to make the efficiency of market mechanisms prevail over the bureaucratic procedures of state, is seen as a way to minimize costs and, at the same time, translate the freedom of the market domain in the context of government. This view is mirrored by the notion of "good governance" implied by international financing institutions, whose policy makes loans conditional to structural adjustments aimed at rolling back the state. In this sense, in developing nations, the use of ICTs for good governance is directly functional to reaching higher and better development outcomes.

Still, these assumptions are not automatic or self-evident: there are, indeed, arguments that cast doubt on their appropriateness, in terms of structuring the dynamics of the public sector. These doubts are summarized by the views of Cordella (2007), concerning the adequacy (or not) of a market-based philosophy for public administration: he observes that the guidelines of NPM, designed for the domain of private organizations, are not necessarily applicable to public management, in which objectives of fairness and equality should be prioritized on sheer efficiency. On the basis of this discrepancy, Cordella (2007: 266) problematizes this conception at its very basis, identifying the bureaucratic organization as the guarantor of equity and impartiality in the public sphere: as a result, ICTs should be used to purport the values of bureaucracy, not to reform the public sector along the lines of private organizations. Therefore, NPM should not be used as a guide to informatization in the public sector, as it is rooted on objectives that do not fit the purposes of public administration.

As illustrated by the contrast between these perspectives, the reasons for introducing new technologies in governance may vary, and scholars have different views on what constitutes the "right" rationale for the adoption of technology. The principles of NPM, led by a managerialist view of public administration, are counteracted by the objectives of

bureaucracy, which display a different conception of government in state-citizen relations. The key point here is that e-government infrastructure, rather than just automatizing existing procedures, constitutes a means to carry specific values, and embed them into public administration: technology is, therefore, a means to convey these values, and make them come alive in the public sector. As I look at e-governance for development, as a sub-field of ISDC, the diversity of rationales, and the consequent diversity of resulting infrastructure, are to be held as key features of the field.

2.2.2. E-Governance for Development: Research Agenda

The diversity of rationales for the adoption of technology, reviewed above, is reflected in the applications of e-governance in the developing world, referred to as e-governance for development. The first conceptual shift, with respect to the field reviewed in the previous paragraph, is in the meaning of "e-governance", which is intrinsically different from that of "e-government" (Bhatnagar 2004; IIITB 2005; Madon 2009). The term "e-government" refers to technologies related to improving government mechanisms, or the interaction between government and the citizenry: as such, it excludes the multiple, non-governmental actors that characterize contemporary politics.

My choice of looking at "e-governance", a broader term that transcends the strict domain of "government" as such, is predicated on the theoretical perspective of Rose (1999: 28), according to which new actors, blurring the boundaries between "government" and civil society, are acquiring increasing importance in world politics. These players, and the dynamics they follow, transcend the boundaries of "government", and therefore need to be conceptualized through a specific terminology, which goes beyond previous categorizations. My focus (elaborated in Chapter 3) on state-citizen relations as polymorphous links, inscribed in a "political society" that the term "government" does not encompass, led me to take a broader focus on state-citizen relations, and therefore adopt "e-governance" as my specific domain of interest.

E-governance for development constitutes an integral part of ISDC, as it views technology as a means to reducing the impact of institutional frailty in developing nations, through reinforcement and amelioration of their mechanisms of governance. As noted by Madon (2009), e-governance in developing countries can take different shapes, which can be classified in three categories:

- E-administration, aimed at automatizing the back-end processes of government. E-administration constitutes the oldest form of e-governance for development (Heeks 2001), and computerizes the internal processes through which the functioning of the state is enabled. For example, in a project named Bhoomi, aimed at computerizing land records in Karnataka, southern India, ICTs have been used to change the mechanisms of issuance of land ownership certificates, enforcing queue discipline and reducing corruption (Bhatia et al. 2009). E-administration projects aim at translating technology into better functioning of government, guaranteeing the responsiveness of the state to its administrative duties.

- E-services, through which mechanisms of interaction between the state and citizens are built, or made easier, by digitalization. In order to maximize public access to government, e-service delivery often happens through a system of Internet kiosks: for example the e-Seva project, in the Indian state of Andhra Pradesh, offers 135 government services, ranging from payment of bills to applications for government schemes. Other e-kiosks focus, instead, on specific services: for example, the Karnataka Valuation and E-Registration project (KAVERI) offers registration of property sale and purchase deeds, issuance of non-encumbrance certificates, and issuance of copies of previously registered deeds. These kiosks, providing e-services in a developing country context, automatize service delivery, enabling significant gains in terms of time optimization and elimination of bribes connected to services (Bhatia et al. 2009).

- E-participation, in which technologies are used to enable participation to government mechanisms, and exploit the democratic potential of ICTs. The shift from "government" to "governance" is epitomized, in the case of e-participation, by new forms of aggregation, belonging to the domain of civil society, which are "in between" government and citizens, and still play a key role in state-citizen relations. An example here is that of the so-called Bhoomi clubs, related to Akshaya, an initiative (reviewed later in the thesis) that brought e-kiosks to the Indian state of Kerala: these clubs, in which farmers discuss matters related to agriculture, are increasingly developed in the premises of Akshaya e-kiosks (Madon 2009). By doing so, they enact new forms of participation to civic life, by clustering farmers' politics around the telecentres through which they are connected.

These are the main forms that e-governance projects may take, when applied to the context of public administration and civil society in developing countries. In the study of e-

governance for development, a set of recurrent themes emerge, mirroring the diverse political rationales embedded in infrastructures for computerization. The key themes explored in this domain can be grouped in five categories:

Role of the state. E-governance projects in the developing world are not necessarily funded by the state alone. They may also be sponsored by the private sector or NGOs, which provide for what the government cannot afford: another system, applied to services delivered through telecentres or e-kiosks, is the one in which the state funds the initial project phase, and the kiosks are left, at a later stage, to the management of private entrepreneurs. At the same time, the state should act as a "political champion" in the pursuit of the objectives of e-governance: for example, the Akshaya project is based on ownership of kiosks by private entrepreneurs, but its strong reputation is due to the symbolic representation of entrepreneurs as agents of the state (Kuriyan et al. 2006; Gopakumar 2007; Madon et al. 2009). The Akshaya project therefore constitutes an example of how the state can act as a development manager, leveraging on marketing techniques and on the use of "political champions" to promote its initiatives (Roman and Colle 2003).

Sustainability. Existing studies focus primarily on the *financial* view of this concept, i.e. the condition thanks to which e-governance projects can survive financially, without incurring in losses or economic failure (Hudson 2001; Harris et al. 2003): yet, *social* sustainability is also important, as it is based on the capability of telecentres to generate locally relevant content (Oestmann and Dymond 2001; Madon 2005; Mukerji 2008) and, by doing so, promote community ownership and participation (Whyte 2000). The relationship between diverse forms of sustainability is debated in the literature: for example, according to a study of the Akshaya project carried out by Kuriyan et al. (2006), it is difficult for telecentres to simultaneously pursue the goals of financial and social viability, as inclusion of poorer people comes at a significant economic cost. In a piece on the very same project (Masiero 2010), I have disputed this view: my research has found several mechanisms of social sustainability – identified as trust-building, context-based services, and civil society involvement – that proactively foster positive financial outcomes.

Knowledge. The debate on the nature of relevant knowledge, mirrored in the coexistence of diverse discourses on ICTs in developing countries (Avgerou 2008), is retrieved in the literature on e-governance in developing nations. Telecentres aimed at disseminating locally relevant information, such as the Knowledge Centres studied by Arunachalam (1999) and Kanungo (2003; 2004), are at the centre of this debate, as they challenge the assumption

according to which knowledge is, *per se*, able to generate better livelihoods. The debate is centred on the meaning of knowledge in context, and on the type of knowledge that is relevant for poorer people to build their livelihoods: on this, Kanungo stresses the acquisition of locally relevant information as a tool for empowerment, which may subvert previous power relations dictated by monopoly of information by governments. Where the unproblematic depiction of information as "knowledge transfer" from industrialized countries is dominant, these accounts question the nature and relevance of knowledge promoted by e-governance in development.

Trust. New technologies, as inserted in the field of governance, are not automatically able to gain acceptance and be adopted by potential users, and risk, in fact, to determine cases of "correspondence failure" (Lyytinen and Hirschheim 1987; Lyytinen 1988), as usage rates may be lower than those needed to sustain a project. Therefore, e-governance projects should be tailored in order to maximize the trust of potential users: as noted by Gopakumar (2007), there are several channels to do so, e.g. linking projects to entities that already enjoy symbolic acceptance, such as the government and its agencies. Another means to trust-building lies in supplying governance services through technologies perceived as trustworthy: the increasing uptake of m-governance, especially in areas where e-government services have limited coverage, is related by Bhatnagar (2009) to the increasing reliance that developing country citizens have built, over time, on mobile devices. Trust-building is at the core of e-governance initiatives, and lower experience with ICTs in the developing world makes it a particularly important target.

Transformativity. As noted above, with reference to e-governance, technology is often used to automatize existing processes, rather than to create new ones and reshape the power structures on which government is based. In developing nations, projects aimed at improving existing processes may be able to sort out transformative outcomes: for example, the Bhoomi project has resulted in a significant reduction in bribery for land ownership certificates (Bhatia et al. 2009). Other examples are the creation of social spaces in telecentres (Madon 2007), and the shifts in patterns of knowledge acquisition determined by dissemination of information through e-kiosks (Arunachalam 1999; Kanungo 2003 and 2004). However, transformations of state-citizen relations are not always achieved, and most likely, are not openly sought: as noted by Bhatnagar (2004), e-governance in developing nations aims to shift away from paper-based services, to deliver the same outcomes in more efficient and accountable terms. These may, in fact, be used to problematize power structures, but the transformative usage of ICTs does not necessarily come with practice.

Theme	Meaning	Practicalities
Role of the State	- Diversity of roles on the *financial* side (state alone, state plus other agents, no state support at all) - *Moral* importance of the state as promoter of projects	- Telecentres: typologies based on the different role of the state in financing (Mukerji 2008) - *Political champions* enacting the role of the state as promoter
Sustainability	- Financial: a telecentre's capacity to cover costs of operation and be economically viable - Social: integration of telecentres in the local community, fostering proactive participation	- Importance of both forms of sustainability, for telecentres to work properly - Controversy on relationship between forms of sustainability (financial vs. social: either-or or pursued simultaneously?)
Knowledge	- Persistence of debate: transfer vs. socially embedded knowledge (Avgerou 2008) - Locally relevant information to be produced/conveyed by e-governance projects	- Knowledge as a generator of livelihoods (Arunachalam 1999) and as a factor altering power distribution in favour of the poor (Kanungo 2003 and 2004)
Trust	- Necessary condition to develop participation in e-governance – and foster sustainability	- Specific strategies of community fidelization (Gopakumar 2007) - Fostered by trust-building agents, e.g. telecentre entrepreneurs (Madon 2005)
Transformativity	- Uncertain effect of e-governance on state-citizen relations in LDCs - Uncertain role of technology in mediating/reconstructing this effect, and the forms it takes	- Delivering same services in computer-based ways (Bhatnagar 2004)… - Or using e-governance to transform/discuss/reshape existing power distributions (Kanungo 2004; Madon 2005; Avgerou 2008)?

Table 3: Themes in E-Governance for Development

The five themes listed above, in diverse forms, coexist and interact in the literature on e-governance in developing nations. Among all themes, the one of transformativity is the one that has captured my attention most deeply, as it is the one that engages most directly in theorizing state-citizen relations in developing countries, and the role of ICTs in reshaping these relations. These themes, viewed together, constitute one way of mapping the field: in the scenario that they define, a new theme has recently emerged, from the introduction of a novel approach – the Sociology of Governance – in ISDC.

2.3. Image Formation on the State: Implications of ICTs

So far, I have conceptualized the field of ISDC, in which my research is inscribed, and mapped it through the main theories utilized to read it. Next, I have focused on e-governance for development, as the sub-field of ISDC to which my work belongs: in doing so, I have provided a synopsis of this domain, through the main themes found in the literature about it. At this point, I will observe the process through which, starting from a novel stream of governance literature, a new theme has been introduced in e-governance for development: that is the theme of image formation, and of the processes through which it is experienced by governing actors. Studies on the role of technology in these processes, with reference to developing countries, have opened a new domain of literature, to which my research aims to contribute.

2.3.1. Sociology of Governance and Image Formation

The approach known as the Sociology of Governance, arising from a thorough re-evaluation of power dynamics in the contemporary world, has become integral part of the literature on governing processes. Conceptually, this perspective stems from the question on how analyses of political power should be reconstructed, in order to account for changes in the equilibria of global politics. On this, reflections by Nikolas Rose (1999) are paramount: on the one hand, in the 20th century, "the state" emerged as hegemonic, and analyses of political power could be fully synthesized through the construct of "state-citizen relations". Even so, over the last two decades of the 21st century, there was a subversion of previous political equilibria: this consisted in the end of the state-centred world, and in its substitution with a complex set of relations between public and private authorities. A tangible sign of this shift, as reproduced in the microcosm of political theory, is constituted by the upsurge of the term

"governance", which acts, once again, as a signifier of the transition from "government" to more complex power networks.

The term "governance", as Rose (1999: 16-17) notes again, is intended, in political literature, in two different meanings, respectively a normative and a descriptive one. As a result of its normative meaning, "governance" is often encountered in association with value judgements, which deem it as "good" or less good: as noted above, the semantic domain associated with "good governance" refers to minimization of the role of the state, and introduction of NPM incentives to optimize efficiency in public administration. In other words, "good governance means less government", and more market-based administrative techniques: as reflected by NPM objectives, this is aimed at achieving the best possible outcomes in terms of key dimensions of government.

The descriptive meaning embraces, instead, a different sphere in the governance domain. Rather than looking at value judgements, on the features that governance should have to be viewed as "good" or less good, it refers to a thoroughly new way of studying governing practices, as a consequence of the shift in power equilibria delineated above. If the political world was, beforehand, characterized by a linear relation between the state and citizens, the present power dynamics are based on networks predicated on complex, mutable relations: the scholarly technique, utilized for reading these dynamics, involves a sociology of these networks, which focuses on the patterns of action within them. In this novel approach, the key concept is that of *interactions*: these are, in Kooiman's (2003: 19) definition, "mutually influencing relations between two or more entities", which influence the way in which actors develop and structure their decisional behaviour. A conceptual perspective based on network interactions, in the place of linear state-citizen dynamics, constitutes, perhaps, the main contribution of the Sociology of Governance to the literature.

To sum up, the Sociology of Governance presents a novel picture on the study of governing power, which, starting from awareness of shifts in global political equilibria, provides a new way of reading governance, based on interactions within power networks. The novelty that this introduces, in the literature on theory and practice of governing, is synthesized by Rose in the following terms:

> For sociologists of governance as Kooiman and his colleagues, the object of investigation is understood as an emergent pattern or social system, arising out of negotiations between "intermediate" social actors, groups, forces and organizations, public and semi-public

> institutions in which state organizations are only one – and not necessarily the most significant – amongst many other seeking to steer or manage these relations. But the object of the analytics of government is different: these studies (…) try to diagnose an array of lines of thought, of will, of invention, of programmes and failures, of acts and counter-acts. (Rose 1999: 21)

This is a powerful synopsis of the Sociology of Governance, in the nature and objectives that characterize it: on the one hand, there is a novel object of study, i.e. the new patterns of political interconnection that arise in the new world order. On the other hand, and simultaneously, there is "an array of lines" of thought and reflection: this is the profound, implicit rationality of power, underlying governing behaviour and acting as a substratum for its tangible manifestations. It is in this double nature, implicit in the coexistence between rationality and structure, that the Sociology of Governance finds its highest expression, and is codified as a conceptual approach to read contemporary political dynamics.

This coexistence, and its implications for political studies, are at the core of Kooiman's (1993; 2003) work, whose insights have mapped the Sociology of Governance as a descriptive technique to read the field. Kooiman starts by stating that governance, in the contemporary world, is substantiated by a mix of "all kinds of governing efforts", achieved by social-political actors in the public and private domain: it is this mixed system, profoundly different from the monolithic nature of top-down relations in nation states, that needs to be grasped by a new, adequate perspective. The key to Kooiman's view primarily lies in presenting the Sociology of Governance as a conceptual approach, rather than a theory in its fullest sense: indeed, this view provides a new lens to read political dynamics, based on a novel vision of existing systems. This is epitomized by the conceptual shift from "government" to "governance", and all the semantics of networks of power and intra-network interactions attached to it.

As noted above, the notion of interactions constitutes, in the Sociology of Governance, the main unit of analysis of the political field. Kooiman (2003: 19) uses this notion to ground and structure his approach to governance as a whole: interactions occur, in this perspective, at the two simultaneous levels of action and structure. On the one hand, the sphere of action – referred to by Kooiman as *intentional* level – focuses on the contingent aspect of interactions, and on the polymorphous shapes that they can acquire depending on the context in which they are immersed. On the other hand, the *structural* level looks at the intrinsic pattern at their basis, and at the nature that underlies it: in other words, while the

contingency of interactions can be very varied, their structural dynamics are based on regularities, which are amenable to be observed and studied in the social sciences. The structure of interactions, which allows individuals to make sense of them in the real world, is the "pattern" referred to by Rose as the main object of investigation in the field.

The structure of interactions, in the Sociology of Governance, emerges from several constitutive elements: the key one for my study, and a fundamental one in Kooiman's vision, is that of image formation, as inherent to governance processes. Image formation, as of Kooiman (2003: 33), is "constitutive" of the act of governing: in fact, "anyone involved in governance, at all levels, form images of what they are governing", and develop their behaviour on the basis of those images. Interactions are structured on the basis of the images formed in people's minds: the subjective knowledge of the world around us, developed through the filtering devices implicit in human cognition, is at the roots of the behaviour of individuals towards external actors. Therefore, the Sociology of Governance studies image formation as a political process, firmly placed at the root of governing interactions.

Image formation processes, as detailed by Kooiman (2003: 33-39), reflect the same two-layered form as interactions, as they arise from the combination of an intentional and a structural level. On the one hand, intentionality is substantiated in the contingent side of the process: reflecting Boulding's theory on human cognition (1956), images are constructed through the continued absorption of *messages*, i.e. all the inputs that concur to adding information on an object of knowledge. An image results, therefore, from the sum of all the inputs received with regards to it: however, absorption of messages is not automatically devised, but depends on the structure constituted by the *value systems* rooted in people's cognitive spheres. Therefore, when a message is received by a subject, it is filtered by the systems in point: the reaction to it, in terms of degrees of acceptance or rejection, will depend on its coherence with the pre-conceptions (pre-images) embedded in the individual's cognitive structure. As a result, image formation does not depend solely on external inputs, but on the systemic interaction of these with the value systems that shape human cognition.

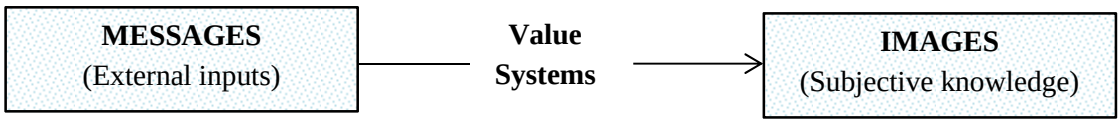

Figure 1: Synopsis of Boulding's Theory on Image Formation
Source: adapted from Boulding (1956)

Figure 1 synthesizes the dialectical process described above, in which external inputs (messages) and internal structures (value systems) interact in the formation of images. Going back to Boulding (1956, cited in Kooiman 2003: 37), as an image is reached by a message, three main scenarios can possibly unfold: in the first one, the image may remain unaffected, as the information added is irrelevant (i.e. does not produce a change on existing images). In the second one, the image may be changed in a regular way, i.e. by the provision of additional, relevant information to previous knowledge that the individual held on the same object. In the third one, transformative changes (of various natures and degrees of significance) may be produced in the image: this entails, in fact, a re-discussion of existing preconceptions, and potentially of the systems that shaped these in the first place. That is why the latter case is not frequent, as it entails a re-discussion of elements that are already firmly rooted in cognition: to happen, disruptive change requires convincing messages, to be frequently and persuasively repeated.

Images, as produced by Boulding's dialectic process, may be shaped and constructed in a completely tacit way, articulated only in the cognition of individual subjects. The transition of images, from the domain of individuality to that of open articulation, happens in the public sphere: this is interpreted, as in Habermas, as a forum where social experiences can be brought to the attention of other actors, discussed, and reshaped in subsequent cycles, through the reception and elaboration of new messages. In this structure, communication plays an important role in providing interpretive frames: it gives, in the first place, an explicit form to inherently tacit images, and furthermore, it allows the formation of shared images, which add to the pre-images created individually. The public sphere, in the notion adopted here, is therefore the place in which the domain of images, tacit and individual as they initially are, enters the domain of interactions, and is then enabled to concur to governance within the networks.

To sum up, the Sociology of Governance conceptualizes a new way of thinking, observing, and articulating the activity of governing. This perspective is grounded on the study of interactions, which are based, in turn, on image formation processes in human cognition. As it is at the core of the Sociology of Governance, the notion of image formation introduces a whole new theme of analysis in the field: as it will be seen below, this theme has entered the scene of e-governance for development, creating a new perspective to read the sector as a whole. In pursuit of my research topic, I focus on this perspective, and on the stream of ISDC literature that it has resulted in.

2.3.2. Images and E-Governance for Development

As noted here, the Sociology of Governance introduces a new conceptual approach, and a new theme of analysis in the domain of governing. This approach is grounded on interactions, as a main unit of analysis for understanding governance, and on images, as the main element participating to the construction of interactions within the networks. The question to be asked here is why, and in what ways specifically, should this theme be relevant to ISDC, as a field mapped by the theories and themes synthesized in the first part of this chapter.

To understand this, we need to conceptualize the way in which the Sociology of Governance has been introduced in ISDC, and the implications of using this approach in our domain. Explicit usage of the Sociology of Governance, in a study focused on e-governance for development, was made for the first time by Madon (2005), who, in her work on telecentres in the southern Indian state of Kerala, studies the governance networks around e-kiosks on the basis of the interactions occurring within them. In this respect, Madon provides a new perspective on telecentres, in which the relations between the actors into play are used as a main unit of analysis: what emerges clearly, throughout her work, is the rupture between this vision and the dominant paradigm in the field, in which telecentres are evaluated through the abovementioned notion of "good governance". The Sociology of Governance, as it looks at processes of image formation and at the interactions that arise from them, transcends "good governance" indicators of effectiveness and accountability, to focus on how governance networks are influenced by the quality of the interactions within them.

By introducing the Sociology of Governance in ISDC, Madon's work has brought a significant innovation to the field: its importance, beyond theoretical innovation *per se*, lies in providing a clear rationale for using the Sociology of Governance in this domain. This rationale is composed of two motivations, in a descriptive-normative dichotomy that mirrors Rose's vision delineated above: the first reason, of a descriptive nature, is that ISDC initiatives, epitomized by telecentres, tend to be based on models that resemble the idea of networked governance. As noted above, e-governance projects do not normally involve unilateral action by service providers: instead, they tend to be organized through various forms of public-private partnership, in a networked system characterized by distributed forms of power and management. The Sociology of Governance, conceived exactly for studying forms of governance based on networks, has a strong descriptive potential for

power structures of this kind, and this makes it particularly suitable for contemporary phenomena in ISDC.

The second motivation, of a normative nature, is also rooted on consonance between the Sociology of Governance and ISDC, with specific reference to my sub-field of interest. In fact, as signified by the term itself, "e-governance for development" studies a type of governance that displays two particular features: it is enabled through new technologies, and it belongs to developing country contexts, where technology-based initiatives are situated. These two factors lead to a context in which, in Madon's words,

> To understand the reality of telecentre activity (...) we need to move beyond the confines of the good governance paradigm that gives rise to them, and that continues to frame the parameters used to study these projects. (…) The achievement of telecentre sustainability is dependent on the complex exchanges and relations between state and society. (Madon 2005: 403)

This implies a strong programmatic assertion: parameters utilized for evaluating governance in standard realities, in which "good governance" is implicated, do not necessarily work in e-governance for development, where the combination of ICTs and a developing country context creates a particular domain of application. The reason for this is that e-governance for development, as it computerizes governance processes that were previously manual or paper-based, may result in disruptive change for all actors in the network, who might therefore cope in diverse, unpredicted ways with the novelty of ICTs. In this context, standard governance principles may be unsuitable for evaluation: in other words, governance may not be "good" if the state's power is rolled back, but if interactions between the various entities into play, in adapting their behaviour as a consequence of innovation, still work in a positive way. In other words, in ISDC, the assertion that "good governance means less government" is not necessarily true: instead, good governance tends to coincide with the presence of well-functioning interactions, which the Sociology of Governance is optimally positioned to assess.

Madon's approach, in terms of introducing the Sociology of Governance into ISDC, has been mirrored by a new stream of literature, involving the themes of e-governance for development delineated above. Primarily, this perspective is applied to studies on sustainability, a concept that, in e-governance for development, also involves a social dimension (IIITB 2005; Kuriyan et al. 2006): social sustainability, in fact, is predicated on participation, which calls for well-functioning interactions between users and governing

actors to take place (Whyte 2000; Madon 2005; Kuriyan and Ray 2009). Studies on trust, based on the presence of human intermediaries within e-governance projects, are also predicated on interactions: here, image formation by users on projects and their developers is crucial, for individuals to develop and consolidate trust towards them (Gopakumar 2007). The discourse on transformativity, related to e-governance, also pertains to this theme: this is grounded, in fact, not only on objective parameters of transformation, but also on the way in which users, engaging in technology, change their images of the world around them, and might – as in the case of Indian telecentre entrepreneurs, studied by Srinivasan (2010) – acquire a new social and economic status, which results in new images of themselves.

The themes outlined here, inscribed in a field increasingly pervaded by networked models of governance, reflect the descriptive and normative reasons for using the Sociology of Governance in ISDC. In this perspective, my focus is specifically on image formation processes, which lie at the basis of the framing and construction of interactions within networks. As observed, again, by Boulding (1956), the image constitutes the prism through which human beings tailor and develop the totality of their actions: hence, processes of image formation dictate the way in which actors relate to each other, on the basis of their individual perceptions. In the present historical phase, in which e-governance is being increasingly adopted in developing nations, studying the role of technology within image formation processes means studying the key devices through which behaviour of citizens, which proactively shapes relations between them and governing powers, is motivated.

Image formation processes, appraised in terms of the patterns through which they unfold, can be studied in diverse ways, according to their domain of action. As noted above, the image is viewed, in the approach adopted here, as the subjective knowledge of things, developed through external inputs and the internal value systems that act upon them. In her study of telecentres, Madon (2005: 407-408) develops a specific strategy to elicit images, and the processes at the root of their formation: to do so, she devises a specific way of interviewing, aimed at flagging interactions between a set of players and understand how these are, in turn, shaped by images. According to the object of study, and to the nature of the research questions behind it, scholars develop their own methods to observe image formation processes: in Chapter 4, I detail my choice of developing an *ad hoc* technique for data collection and analysis, aimed at eliciting images from respondents' narratives.

In structuring a study on image formation, a key question is: *which* images are those at the core of research? To be defined, studies of this kind need a subject (the "who" of image

formation processes) and an object ("what" is being imagined in the process). In his seminal work, Kooiman (2003: 33-36) looks specifically at images developed by governors, as constitutive of the very act of exerting governing power: still, governors are not the only agents of image formation, and the perspective that focuses monolithically on them has been, in fact, counteracted by a more holistic approach to networks (e.g. Kjaer 2004). Again, in her work on telecentres, Madon focuses on images pervading the whole set of actors into play, with a specific focus on telecentre users: this is because user participation is key to the social sustainability of these initiatives, which fosters, in turn, the financial viability of e-kiosks. This reveals that, especially in a composite field as ISDC, images at the core of analysis can belong, in principle, to each actor, and focus on each element of governance networks.

2.3.3. Problem Area: Back to the State

Answers to the above questions, on the subject ("who") and object ("what") of the image formation processes at the centre of attention, are instrumental in defining the domain of interest that has informed my research. In particular, my approach conceptualizes image formation beyond the space of governing powers, and views it as distributed through the governance network as a whole: in fact, rather than looking solely at the *governors*' perspective of image construction, I am equally interested in the *governed*, and in the processes of image perception that they experience. As detailed above, the relevance of these processes lies in the link between images and the structure of interactions: developing country citizens, subjected to e-governance, are enabled to reconstruct their vision of governors, and this proactively influences their relations with them. Among the multiple forces, embedded in the governance network and coexisting within it, the state is the one in charge of administrative decision making, and profoundly conditions the lives of citizens in terms of public policies and entitlements.

Therefore, while considering the plethora of actors involved in governance, the state, as a coordinator of policy and development management, is the main object of interest here, and the one about which I aim to investigate image formation processes by citizens. The vision of the state as a key actor in governance, albeit – as highlighted by Kooiman – not anymore the only one, has contributed to delineation of a new sub-field in e-governance for development: this looks at how images of the state, constructed and developed in the minds of citizens, are influenced by the action of e-governance on people's lives. As per how it is constructed, this sub-field focuses exactly on image formation: its origins lie, once again, in

Madon's work, with its focus on how images influence interactions in governance networks. This novel stream of literature looks exactly, as the next chapter will detail through Corbridge et al.'s (2005) theory, at how people "see the state" through new technologies of governance.

Based on the insights detailed here, I can provide a first characterization of my broader domain of interest: starting from the Sociology of Governance, as introduced in the domain of e-governance in developing countries, I have looked at the way in which e-governance enters citizens' processes of image formation on the state. In this perspective, the "who" and "what" questions on image formation processes are answered precisely: the subject of image formation, which I observe, is constituted by developing country citizens, exposed to e-governance and potentially rethinking the state as a result of it. The object is, consequently, the state, conceptualized in the multiple productions that it acquires in contemporary governance systems. A broader research question, that captures this problem area, is:

- How does technology influence the ways in which developing country citizens form images of the state?

This question synthesizes the domain of interest described above, and inscribes it in the space of ISDC literature opened by Madon's work. The abstract terms of the question needed to be operationalized into more specific, researchable ones, a task that is pursued through the usage of a theory of technology to read the problem area. This process, which uses theory to convert a broad question into narrower ones, is illustrated in the next chapter.

2.4. Summary and Conclusion

In this chapter, I have firstly provided a theory-based overview of the domain of ISDC, to which the research developed here aims to contribute. Closer observation has then been conducted on the sub-field at the core of my work: namely, that of e-governance for development, which has been mapped on the basis of the main themes in it. The introduction of a new theme in the field, that of image formation through ICTs, has been observed in its theoretical matrix, identified in Kooiman's (1993; 2003) Sociology of Governance: the chapter has then detailed the introduction of this theme in ISDC, operated by Madon (2005) with her work on telecentres in Kerala. On the basis of the new theoretical space opened by this theme, I have synthesized the problem area observed here, which the next chapter will convert, through an *ad hoc* theory of technology, into specific questions for my research.

3. Conceptual Framework

In the previous chapter I have positioned my research in the domain of ISDC, with reference to the sub-field of e-governance in developing countries. In doing so, I have outlined my area of interest, and codified it in a research question on how technology may affect citizens' processes of image formation on the state. In this chapter, I illustrate the conceptual framework through which I have structured my work: by the means of theory, this question has been converted into two narrower ones, which focus on specific aspects of my domain of interest.

The conceptual framework, devised for this research, is informed by two theories: these are, respectively, a *theory of action*, aimed at explaining the processes at the centre of attention, and a *theory of technology*, focused on the role of technology in these processes. The theory of action, used here in the formulation by Corbridge et al. (2005), revolves around the concept that citizens "see the state" through direct encounters with it, in the form of its localized embodiments and representations. This problematizes, at its very roots, the Weberian assumption of "facelessness" of government, arguing that the state is perceived by citizens in the form of the individuals and institutions that they encounter on an ordinary basis. The theory of technology is, instead, a view of ICTs as directly implicated in image construction by the state: this notion, applied to e-governance for development by Kuriyan and Ray (2009), constitutes a political application of a vision of technology as socially embedded in its context of action (Avgerou 2008).

Both theories have been highly utilized in their respective domains: the theory of action originally belongs to the field of anthropology and development, whereas the theory of technology, originated by a broader vision of social embeddedness, finds its roots in information systems at large. The novelty of my conceptual framework consists in *combining* these visions, in a theoretical lens resulting from their mutual integration: by doing so, I devise a new composite approach, in order to structure my study of the role of technology in image formation processes. This theoretical lens is the one that, as illustrated at the end of the chapter, informs the conversion of my problem area into two specific questions for research.

3.1. Theory of Action: "Seeing the State" through Technologies of Rule

In the framework proposed here, based on complementarity between a theory of action and a theory of technology, the function of the theory of action is that of explaining the processes at the centre of research. Image formation, as observed in Chapter 2, is at the core of the Sociology of Governance, which views it as the basis on which governing is grounded: what I needed was a view that encompassed the reverse process, observing how *the governed* form their images on the state. This, coupled with my focus on developing countries, led me to encounter the vision by Corbridge et al., on how citizens in rural India "see the state" in the form of its localized embodiments.

Theory by Corbridge et al. belongs to a specific body of research, focused on anti-poverty programmes in rural India, which looks at how the state is perceived, through these schemes, by citizens (e.g. Srivastava et al. 2002; Corbridge et al. 2003a, 2003b, 2005; Véron et al. 2003 and 2006; Williams et al. 2003a and 2003b).[3] My choice of this theory was motivated, primarily, by its optimal fit with my area of interest: this is indeed a theory that looks at image formation in a developing country context, from the point of view of citizens (and, specifically, citizens made vulnerable by poverty and marginalization). Additional elements, reinforcing my willingness to engage with this approach, were dictated by its synergies with my view of research: sharp focus on empirics in theory-building, combined with explicit willingness to "make social science matter" to policymaking in the developing world, made it "the right theory" for the study I was imagining.

In this work, I have read Corbridge et al. in the form of a structured reasoning, which has informed the theory of action at the core of my research. This reasoning consists in three steps, whose organization mirrors a syllogistic structure: the first one, used as a *major premise* in the theory, asserts that citizens "see the state" through encounters with it, experienced in the form of its localized embodiments. The second step, a *minor premise* that qualifies the former, specifies the structure of state-citizen encounters: it asserts that these are grounded on regular patterns (technologies of rule), which, in the postcolonial domain epitomized by India, are based on the Foucauldian logic of governmentality. The conclusion, resulting from combination of these two premises, is that technologies of rule, through

[3] Albeit research by S. Corbridge, M. Srivastava, G. Williams, and R. Véron is embodied in a vast body of literature, the book (2005) on "Seeing The State: Governance and Governmentality in India" provides, perhaps, the most powerful synopsis of the theory that emerges from it. This book is therefore referred, throughout the thesis, as paradigmatic of the theory as a whole

which state-citizen encounters are structured, constitute the prism through which citizens "see the state" in their lives.

3.1.1. Major Premise: Citizens "See the State" through Encounters with it

> At the doorstep of [a district-level government office], we recognised one of our village respondents, a poor tribal women. She explained that she had been waiting for four hours to see the officer and was afraid of losing her 'turn' if she left for a few minutes to have her lunch. By contrast, the peon allowed a large group of men led by *netas* [political leaders] to enter the office immediately. This group stormed in while we were still having our discussion with the district-level bureaucrat. (Field note, Malda district, West Bengal, 28 Jan. 2000, in Véron et al. 2003)

Vignettes and descriptions of field situations, as the above, recur frequently in Corbridge et al., and constitute an integral part of their method of engaging with theory. Strict coupling, between field data and the derivation of theoretical propositions, is one of the key features in their approach: empirical work, at the basis of theory on citizens' sightings of the state, has been conducted primarily in rural India, with a focus on the states of Bihar, Jharkhand and West Bengal.[4] This body of literature focuses largely on one programme, the Employment Assurance Scheme (EAS), which aims at generating livelihoods for poorer people through short-term employment. Of the EAS, Corbridge et al. observe several aspects, with particular attention to dynamics underlying new patterns of participation: one of the objectives of this programme is, indeed, that of allowing the poor into a new experience of the state, in which they should move from passive recipients to proactive interlocutors of government.

As they depict state-citizen encounters, produced and structured by the EAS in India, Corbridge et al. state the core argument of their theory: citizens, as they engage with the state, do not see it in the form of an indirect projection, but in the tangible embodiments that they encounter in their lives. This means, as a practical illustration, that poorer people, accessing the EAS in India, do not "imagine" the state in the form of the central government, which is physically and humanly detached from them: instead, they "see" it in a very real shape, that of the bureaucrats, policemen, village leaders, and other institutional

[4] Corbridge et al.'s work, while focused primarily on these states, is not limited to them: for example, chapter 7 (2005) constitutes a case study of Kerala, the state on which my research is focused. However, eastern India constitutes the main centre of their research, with particular attention to how anti-poverty schemes are implemented.

embodiments that they encounter in their everyday existence. It is in these encounters, often frustrating and sometimes violent for poor people in India (Corbridge et al. 2005: 3), that sightings on the state are structured: this represents a rupture with the Weberian vision, based on a "faceless" bureaucracy that makes the state impartial and impersonal (Hughes 2003: 93). Corbridge et al.'s vision is rooted in Benei and Fuller's (2001) view of an "anthropology of the everyday state", illuminating the quotidian practice of politics, and in Akhil Gupta's vision on how the state, entering people's existence, becomes implicated in the "minute texture" of life itself (Gupta 1995: 375).

This vision, based on empirical data collected on Indian anti-poverty programmes, has introduced a significant innovation into theoretical perspectives on state-citizen relations. Focus of theory, originally grounded in the ways for government to conceptualize its objects, moves, with Corbridge et al.'s work, to the perspective of the governed: this is the "reverse process", as compared to the Sociology of Governance, which I have sought when devising a theoretical lens for my research. The idea of "seeing the state" is, in itself, a reversal of "Seeing Like a State", James Scott's (1995) piece on how colonial powers engaged in proactive production of citizens through diverse means of census and classification, inscribing them into categories amenable to top-down control. Innovation in Corbridge et al.'s work lies exactly in subverting this process: what matters, in their anthropological perspective, is not how citizens "are seen" by the state, but how they "see" it through its real-life embodiments and manifestations.

This vision is applied to several settings in contemporary India: primarily, and, most importantly here, to the new "participatory" programmes devised by the central government. These programmes have constituted, in the view of Corbridge et al. (2005: 2), "a sea-change in the way in which the Indian government approaches its citizens": these are predicated on new, institutionalized forms of participation, in which citizens are directly consulted on programmes, their outcomes, and their potential improvements. These programmes have come in parallel with the wave of constitutional reforms, aimed at fiscal and administrative decentralization, known under the name of Panchayati Raj (Dasgupta 2001; Mitra 2001): this seems to be a sign of a major rupture with the past, characterized by a paternalistic mode of combating poverty (Corbridge 1999; Corbridge and Harriss 2000). These new programmes, in the vision by Corbridge et al., have created a space for a theoretical approach to understanding how people's perceptions, observed in the form of sightings of the state, change as a result of innovation in governance.

3.1.2. Minor Premise: Encounters Are Shaped through Anti-Poverty Programmes

Following from the above, the second part of this theoretical syllogism looks at *how* state-citizen encounters, through which image formation occurs, are structured in practice. In the approach utilized here, state-citizen encounters are embedded in recurrent forms, whose regularity makes them amenable to theorization: the construct used by Corbridge et al. (2005: 14) to study these regularities, with reference to contemporary India, is that of *technologies of rule*. Theorization of this concept is ascribed to Nicholas Rose's work on new forms of political power: in Rose (1999: 28-36), the term "technologies of rule" stands for all the *institutions, practices, and classification techniques* utilized to perform the actions of government. More specifically, this refers to:

- **Institutions**, as the physical or representational entities exercising government. For example, state agencies operate according to regularized practices, which embody a specific underlying philosophy of public management. A practical illustration, here, is that of the Foucauldian account of the modern classroom: this is made in a certain way, and informed by a certain structure, in order to allow teachers to discipline students along specific lines of conduct (Rose 1999: 27).

- **Practices**, i.e. regulatory or disciplinary techniques utilized for the purpose of government. As well as institutions, practices of government embody regularized mechanisms of control over subjects, organized in *routines*, and aim to crystallize certain mechanisms of government upon them. A paradigmatic case of this is that of Taylorism, a work management practice that subsumes a specific philosophy of control over workers (Rose 1999: 27).

- **Classification techniques**, i.e. ways for inscribing citizens in categories that are constitutive of government. As of Rose (1999: 33), language is sufficient to enact classifications, as terming subjects in a certain way may have profound consequences on how they are disciplined. An example here is that of the census, a technology of rule that acts upon citizens by inscribing them in specific categories, which, rather than existing in nature, are artificially imposed upon them: by doing so, the government "makes up people", in the specific ways through which its activity is framed (Hacking 1986).[5]

[5] This is particularly relevant to the Indian context, where the Census, in colonial times, was key to the reification of what Dirks (2001) terms an "ethnographic state". This indicates a form of government that utilizes ethnographic tools as a means of rule, framing the population through

A key point here is that technologies of rule, as constructed by Rose, are not constituted solely by the tools and practices that allow governing powers to operate. Instead, technologies of rule are *assemblages* of a twofold nature, embodying both a physical manifestation, and the political *substratum* that lies at its basis. Therefore, assemblages of this kind result from the dynamic combination of two elements: on the one hand, the ontological rationality of control by government on citizens, on the other, the physical, performative instruments that translate this rationality into the reality of governmental action. Technologies of rule, as a result, may be, to an extent paradoxically, totally devoid of "technological" content: the word "technology" is utilized, instead, in a highly metaphorical sense, to describe the ontological and practical means through which governing powers discipline their subjects.

The concept of technologies of rule, as utilized by Corbridge et al., is strongly rooted on the mutual interaction between the two parts of the assemblage, i.e. the rationality behind governmental action and the performative tools in which it is embedded. On the one hand, the underlying ontology of control is conceived as a product of modernity, strongly relying on the discourse of governmentality introduced in the literature by Michel Foucault. On the other hand, the instruments that constitute the manifest aspect of technologies of rule – and the specific configuration that these acquire in post-colonial developing nations – are the focus of the new school of Subaltern Studies, initiated and led by the thought of Partha Chatterjee. Below, I elicit the contribution of both schools of thought to this concept.

Foucault: The Logics of Governmentality. The Foucauldian vision of the art of government, and of the specific human rationalities underlying governmental behaviour, is paramount in the elaboration of the notion of technologies of rule. The idea of "governmentality", utilized to indicate the essence and outcome of the historical process of "governmentalization of the state", has a threefold meaning (Foucault 1991), indicating:

- The ensemble of **institutions and practices** that has *populations* at its core. The use of the semantic field of "populations" recalls the Foucauldian notion of biopolitics, i.e. the

concepts that, while politically operational, do not necessarily mirror its ethnical features. For example, as noted by Béteille (1998), the concept of "tribe" in colonial India was poorly translated in the Census' classification, and this has had perverse effects on the outcomes of reservation policies depending on "tribalness" (on this, see also Corbridge 2000).

type of politics exerted on subjects *exactly because* of their features as human beings: hence, human nature is used as a basis to assert amenability to biopolitical practices,[6]

- The prevalence of government as a **means** to conceptualize the operations of the state. The idea of government, substituting that of sheer rule that ancient Princes enforced, is imbued with a finalistic aim to pursue the common good, and finds legitimization in this specific teleology, rather than in the authority of the Prince *per se*,

- The **process** for which the state of justice of the Middle Ages, when turned into the making of the administrative state, gradually becomes governmentalized. This process marks, once again, the way in which the ontology of governmental control is translated into reality: the idea of rule, entailing top-down authority and self-based legitimization, is turned into that of government, in which the "discipline of the conduct of conduct" is teleologically oriented to pursuing the common good.

The threefold meaning of "governmentality" elaborates, therefore, the phases of a reasoning that covers both the *process* of governmentalization of the state (point 3), and its *outcomes* in terms of new means of rule (point 2) and the *practices* in which these are translated (point 1). The same unity found in Rose's notion of technologies of rule, between practical tools of action and the ontological rationale underlying them, can be found in the notion of governmentality, which includes both the new mindset of government, and the outcomes stemming from it. This notion is to be combined with Foucault's attention towards populations, conceived as biopolitical collective entities, objectified and made amenable to government exactly in the light of their nature as human beings.

Foucauldian thought on governmentality constitutes the ontological part of the assemblage that, as per the above, is implicit in all technologies of rule. This rationale, as embedded in Corbridge et al., finds its application in the domain of postcolonial developing countries: these are epitomized by contemporary India, and by Chatterjee's theorization on the form acquired by technologies of rule in this setting.

Chatterjee: The Politics of the Governed. The work of Partha Chatterjee, who studies "popular politics in most of the world" (Chatterjee 2004: 3), looks at the performative aspect

[6] Among the techniques reviewed above, the Census is, again, perhaps the one on which the signs of biopolitics, as a vision framing policy measures, are most evident. Indeed, as noted by Dirks (2001), Census categories are imposed upon populations according to their ethnographic features, a process that results, as of Anderson (1983), in the creation of "imagined communities" of people.

of technologies of rule, as it comes alive in the context of postcolonial developing nations. While Foucauldian thought on governmentality looks at the ontological aspect of the assemblage detailed above, Chatterjee's work focuses on how these instruments are constructed in practice, and how they are effectively perceived by subjects (the "governed") in their lives. Most importantly, Chatterjee's geopolitical focus – including "more than 3/4 of the world's population" (Chatterjee 2004: 11) – is constituted by the domain of "subaltern nations", whose condition is induced by the legacies experienced as a result of colonial domination.

A key point here is that the vision of Chatterjee, informing the field of "subaltern studies" through the notion of postcolonialism, ascribes subalternity – and its adverse effects on development – to an inherently *political* cause, rather than an economic one. It is, he argues, the political condition of postcolonialism that produces specific structures of government, which tend to reproduce domination as it was devised by colonial power, relegating the poor into the role of non-participating policy recipients. This is epitomized by India, whose political history inspires theory on the condition of subalternity: in India, colonialism has left a legacy that tended to reproduce paternalistic structures of colonial power, especially in the early years.[7] This is why, in the vision of the first Indian president J. Nehru, the indigent masses had to be "fed and clothed" by the government, but not really "involved" in participatory development management. A top-down logic of administration, aimed at "looking after" the poor rather than making them part of political life, constituted the legacy of colonialism, and constrained development outcomes into specific paths (e.g. failure of the state to "take care of the poor" resulted in the massive inequality that persists in India today).

The thesis at the heart of Chatterjee's work is that government, in subaltern countries, presents a recurrent form of technologies of rule, which acquire a patterned and recognizable mode of construction. This is informed by systematic detachment between the domains of *civil* and *political society*: departing from the Marxist philosophy that inspires him, Chatterjee identifies civil society with the political elites that can interact with the government in spite of subalternity, whereas the poorer masses are relegated to the "rough

[7] This theory reveals profound Gramscian influences on Chatterjee's political thought. Gramscianism is implicit, in the first place, in Chatterjee's identification of the roots of subalternity as political, rather than strictly economic: this consideration – suggesting that political-ideological sovrastructure prevails on economic structure in determining the outcomes of history – is a chief component in his study of contemporary governance. Gramsci wrote his "Prison Notebooks" with constant reference to Italian independence, explaining dynamics of hegemony and passive revolution with specific reference to historical events occurred in that phase: Chatterjee does the same with India, which he views as the epitome of the contradictions implicit in the dichotomy between an elitarian "civil society" and a marginalized "political society" (Chatterjee 1986; 2001; 2004).

and tumble" worlds of political society (Chatterjee 2004: 20-29). The dichotomy between these two groups, based on their capability (or lack of it) to be considered as interlocutors by the government, is once again epitomized by contemporary India: whereas richer elites inhabit a closed and circumscribed civil society, political society encompasses the poorer masses, objectified by top-down policies that exclude them from any form of participation.[8] It is the strict, hardly challenged dichotomy between civil and political society that, according to Chatterjee, is key to understanding politics in "most of the world".

This vision matters, to my theory of action, exactly in relation to the notion of technologies of rule that informs it: the dichotomy above, as Chatterjee illustrates, generates a set of particular technologies of rule, that apply to the poor as they inhabit the domain of political society. In fact, while in civil society *citizens* interact with government on an equal basis, political society is instead based on *populations*, which are ruled through a top-down, non-participatory logic of governmentality. A key example, here, is again the colonial Indian state, rendered an "ethnographic state" (Dirks 2001) through instruments of action (e.g. the Census) that mirrored a biopolitical vision of government: that was, indeed, the same form of rule *de facto* maintained after national independence, through a set of anti-poverty schemes in which the poor have no voice – they are just constructed as "objects" of determined "development" measures.

How is this notion, developed in theory, embodied into practice in contemporary India? As of Corbridge et al. (2005: 14), poorer people in India "see the state" through technologies of rule that structure a war on poverty. These technologies coincide largely with the big, national anti-poverty programmes, originated by the policies of the Nehruvian power (Corbridge and Harriss 2000). While focused on different domains of need (food security, employment, pensions, *et similia*), these programmes find a common denominator in the logic of governmentality behind them, which objectifies the poor as sheer beneficiaries of development: only now, with the "sea-change" that has occurred in Indian politics, is a participatory nature being gradually infused in them.

[8] While Chatterjee suggests that "civil society and the poor in India like oil and water" (Corbridge et al. 2005: 3), Corbridge et al. point at a "sea-change" in contemporary Indian politics, based on the "participatory" character of a whole new host of anti-poverty schemes. Both streams of thought recognize the presence of a top-down, paternalistic nature in Indian technologies of rule: however, Corbridge et al. differ from Chatterjee in their vision of an ongoing change in this process, which enables "more direct sightlines of the state" (Corbridge et al. 2007: 613).

3.1.3. Conclusion: Technologies of Rule as Makers of Images

To sum up, my theory of action focuses on the processes through which developing country citizens form their images of the state. Theory by Corbridge et al., focused on "seeing the state" from the eyes of citizens in contemporary India, is articulated in two macro-arguments: a *major premise* states that citizens "see the state" through encounters with it, in the form of institutions, individuals, and all its localized embodiments and representations. A *minor premise*, specifying the former, details the way in which the encounters in point are constructed: these happen on the basis of regularized technologies of rule, which, in the postcolonial developing world, embody the top-down logic of governmentality. A conclusion, resulting from combination of these two premises, is that technologies of rule, through which state-citizen encounters are structured, constitute the prism through which citizens get to "see the state" in their lives.

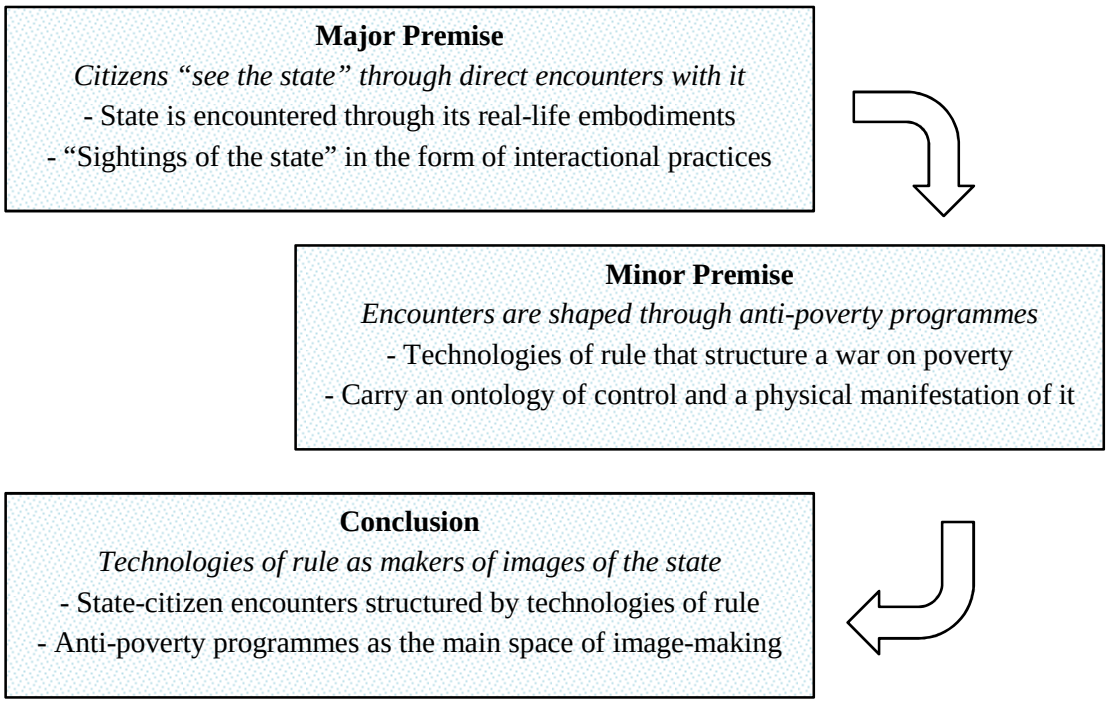

Figure 2: Synopsis – Conceptual Framework: Theory of Action
Source: adapted from Corbridge et al. 2005

This is a theory that has a visual, pragmatic nature, and is developed with constant reference to real-life instances and situations. Most importantly for this thesis, it is a theory that aims to matter for the formulation of practical, readily-usable policy suggestions: it aims, as Corbridge et al. (2003a; 2003b) indicate, at "making social science matter", a programmatic

assertion originally coined by Flyvbjerg (2002). As the authors conceiving this theory aim to "make it matter" for the context of reference, they focus on extracting the practical lessons that it may have for devising anti-poverty programmes, in order to improve the sightings of the state that these schemes may grant to poorer people.

This is the theory of action that I adopt in my study. To complete my theoretical framework, this needs to be complemented by a theory of technology, which explains the role of ICTs, and more specifically of e-governance, in the processes through which the state is sighted by its citizens.

3.2. Theory of Technology: Reconstructing the State through ICTs

So far, I have detailed the theory of action adopted here, which explains the processes through which citizens in the developing world form images of the state. In their theorization, Corbridge et al. suggest, in passing, that technology may contribute to reconstructing state-citizen relations:

> In those parts of rural India where even poorer families now have access to TV sets, perhaps powered by a car battery where there is no electricity supply, the possibility also exists for what Rajagopal has called (…) a collective libidinal experience. This mode of experiencing the state reaches back to conversations that people may have on the basis of shared readings of a newspaper. Whether it also anticipates those sightings of the state that might be provided by Internet access – along the lines perhaps of panchayat-level computer booths that have been promised in Andhra Pradesh and Madhya Pradesh – is a moot point (…) it is likely that the Internet will change poorer people's experiences of and reactions to the state, just as other new technologies have done previously. (Corbridge et al. 2005: 28)

Still, Corbridge et al. do not go into further depth concerning this, as the discourse on relations between ICTs and governance transcends the focus of their research. As I now move to the theory of technology, which completes my conceptual framework, I therefore need a gnoseological structure to answer the question on the role of technology, in the image formation processes at the core of research.

3.2.1. Technology as Embedded System

The notion at the basis of this theory is a view of technology as "embedded system", as detailed in the seminal work by Orlikowski and Iacono (2001: 126-127). This notion, as

noted by the authors, stems from dissatisfaction with the "tool" and "proxy" views of technology, which, conceptualizing the artefact *per se* rather than in context, do not make sense of its multiple relations with the situational factors around it. Conversely, in the vision of technology as embedded system, the artefact is seen through the lens determined by the context in which it is used:

> The conceptualization of technology (…) is that of an evolving system embedded in a complex and dynamic social context. Technology is neither an independent nor dependent variable, but instead is seen to be enmeshed with the conditions of its use – hence our label "embedded system". (Orlikowski and Iacono 2001: 126)

The key notion, in this vision, is that of "enmeshment" between technology and its situational factors, which leads to the conceptualizion of the artefact as a byproduct of its context of use. At the same time, as per the above, technology is not reduced to a dependent variable: the notion of enmeshment implies a feedback mechanism, out of which technology, in turn, shapes the contextual dynamics around it. Embeddedness, as conceptualized by Orlikowski and Iacono, can therefore be identified with this two-way relation with the context: technology is shaped by it, but is also endowed with the intrinsic power to influence its dynamics and trajectories.

The view of technology as embedded system is inscribed in a broader information systems debate, centred on the question of the extent to which technology is interpretable and reshapable by its users. On the one hand, theories on the *situatedness* of technology (e.g., Pinch and Bijker 1987; Bijker and Law 1992; Orlikowski 1992, McKenzie and Wajckman 1999; Bijker 2001) state that technology is, in its own nature, reshapable *in situ* by users, i.e. it can be interpreted and plied by them in virtually infinite ways and modalities. In her theory of situatedness, Orlikowski (1996; 2000) relies on structurational models of technology: in these models, technologies are based on an intrinsic structure, which is then appropriated by users for adaptation to their own needs. In this conception, technology is fully malleable, and endowed with the *interpretive flexibility* (Pinch and Bijker 1987) that allows users to determine the way in which they approach it, and make sense of its implicit properties.

On the other hand, a different view is detailed by Kallinikos (1995; 2004; 2011), and by a school of thought that sees technology as an independent regulator of human action. In taking this perspective, Kallinikos makes a compelling analysis of the inner features of

technology: this leads to the argument that malleability, if it exists at all, concerns solely "the slim area upon which human beings encounter technology" (Kallinikos 2004: 28). In other words, the *interface* of technological artefacts may be reinterpretable, but this feature does not extend to the *structure* underlying them: the real essence of technology lies, indeed, in the structure, which invites human behaviour along specific lines of action. This works to the detriment of the core argument of situatedness: technology, as constructed here, does not incidentally traverse human existence, but is profoundly implicated in it, in a "compelling tangle" that structures human behaviour (Misa et al. 2004). As a result, technology is viewed as a factor that regulates the agency of users in specific ways.

The view of technology as embedded system, theorized by Orlikowski and Iacono and utilized here, acts as a synthesis to the dialectics implicit in this debate. On the one hand, it accepts the idea of reshapability sustained by theorists of situatedness, because it views technology as a byproduct of the context around it. However, at the same time, it recognizes the power of technology to engage in the reverse process: the two-way relation with context, implied by embeddedness, assumes an influence of the artefact on the factors around it, which are in turn reshaped in this process. So configured, the view of technology as embedded system is enabled to subsume the two visions of situatedness and regulation.

3.2.2. Social Embeddedness of Technology in ISDC

The view of technology as an embedded system, one of the main perspectives adopted in information systems at large, has been widely accepted and utilized in ISDC. A perspective of social embeddedness is identified by Avgerou (2008: 133-135) as one of the dominant ways in which technology is constructed, as applied and implemented in developing country contexts:

> Authors of the social embeddedness discourse view IS innovation as a locally socially constructed course of action. Innovation is studied as a locally constituted process of technology construction and organizational change. Its purpose arises from local problematizations and its course is determined by the way local actors make sense of it and accommodate it in their lives. (Avgerou 2008: 135)

This notion, predicated upon a socio-technical vision of the information systems domain (Avgerou 2002; Avgerou and Madon 2004), views technology as directly related to its locally determined features, which maximize the importance of context in its configuration

(Avgerou 2001). The discourse of social embeddedness is viewed in opposition to another dominant perspective in ISDC, referred under the notion of "technology transfer": in this discourse, developing countries are constructed as keen to "catch up" with the industrialized world, by transferring technologies and knowledge from outside. The argument of social embeddedness disputes this view, by stating that technology is not necessarily "transferred" to the developing world: diversely, developing nations conceive new technologies according to their own needs and perspectives, and implementation is led on the basis of locally relevant content and necessities.

So constructed, the discourse on social embeddedness is highly diffused in the ISDC literature. Based on the theoretical mapping of the field, conducted in Chapter 2, many approaches are found to be predicated on this vision of technology: for example, the ANT framework used in Walsham and Sahay (1999) views GIS as embedded in the local system of knowledge, constructed in strict relation with the characteristics of the territory. A similar perspective is found in other works on GIS in India, as those by Puri and Sahay (2003) and Puri (2007): here, participatory mapping is seen as embedded not only in the experience of scientific professionals, but also in that of the local communities called to contribute to GIS projects. In a recent piece of work on netrepreneurs in China, Avgerou and Li (2013) suggest that economic activity, performed through web platforms, is embedded in a set of social and cultural relations, in which the use and perception of technology is inscribed. These approaches are paradigmatic of a social embeddedness discourse, as they see technology as predicated on the specific features of its context of action.

More evidence of this discourse in ISDC is found in institutionalist approaches, of which the work of Madon et al. (2009) on digital inclusion is paradigmatic. Here, the institutionalization of e-governance projects is predicated on several categories of contextual factors: acceptance by local communities, and the support of key actors such as government and relevant social groups, is based on the projects' capability of providing locally relevant content. The neo-institutionalist approach of Miscione (2007), applied to the study of telemedicine in the Amazon, views technology as endogenous to the encounter of two streams of knowledge, defined by notions of standard healthcare and of local traditional medicine. A similar vision is found in Braa et al's (2004, 2007) work on health information systems, which Avgerou (2008: 135) views as paradigmatic of social embeddedness: in designing an action research project, Braa et al. depart from standard models of healthcare, and develop their vision on the basis of context-specific notions of health management.

The vision of technology as embedded system is therefore found to be widely utilized in ISDC, as a lens for conceptualizing the dynamics of the field. Within this domain, it has been used in different ways, all predicated on a view of enmeshment between the artefact and the contextual factors around it. This position can be synthesized with Land and Hirschheim's (1983) view that information systems are, in the first place, social systems that use technology: the object at the core of theory, therefore, is no longer the artefact *per se*, but the ensemble of technology and its social environment.

3.2.3. Technology's Implications in Image Construction

As illustrated above, the approach to technology as embedded in its social context is highly diffused in ISDC. This is also the perspective that informs Madon's (2005) work on telecentres, which, as noted in Chapter 2, marks the introduction of image formation as a theme in e-governance for development. A vision of social embeddedness emerges, in the first place, in Madon's discussion of community involvement through telecentres: social sustainability, as it is discussed here, stems from the capability of e-kiosks to provide locally relevant content, to make the link between technology and its prospective users.

Embeddedness, as it emerges from Madon's approach based on the Sociology of Governance, relates to the actors gravitating around telecentres, and to the *interactions* that they experience as a consequence of technology implementation (2005: 406-407). This means that the context, in which e-governance projects are embedded, transcends the social domain, and becomes *political* in nature: telecentres are configured, in the analysis conducted here, as a way to reach the target of state-wide e-literacy, and make ICTs accessible on a universal basis. Technology is, therefore, embedded in its political domain of use: its features are determined by the objectives of local governance, and constitute the practical way in which these are converted into reality.

This political idea of embeddedness is at the root of a theoretical vision of my research topic, in terms of how e-governance is related to image formation on the state, as experienced by citizens in developing countries. This vision is detailed by Kuriyan and Ray (2009): as they leverage on Madon's work, they focus exactly on image formation, and on how it is implicated in the structure of e-governance initiatives. Through further observation of telecentre projects, as implemented in the Indian states of Andhra Pradesh and Kerala, Kuriyan and Ray elicit a specific process of reconstruction, in which the state utilizes e-governance to create a new image of itself:

> The state is trying to recast its image to fit market-friendly principles such as economic efficiency, accountability and effectiveness, all of which embody the "good governance" agenda in India and elsewhere. These efforts reflect the state's attempt to reposition itself in the context of a liberalizing economy and to alter the way in which it is perceived by its citizens (…) e-governance, through decentralized entrepreneur-mediated telecenters, is partially redefining perceptions and expectations of the state, the lay citizenry and the private sector. (Kuriyan and Ray 2009: 2).

The twofold relation between technology and context, seen by Orlikowski and Iacono as the root of the notion of embeddedness, is applied here to the topic of image formation. On the one hand, technology is seen as a byproduct of political targets: these belong, as per the above, to a view of modernization and liberalization, which is physically embodied in decentralized e-governance architectures. On the other hand, technology is found to reshape the context as well: it engages, through the means of ICTs, in reconstruction of images of the state, as portrayed in the eyes of citizens. The role of technology in image construction, as it is theorized here, constitutes the ideal completion to Corbridge et al., as it sees technology as directly implicated in the state-citizen encounters at the root of image formation.

At the same time, this theory recognizes the relevance of image perception, experienced by citizens as they relate to technologies of e-governance. Still, Kuriyan and Ray's vision of image perception is less structured than that of construction, and consists primarily of empirical statements:

> Citizens simultaneously trust the government as credible and are disillusioned with it as inefficient (…) this hybrid version of government is gradually reworking both the way the state sees itself and how citizens see the state. (Kuriyan and Ray 2009: 2).

Kuriyan and Ray's vision, applying the social embeddedness discourse to image formation, constitutes the theory of technology through which I have framed my study. Image construction, in this theory, is conducted through e-governance, which endows the state with a means to reshape itself in the eyes of citizens. Image perception, instead, is not observed through a structured conceptual lens: this leaves the researcher with a space for theorization, in terms of citizens' appraisal of the images received.

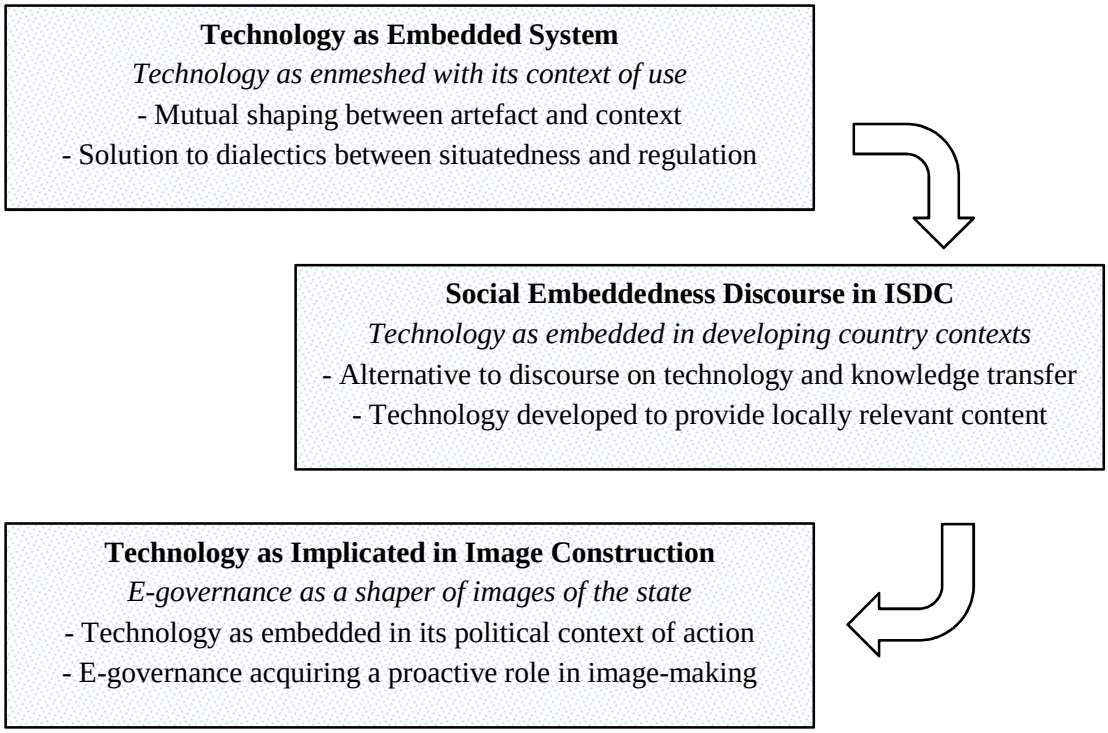

Figure 3: Synopsis – Conceptual Framework: Theory of Technology
Source: adapted from Orlikowski and Iacono (2001), Avgerou (2008), Kuriyan and Ray (2009)

The scheme above summarizes my theory of technology, through the three steps in which it is organized. The vision at its basis is that of technology as a system embedded in its context of use: this vision is applied to the domain of ISDC, and in turn to the sub-domain of image formation processes. This is synthesized by the vision of Kuriyan and Ray, which explicitly makes the link between e-governance and processes of image formation on the state. This theory introduces, in my area of interest, the notions of image *construction* and *perception*: these are the concepts on whose basis I have structured my research, and converted my broader question in two specific ones.

3.3. Synopsis: A Composite Conceptual Framework

As noted above, my conceptual framework consists of two different theories, combined in order to structure my research. Firstly, a theory of action, stemming from the perspective of Corbridge et al., explains the central object of my work, i.e. processes of image formation on the state as experienced by developing country citizens. Looking at postcolonial developing nations, epitomized by contemporary India, this theory makes the argument that citizens "see the state" through direct encounters with it: in the setting of interest, these are

structured by top-down technologies of rule, which constitute the main space of image formation for citizens. Secondly, a theory of technology has conceptualized the artefact as embedded in its social context of use: this notion has been applied to e-governance for development, and to the processes of construction and perception of images of the state.

Figure 4 illustrates my conceptual framework, resulting from combination of the theories detailed above. Its suitability lies in complementarity between the two approaches: whilst the theory of action looks at the "what" of my research, in terms of processes of image formation in my setting of interest, the theory of technology looks at "how" technology is, or is expected to be, implicated into these processes.

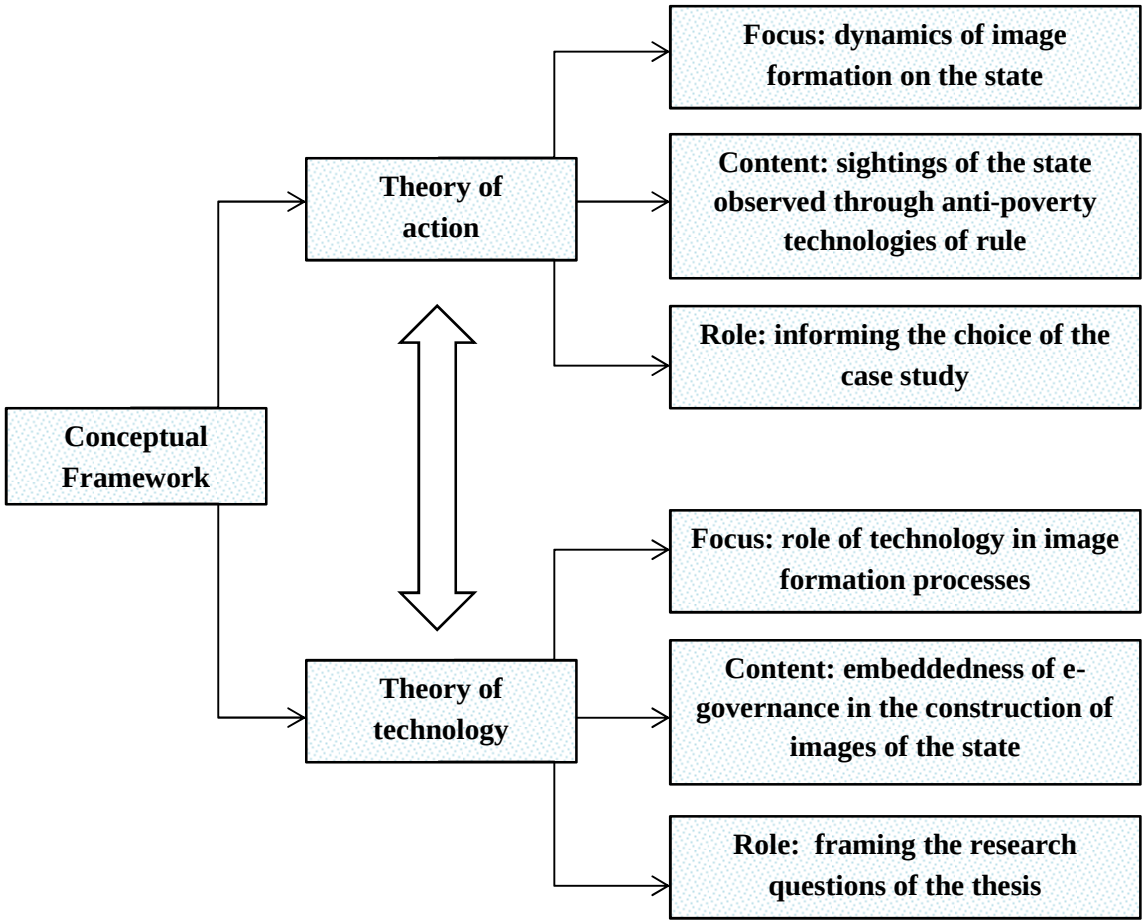

Figure 4: Composite Conceptual Framework of the Research

And still, these theories are related to two different functions, which in turn complete each other in the organization of the thesis. On the one hand, the theory of action has shaped my empirical study: the PDS, the food security programme at the centre of my research, has

been chosen as a consequence of reliance on Corbridge et al., viewing anti-poverty technologies of rule as the basis of image formation. On the other hand, the theory of technology has informed my research questions, converting a broader area of interest into specific domains for analysis.

3.4. Research Questions

At the end of Chapter 2, having identified ISDC as the field to which my research aims to contribute, I have focused on e-governance in developing countries, and specified my area of interest in this domain. This relates to the dynamics of image formation on the state, as experienced by developing country citizens newly interfacing with e-governance in their lives. A broader research question, identified to capture this problem area, was: how does technology influence the way in which developing country citizens form images of the state?

To operationalize this broader question into narrower, researchable ones, I have used the theory of technology grounded on social embeddedness in ISDC, and explicated by Kuriyan and Ray with respect to image formation. The theory of technology, selected for my conceptual framework, has proven to be suitable to this process for two reasons: first, it focuses exactly on my area of interest, providing a structured way to read the role of ICTs in image formation. Second, it suggests a dichotomy between image construction, enacted by the state through e-governance, and citizens' perception of the outcomes of this process. This dichotomy, applied to the problem area, has resulted in the two following questions:

- Do new technologies provide the state, in developing nations, with a way to recast its image? If so, how does this happen?

- How do citizens receive new, technology-induced images of the state?

While the theory of technology has informed the two questions above, the theory of action has played another, complementary role in the research. Indeed, this theory identifies anti-poverty technologies of rule as the key space of image formation on the state, in the developing country context epitomized by contemporary India. Grounding on this view, I have sought a case study that consisted in one of the technologies of rule in point: I have found it in the PDS, the biggest Indian food security programme, identified by Corbridge et al. (2005: 63) as one of the most deeply involved in sightings of the state for poorer citizens. The e-PDS, the technological object resulting from computerization of the PDS in Kerala,

has allowed me to apply the research questions above to the practical situation of an empirical case of e-governance.

3.5. Summary and Conclusion

In this chapter, I have illustrated the conceptual framework that has informed my study. This framework consists in the combination of two theories: a theory of action, explaining image formation on the state in developing countries, is identified in Corbridge et al's vision of citizens "seeing the state" through structured encounters with it. A theory of technology, explaining how ICTs may be implicated in image formation, is found in Kuriyan and Ray's vision of e-governance, as a way for the state to reconstruct its image in the eyes of citizens. On the basis of the theory of technology, a broader problem area has been converted in two research questions, mirroring the two domains of image *construction* and *perception*: these questions will be investigated through the case study of e-PDS in Kerala, approached by the interpretive perspective that is detailed in the next chapter.

4. Methodology

So far, I have detailed my problem area, and the theory through which I have structured my work. This chapter explains the methodological structure that I have followed to answer my research questions, focused on how images of the state are constructed and perceived through e-governance.

Research methodologies can be articulated in different ways. The principle that I follow, in illustrating my own, holds that methodology is logically inscribed in a theoretical perspective, which is, in turn, determined by an epistemology of reference – i.e. a theory on mechanisms of knowledge, and on criteria for validating it. Articulation of research through the four steps of epistemology, theoretical perspective, methodology, and *ad hoc* research methods is developed in Crotty (1998), and is suited to informing social research in general: here I detail the steps in point as they feature in my research, clarifying the reasoning that leads from each level to the next. As a result, this chapter is structured through the steps of:

- Epistemology of reference, i.e. social constructionism,

- Theoretical perspective, i.e. interpretivism (reflected by Eric Boulding's theory of cognition),

- Methodology, i.e. an interpretive case study,

- Methods for data collection and analysis, i.e. a technique of thematic narrative analysis constructed to elicit, from respondents' narratives, processes of image formation on the state, and the role of technology within these.

Figure 5: Structuring Elements of Social Research
Source: Crotty (1998: 5)

This scheme, aimed at maximizing the rigor of the research process (Crotty 1998: 16), can, in principle, be applied to all fields of social research. Yet, here, Crotty's reasoning is accompanied by another methodological instrument, which aims at guaranteeing quality and coherence in *this* specific research work. This consists of two guidelines, conceived as lines of *continuity* between concepts: these guidelines have dictated the choice of methods related to my questions, and have therefore arisen as the guiding principles of my empirical study.

The first guideline assures continuity between the theory of action, utilized in my conceptual framework, and the case study selected in order to answer my questions. This principle has led me to choose a case in which new technologies are applied to an Indian anti-poverty programme: this is exactly the type of scheme that, as of Corbridge et al., constitutes the prism through which poorer citizens "see the state" in contemporary India. Therefore, continuity here is assured not only with the research questions, but with the specific framework devised to study the theme of image formation at their core.

The second guideline guarantees, instead, continuity between the research questions, as formulated in Chapter 3, and my methods for data collection and analysis. Continuity, in this respect, flows from the notion of image, as the instrument for exploration of reality that the research impinges upon, to an interviewing technique that aims at making images, tacitly inbuilt in the cognition of respondents, emerge as concepts articulated in their narratives. Data collected through this technique are then interpreted through thematic analysis, in order to identify, in the narratives of respondents, the external inputs to image formation, and the role of technology within them. Constructions of narratives, and the analysis conducted on them, are therefore carried out in direct continuity with the research questions.

Elements of Social Research in the Thesis	
Epistemology	Social Constructionism
Theoretical Perspective	Interpretivism – Boulding's Theory of Human Cognition
Methodology	Interpretive Case Study Research
Methods	Thematic Narrative Analysis centred on "Historiography of Images"

Table 4: Gnoseological Structure of the Thesis
Source: adapted from Crotty (1998)

Crotty's four-pronged scheme is utilized, here, as a way to elucidate the epistemological and theoretical perspectives that lie behind my research methods. However, the novelty of my methodology is embedded in the two guidelines mentioned above, which inform Crotty's level 3 (methodology as a vision informing research techniques) and level 4 (the specific methods utilized for research) respectively. Therefore, this chapter is structured according to Crotty's four steps, in order to detail the logic that has driven my methodological choices: however, the two guidelines described above feature strongly here, as they make the link between research objectives and the methods through which I have pursued them.

4.1. Epistemology: Social Constructionism

To inscribe my research in its epistemology of reference, I start from my broader research question, through which I have initially conceptualized my problem area: how does technology influence the way in which developing country citizens form images of the state?

As noted in the introduction to the thesis, the choice of the image, as a device for conceptualizing how human beings make sense of the world, subsumes a specific theory of knowledge, identified with the domain of social constructionism. This epistemology is detailed here in its tenets and implications.

As suggested above, accepting image formation as a theoretical device implies asserting that reality, rather than being unique and objective, is constructed by individuals in their own conceptualizations. This implies that human beings, rather than "discovering" reality as an objectively observable truth, can only "construct" it through engagement with the world. The researcher, therefore, does not confront a unique, stable reality: instead, she interprets the world through her own cognitive structures, which are then very relevant to research output. This position holds especially for recounts referred by research respondents: in this case, the researcher is confronted with *other people's* constructions of reality, and is called, in turn, to reconstruct these in her own terms. As noted by Walsham (1995), Clifford Geertz suggests that researchers operate a double construction:

> What we call our data are really our own constructions of other people's constructions of what they and their compatriots are up to. (Geertz 1973: 9, cited in Walsham 1995: 75)

Walsham then continues by reminding how, in the ethnographic work by Van Maanen (1979), the constructions of respondents are called first-order data, whereas the concepts

developed upon these by researchers are referred to as second-order data. The concept of image utilized in this thesis, which is based on Boulding's theory of cognition, strongly mirrors Van Maanen's idea of first-order data: indeed, Boulding's notion of image is that of "subjective knowledge", i.e. the vision of the world as filtered by human cognition. Therefore, for every subject, there is an autonomously constructed reality, which recalls Crotty's definition of constructionism:

> Constructionism is the view that all knowledge, and therefore all meaningful reality as such, is being constructed in and out interaction between human beings and their world, and developed and transmitted within an essentially social context. (Crotty 1998: 46)

This definition, in the formulation stated here, subsumes the two key tenets of social constructionism. The first one has just been discussed: as of the very etymology of the word "constructionism", knowledge does not unfold through discovery of an objective reality, but through human construction of the reality itself. Therefore, even the researcher is a producer of knowledge: as per Geertz's argument above, she engages in a double construction, reading her data through other people's production of reality. A key point, here, is that the researcher needs to be aware of this double construction, and maintain this awareness throughout the process of interpretation (Avison and Myers 2002).

The second tenet of social constructionism articulates the way in which people produce their concepts, and motivates the "social" element of this epistemology. Crotty (1998: 55) asserts that reality, as per the way in which it is constructed, is not developed in a vacuum: it is, instead, built in the "social context" in which all individuals are immersed. In the social constructionist vision, this is exactly what happens: as of Fish (1990, cited in Crotty 1998: 46), human beings develop their views within a set of institutions, which dictate, at a pre-conditional level, their ways of imaging the world around them. A similar point, in this respect, is made by Hacking (1999), who sustains that all human constructions are developed through a *matrix*: that is a cognitive filter through which reality is seen and constructed, generated by the *social milieu* to which individuals belong.

The social matrix, through which all things are constructed, is the second key component in a social constructionist epistemology. In my research, both tenets highlighted here are paramount: on the one hand, the view that reality is not discovered, but constructed by human beings, is the argument that legitimizes the image as a primary device for research. On the other hand, the idea that the construction of concepts does not happen from scratch,

but through socially produced images and objects, has specific implications for the research process: it means that the researcher needs to gain a firm grasp of the *social milieu*, in which the knowledge structures of her respondents were developed and consolidated. As explained below, this is one of the motivations behind my decision of spending a reasonably long time in the field, living and working in close interaction with the beneficiaries of the programme that I have studied.

To recap, the question that informs my work, centred on cognitive processes of image formation, is inscribed in a social constructionist epistemology, in which:

- Reality is not discovered as objective truth, but produced by human beings in their minds, and appraised by the researcher through her construction of concepts, which in turn have been constructed in the cognition of respondents,

- This production, in which human beings constantly engage, does not happen in a vacuum, but in the precise social context in which their lives are inscribed.

This theory of knowledge, as per Crotty's scheme, is at the root of specific theoretical perspectives, which inform the way in which research is conceived and structured. Theoretical perspectives, inspired by the epistemology described here, are referred to as "interpretivist" approaches to science. Below, my own take on interpretivism is explored, through the theory of cognition that has informed the notion of image utilized here.

4.2. Theoretical Perspective: Interpretivism and Boulding's Theory of Cognition

As Crotty's scheme illustrates, epistemology is instrumental in devising theoretical perspectives, through which research work is elaborated and informed. As revealed by my choice to look at the construction and perception of images, my theoretical perspective belongs to interpretivism, a domain that builds on the epistemology stated above: namely, the idea that reality is not absolute, but accessible only through social constructions, enacted by respondents and by the researcher herself. As a primary implication, this vision requires that the researcher develops a device, or set of devices, to convert people's social constructions into meaningful data (Boland 1978). My choice of the image as "subjective knowledge", developed within Boulding's theory of cognition, has provided an instrument for my interpretive project to be imagined and conducted.

Among the notions of interpretivism in the literature, I refer to one devised specifically for the field of information systems, to which my research ascribes. Articulated by Orlikowski and Baroudi (1991), on the basis of the theoretical categories designed by Chua (1986), this vision describes interpretivism in the following points:

- Interpretivism, as a philosophical perspective (level 2 in Crotty's scheme), impinges upon a social constructionist epistemology (level 1), creating, by doing so, a rupture with the positivist approach. In other words, social constructionism constitutes the epistemological root of interpretivism, and is key to reading and understanding its prescriptions for the researcher.

- As Rosen (1991, cited in Orlikowski and Baroudi 1991) states, interpretivism is a philosophy that believes that "understanding process involves getting inside the world of those generating it". This means, in practice, that the researcher has to study the points of view of people, which determine their social constructions, *in the very context* in which these are developed. Production of reality, as remarked by social constructionism, is always shaped by a social dimension: this is why the researcher, to gain a firm grasp of her data, should understand, in the fullest possible way, the social world to which they belong. Therefore, Rosen continues, long field studies constitute an optimal way to do interpretive research, as they allow researchers to "get into the world" of those studied.

- Generalization of results, which under positivism is based on sampling and statistics, is structured, in interpretivism, along theoretical lines. Therefore, the interpretivist researcher does not generalize her findings through a statistic sample, but extends her results to wider, more pervasive theoretical propositions. In interpretivism, generalization is achieved through a process that moves from empirical case study findings to theory (Lee and Baskerville 2003; Yin 2003).

These guidelines, which constitute the basis of interpretivist research in information systems, are combined, in this work, with the tenets of Boulding's (1956: 3-15) theory on human cognition. The choice of the image as a unit of analysis, and as a device to read human constructions of reality, needs a theoretical background to define it, and to explain the process through which it is generated. Boulding's theory, which informs my notion of image throughout the thesis, is articulated in the following contents:

- The image, as mentioned above, is defined as the *subjective knowledge* of the world. In human cognition, there are two different types of images: namely, images of fact (that reflect real, observable objects or entities) and images of value (that reflect people's points of view on things). Even so, the cognitive process behind production of images does not substantially differ between the two: in either case, people appraise reality through the subjective knowledge of its elements, which occurs by interfacing directly with the world around them.

- The process of image formation is structured in a precise way, as reviewed in Chapter 2: first, the image results from a set of *messages*, i.e. all the external inputs received by the subject in her interaction with the world. Every image therefore results from the sum of all messages, which have concurred to shape it. Second, messages are filtered by the *value systems* embedded in the subject's mindset and culture: these constitute the substratum on whose basis each message is accepted, interiorized, or rejected.

- The dialectics between messages and value systems is regulated through a mechanism that admits, in itself, a low degree of variety. Indeed, as reviewed above, a message can be received in three primary ways: the image may remain unaffected, it may be changed in a regular way (i.e. by the addition of new information to it), or it may be changed radically, as a result of transformative events. The last option, in fact, happens with lower frequency, as people are inherently driven to think in terms of their pre-images: for disruptive change to happen, the image-changing message has to be convincing and repeated. Hence, when a message hits an image, the likelihood of each of the above phenomena depends on:
    - The content of the message (i.e. the extent to which it matches pre-conceptions),
    - The strength with which it is communicated (i.e. how persuasive it is).

Boulding's theory, stated in the terms above, is the basis for the interpretivist perspective of my research. It is through reliance on this theory, and on the way in which it qualifies the formation and nature of images, that I have organized my empirical work, constructing a technique for data collection and analysis that aims at eliciting images, and the process behind their formation, from people's narratives.

This technique, and the methods belonging to it, ascribe to the second guideline of my research, connecting the research questions to the methods devised for responding them. Before looking at this, I will explore the first guideline, which connects my case study with

the theory of action utilized here. The case study has been conceived as a way of establishing continuity between the dynamics observed in the field, and the theoretical underpinnings behind them.

4.3. Methodology: Interpretive Case Study Research

Below, within the picture provided by my conceptual framework, I review the methodology utilized here, conceived – as per Crotty's definition – as the broader vision underlying a set of specific research methods. This explanation is thereafter linked to that of my case study, highlighting its continuity with the theory utilized in this work. This is followed by the details and features of my research design.

4.3.1. Choice of the Case Study Method

The theme investigated here, and the research questions through which it has been operationalized, did not automatically lead to the choice of a unique research method. A key reason for my choice to conduct a case study, which involved a relatively long presence in the field, has been explained above, in the terms stated by Rosen (1991): understanding process, which is the main purpose of interpretivist research, involves "getting inside the world" of those generating it. The use of long-term field studies, therefore, is motivated by the need to enter the world of respondents, and understand the processes that unfold in their lives. This reveals that the in-depth case study is, *per se*, a technique that mirrors the key tenets of interpretivism, and that fits in the epistemological and theoretical visions outlined so far.

Even so, the above considerations hold for all interpretive research, without differences determined by specific guiding principles or research questions. Instead, on the basis of the core enquiry of this thesis, I have a precise reason to make a case study: that is, my research questions aim exactly at what Rosen refers to, i.e. grasping processes that lie "in the world" of respondents, as they are deeply rooted in the minds of people. The choice of image formation as a theoretical instrument, and, at large, the conception of the research question as I have proposed it, are focused on cognitive mechanisms that are not self-evident, or amenable to statistical techniques: instead, they can be grasped only through development of an empathy with respondents, that leads the researcher to interact with them on the basis of

reciprocal trust. Therefore the researcher, in a project of this kind, is *morally and scientifically* obliged to maintain close contact with her respondents.[9]

On my way of conducting the case study, two major points are to be remarked. First, my research question encounters exactly the features that, as of Yin (2003), constitute the principal requirements for a case study: I am dealing with a "why/how" question (more specifically, investigating "how" citizens see the state through new technologies), it is a study in which the researcher has no control on data (I am dealing with a state-wide food security scheme, in which decisions are taken by the local government), and I am observing a contemporary phenomenon, which has, sadly, even too many present-day witnesses (the below-poverty-line citizens of Kerala, who benefit from the programme). The choice of making it a single case study, instead of a multiple or comparative one, is due to the nature of the research questions, which require me to go in depth of people's processes of image formation: this requires in-depth analysis on specific dynamics, which have to be closely examined, rather than covered in a comparative fashion.

Second, this is an interpretive case study (Walsham 1995), rather than a positivist one, relying on an objective vision of reality (Benbasat et al. 1987).[10] This implies, in the first place, that the choice of methods has focused on interpretive techniques: therefore interviews have been used as the main source of data, and integrated with participant observation for the purpose of triangulation (Lee 1991; Mingers 1991; Markus 1994). Furthermore, not only data collection, but also analysis has followed an interpretive process: indeed, I have used an *ad hoc* technique of thematic narrative analysis, in order to use the recounts of respondents as a means to elicit image formation processes.

[9] This leads to the question, faced by other researchers before (e.g. Bailur 2011), on why adopt the case study method, instead of ethnography. In fact, in spite of similarities, there are important differences between my work and ethnography: first, the time spent on field (8 months in total) may not be sufficient to configure an ethnographic approach. Second, I have not necessarily "gone native", as, working (as I will describe below) with several, diverse social groups, I have had to maintain a balance between them, and preserve human and political impartiality. As a result, I have chosen case study research over ethnography, even if my work has been characterized by high involvement in the field dynamics.

[10] Still, as suggested by Walsham (1995), recommendations and suggestions on case study research, contained in the work of positivist authors, may be operationally used by interpretivist researchers too. Indeed, the dominantly positivist work of Yin (2003) could not be used for data collection and analysis, but has provided the guidelines on which I have structured my process of analytic generalization, observed in Chapter 8.

4.3.2. Choice of the e-PDS as a Case Study

My case study constitutes, in many respects, a manual case of the processes at the centre of my research. The object at the core of fieldwork is an Indian anti-poverty programme, one of those studied by Corbridge et al. as a prism through which citizens come to "see the state", modified by new technologies in its key mechanisms of planning and delivery. This has allowed me, as detailed above, to apply my theory of action to a real, closely observable situation.

Beyond continuity with the theory of action, the theory of technology, which informed my research question, comes into play here: on the one hand, theory of action is embodied by the PDS, the programme through which poorer Indian citizens should be enabled to "see the state". On the other hand, theory of technology is materialized in the fact that this programme, in the state of Kerala, has become an "e-PDS" restructured by new technologies, which allows me to investigate the role that these may play in citizens' processes of image formation. As a result, in the setting of my fieldwork, both theories are embodied by a case in the real world.

4.3.3. Research Design

Fieldwork has been conducted during two research visits, of three and four months respectively, as specified in the table below. These were preceded by a one-month preliminary visit in December 2010, aimed at assessing the feasibility of the project, and making sense of the main facts about the e-PDS in Kerala. The first visit, apart from serving these purposes, was necessary for a bureaucratic function: under the Indian law, clearance by the State government is needed for research projects on governmental schemes, which applied to my work on the state-level computerized implementation of the PDS. Therefore, meetings with government representatives at the ministry responsible for PDS – the Department of Food and Civil Supplies, Government of Kerala – were made during the preliminary visit, for my research project to be discussed and finally approved.

Time	Districts	Municipalities
December 2010	Thiruvananthapuram	- Neyyattinkara - Thiruvananthapuram City
November 2011 – January 2012	Kannur	- Kannur City - Payanoor - Taliparamba - Thalassery
	Thiruvananthapuram	- Attingal - Neyyattinkara - Thiruvananthapuram City - Varkala
	Wayanad	- Kalpetta
June 2012 – September 2012	Kollam	- Paravoor - Punalur - Quilon City
	Malappuram	- Malappuram City - Manjeri - Nilambur - Perinthalmanna - Tirur
	Thiruvananthapuram	- Neyyattinkara - Thiruvananthapuram City

Table 5: Fieldwork – Time and Locations of Visits

Another condition, that I needed to satisfy in order to comply with the law, was that of being affiliated to an Indian university or research institute, to obtain the authorizations needed to carry out empirical research in the field. To do so, during the preliminary visit, I started and developed an interaction with the Centre of Development Studies (CDS) Trivandrum, which, after a few months, granted me affiliation as a Foreign Researcher, for the academic year 2011/2012 (see Appendix 1).[11] Affiliation to the CDS allowed me to operate on the field, interfacing with politicians, policymakers, software designers, implementers and actors in

[11] Affiliation to CDS as a Foreign Researcher was originally granted for seven months, from 1st November 2011 to 30th June 2012. At a later stage, a request for extension of affiliation time, until 30th September 2012, was presented to the CDS Academic Registrar, and approved on 26th June 2012.

the programme of my choice: also, it provided me with a local supervisor, who constantly guided me during the research process.[12]

These formalities, needed to grant feasibility of the research project, proved to be even more important than I thought, due to the political nature of the object that I have researched. Observation focused on the Indian Public Distribution System (PDS), a food security system aimed at guaranteeing access to primary necessity goods to below-poverty-line (BPL) people, by making rationed quantities of these goods available to them at subsidized prices. In the state of Kerala, delivery and management of this programme are being radically restructured, by progressive computerization of its key processes. The technological object devised for doing so, in the Kerala experience, is known as e-PDS, and, as it will be detailed in Chapter 5, it aims at full computerization of this food security programme, obtained through three layers of digitalization pursued at different points in time.

The e-PDS, as it is constructed in Kerala, is not monolithically structured, but adapted to a decentralized architecture that makes it distributed over time and space. The suite of software that enables the e-PDS operates, indeed, at the interface between the governmental agencies – Taluk Supply Offices (TSOs) – that use it to manage its operational functions, and the *telecentres* disseminated on the state territory, that constitute citizens' point of access. As the technological object operates through multiple entry points, I have collected my data in a distributive fashion: in the time spent on field, rather than having a single "site" to be visited every day, I have been constantly moving between the social groups into play, interacting with the actors involved and observing the artefact in its diverse settings. The research design, that I have conceived to study this programme, is described below in its key characteristics.

Respondents: participants to this study have been classified, in the first stages of research, on the basis of their relation with the artefact. The table below illustrates the interviews that have been conducted, grouping respondents into three classes, as per their specific relationship with the technological object of the research. More specifically, interviews were planned and conducted with:

[12] My supervisor at CDS Trivandrum has been Prof. Sunil Mani. Selected parts of my research findings have been presented at CDS in June 2012, and published as a CDS working paper in December of the same year (for a full list of publications, see Appendix 3).

- **Actors involved in the PDS**, i.e. the state-, district-, and village-level implementers of this anti-poverty scheme. These include macro-level actors, first and foremost the Kerala Department of Food and Civil Supplies, but also the complex system of minor actors revolving around it (i.e. Taluk Supply Officers, PDS shop owners, representatives of ration dealers associations, etc.)

- **Actors involved in e-PDS**, i.e. those implicated, through design, elaboration or implementation, in the technological fabric of PDS digitalization. These are, in the first place, the software developers of the programme, based at the National Informatics Centre (NIC Kerala), but also its primary implementers, both at the level of administration and at that of telecentres, which act as citizens' entry points. Data collection has been conducted in 7 TSOs and 16 telecentres.

- **Recipients of the PDS**, i.e. those citizens that access the programme on a regular basis. Citizens, as their processes of image formation are at the centre of the research, have constituted my main unit of analysis, and have been accessed in settings as diverse as PDS ration shops, telecentres, public offices, and pro-poor organizations. Interviews with citizens have taken place primarily in the locations and instances in which the PDS is directly accessed by them.

Interviews		No.
PDS Actors	Department of Food and Civil Supplies, Government of Kerala	7
	Taluk Supply Officers	12
	District Collectors	2
	Ration Dealers	15
	Rationing Inspectors	3
E-PDS Actors	Staff at National Informatics Centre (NIC Kerala)	9
	Staff at Kerala State IT Mission (KSITM)	8
	Staff at Akshaya Project Office - Trivandrum	6
	Staff at Akshaya Project Office - Malappuram	2
	Akshaya Telecentre Entrepreneurs	16
PDS Recipients	Citizens – customers of PDS	36
	NGO Volunteers	3
	Political Party Workers	5
	Leaders of Panchayats (Village Councils)	2
Total		126

Table 6: Fieldwork – Interviews by Groups of Respondents

As of Mingers (1991), every group of respondents has been approached in a different way, mirroring its characteristics and features in the interaction with external agents. As per Riessman (2000b), extra care has been taken to bridge the gap determined between my identity, as a European female researcher, and its perception in the field: hence, for example, members of the political class have been contacted on email, or through the institution of reference (CDS), which has been paramount in strategic networking. Differently, PDS users have been met and interviewed, primarily, in the very spaces of access to the PDS: the ration shops at first, but also telecentres, public offices, and pro-poor organizations.[13] In all situations, except for few times in which support could not be arranged, I was accompanied into the field by at least one person, to properly make the link with respondents: this person

[13] In Kerala, access to the PDS is universal, i.e. granted, in principle, to all citizens. Still, as detailed in Chapter 5, many Above Poverty Line (APL) people have opted out the system, due to the small size of subsidy granted to them. Therefore, I have elaborated a strategy of selection, for my interviews to be targeted to actual, and not just potential, users of the PDS: to do so, I have spent long times in the fair-price shops, where citizens buy PDS goods, and worked in close contact with pro-poor organizations, that cater directly to PDS users.

was usually a translator, but other facilitators, belonging to my research network, have joined my field visits in several occasions.

Access to the field: the possibility of undertaking this study could not be taken for granted, especially due to the deeply political nature of the object researched, and to my condition as a non-Indian woman based in the United Kingdom. In general, access to the field has been enabled by my partner university: letters from CDS, backed by my status as a PhD candidate at LSE, have made it easy to get appointments with most of the targeted respondents, even those located in upper political strata. Reluctance of the Food Corporation of India, one of the main actors of the PDS, to take part in my study, can be interpreted through a political lens (as detailed in Chapter 6, diversion of foodgrains, known as "rice mafia", has resulted in several allegations against this agency), but I have no evidence to back up the hypothesis that reluctance was due to political considerations, rather than, for example, convenience or time constraints. Other than that, access to the field was easy and continuous, even if often mediated by translators of the local language (Malayalam), in which my communication skills are very basic.

Style of involvement: as Walsham (2006) suggests, it is paramount that the researcher decides on her style of involvement, in reading the field and interfacing with its key actors. As a consequence of my take on interpretivism, I have decided for a high level of involvement: indeed, if understanding process means "getting into the world" of those studied, my collaboration and vicinity to them needs to be, necessarily, very high. Involvement, here, is not intended only as vicinity to the respondents, but also, as per Walsham's consideration, as involvement *in the dynamics* at the core of research: hence, the question is not "how empathic" should one be with respondents, but "how much should one intervene" in these dynamics. In fact, I have found myself in a situation that mirrors quite closely that of Walsham and Sahay (1999), in which local policymakers, understanding (and potentially overestimating) my expertise, have often approached me for help on how the e-PDS should be tailored and conducted.

Even in this sense, as portrayed by Walsham and Sahay, I have decided for a style of involvement that is, consciously and purposefully, very high, for a reason that mirrors the one that the two authors detail in their piece on GIS in India. On the one hand, Walsham and Sahay argue that their decision to adopt a "very involved" style of research was informed also by moral reasons, as the local community was very much in need of ICT-led

improvements of GIS: if the researcher is enabled to do so, there is a "moral imperative" to help out in making technology work for development.

On the other hand, the programme I am studying (as it has emerged after few days on the field, in the first interactions with PDS users) is one of those that, in India as a whole, pay the highest consequences of corruption. As it will be described in Chapter 5, huge amounts of foodgrains leak out the PDS, to be sold on the private market at higher prices: this systematically hinders the capability of the poor to avail food at lower costs, as per the programme's targets. As I have started fieldwork, it took few days to understand that carrying out this project meant looking directly at the "rice mafia" phenomenon, in its deepest political implications: therefore, I have accepted to be involved as much as I could, for an ethical imperative to counteract a phenomenon that threatens the food security of the Keralite poor. As suggested above, with Flyvbjerg (2002), the aim of my research has been that of "making social science matter", and I did all that was in my power to make it happen.

4.3.4. Research Questions Adapted to the Case Study

Having outlined the object at the centre of my case study, and the socio-political context in which it has been developed, I can now detail how the research questions, stated at the end of Chapter 3, have been informed on the basis of this case study. The questions, through which my area of interest has been operationalized, read as follows:

- Do new technologies provide the state, in developing nations, with a way to recast its image? If so, how does this happen?

- How do citizens receive new, technology-induced images of the state?

These questions, while substantiating my broader enquiry into more specific domains of analysis, are still composed by quite abstract building blocks, which lack explicit connections to the empirics of the study. As detailed in this chapter, I have chosen to rely on case study research, as a means to see the core object of the theory utilized here – a top-down technology of rule for food security – at work in the real world, in a postcolonial developing nation. This has allowed me to identify abstract elements in my questions with real-world technologies and agents: the Government of Kerala, the e-PDS, its users, and the actors gravitating around the programme. As a result, my two questions have been reformulated as follows:

- Is there a way through which the Government of Kerala uses e-PDS to recast its image? If so, how is it articulated?

- How are images, reformulated through e-PDS, perceived by the citizens of Kerala?

These are the questions that I have investigated on field, through data collection and analysis. My technique for doing so, based on thematic analysis of respondents' narratives, will be detailed in the next paragraph. What needs to be remarked, at this stage, is the continuity between the theory selected, and the case study examined here: the e-PDS, embodying the type of technology of rule that Corbridge et al. place at the centre of their vision, has allowed me to see computerization of a massive food security programme, as it is reflected onto the way in which citizens see the state. This case study has provided, therefore, an optimal way to observe the dynamics at the centre of my questions.

4.4. Methods: Eliciting Data on Image Formation

In the light of Crotty's scheme, I conclude by reviewing the methods utilized to answer my research question, in terms of data collection and analysis. The second guideline of my methodology flows from image formation as a device to explore the field, to the practical methods through which I have structured my study. Given the nature of my research question, I have chosen a technique aimed at eliciting processes of image formation, as they are experienced by users of the e-PDS: this means, as per the two questions above, looking both at if (and if so, how) the state redesigns itself through new technologies, and (if so) at how new images, so produced, are perceived and elaborated by poorer citizens. To do this, I have relied on a specific form of narrative analysis, which takes the contents of respondents' narratives as its principal source of data.

4.4.1. Narrative Analysis and Social Research

Narrative analysis constitutes a wide methodological domain, which has been studied and mapped through different taxonomies (e.g. Cortazzi 1991, Mishler 1995, Riessman 2003). In Riessman's definition (2008: 11), narrative analysis refers to "a family of methods for interpreting texts that have in common a storied form": both elements, i.e. the idea of a "family" of methods and the "storied form" that data need to present, are paramount in qualifying this technique. On the former, it should be noted that narrative methods differ

substantially in their dynamics, and observe aspects of narrative that may vary from sheer content, to actual performance of speech: and still, they are unified by a common denominator, which lies in the "storied form" presented by the data. Even if Riessman (1997) cautions against a "tyranny of narrative", resulting in an ubiquitous usage of the term, it is a fact that narrative can acquire, in principle, many diverse shapes, from long biographical accounts (e.g. Labov 1982) to shorter tales of human experience (e.g. Williams 1984).

As a social research method, narrative analysis has brought about significant innovation, both in the construction of text data and in the ways utilized to read them. In his seminal work on the narrative method, Mishler (1986) reshapes the very notion of what constitutes an *interview*, which, in the dominant literature, was viewed as a structured form of interaction, involving an interviewer asking questions and a respondent answering them. This pre-codified structure, according to Mishler, presents two problems when applied to reality: the first one, moral in nature, is that this technique shifts all communicative power away from the interviewee, an issue that has been strongly remarked by feminist critique (e.g. Oakley 1981). The second one is that, by doing so, the interviewer limits her capability of collecting data: the interviewee, forced into a constrained scheme of responses, needs to limit her answers to what has been asked, and this may prevent her from articulating concepts that may be of relevance to the research.

These considerations have resulted in a new method of structuring interviews: in his work, Mishler defines the interview as a *co-constructed* situation, in which respondent and interviewer share equal power in the construction of meaning. In this technique, the two pre-codified roles of respondent and interviewer leave room for a broader, partially unstructured schedule of action: the interviewer, following a semi-structured topic guide, asks questions that may trigger narrative recounts, which the respondent is free to structure as she prefers. As a result, the narrative is configured as what emerges from the account of the interviewee, and is developed according to her choices, in terms of the order and relevance of the narrated events. It is thanks to this method that the interview, from a structured interaction featuring pre-codified roles, can be turned into a "narrative event", in which narrator and researcher proactively collaborate in the production of content.

More innovation, in the literature on qualitative methods, is brought about by narrative techniques for analysing data, elicited in interviews and other forms of text. The method known as coding, i.e. fragmenting data in the service of interpretation (Glaser and Strauss

1967; Strauss 1987; Corbin and Strauss 2008), belongs to the well-established domain of grounded theory: in this method, textual data are divided into categories of subject, which are then interpreted in the form of codes. The problem here, as noted by Mishler (1986: 78), is that coding, while viable as a means to theory-building, is grounded on systematic, purposeful fragmentation of data: this limits the domain of applicability of this method, and makes it, in fact, particularly challenging with respect to research questions that have *processes* of some kind at their core. Processes are, indeed, dynamics of a holistic nature, whose parts tend to depend highly on each other: therefore, if disaggregated into bits and pieces, the meaning of what is being analysed may be difficult to retrieve. The alternative, provided by the narrative method, is a form of analysis that, while articulating and contemplating sub-units of text, reads them in function of the narrative as a whole, whose meaning is the main ordering force behind the data.

These elements of narrative analysis, which configure it as a method for social research, closely reflect the purpose of my work, and constitute my main motivation for choosing this specific method over others. The reason for this is to be sought, once again, in my choice to conduct a study on image formation, a highly subjective dynamic that is structured in the individual's cognitive sphere. Mishler's approach to the interview, which leaves a high degree of freedom for respondents to articulate their stories, has been ideal to elicit the narratives I have sought: this approach has enabled me to carry out what I have termed a "historiography of images", investigating processes behind formation of images of the state in e-PDS users. Equally, my choice of a thematic analysis based (not on codes, but) on narratives flows directly from my research question: themes identified in interviews, as related to image formation, are not considered as units of meaning *per se*, but as parts of wider processes, which I have aimed to map in detail.[14]

As suggested by Riessman (2008), my research method has been substantiated into three, logically interlinked phases of action. First, I have constructed my interviews with a specific purpose in mind, creating a semi-structured topic guide for the production of narratives on image formation. Second, I have used the notion of "historiography of images" to analyse my data, through a thematic method based on my research question: that is, mapping the

[14] This method has been chosen as opposed to thematic coding, which, in the literature on qualitative interviewing (e.g. Boyatzis 1998; Corbin and Strauss 2008; Silverman 2013), seemed to be the most plausible alternative for this research. Indeed, in the early stages of decision on methods, I considered thematic coding, due to its high degree of scientific rigor: however, there was a trade-off between that, and amenability of this method to my research question. It is, indeed, due to the nature of the question, that I have opted for the narrative method: when looking at processes of image formation, fragmentation of data loses its value, as narratives are to be studied in their full sense.

processes of image formation in interviews, and observing, within them, the themes related to technology (primarily in the form of the e-PDS). Finally, I have used the themes retrieved in the analysis to answer my two research questions: this has been instrumental in viewing (1) the mechanisms through which the state reshapes itself through the e-PDS, and (2) the ways in which citizens see the state through this programme. Techniques for data collection and analysis are detailed below.

4.4.2. Data Collection: A Technique for Narrative Interviewing

In a research project of this kind, where I investigate cognitive processes experienced by individuals in their own lives, the main source of data is constituted by interviews. This is because the interview, for how it is constructed, allows the researcher to look directly at verbal representations of these processes, by asking respondents to develop concepts and narratives around them. Following Mishler's vision of the interview as co-constructed by the researcher and respondents, I have organized my interviews in a semi-structured way, in order for respondents to develop their own recounts of the e-PDS, and of the images of the state resulting from it. This has resulted in an *ad hoc* interviewing technique, based on the iteration of three phases:

- **Broad, descriptive questions,** used as a starting point of the interview. I started with questions related to the general description of the objects of interest – namely, the PDS, and the e-PDS as a computerized food security programme. These descriptions, obtained by respondents, did not have the aim of getting information on the programme itself: they had, instead, the purpose of breaking the ice, instilling confidence in respondents, and allowing the researcher to visualize the main elements concurring to the description provided. Describing objects was, therefore, a common ground on whose basis all interviews were developed.

- **Flagging of images**, i.e. the moment in which, during narration, an image is identified by the researcher, in the words through which description is crafted. At this point, the researcher shifts from a passive role – leaving respondents to their narration – to a more directive one, in which she asks interviewees to insist more on the concept in point: what, exactly, is there behind that image? What are its specific details? Which factors, historically, have concurred to shape it?

- **Iteration on images**. Questions of this kind are posed by the researcher, until she realizes that the narrative on an image has been saturated. These questions are asked on the basis of the guidelines provided by Boulding's theory of cognition: these refer to external inputs (messages), related to the formation of the image, and also try to grasp the views and preconceptions (pre-images) that enter the process. Once saturation has been achieved, i.e. the researcher feels that she has obtained all the relevant data on a specific image, the interview continues, either with more descriptive questions or re-starting from where the description had been interrupted.

A paradigmatic example of this technique is provided at Appendix 2.1. As per the above, interviews have constituted my primary source of data, because tacit processes of image formation, to become discernible by the researcher, need to be articulated in a verbal form. Even so, complementary sources of data have played an important role in research design: documents, participant observation, and field notes have been instrumental in integrating the data collected through interviews. Integration of sources, between interview and non-interview data, has happened primarily in two ways: first, documents have acted as sources of information on the object of my research, whose dynamics are quite complex, from both a technological and a socio-political point of view. Second, my choice of a quasi-ethnographic method is integrated here, as it aims at grasping the *social milieu* that, as per Boulding's theory, shapes the value systems in which image formation is inscribed. Making sense of the social, political, and cultural context of image formation is functional to understanding the object of research, and my permanence on the field – living in close contact with poorer citizens, largely users of the PDS – was aimed exactly to this purpose.

4.4.3. Data Analysis: On the Historiography of Images

Upon completion of fieldwork, my data, beyond documents and field notes from observation, consisted of 126 interview transcripts (or detailed notes, in the cases in which conversations were not tape-recorded). At this point, my task was that of eliciting, in these texts, the themes related to my two questions: namely, evidence on whether/how e-PDS plays a role in the state's own image reconstruction, and, if so, on how images resulting from this are perceived by citizens. Riessman (2008) highlights, again, that narrative analysis is not a single technique, but a family of methods for examining text data: in her taxonomy – divided between thematic, structural, interactional, and performative analysis – all methods,

except for thematic analysis, go beyond the sheer content of the respondents' narration.[15] This is because, as she reminds, narration does not only consist of its contents: people, instead, develop it with specific verbal structures, construct its meaning in specific ways, and tailor their stories depending on listeners (Riessman 2008: 32).

My choice of thematic analysis, among the various narrative methods available, is motivated, once again, by the object of the research: answers to my questions, indeed, can be extracted from the sheer content of narratives, without taking into explicit account additional aspects (structure, dialogue, performance) of the narration. This is because, as I look at image formation in human cognition, I consider these processes as they are articulated by respondents, in the form that they provide by their narrative choices and content selection. As I am interested in "writing the history" of technology-based images of the state, articulated in people's narratives, focus of analysis is on *what* respondents say, rather than *how* narration is performed: therefore, I have looked for a type of analysis that prioritizes content, and looks at it as a direct means to answer research questions through text data. This is what thematic analysis does, as, in its process, "content is the exclusive focus" of research (Riessman 2008: 53).

Thematic analysis acquires diverse shapes in the literature, according to its context of application. As compared to thematic coding, whose methods are rigorously codified (Boyatzis 1998; Corbin and Strauss 2008; Silverman 2013), techniques for thematic narrative analysis are less prescriptive, but also less constraining: choices on how to choose themes, organize them, and use them to answer the research question, are by and large at the discretion of the researcher. Therefore, my thematic analysis has followed an *ad hoc* logic, which I have termed, in this work, a "historiography of images": the interviewing technique described above, as well as the methods utilized to read data, have been tailored to elicit people's images of the state, and the processes that concurred to their formation. My method has been articulated through the following passages:

- First, I have mapped the processes of image formation within interviews. This process is termed a "construction of narratives for enquiry" (Riessman 2008: 21): at this stage, interviews are transcribed and re-elaborated according to the researcher's objectives, in order to elicit the data of interest. In this case, I am interested in processes of image

[15] These investigate, respectively, the way in which content is organized (structural), the way in which content is tailored to a specific listener (interactional), and the physical, performative aspects of the narration (performative).

formation, with regard to the role of technology within them: therefore, my way of reconstructing narratives was that of turning interviews into *maps* of image formation processes, as per the example illustrated at Appendix 2.2. These processes, depending on respondents, have emerged in different ways: sometimes spontaneously, through what Riessman (2000a) calls "enclaves" of narrative within an interview, sometimes through external inputs, as brought in by my questions. At the end of this phase, I had 126 maps of interviews, each of which represents, in its own right, a different historiography of images.

- Secondly, I have carried out thematic analysis on the narratives so constructed, choosing specifically the themes that were relevant to answering my research question. Hence, I have focused on themes that presented two characteristics: first, they needed to be connected to images of the state, as represented in respondents' narratives, and second, they needed to be related to technology, as embodied by e-PDS. As per Mishler's argument reviewed above, these themes have not been read as fragmented units, but have been interpreted, case by case, in the light of the interviews' meaning as a whole.

- Third, I have moved to a global perspective on all interviews, looking at the themes that were recurrent and reiterated across them. In approximated terms, which will be explored in greater detail in the analysis, I can state that interviews with actors belonging to the PDS and e-PDS have responded the question on state's technology-induced reconstruction, whereas interviews with citizens have helped responding the question on perception of images. At a final stage of analysis, I have ordered narrative data in two clusters, one for each question, as referred to the *construction* of images (analysed at Chapter 6) and their *perception* through e-PDS (analysed at Chapter 7).

This is the process that I have followed to collect and analyse my data. The narrative method, utilized here as an analytical device, does not constitute *per se* a methodological innovation: what this research contributes, to the study of images in information systems, is the notion of a "historiography of images", aimed at giving, through the method described here, an historical perspective on the processes behind people's sightings of the state. The last part of the process, that led me from data analysis to expansion of existing theory, can be illuminated only in the light of my case study findings, so I will explore it in the final part of the thesis.

4.5. Summary and Conclusion

In this chapter, I have detailed the methodology utilized in the thesis. Having detailed the social constructionist epistemology, implicit in Boulding's definition of the concept of image, the chapter has highlighted two guidelines of methodology: the first one connects theory by Corbridge et al. to my case study of an Indian anti-poverty programme, viewed as an image-forming technology of rule. The second one links the research questions, elaborated in Chapter 3, to the method utilized to answer them: this method, centred on thematic narrative analysis, aims at using respondents' narratives to elicit processes of construction and perception of the state. This method is centered on what I have termed a "historiography of images": based on narratives, I have identified the *messages* (in Boulding's sense as external inputs) contained in them, and observed the ways in which these are combined in the processes through which images are constructed and perceived. This is the structure through which, in response to my research questions, I have studied the case of the e-PDS in Kerala, which is detailed in Chapter 5.

5. Case Study

So far, I have illustrated the domain of the thesis, its theoretical framework, and the methodology utilized to conduct my research. In this chapter, I focus on my case study, which is centred on the state-level computerization of an Indian food security programme. Given the high dependence of the artefact on its historical and political context, this chapter is organized as follows:

- First, I deal with the food security programme, the Public Distribution System (PDS), which is being computerized by the software observed here. This is a programme based on subsidies on first-necessity goods to poorer people.

- Second, I observe the implementation of this programme in Kerala, the state where my research has been conducted. Kerala's PDS, widely recognized as one of the best in India under the previous (universal) policy, has been put under severe strain by the targeted system adopted by the central government in 1997.

- Finally, on the basis of this historical background, I describe the technological object of my research. This, known as e-PDS, enables the computerization of four main functions of the PDS: management of ration cards (entitlement documents), intra-district allocation of goods, inspection and monitoring of the supply chain, and web-based interaction with final users. This programme is presently being integrated with the Unique Identification project (UID/Aadhar), which aims to identify each Indian citizen through a unique twelve-digit number and biometric details.

A full understanding of the e-PDS is predicated on a firm grasp of the PDS and of its implementation in Kerala, especially as a consequence of targetization. Therefore, in recounting my case study, I follow the three steps above, and highlight how the PDS, and its computerized version, embody Corbridge et al.'s notion of anti-poverty technologies of rule, through which citizens should be enabled to "see the state". By its very nature, the e-PDS operates a synthesis of the two theories in my conceptual framework: indeed, it combines a view of anti-poverty programmes as tools of access to the state, with a view of technology as a means to political action by the government.

5.1. The Indian Public Distribution System

The Public Distribution System (PDS) is the main Indian food security programme, and is based on the distribution of primary necessity goods at subsidized prices. Triggered by the severe food shortages experienced in pre-independence India (in particular, the Bengali famine in 1943), the PDS is a nation-wide scheme articulated in two parts: firstly, essential commodities (primarily rice, wheat, sugar, and kerosene)[16] are procured by the central government from private producers at below market prices, and secondly, these are re-distributed through Fair Price Shops (FPS), also known as Authorized Retail Dealers (ARDs) or ration shops, throughout the nation. Organization of the PDS is divided between the central government, which makes decisions on national food policy and allocates rationed goods to the states, and state administrations, which design and implement distribution schemes at the local level. Articulated in this way, the PDS has one primary purpose: to provide, in a nation where hunger and malnutrition are still extremely severe, a solid food security net, based on guaranteeing affordable food prices to the poor.

The PDS needs to be inscribed in its political and historical context. In India, the issue of food security is still high on the central government's agenda: as revealed by the National Family Health Survey (NFHS-3) indicators below, the nation is still struggling to achieve basic levels of nutrition. In this respect, the 1990s are seen by some as a "lost decade", since higher growth, at the level of national productivity, has not been matched by proportional outcomes in poverty reduction (Sen and Himanshu 2004a and 2004b; Himanshu 2007).[17] Yet, the problem of dependence on food imports, from which pre-independence India suffered severely, was largely solved in the years that followed the Green Revolution: the PDS presently works, therefore, as a mechanism for internal redistribution, that procures commodities from food-surplus regions and transfers them to food-deficit ones.

[16] In this thesis, I refer to the PDS as a food security programme, because, despite the fact that non-food items (e.g. kerosene) are subsidized under the programme too, the scheme has been conceived for the primary purpose of guaranteeing adequate nutrition to all Indian citizens (Corbridge and Harriss 2000: 41). Foodgrains – primarily rice and wheat – are the staple commodity dealt with by the programme, and are sometimes used, in this chapter, as a metonymy to refer to PDS commodities at large.

[17] Instead, others (Deaton and Drèze 2002; Deaton 2003; Sundaram and Tendulkar 2003) sustain, on the basis of a different interpretation of data from the 61st round of the National Sample Survey (NSS), that poverty decline, in the 1990s, has proceeded in line with earlier trends.

Key Indicators for India from National Family Health Survey (NHFS-3)	
Children age 6-35 months who are anaemic (%)	78.9
Ever-married women age 15-49 who are anaemic (%)	56.2
Pregnant women age 15-49 who are anaemic (%)	57.9
Women whose Body Mass Index is below normal (%)	33.0
Men whose Body Mass Index is below normal (%)	28.1
Children under 3 years who are underweight (%)	40.4

Table 7: Selected Indicators from the National Family Health Survey (NFHS-3)
Source: http://www.rchiips.org/nfhs/pdf/India.pdf, accessed 21st January 2014

The PDS is articulated in three phases, which determine the course followed by its commodities:

- First, the central government makes estimates of poverty incidence in every state, and determines, on this basis, the statewise allocations of PDS goods. This system, implemented by the targeting policy reviewed below, is grounded on income-based poverty lines (Tritah 2003: 11-12),

- Second, procurement of PDS commodities is carried out by the central government, through a state-owned corporation (the Food Corporation of India – FCI) which buys goods from private producers at the issue price, and stores them in godowns across all states,

- Third, PDS goods are lifted by the states, and distributed through a network of Fair-Price Shops (FPS) managed by authorized ration dealers. Prices of goods at the FPS, again as a result of targeting, differ on the basis of the poverty status of buyers: targeting has virtually eliminated the subsidy for the above-poverty-line (APL), whereas the below-poverty-line (BPL) are now specifically addressed by the programme.

Furthermore, in the PDS, subsidy is combined with rationing: households are entitled to monthly quotas of subsidized goods, which can be bought at the PDS price. The configuration of PDS has changed significantly through the years: the passage from a universal system, to one targeted specifically to poorer households and states, is reviewed below in a historical perspective.

5.1.1. PDS: From Pre-Independence Rationing to Universal Distribution

The historical development of the PDS is articulated by Mooij (1998) in three phases: the first one (1939-1965) covers the emergence of the programme, whereas the second (1965-1990) comprises its consolidation under the previous, universal form. In the third phase, starting with the Structural Adjustment Programme adhered to by India since 1991, the PDS has moved from universality to targetization: in particular, with the policy shift operated in June 1997, the programme has become targeted to the BPL, and the subsidy to the APL has been, depending on states, minimized or eliminated.[18]

Before 1939, when rationing was firstly introduced in Bombay as an emergency measure, colonial India lacked a regional food policy. Still, the situation in terms of food production was dire: dependence on foreign imports of foodgrains was high, and entitlement failures, combined with food deficits, caused between 1.5 and 3 million casualties in the 1943 Bengali famine alone (Sen 1981). In this situation, still under the colonial power, the Food Department was endowed with two redistributive tasks: these consisted in making purchases of foodgrains from private producers in surplus provinces, and allocating such foodgrains to deficit ones, where they would be sold at below market prices. This structure, conceived as an emergency measure during the pre-independence years, was *de facto* maintained in the years of the Nehruvian power, even though reliance on food imports remained high.

In 1965, the food security system formally took the shape of the PDS, with the creation of the Food Corporation of India (FCI) as a lead agency for its management. As of the Foodgrain Prices Committee, which recommended its foundation the year before, the FCI had the purpose of "enabling the government to undertake trading operations, through which it will influence market prices" (Government of India 1968, cited in Mooij 1998: 84). In fact, the creation of the FCI marked the onset of the PDS, in the form that it maintained until the early 1990s: that is, a universal form, in which all beneficiaries were entitled to the same, equal subsidy. The system's mode of operation was based on the same two tasks performed by the Food Department in the 1940s: the FCI would buy commodities from private producers, store them in godowns across the nation, and redistribute them on the basis of theoretical requirement, through a network of Authorized Wholesale Dealers (AWDs) catering to the ration shops.

[18] The exception to this policy is Tamil Nadu, the only Indian state which maintained a universal PDS even after the central governments' move to a targeted one.

With the establishment of the FCI, the universal PDS began to operate. From 1965 to 1990, the amount of foodgrains dealt with by the agency increased from 10 to more than 18 million tonnes, and the number of ration shops, across the entire nation, grew to over 350000 (Mooij 1998: 86). The size of subsidy, which represented 0.04% of GDP in 1970-1971, increased to 0.5% in 1990-1991 (Ahluwalia 1993): this reveals the high relevance of food security on the central governments' agenda, which led the PDS to be, as Corbridge et al. (2005: 63) describe it, a key mechanism for poorer citizens to "see the state". The real strength of the PDS lies, in effect, in its capability to constitute a ramified network of ration shops, which should make the state manifest in poorer people's daily lives.

Throughout this phase, while remaining unaltered in its basic features, the programme was interpreted in diverse ways by state governments. Indian states, while subjected to the central government's general guidelines on food policy, are in fact highly autonomous in terms of implementation: this includes decisions on the amount of food subsidies, and on the benefits granted to specific groups of users. As a result, despite the universality of PDS at the central level, some states started targeting the needs of vulnerable users: to do so, they elaborated pro-poor schemes, and planned benefits that catered specifically to the BPL. For example, under the Green Card Scheme in Karnataka, 40% of the population was entitled to a green card, which gave them higher subsidies on PDS goods (Mooij 1998: 87-88): still, these instances did not change the system's rationale, which remained universal and based on homogeneous prices.

5.1.2. PDS: Targetization and Its Consequences

In the 1990s, the structure of the PDS was subjected to profound modifications. The universality of the system, *per se*, had exposed it to two major critiques: first, an "urban bias" was found in public distribution, which excluded many rural communities from the system (Howes and Jha 1992; Dantwala 2006) [19]. Second, the systemic leakage to non-poor recipients caused severe concerns at the level of public expenditure: the argument was that providing a subsidy to all citizens, as it was strongly advocated by many scholars, meant sustaining a very high cost, which India, in a severe fiscal crisis, was unable to cope with (Ahluwalia 1993; Radhakrishna and Subbarao 1997; Dutta and Ramaswami 2001; Umali-Deininger and Deininger 2001; Ramaswami and Balakrishnan 2002; Radhakrishna 2006).

[19] The existence of the urban bias is, though, questioned by several studies (e.g. Dev and Suryanarayana 1991; Suryanarayana 1995), on the grounds that different measurements lead to different distributional outcomes.

In 1991, India initiated a Structural Adjustment Programme, aimed at ending the fiscal crisis and relaunching the economy through neoliberal reforms. Economic feedback on the PDS reported severe inefficiencies in the programme, substantiated in the argument that the system, as it was designed, enabled "meagre transfer at exorbitant cost" (Radhakrishna and Subbarao 1997). International institutions, confronted with the Indian case, reported enormous fiscal expenditures, which also had distortionary effects on the private market (Ramaswami and Balakrishnan 2002): in this context, restructuring the PDS was seen as a priority by the central government. Structural adjustment was, therefore, at the root of the targeted PDS, a programme that converted universal provision into reservation of subsidy to the BPL.

The targeted PDS, introduced in June 1997, changed the rationale that formed the basis of the system, determining primarily two structural changes:

- From universal provision of fair price commodities, the programme moved to restriction of subsidy to the sole BPL category, with some leeway for states to preserve an optional minimum subsidy for the APL. An even higher subsidy was introduced for the poorest of the poor, grouped under the Antiyodaya Anna Yojana (AAY) scheme. Membership to the BPL and AAY categories was established, by the central government, on the basis of income-based poverty lines.

- In the universal PDS, commodities were allocated to states, by the central government, on the basis of the theoretical requirement. The targeted system, instead, allocates goods on the basis of relative poverty: the central government estimates poverty incidence in all states, and on this basis it allocates proportional supplies of subsidized goods.

Hence, June 1997 marked a watershed in the PDS: as a result of policy changes, subsidy on first-necessity goods was reserved to poorer people, in order to eliminate the leakage to the non-poor from which the universal system suffered. As a result of the targeted PDS, the fiscal subsidy expenditure of the central government was, in both relative and absolute terms, effectively reduced (Umali-Deininger and Deininger 2001: 328). Another consequence of this move was that APL citizens, left with little or no subsidy on PDS commodities, largely opted out the system of ration shops, and resorted to the free market.

As per the broader debate on neoliberal reforms in India, targetization is examined through two different streams of thought. On the one hand, neoliberal scholars point to the necessity of targeting for reducing fiscal expenditure, while at the same time maintaining ability of the nation to cope with the needs of the poor. On the other hand, literature on the drawbacks of targetization (e.g. Kochar 2005; Swaminathan 2008a and 2008b; Drèze and Khera 2010; Jha and Ramaswami 2010; Khera 2011b; Sen and Himanshu 2011) points, in the first place, to the exclusion errors that targeted PDS has entailed, which led, in turn, to severe disruptions in the national food security system. The case of Kerala, whose PDS suffered severely from the shift to targetization, is paradigmatic of this type of problems.

5.2. Kerala: PDS and the Impact of Targetization

Before 1997, Kerala was widely recognized as operating the best state-level PDS in India (Suryanarayana 2001; Swaminathan 2002; Khera 2011a). In fact, under the initial universal system, PDS distribution catered to 97% of the state's population (George 1979: 23), and the impact on beneficiaries' nutritional status was high and significant (Kumar 1979). This was extremely relevant in Kerala, a state whose food-deficit situation, *per se*, would put people's nutritional security in peril. The Keralite system, and the operational efficiency that characterized it, were based exactly on the universality of PDS, and on its capability to serve the population in its quasi-entirety.

Figure 6: Ration Shops, Taliparamba Municipality, Kannur District

Reflection is needed on the potential reasons why, in Kerala specifically, such an optimal functioning of PDS could be reached. The history of Kerala is *sui generis* in the Indian context: the Communist Party of India Marxist (CPI-M) achieved considerable power since Kerala gained independence as a state, and operated on the two pillars of public action and redistributive development. In a country where the transition to capitalism has taken, in

Gramscian terms, the shape of a "passive revolution", lacking the direct mobilization of popular masses (Chatterjee 1986, cited in Corbridge and Harriss 2000: 38), Kerala has witnessed a socioeconomic transition from below: it was, indeed, the class agency of rural peasants, that played the key role in subverting feudal relations of production (Heller 1995). These historical precedents were instrumental in generating the current, atypical development outcomes: on the one hand, sustained public action led to high levels of human empowerment, but at the same time, the imperative of redistribution may have been an obstacle to economic growth.

Whether the Kerala development model is a positive one, to be taken as a paradigm of achievement in social development (e.g. Parayil 2000), or a problematic one, impeding industrial and financial development (e.g. Tharamangalam 1998), one point remains: in Kerala, public action and economic redistribution have acted as the primary principles of politics, and informed its outcomes in very specific ways. In effect, in the very first years of independence, Kerala politics were already strongly oriented towards redistribution, which provided fertile ground for governments to take PDS very seriously (Mooij 1998: 88-91). Besides, the power of public action quickly transferred to the monitoring of FPS-level activities: starting from 1965, ration shops were supervised by People's Food Committees, which would closely control the accountability of local retailers. The combination of governmental care, with people's participation in the monitoring of ration shops, was therefore deeply instrumental in the success of the old universal system.

And yet, the policy shift to targeting in 1997 overturned the situation, causing a major rupture in the continuity of a smooth and well-functioning PDS. Indeed, it was with targetization that the state-level system started suffering from severe disruptions, to the point that, as of Suchitra (2004), the Kerala PDS became "the worst hit" by targeting policies in the entire nation. More specifically, as a result of the newly-designed PDS:

- Allocation of foodgrains to the state was reduced to less than 10% of the previous supply (Swaminathan 2002: 51). This was a direct outcome of centralized poverty assessments, which estimated poverty incidence in the state at just 25%, and therefore significantly decreased allocation of goods to its beneficiaries. The local government responded promptly to the problem by re-estimating poverty, increasing it from 25% to

42%: even so, the sudden drop in available supplies of subsidized commodities constituted a major problem for the PDS.[20]

- In the few years after 1997, citizens classified as APL opted out the system in massive numbers, as a result of the drastic reduction in the subsidy reserved to them. This situation is matched by data on the overall offtake of cereals: as per the estimates by Khera (2011b: 107), statewide purchases from the PDS have dropped from 4.64 tonnes in 1997, to 1.71 in 2001. It should be noted here that Kerala is one of the states where a subsidy to the APL, while minimum, still exists: but given its very small size (see table below), many former beneficiaries were, *de facto*, excluded from the system.

- As a result of the drop in the overall customer base, FPS are by and large becoming unviable and closing down (Krishnakumar 2000; Nair 2000). Initially, under the system that governed the Kerala PDS until the 1990s, a well-organized network of ration shops fulfilled the needs of the quasi-entirety of the population. Yet, the drastic reduction in foodgrain supplies, and the factual exclusion of the APL from FPS purchases, has determined a situation in which ration shops are put under the serious threat of unviability, and have been, in many cases, forced to close down.

Category	**Entitlement**	**Quantities and Subsidies**
APL	35 Kg.	8 Kg. Rice at Rs. 8.90/- per kg.
		2 Kg. Wheat at Rs. 6.40/- per kg.
		2 Kg. Atta at Rs. 12/- per kg.
BPL	35 Kg.	18.75 Kg. Rice at Rs. 1/- per kg.
		16.25 Kg. Wheat at Rs. 2/- per kg.
		2 Kg. Atta at Rs. 12/- per kg.
AAY	35 Kg. Rice	35 Kg. Rice at Rs. 1/- per kg.

Table 8: Foodgrain Entitlement under PDS in Kerala

Source: adapted from Justice Wadhwa Committee Report on PDS in Kerala (2007)[21]

[20] This supports the argument that the use of income-based poverty lines, which do not take into account the real nutritional needs of people, has had particularly dire consequences for food-deficit states (Tritah 2003: 15, Swaminatahan 2010).

[21] State-level data from the Justice Wadhwa Committee have been adjusted as a result of the policy changes operated in 2011, as a result of which subsidies to the BPL and AAY have been increased.

These consequences, related to the new design that structural adjustment has imposed on the system, are in turn connected to a serious accountability problem, which, over the last few years, has brought the PDS back to the centre of the local political debate. Ration shops, faced with a drastically reduced customer base, have increasingly engaged in illegal sales of PDS goods on the open market: standard prices, for the same goods availed in the PDS, are by design considerably higher, which constitutes an implicit incentive to indulge in profit-making diversion. Leakage of PDS goods on the private market, a phenomenon termed "rice mafia" by the Justice Wadhwa Committee on PDS (2007), is one that severely hinders the state-level PDS: its diffusion, mapped across India by central government data in table 9, undermines the very same food security that the system is aimed to guarantee.

As revealed by the data below, the problem of "rice mafia" in the PDS extends well beyond Kerala: in fact, compared to the rest of India, diversion in this state is among the lowest. With its tradition of public vigil, Kerala has taken strong measures for accountability enforcement over time, but it remains, in spite of this, a state where targetization has drastically reduced the customer base of ration shops, which are left in dire need of sources for sustainment. The conclusion of Khera (2011a: 1058), that "corruption has become a requirement of economic survival for the PDS dealers", seems very real in Kerala, and has found confirmation in my interviews with ration dealers (see Chapter 6).

The issues recounted above are the undesired outcomes of structural adjustment, as they came alive through implementation of targeting policies in Kerala: a well-functioning PDS has been, *de facto*, dismantled by the new measures of targetization. In line with its redistributional tradition, the Government of Kerala has taken action on several fronts to revamp the programme: first, it has extended its subsidy to an additional number (17%) of BPL households, which the central government would not recognize as such. Second, it has provided ration dealers with a set of concessions, ranging from credit options to the allowance of selling non-PDS goods (Nair 2000). Third, it has created a second tier of public distribution, based on direct procurement by the Food and Civil Supplies Department: this tier is managed by a state corporation (Supplyco), and provides, through the state-level version of FPS (Maveli stores), a set of additional commodities to citizens.

Name of State	Estimated Diversion of PDS Goods (%)		
	Wheat	**Rice**	**Sugar**
NORTHERN REGION			
1. Delhi	53	53	25
2. Haryana	53	44	28
3. Himachal Pradesh	47	18	8
4. Jammu and Kashmir	28	29	28
5. Punjab	69	40	6
6. Uttar Pradesh	46	49	36
WESTERN REGION			
1. Goa	23	28	6
2. Gujarat	23	21	18
3. Maharashtra	26	30	22
4. Madhya Pradesh	20	24	32
5. Rajasthan	31	36	17
SOUTHERN REGION			
1. Andhra Pradesh	15	19	16
2. Karnataka	30	18	19
3. Kerala	28	23	25
4. Tamil Nadu	24	33	28
EASTERN REGION			
1. Bihar	44	64	47
2. Orissa	39	54	28
3. Sikkim	52	21	41
4. West Bengal	40	34	24
NORTH EASTERN REGION			
1. Arunachal Pradesh	47	56	23
2. Assam	61	64	52
3. Manipur	48	19	37
4. Meghalaya	62	54	39
5. Mizoram	63	54	41
6. Nagaland	100	46	24
7. Tripura	27	33	13
UNION TERRITORIES			
1. Chandigarh	24	12	35
2. Dadra & Nagar Haveli	18	7	26
3. Daman& Diu	40	38	13
4. Pondicherry	40	20	39
NATIONAL LEVEL	**36**	**31**	**23**

Table 9: State and National Level Estimated Diversion of PDS Foodgrains

Source: Government of India (2010: 239)

5.3. E-PDS: Computerizing Food Security in Kerala

Computerization of the PDS in Kerala, in light of the above, has been configured as one of the key measures to fix the problems induced by targetization. The digitalization of PDS operations, conceived by the state government in the late 1990s, has been delegated to the National Informatics Centre (NIC), the main national enabler of e-government services: in this task, NIC Kerala has been supervised by the Kerala State Information Technology Mission (KSITM), the agency responsible for the provision of e-governance services.

The state-level organization of the PDS supply chain is supervised by the Department of Food and Civil Supplies at the Government of Kerala. The Director of Civil Supplies, reporting to the Commissioner in charge, takes operational decisions at the state level, which are enforced by Taluk Supply Offices (TSOs, referred to as City Rationing Offices – CROs in the Trivandrum municipality): in parallel, there is a structure of regularity control, led by a Controller of Rationing at the state level. Regularity control, as far as district-, block-, and panchayat-level operations are concerned, is performed by a network of Rationing Inspectors, who work in cooperation with TSOs to verify the legality of public distribution.

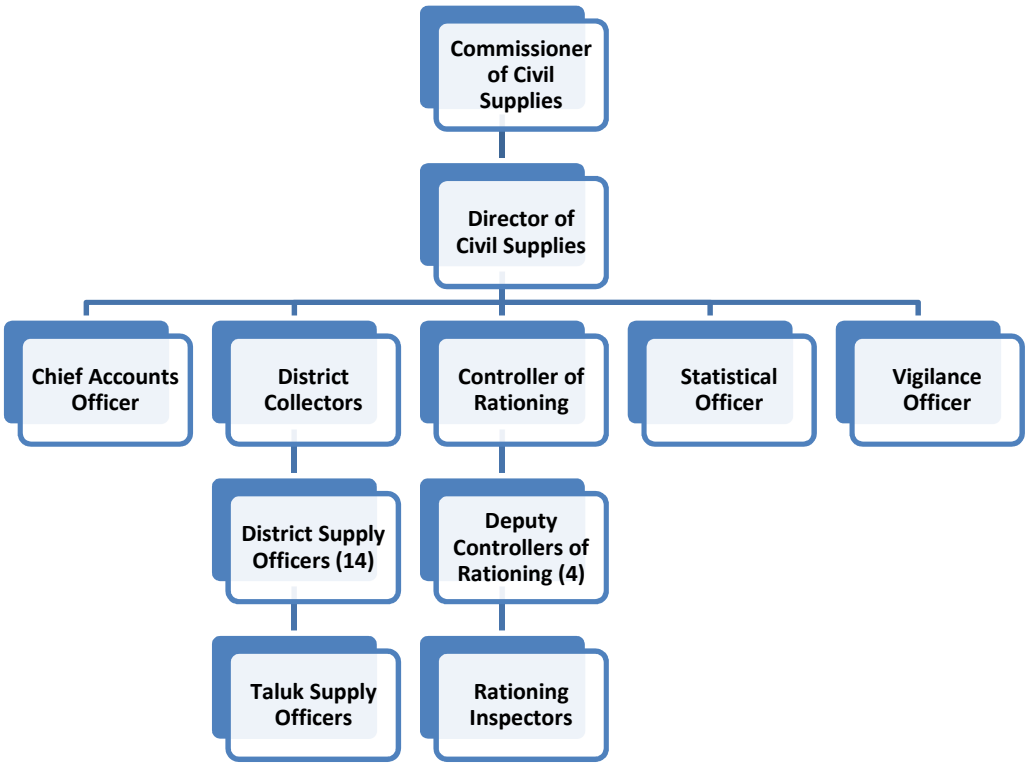

Figure 7: Organizational Chart of PDS State Management, Government of Kerala Website[22]

[22] http://www.kerala.gov.in/index.php?option=com_content&id=154:food-a-civil-supplies-department-food-a-civil&Itemid=2258, accessed 19th January 2014.

As per the above, the actual enforcement of guidelines, and field performance of PDS operations, is accomplished by the TSOs, which are the main administrative units of the Kerala PDS. Given the centrality of TSOs in PDS operations, computerization has focused primarily on their activities: more specifically, the main tasks of these offices – ration card management, allocation of commodities, and inspection monitoring – have been automatized by an *ad hoc* software. An additional function, pertaining to communication between users and providers, has been enabled by a dedicated web platform, known as WebPDS and accessible by all citizens on the Internet.

The computerization of the state-level PDS has been articulated in three phases. The first one consisted in the creation of a database, in which the details of all Kerala PDS users were registered. The second one coincided with the implementation of TETRAPDS, a software package aimed at automatizing the key functions of PDS in all TSOs. The third phase, still in course of implementation, consists in the integration of the ration card management system with UID/Aadhar, the project aimed at assigning a unique identification number to all Indian citizens. The Kerala e-PDS results from the sum of these phases: hence, the object of my research is a composite one, constructed by three different layers of digitalization.

As a consequence of the social embeddedness perspective, which I have adopted in this research, the artefact is viewed in constant relation with its context of use. The e-PDS belongs, indeed, to a broader e-governance project at the state level, which has resulted in the transition to digital delivery for a plethora of services. These are supplied through a network of public-private telecentres, which, located even in the most remote areas of the state, translate the idea of combating rural isolation into real infrastructures for doing so: citizen-centric political values, embedded in the historical tradition of Kerala, seem to be highly reflected in this type of e-governance architecture. The *grand design* of e-governance in the state is seen, therefore, as the technological and political background in which the e-PDS is inscribed.

5.3.1. On Geopolitical Context and E-Governance

The development experience of Kerala is referred to as a “development paradox” (Chopra 1982; Subrahmanian 1990; Gopakumar 2007), as it combines high social development with low levels of per capita GDP (Government of India 2005b: 60). On the one hand, the old Kerala model, preoccupied to a great extent with redistributive policies and reluctant to engage with the private sector, has been weak in inducing economic growth (Véron 2001).

At the same time, though, Kerala' levels of education, healthcare standards, and gender equality have been outstanding over the last decades, both in comparison with the rest of India and in absolute terms (Sen 2001). With its *sui generis* development experience, the state has shown an alternative to the neoliberal route, based on economic growth as the one determinant of development (Isaac and Tharakan 1995, cited in Madon 2005: 407).

This development model, highly oriented to the pursuit of social dimensions, has been deeply reflected by the state's approach to e-governance. The focus on social development and equality, which permeates the historical tradition of Kerala, has been matched by a particular e-governance infrastructure, rooted in the democratization of access and of its consequent benefits. The citizen-centric nature of this infrastructure emerged from the very first experience of e-services in the state: FRIENDS (an acronym for Fast, Reliable, Instant Effective Network for Disbursement of Services) was a system of payment counter facilities, which allowed citizens to pay all their government dues in a single transaction (Madon and Gopakumar 2002; Bhatnagar 2004). The objective of this service, embedded in the systems' architecture, was to facilitate the operations of tax payments, which previously involved long waiting times in public offices, by structuring them in the form of a one-stop-shop system: this was a precursor to the telecentre model of e-governance, adopted in the entire state a few years later.

The Akshaya Telecentre Project, consisting of more than 14400 telecentres distributed throughout the territory of Kerala, presently constitutes the main infrastructure for citizens' access to e-governance in the state. The Akshaya experience started in 2002, with a proposal by the Malappuram district panchayat, to dedicate part of the council's budget to maximizing e-literacy among the district's households (Madon 2005: 407). The way in which KSITM converted this idea into reality consisted in the creation of a physical infrastructure for e-literacy: this consisted in a network of telecentres, managed by local entrepreneurs and coordinated by a project office at the district level. The project, configured as a public-private partnership between the state and telecentre entrepreneurs, was originally aimed at imparting the contents of an e-literacy course, to which one member per each household was invited: with this perspective, the project was launched in Malappuram district in November 2002.

Literature on the initial phases of the Akshaya project focuses, in the first place, on its achievements, as the project reached 100% household e-literacy in Malappuram district, and made Malappuram the first fully e-literate district in all India (Madon 2005: 408; Pal 2009:

108). Still, what is remarkable in the system of Akshaya telecentres is that the infrastructure, created for the purpose of e-literacy, remained into place after completion of the programme: Akshaya became, after e-literacy, the main form of access to the first e-governance services in the state, consisting primarily in the e-payment of bills and in online application for government schemes. An e-governance infrastructure based on telecentres implied a paradigm shift, which put citizens at the core of the e-governance architecture: through Akshaya, government services could be accessed directly from villages, allowing citizens to avoid travelling to busy administrative offices in the district (Antin 2005; Gurumurthy et al. 2005). An even more profound shift was related to the type of state-citizen interactions which Akshaya enabled: these occur through telecentre entrepreneurs, chosen among those who were well-known and trusted in the local community (Madon 2005; Pal et al. 2006; Gopakumar 2007).

The Malappuram district pilot led to the state-wide rollout of the Akshaya telecentre project, which occurred in two phases between 2007 and 2008. Telecentres were then established in the entire state, through either creation *ex novo* or conversion of existing Internet kiosks: the same model piloted in Malappuram, based on partnership between the state and private entrepreneurs, was maintained throughout all districts in the rollout phase. Over the last few years, the range of facilities offered at Akshaya centres has expanded considerably, and currently includes a system of 25 government services:[23] all these are supplied through the mediation of telecentre entrepreneurs, who "make the link" between the local community and the novelty of ICTs (Masiero 2010: 29). The e-governance infrastructure of Kerala, at the present stage, is therefore constituted by Akshaya telecentres: these e-kiosks, based on the objective of pursuing ease of access and user-friendliness, constitute the main means of access to the government experienced by citizens in their daily lives.

The context in which e-PDS has been developed needs, therefore, to be read through the lens of a line of continuity, which flows from the Kerala development model to the state's e-governance infrastructure. The inclusive orientation to social development, on which the Kerala model is rooted, is physically embodied in the e-governance architecture based on Akshaya telecentres: this constitutes, in Corbridge et al.'s terms, a way to "see the state" in a different form, characterized by the vicinity of e-kiosks and the community reputation of telecentre entrepreneurs (Kuriyan et al. 2009; Masiero 2013). The Akshaya project, with its

[23] The full list of services provided at Akshaya telecentres is available at http://www.akshaya.kerala.gov.in/index.php/platform-for-services, accessed 20th January 2014

citizen-centric nature, constitutes the infrastructural context in which the e-PDS has been developed.

5.3.2. Database Creation: Computerizing Cardholder Details

A ration card is the document that enables citizens to access the PDS. Targetization, by differentiating entitlements according to poverty status, has determined an evolution in the role of ration cards: not only are these needed to buy PDS commodities, but differences in poverty status, which the cards report, now determine the quantity and price of the quotas provided. As noted above, subsidy to the APL still exists in Kerala, but it is much lower than that granted to poorer citizens: indeed, ration cards have different colours depending on poverty status (blue for APL, pink for BPL, yellow for AAY). In Kerala, a ration card is not related to the individual, but to the *household* to which each one belongs: each card contains, on its reverse side, the name of all household members, who can collect PDS goods from the shop with which the card is registered.

Figure 8: Barcoded Ration Card, Trivandrum District

Computerization of the PDS was started in 2001, with the creation of a database of all cardholders. This was the outcome of a state-wide data digitization project, in which delegated ward members went door to door to collect cardholder information: data entry was performed, at the district level, by members of Kudumbashree, a women's organization depending on the State Poverty Eradication Mission (SPEM). Details so collected were then

transferred into a central database of ration cards: this is stored in the State Data Centre (SDC), and made accessible to TSO staff through the Kerala State Wide Area Network (KSWAN).[24] As a result, details of all cardholders in the state can now be availed, verified, and modified upon request by staff at TSOs.

In addition, a suite of software has been implemented in TSOs, to issue ration cards in bilingual format: data in the local language font (figure 9) are converted in Unicode and translated into English. Ration card data management has now become an institutionalized practice at the TSO level, and it is integral part of the system that constitutes the first module of the TETRAPDS software (see below).

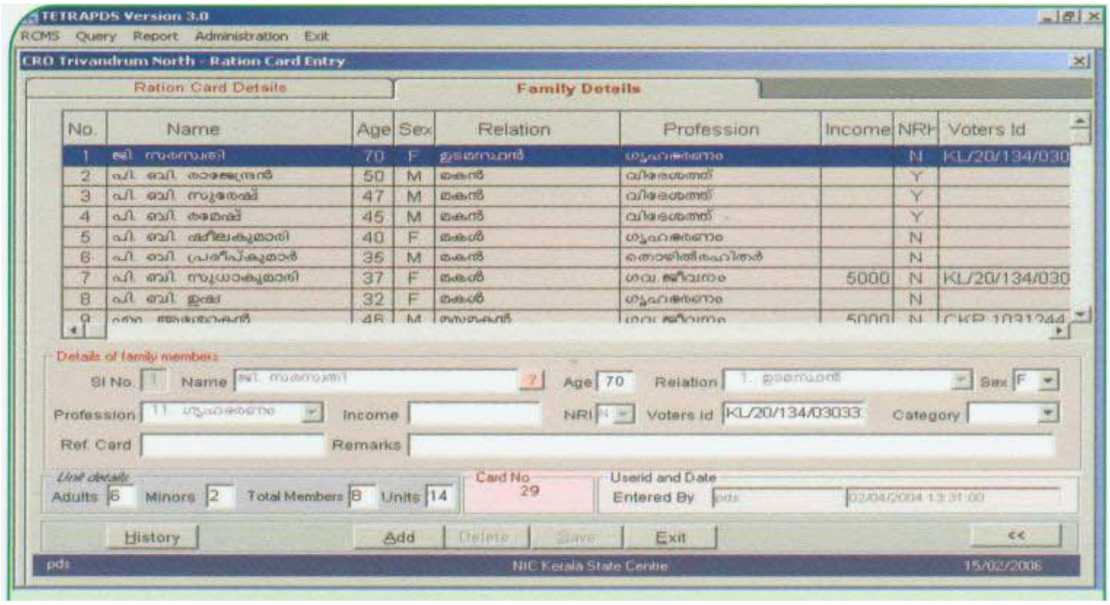

Figure 9: Entry in the Ration Card Database
Source: TETRAPDS brochure – NIC Kerala[25]

In 2007/2008, the government has started issuing barcoded cards, with the purpose of ensuring uniqueness and authenticity of each document. The initial idea was that of moving to a system based on smart cards, but, as the former Director of Civil Supplies (Sri. Sivasankar) declared at the onset of computerization,

> For better or worse, diversions in the system have stopped over a period of time basically because the open market prices and the ration prices have tended to converge. There is no

[24] http://informatics.nic.in/uploads/pdfs/b121d952_ICT%20enabler%20in%20Kerala.pdf, accessed 19th January 2014.
[25] http://kerala.nic.in/Brochures/tetra_brochure.pdf, accessed 20th January 2014.

> incentive for the dealer to divert stocks anymore (…) it is extremely clear that I don't want to blow up Rs 40 crore of State Government money on this [smart card] project.[26]

As a result, in the place of smart cards, barcoded cards have entered the system: the barcode, connected to the cardholders' database, ascertains the identity of users, and the exact amount of goods to which they are entitled. The barcode aims, as well, at preventing the creation of bogus cards, i.e. the fake entitlement documents through which PDS commodities are bought beyond quotas, and sold on the market at higher prices. Bogus cards, rather than being an instrument for PDS *users* to make illicit profits, are found to be used primarily by *ration dealers* to enact diversion: a common practice, found by the Justice Wadhwa Committee on PDS (2007), is that of registering bogus cards with the ration shops, in order to simulate sales to existing beneficiaries.

At present, with 7 million cards and 30 million registered individuals, Kerala's ration card database is one of the biggest among Indian states. This is the infrastructure that enables the emission of barcoded cards, and a specific software application, known as the Ration Card Management System (RCMS), has been devised specifically for managing this process.

5.3.3. TETRAPDS: Automatizing the Operations of TSOs

The creation of the cardholders' database has constituted the first phase in the computerization of Kerala PDS. On the basis of this, NIC Kerala has created a new suite of software, to automatize the main tasks performed routinely by the TSOs. This software package, known under the name of Targeted, Efficient, Transparent Rationing and Allocation Public Distribution System (TETRAPDS), has been launched in TSOs in 2005, and updated through the years with additional features and applications. TETRAPDS consists of four modules, three of which cover the main functions of TSOs: a fourth one, known as WebPDS, is a platform for web-based interaction with citizens, who can access portal services at http://civilsupplieskerala.gov.in.

5.3.3.1. Module 1: Ration Card Management System (RCMS)

Module 1 – known as the Ration Card Management System (RCMS) – is a workflow-based application for requesting ration cards, and for modifying existing ones as per citizens'

[26] http://www.thehindubusinessline.in/2002/07/31/stories/2002073101140200.htm, accessed 20th January 2014.

requests. Before RCMS, new ration cards, and modifications on existing ones, were requested at TSOs, in a lengthy process that involved complex bureaucratic management. At present, the ration card application procedure can be performed online, through the WebPDS system accessible at http://civilsupplieskerala.gov.in: to ensure compliance with the state's requirements, many citizens perform it from Akshaya kiosks, the public-private telecentres disseminated throughout the state.

The ration card application, enabled both for requesting new cards and for modifying existing ones, has been one of those most recently included in the Akshaya system. Its mode of operation is illustrated in the figure below: once received through the registration counter, applications are verified by rationing inspectors, which then submit them to the TSO for approval. This process terminates either with a printed ration card, or, if irregularity is detected, with a reason for rejection. Ration cards, once printed, are prepared for delivery at TSOs: at present, citizens still need to physically collect their documents from there, in a time indicated on a receipt that the system generates at the moment of application. The next step, as planned by KSITM, will be the doorstep delivery of ration cards.

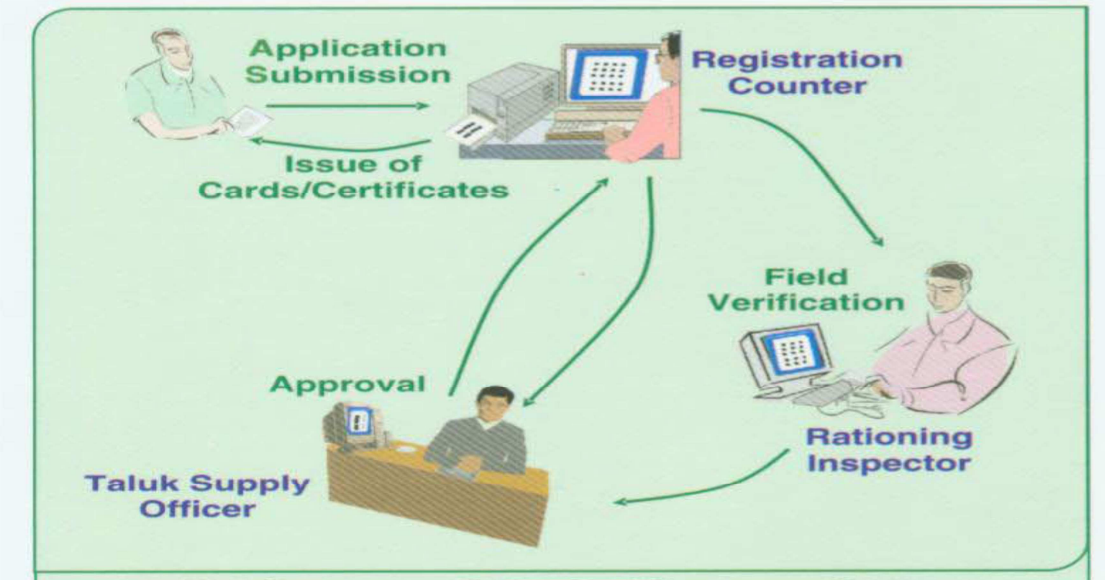

Figure 10: Workflow of Ration Card Management System (RCMS)
Source: TETRAPDS brochure – NIC Kerala[27]

The implementation of RCMS has deeply changed the management of ration cards in Kerala. Before the digital system, a massive amount of applications were stuck in the

[27] http://kerala.nic.in/Brochures/tetra_brochure.pdf, accessed 20th January 2014.

pipeline,[28] which prevented thousands of households from accessing subsidized goods under the PDS. The computerization of the RCMS application procedure has been achieved in September 2010, and is now one of the most utilized services at Akshaya centres: as per the description above, a ration card is a document that undergoes several modifications throughout its life. This is because, as it is based on households rather than on individuals, changes may be needed in the form of:

- Change in poverty status, if an APL household turns BPL. At the moment of generation, all ration cards are APL, and it is up to the household to obtain conversion by demonstrating BPL status,

- Addition or deletion of members, when the composition of a household changes,

- Transfer to a new ration shop, if a household moves to a different location. This procedure is accompanied by the issuance of a surrender/reduction certificate, through which the household leaves its ration shop and requests to be registered with a new one.

Furthermore, as ration cards are household-based, a new card has to be generated every time a new household is formed, which makes the process of request/modification a frequent one in citizens' lives. By computerizing this procedure, RCMS has simplified an important process, whose prompt fulfilment enables citizens to regularly access subsidized goods under the PDS.

5.3.3.2. Module 2: Allocation of Commodities

TETRAPDS Module 2 is based on the allocation of commodities, among the wholesale and retail dealers located across the 14 districts of Kerala. This function is performed through Allocation 2.0, an application through which members of TSO staff are enabled to ascertain the theoretical requirement of each ration dealer, and allocate PDS goods consequently. Allocation 2.0 works by connecting with the cardholders' database, which reveals the number of cardholders registered with each ration dealer, and the quotas of commodities to which each of them is entitled (determined on the basis of poverty status). The algorithm

[28] In July 2010, before the online system went live across Kerala, a back log of about 600,000 application forms was to be cleared up. See http://archives.keralaitnews.com/e-governance/110-e-governance-/1220-ration-cards-online, accessed 20th January 201.

used as the basis of Allocation 2.0 receives cardholders' data as an input, and provides in output the amount of commodities to be assigned to each shop.

Figure 11: Allocation of PDS Commodities by Poverty Status – Prasanth Nagar, Trivandrum

This application is used in order to redistribute the resources that the central government allocates to the state as a whole. The importance of this function, in the present historical phase, is high especially as a result of the drop in PDS commodities allocated to Kerala, as a result of the new targeted system.

Computerization covers, so far, only the intra-district allocation phase. The ideal point of arrival, in this respect, is the complete computerization of the PDS supply chain, from the lifting of foodgrains at FCI godowns to the point of delivery to ration cardholders. As noted by Anoop Jacob, the present Minister of Food and Civil Supplies, digitalization should be extended to the system as a whole:[29] the ultimate purpose of this *grand design* is, again, that of preventing the diversion of foodgrains, often subtracted along the supply chain to be illegally sold on the market.

[29] http://epaper.timesofindia.com/Default/Scripting/ArticleWin.asp?From=Archive&Source=Page&Skin=TOINEW&BaseHref=TOIKRKO/2013/01/25&PageLabel=5&EntityId=Ar00502&ViewMode=HTML, accessed 20th January 2014.

5.3.3.3. Module 3: Inspection Monitoring System

TETRAPDS Module 3 consists in an inspection monitoring system, and has the purpose of registering the inspections conducted, periodically, by rationing inspectors, in the ration shops under their control. The task of rationing inspectors, as of the above, is that of performing regularity controls on the main operations of the PDS: this is applied to the ration card management process, as well as to the sales and registrations carried out by ration dealers. Due to widespread irregularities, referred to within the phenomenon of "rice mafia", these operations need to be closely and constantly supervised.

The inspection monitoring system is a database that registers, for the areas controlled by each TSO, the inspections conducted, the irregularities detected, and the action taken in cases of illicit conduct. Rationing inspectors, as they conduct regulatory verifications in shops, collect their results in the system: the resulting database, as well as the ration cardholders' one, is stored in the SDC, and made accessible to all TSOs through KSWAN. The application comes with a system that, in case of suspension of a ration dealer's licence due to irregularities committed, allows to register the customers of that shop to another ration dealer, determined on the basis of geographical proximity.

5.3.3.4. Module 4: WebPDS

The three modules described so far have computerized the three key functions of TSOs: ration card management, allocation of commodities, and organization of inspections in the FPS. The fourth module consists, instead, in WebPDS, a platform for web-based interaction with PDS beneficiaries, which allows citizens to access portal services at http://civilsupplieskerala.gov.in.

Figure 12: WebPDS – Portal of Department of Food and Civil Supplies
Source: http://civilsupplieskerala.gov.in

Through this portal, people can obtain information, and perform tasks related to several aspects of the PDS: they can receive updates on PDS policies by the local and national government, download forms to apply for different benefit schemes, register for SMS alerts on PDS commodities, lodge complaints in case of disruptions in the service, and receive details on PDS commodities lifted at the state level. Furthermore, as mentioned above, citizens can now (from September 2010) use the WebPDS system to apply for ration cards, which they often do through staff at Akshaya e-kiosks. The importance of the website, overall, lies in the interaction that it enables between citizens and the Food and Civil Supplies Department: furthermore, PDS regulations are subjected to administrative changes, and the website is regularly revised to provide the most updated information on the programme.

5.3.2.5. TETRAPDS – Synopsis

As summarized in the table below, three of the functions automatized by TETRAPDS are the main ones performed at TSOs: ration card management, allocation of commodities to FPS, and management of inspections conducted at the ration shops. The fourth module, known as WebPDS, is a platform for web-based interaction, substantiated in a website that

allows citizens to get information on the PDS, and interact with the agencies in charge of it. As my data analysis will reveal, the different modules of TETRAPDS display asymmetric levels of utilization in the TSOs: as detailed in chapter 7, deficits in the utilization of parts of the software have been found to matter directly, when answering my question on the state's capability to reconstruct its image through e-PDS.

TETRAPDS Modules			
No.	**Name**	**Function**	**Nature**
1	Ration Card Management System (RCMS)	- Workflow-based application to manage the ration card process - Enables online applications for new ration cards and modifications to existing ones - Operated by TSOs – but online ration card application accessible at Akshaya centres	Back-end (TSOs) and front-end (Akshaya)
2	Allocation of Commodities	- Allocates commodities at the level of ration shops on the basis of theoretical requirement - Operated to redistribute the PDS goods received at the state level	Back-end (TSOs)
3	Inspection Monitoring System	- Monitors activity of Rationing Inspectors in all districts - In case of licence suspension due to irregularities, allows registration of households with new ration shops	Back-end (TSOs)
4	WebPDS	- Web portal providing information on PDS entitlements - Allows online interaction with PDS providers: registration for SMS alerts, lodging complains, online application for services (e.g. ration card)	Front-end (Akshaya)

Table 10: Synopsis of Modules in TETRAPDS Software

5.3.4. Integration with UID/Aadhar: from Ration Cards to Biometric Identification

To sum up, the computerization of PDS in Kerala results from (1) a database of ration cardholders' details, and (2) a suite of software that automatizes the key functions of TSOs – and, through WebPDS, the main interactions of beneficiaries with the PDS. Still, the *grand design* of the programme involves further expansion of existing technologies: the plan, devised and pursued by the Department of Food and Civil Supplies, is to integrate the ration card management system with UID/Aadhar, the system of unique biometric identification

currently under construction by the Indian government.[30]. As a result, in October 2012, KSITM has marked the start of the third phase of computerization, based on smart cards embedding the biometric details of users.

UID/Aadhar, as elaborated at the central government level, is the upcoming national project aimed at identifying each Indian citizen through a unique 12-digit number, and the registration of biometric details. Since September 2011, the Government of Kerala has started an intensive campaign for registering citizens into Aadhar, using Akshaya telecentres as a main agency for enrolment:[31] citizens, willing to register through Akshaya, simply need to fill in a form and register their biometric data, for their Aadhar number to be submitted within a two weeks' time. For this purpose, most Akshaya kiosks have been equipped with machineries for biometric registration: also, staff at Akshaya centres has been trained in order to register citizens, and several e-kiosks have hired specialized personnel for Aadhar registrations. While Aadhar is free to citizens, Akshaya entrepreneurs have a strong incentive to invest in it, as, for every registered citizen, a fee of Rs. 35 is paid to them by the state government.

Integration between the ration cardholders' database and UID/Aadhar is going to be piloted in Trivandrum district, through the means of biometric smart cards. This project has been designed to occur in two phases:

- Aadhar registration of a sample of citizens, whose biometric data have been inserted in a database, subsequently merged with that containing their ration card data,

- Introduction, in a sample of ration shops, of point-of-sale machines, with embedded systems for fingerprint capture and iris scanning: thanks to this, smart cards get recognized by the machine, and, on the basis of recognition, citizens are sold the PDS commodities to which they are entitled, at the price devised for them and within their quota limit.

[30] http://www.thehindu.com/news/national/kerala/biometric-ration-cards-in-state-soon/article4546652.ece, accessed 21th January 2014.
[31] http://www.akshaya.kerala.gov.in/index.php/platform-for-services/483-unique-identification-number-uidaiaadhaar, accessed 21th January 2014.

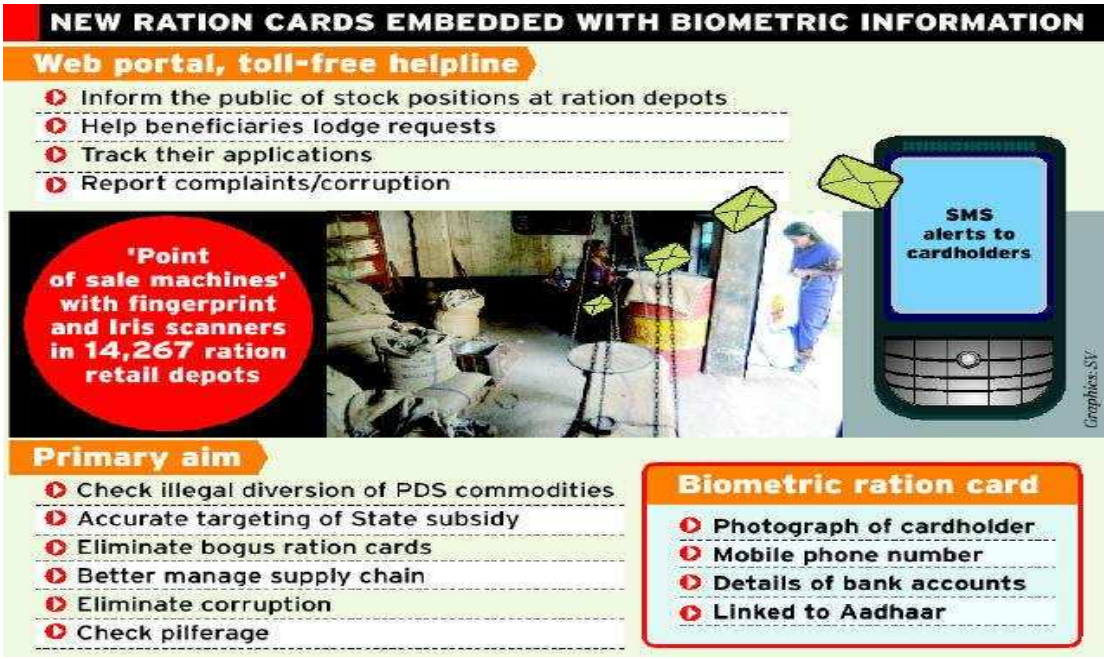

Figure 13: Integration between RCMS and Aadhar
Source: The Hindu, 20th October 2013[32]

Point-of-sale machines allow secure identification of ration card holders: this technology pursues, in an even safer way, the same objective sought by barcodes in ration cards. The introduction of point-of-sale machines in all shops of Kerala, as per the figure above, constitutes the intended completion of e-PDS, which is meant to be scaled up within a two years' time.

The integration of the ration card database with Aadhar, once rolled out to the state as a whole, is meant to change delivery of PDS in two different ways. First, ration cards will be linked to the household's bank accounts, for subsidy money to be transferred directly on these: in this way, the identity of buyers can be ascertained, and leakage of subsidy outside the system (e.g. to bogus card owners) should be prevented. Second, "portability" of the system – intended as access to the PDS from all ration shops in the state – will be enabled: with Aadhar, registered citizens will be able to collect their quota from all PDS shops, not just from the one with which they are registered. This entails, beyond an easier access to the system, an additional means of bargaining power to citizens, because it will enable them to opt out of ration shops that are suspected of illicit conduct.

[32] http://www.thehindu.com/news/national/kerala/biometric-ration-cards-in-state-soon/article4546652.ece, accessed 21th January 2014.

5.3.5. Summary and Conclusion

In this chapter, I have studied the technological object at the centre of my research, starting from a historical perspective on the programme that it computerizes. I have focused on the PDS, as a food security system based on the provision of subsidized commodities, and observed how targeting policies, introduced in the programme in 1997, have adversely influenced PDS provision in Kerala. E-PDS, the artefact developed to restore the system's effective operation, consists of three layers: a database of ration cardholders' details, a suite of software that computerizes the main functions of TSOs, and the prospective integration of ration card management with biometric identification under UID/Aadhar. My study of e-PDS, based on fieldwork grounded primarily on respondents' narratives around it, has been conducted to observe image formation in practice, through the prism provided by computerization of a national anti-poverty programme. My two research questions have been responded to on the basis of data analysis: Chapter 6 illustrates my exploration of image construction, whereas the question on image perception is dealt with in Chapter 7.

6. Analysis – Part 1:
Technology and the Self-Reconstruction of the State

So far I have illustrated the theoretical background to my work, my research questions, and the case study through which I have structured my response to them. A broader problem area, on how e-governance may influence image formation on the state, has been operationalized in two research questions, based on the conceptual framework that I have adopted. In particular, the theory of technology utilized here suggests, with Kuriyan and Ray (2009), that new technologies are directly implicated in the reconstruction of images of the state: image formation occurs, as per the theory of action by Corbridge et al. (2005), in the form of anti-poverty technologies of rule. The two questions asked here focus, respectively, on image construction at the state level, and on the perception of these images in the eyes of citizens.

My questions, grounded on theory, have been applied to the case study constituted by computerization of the PDS in Kerala. As a result, the rather abstract terms of these questions have been converted into practical ones, and reformulated with specific reference to the dynamics at the core of analysis. The two questions investigated in the field, illustrated in Chapter 4, are:

- Is there a way through which the Government of Kerala uses e-PDS to recast its image? If so, how is it articulated?

- How are images, reformulated through e-PDS, perceived by the citizens of Kerala?

The purpose of the two analysis chapters is to illustrate how, on the basis of narrative data, I have framed my answers to these questions. Hence, Chapter 6 focuses on the ways in which the state is found, in the practice of e-governance, to use e-PDS in order to reconstruct its image. Chapter 7 observes, instead, how this reconstruction is perceived by the users of the PDS in Kerala.

6.1. Image Formation at Work: The State Reconstructing Itself through ICTs

The first question, to which this work aims to respond, asks whether there is a way through which the Government of Kerala reshapes its image through e-PDS – and, if so, how this is

structured in practice. An answer to this question has been elicited from respondents' narratives, read with respect to the image formation processes represented in them. The answer, which emerges from these data, consists in two specific mechanisms, through which the state is found to use e-PDS to reconstruct its image in the eyes of citizens. In this chapter, I will illustrate both mechanisms, and the ways through which respondents' narratives have made them emerge during research.

6.1.1. Akshaya: Reconstructing the Locus of Interaction with Citizens

The first mechanism observed here lies in the incorporation of WebPDS, along with the online ration card application, in the system of services provided at Akshaya Telecentres. With this move, the reinvention of state-citizen interactions, operated through Akshaya and its decentralized architecture, is extended to include front-end services under the food security system. Narrative data, collected with reference to this, seem to reveal a specific pattern of action by the government: through the inclusion of e-PDS in Akshaya, the reinvention of interaction between the state and citizens, operated through telecentres, is extended to the PDS and its front-end services. The citizen-centric infrastructure, which Akshaya translates into reality, is applied, by doing so, to the state-level structure of public distribution.

Narratives on Akshaya, and on the inclusion of e-PDS in it, have been collected in diverse contexts, coinciding primarily with the Akshaya Project Offices in Trivandrum and Malappuram districts, and in 16 telecentres across the state. Respondents to this study, as far as the Akshaya network is concerned, belong to the groups of project staff, entrepreneurs, users, and civil society organizations gravitating around the project. The recounts collected cover diverse aspects of the Akshaya project, and of its implications for the people: contents of narratives, overall, cluster around two main themes, which are paramount in framing people's vision of the programme.

The first theme, emerging from narratives on Akshaya, is that of the human empowerment implied by the telecentre project as it is configured. This is a direct consequence of the mission that the project has pursued, from its very beginning in Malappuram district: namely, that of bridging the digital divide, and bringing e-literacy and Internet access to the state as a whole. There is a strong political rationale, connecting Akshaya's infrastructure and the vision of empowerment behind it: with a thorough e-literacy phase, combined with the physical infrastructure offered by telecentres, Akshaya aims to concretize people's gains

from connectivity, providing new development opportunities to previously isolated villages and households. Connectivity, enabled through the e-literacy campaign and then translated into e-governance services, aims to act as a direct source of empowerment to the people.

This is perhaps the reason why a common feature, consistent across narratives from the Akshaya staff, is the use of the semantic field of empowerment, which seems to be, in fact, the main theme emerging from their views of the project. The predominance of this theme seems to match an old argument in ISDC literature, on the view that information, as a source of power and capital, is key to economic and human development (e.g. World Bank 1999; UNDP 2001; Kanungo 2004). This narrative finds a paradigm in the words of a member of the Akshaya Project Office in Trivandrum:

> The purpose of Akshaya is that of bridging the digital divide, and helping the poor by doing so. The rich have computers at home, but before Akshaya, there was no access to connection by poorer people (…) now, Akshaya centres are everywhere, even in the most remote villages, so it is easy for the poor to connect.

The theme of empowerment, strongly grounded in the narratives about Akshaya, is unpacked into different components, related to diverse aspects of the project itself. One of the main components, in discussing this topic, is related to the geography of telecentres: e-kiosks, in accordance with how the project is designed, are located everywhere in the state, and planned in order to be within easy reach from people's houses. As noted by the Director of the Entegramam project at Akshaya,

> Telecentres have been located so that no house is more than 3 km from the closest one. This is because, if telecentres are close, the poor can go there, without losing a day's income to travel.

Hence, the geographic architecture of telecentres is not accidental: on the contrary, it is planned exactly in order for universal access, and therefore universal user empowerment, to be achieved. Similarly, the undertakings of Akshaya entrepreneurs are functional to user involvement, with specific reference to the poorer strata of the population: as noted above, the e-literacy phase was free to all citizens, and devised in order for a member of each household to participate in it. Now that this phase has been completed, the full potential of the component of social help, implicit in the project, can be explicated: indeed, for empowerment through connectivity to be universal, special provisions are to be reserved to vulnerable users of the programme, who may not be fully able to pay for services. As noted by an entrepreneur in Malappuram district,

> Sometimes poorer people come along, and ask for photocopies [of documents]. It may be, in many cases, that they cannot pay for them, but I give them the photocopies anyway. Because tomorrow, the same people will still be there (…) the most important thing for a telecentre is being part of the community: Akshaya needs to involve the poor, otherwise it has no reason to be there.

This narrative points very clearly towards universal user empowerment, and away from the financial concerns that come with social sustainability (Kuriyan et al. 2006). Empowerment, as devised through Akshaya centres, passes through a combination of diverse routes: the most evident one is, perhaps, a full provision of e-governance services, which allows people to avoid queues and harassment at bureaucratic offices. The opening hours of telecentres, often lasting until 8pm or later, also enable daily wage labourers to access services: this differs from access to public offices, which in Kerala close no later than 5pm. Locally relevant information is also provided, as it emerges from the words of Vinod, a customer in Kannur district:

> Beforehand, it was very hard to find information about government schemes [for poorer people]. Everybody knows that there are schemes, to which people can apply, but government made everything very difficult. Instead, things are different now, because Akshaya entrepreneurs know about the schemes, and help people making applications and getting information (…) thanks to Akshaya centres, no relevant information [on government schemes] can be concealed.

Vinod's narrative, centred on the linkage between information and the economic empowerment of people (in this case, the capability of accessing anti-poverty schemes), strongly reflects literature on the relation between information and development, with particular reference to Kanungo's (2004) argument that information leads to changes in local power distribution. Indeed, Vinod refers to information being "concealed" at the state level, something that, with the democratization of information through telecentres, cannot anymore happen easily in the local setting. As a result people can, with the help of entrepreneurs, become aware of anti-poverty programmes and solutions.

To complete the discourse on this narrative, it is important to note that empowerment, in the Akshaya project, is not confined to the customers of telecentres. A parallel empowerment process, is, indeed, the one that concerns entrepreneurs, who need to assure the financial viability of their e-kiosks. This was noted by Madon (2005), during the pilot phase of the

project: as KSITM had clarified at that time, government funding would be limited to the e-literacy phase. After that, entrepreneurs would have to use their skills to keep the e-centres sustainable, and attract a customer base in order to ensure the maintenance of their financial viability. This responsibility may result in a new way of conceiving their activity, as revealed by Aarthi, a female entrepreneur in Vengara:

> To start the telecentre, I needed to work hard from the very beginning: going door to door advertising the centre, seeing what the community needs, making sure that my customers were satisfied with it. This is what Akshaya is, a government face with a corporate heart (…) so I now make my own profit through the centre, and can also apply for loans and grants to the bank.

Aarthi's words underline, beyond the public-private nature of the project ("a government face with a corporate heart" is one of Akshaya's promotional slogans), the economic and social effects related to being an Akshaya entrepreneur. The economic effect, mirrored by "making her own profit" through the telecentre, is a component of newly-created empowerment, but it is not the only one: indeed, as she clarified later in the interview, the possibility of applying for loans, and being accepted by local institutions, also accompanied the establishment of her telecentre business. Aarthi reports that before establishment of her business, her applications to banks and government offices had systematically been rejected: there is, in her view, a direct correlation between the launch of her telecentre, and the new social status she has acquired. This seems to be paradigmatic of the dynamics observed by Srinivasan (2010): entrepreneurs, while providing access to e-governance for citizens, may themselves be granted a "new sighting of the state", in which they are regarded as respectable and given the possibility to be listened to.

The narrative on empowerment, epitomized by the themes and instances highlighted above, seems to be the dominant one on the Akshaya project, representing it as a key measure to combat isolation and bridge the digital divide. And still, this is matched by another stream of discourse, which seems to be equally relevant in determining people's perception of the project. This narrative revolves around the theme of identification, as constructed between Akshaya centres and the government: through telecentres, Akshaya physically interprets the role of state, providing e-governance services through entrepreneurs. This narrative is, at the very same time, one of substitution, in which Akshaya centres actually replace government offices: Akshaya seems, therefore, to provide an alternative to the time-consuming, and often difficult, experience lived by citizens in government agencies.

This narrative, in which identification with and substitution to the state are simultaneous, is mirrored by previous literature on the Akshaya project, and on telecentre networks in general. Akshaya is, in effect, depicted as highly representative of the state, which can have either positive or negative returns: it can, indeed, maximize people's trust due to institutional membership (Gopakumar 2007), but it can also generate caution in richer people, who may interpret it as a sheer anti-poverty programme (Kuriyan et al. 2006). In any case, by moving e-governance services to e-kiosks, Akshaya reshapes the locus of encounter between state and citizens, moving it from government offices to the trusted, friendly space of telecentres. Accepting Corbridge et al.'s theory, according to which people "see the state" through encounters with it, we can say, with Kuriyan and Ray (2009), that Akshaya reconstructs exactly the way through which people form images of the state in their minds.

This view finds many confirmations in respondents' narratives. According to the Director of the Akshaya Project Office in Trivandrum, the creation of a friendly space to meet the state is an integral part of Akshaya's mission, and can be unpacked through several features of telecentres. In his view, the combination between identification with the state and substitution to it starts from the very way in which Akshaya entrepreneurs are selected:

> We select entrepreneurs through a rigorous process, based on whether they are educated, known and trusted. We choose people that the community knows, so that people are happy of going to the centre. And we train them on all the services [provided by Akshaya at the state level], so people can use the centres instead of going to government offices.

Selection, operated according to the above criteria, is not accidental, but inscribed in the specific objective of providing a helpful, approachable interface for government services. In his speech, the Director explains that this process belongs to a wider, complex operation, i.e. that of replacing government officials with elements whose presence is well-rooted in the community, and who can "transform the face of government" by modifying local encounters with it. As a result, he continues,

> My entrepreneurs are the most socially connected people in Kerala. People don't just go there because of proximity: people go to telecentres because, since years, they know the entrepreneur working there, and are aware that they can put their practices in his hands. Entrepreneurs, for the type of activity they do, constitute a point of reference for local community: this is why, when people need a service, they turn directly to them, and only go to village offices as a less desired alternative.

This idea, of reaching simultaneous identification and substitution between Akshaya and the state, is evident in the narratives of entrepreneurs. The interface position, occupied by them between government and private business, is recognized by them, as epitomized by the words of an entrepreneur in Neyyattinkara:

> Akshaya is made of private telecentres, but we operate the activities of government. Our work depends on how good we are, in retaining customers and giving them what they need. But coming to Akshaya is like going to the government, only that they come here, and know us in person. So, they do not have to go to central offices, and wait for very long times, maybe not to be served (…) when [customers] come here, they know that we will be with them in a few minutes, and help them with whatever they may need.

The twofold nature of entrepreneurs, mirrored by this narrative, strongly embodies the dynamic coexistence between identification and substitution: indeed, entrepreneurs are identified with government, because they provide public services through the Akshaya infrastructure. But at the same time, they do so in the new space constituted by telecentres, which substitute public offices and purposefully create a different, more user-friendly environment for citizens. This narrative, featuring strongly in the parlance of those involved, represents Akshaya as the maker of a profound reinvention of governance models: by reconstructing the physical space of state-citizen interaction, and substituting the person through which the state is sighted in citizens' daily lives, Akshaya operates a direct reconstruction of the locus of encounter between the state and citizens.

The narratives presented so far, and their implications for the collective representation of the Akshaya project, seem to confirm, as illustrated above, the assertions of existing literature on e-governance in Kerala. The novelty of my findings lies, instead, in observing how, with the inclusion of e-PDS in the range of Akshaya services, the reconstruction of state-citizen interactions is transferred to the PDS itself: this means that a centralized technology of rule is moved, for its front-end part, to the space of telecentres, characterized by the features of participation and interactivity. Offering e-PDS through Akshaya has, therefore, implications that transcend increases in service efficiency: the space of image formation, which affects everyday sightings of the state in citizens, is altered with respect to a key technology of rule, responsible for food security throughout the whole nation.

As noted above, e-PDS is incorporated in the Akshaya project through two channels, coinciding respectively with the online ration card application – one of the 25 services currently offered by telecentres – and WebPDS, the web portal that enables interaction between citizens and the Department of Food and Civil Supplies. In terms of the online ration card application, narrative is primarily related to sheer improvement of service quality: before, ration card applications used to be performed at Taluk Supply Offices, in a process that involved a complicated bureaucracy and frequent dissatisfaction of citizens. Computerization increases, in the first place, linearity and easiness of the procedure: in this process, as in all Akshaya services, citizens are proactively helped by entrepreneurs, who scan the documents required and fill in the online forms for them. Simplification is epitomized by the words of a customer in a telecentre in Kollam:

> Before this, people had to queue long hours for a ration card, and maybe not at all be served. This, without counting all the bribery related to the ration card application, due to which many people, to have their document processed in reasonable times, had to pay extra fees to the officers. As I got married, I needed a new card, and applied through the centre (…) everything has been very fast, without any problems or waiting times.

Themes contained in this narrative mirror the advantages of e-administration, reviewed in Chapter 2: the idea of telecentres as means to increase efficiency and accountability of services, while reducing logistic and political problems implicit in their provision, features strongly in literature on e-governance, with particular reference to India (e.g. Haque 2002; Bhatnagar 2004; Bhatia et al. 2009). In this plan, service improvement is the key rationale – and one of the key consequences – of the computerization of PDS, and its effects, now that the ration card application has been made available online, can potentially be appreciated in the state as a whole. This is, in effect, one of the applications that, in the ice-breaking phase of interviews with entrepreneurs, came up most frequently as a highly utilized service.

My point here is that, as per the above, including the ration card application among Akshaya services yields implications that are much more profound, as compared to sheer amelioration in the quality of service provision. These implications pertain, in fact, to inclusion of a PDS application in the e-governance setting of Akshaya, characterized by the interconnected narratives of empowerment and identification/substitution with the state. This means that the PDS, rooted in the collective imagery as a highly centralized anti-poverty programme, can now be accessed by a new, interactive infrastructure of e-governance: this novel form of access reshapes, at its very basis, the relation between programme beneficiaries and the state.

This implies a profound restructuring in relations within the PDS, as revealed by Sreeja, a telecentre user in Edakkara:

> Before, many people did not even apply for new ration cards, as they knew that taluk offices were not able to get them one. Now, we do it at Akshaya, so the staff can help us (…) using the PDS here [at the telecentre] allows me to access information that, before, I could not have. Sureish [the entrepreneur] is there to explain what I have to do for my applications.

Sreeja's narrative, departing from the topic of the ration card application, quickly turns out to transcend it, and moves on to discuss (1) the usefulness of information provided through WebPDS, and (2) the role of the Akshaya entrepreneur in her learning processes on the PDS. Both themes seem to envisage, using again Kanungo's (2004) lexicon, a scenario in which information on the programme used to be *de facto* monopolized by the state government, as citizens would not have an institutionalized channel to access it and use it for their own needs. Now, as a result of computerization, the same information is made available online: as a result, citizens can access it at all times, and avail it for the purposes of programme usage. The entrepreneur, following customers at Akshaya centres, emerges as a paramount figure in user experience: on the one hand, this holds for the ration card application, whose technicalities may need an experienced individual to be performed. But on the other hand, this holds also for interpretation on information on the PDS, sometimes supplied through legal or articulated terms: this puts entrepreneurs, once again, in the position of proactive helpers, who make the link between customers and the governance provision of the state.

The information which Sreeja refers to as newly available is published online through WebPDS, the web infrastructure that makes PDS information, and key application forms related to the programme, available online on the portal of the Department of Food and Civil Supplies. The website, as per how it is constructed, contains significant information on the PDS: legal provisions, key rationing orders, and services available in each taluk. Furthermore, the website features a personalized e-services login, based on each households' ration card number: with it, citizens can log into the system, and view all the applications activated in their name. Applications, as noted above, do not coincide solely with the request of a new ration card: they may refer to modification of existing details, addition or deletion of household members, or changes in poverty status, which are also correlated to different entitlements under the PDS. Kumar, a user at an Akshaya centre in Trivandrum, remarks the importance of Akshaya entrepreneurs as mediators for availing WebPDS e-services:

> PDS has never been available on the Internet. To access it, people go to the ration shops, or to the Taluk Supply Office where they collect their documents. But now, we can go on the website, and see what documents are needed, for example, to make our card a BPL one instead of APL. If we need to know more, we can ask the entrepreneurs (…) so now people know much more on the PDS than before.

This narrative, coming back to the theme of entrepreneur involvement touched upon by Sreeja, reveals a key component of the Akshaya staff's role: entrepreneurs, in managing e-centres, go beyond simply offering e-services to their customers. By proactively helping people into these services, and enabling them to make sense of the state's e-governance provision, entrepreneurs become key agents in the citizens' experience of governance: in this way, they become an integral part of the reconstruction of state-citizen encounters, as it is envisaged under the Akshaya project.

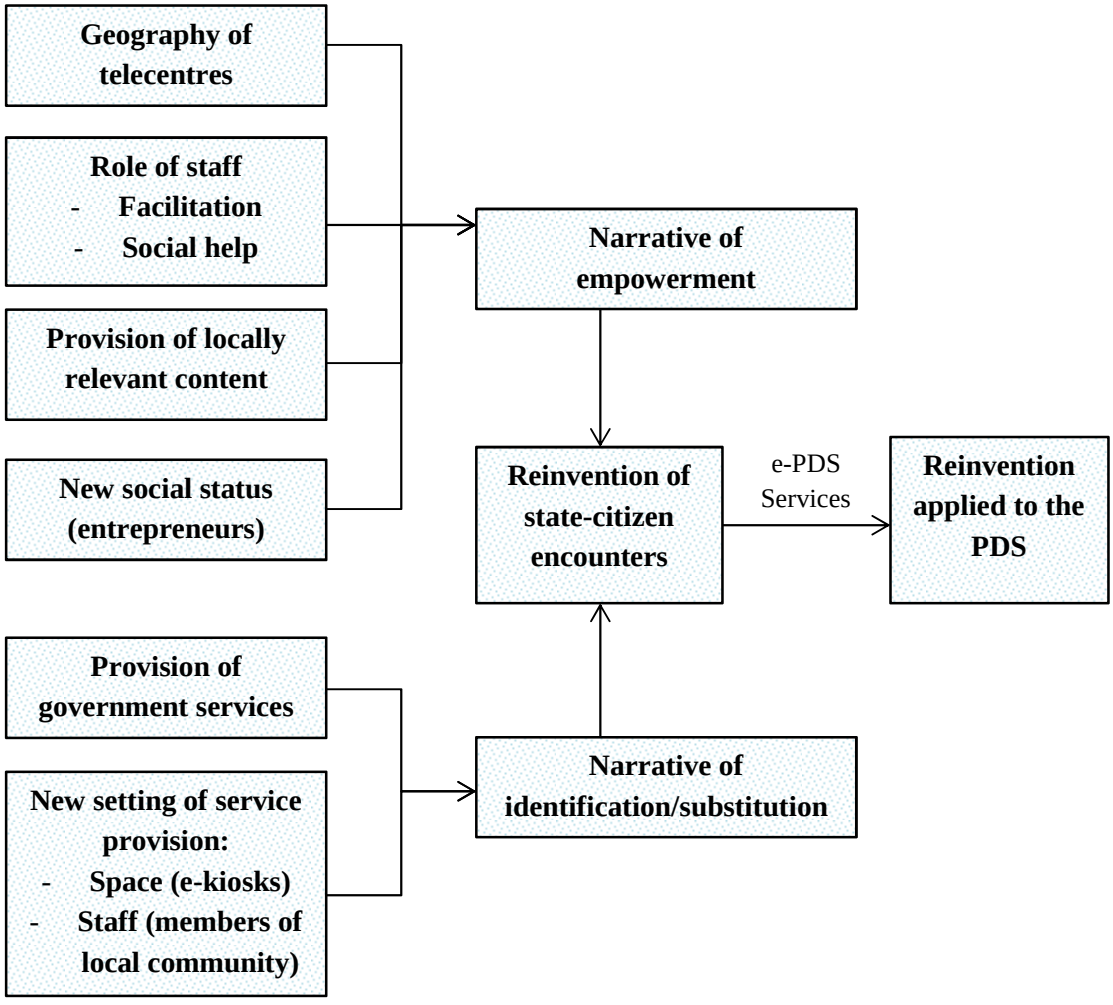

Figure 14: Reconstruction of Image of the State by Inclusion of e-PDS in Akshaya

The map above summarizes the process of image-making resulting from the narratives on Akshaya. By including the ration card application, and the provision of information under WebPDS, in the system of e-kiosks, the reconstruction initiated by the telecentre project is transferred to the PDS too: Akshaya becomes, therefore, one of the key spaces of interaction with service providers, in which images of the state are shaped.

6.1.2. Integration of UID/Aadhar in e-PDS: The Problem-Solution Nexus

So far, I have reviewed the first mechanism of image reconstruction emerging from the data. This consists of the inclusion of e-PDS in the range of services at Akshaya, the telecentre network that constitutes the main route for Kerala citizens to access the government. Akshaya has reconfigured, at its very basis, the main locus of interaction between the state and citizens: e-PDS, through its inclusion in the Akshaya system of services, has extended that reconstruction to the food security system.

A second mechanism, through which the same objective is pursued, lies in the inscription of a clear problem-solution nexus in e-PDS, which links the main problem, experienced by the PDS programme, with a technology-based solution to it. Narratives collected from governmental agencies, in particular at the National Informatics Centre (NIC Kerala) where TETRAPDS was developed, are strongly oriented to identification of a specific problem: namely, the diversion of goods to the private market, occurring at the level of ration shops. The solution devised for this is constituted by RCMS (TETRAPDS Module 1), and by its combination with UID/Aadhar: a problem-solution nexus, in the narratives collected at the state level, strongly depicts the e-PDS technology as the optimal one in this respect.

In particular, there are two streams of narrative that configure the perception of this nexus in practice. These are focused, respectively, on the diversion problem affecting the PDS, and on how, in turn, a solution to this can be developed.

Since my preliminary research visit to the field, I could discern, in my interactions with respondents, a strong stream of narrative on the main problem that affects the functioning of the PDS. This problem, perceived across the different groups of actors around the system, lies in the leakage of goods outside the PDS programme: subsidized commodities, meant to be supplied to poorer households, are instead sold in large quantities on the private market,

to generate illegal profits from diversion. This recurrent narrative is articulated in diverse ways:

> [At the ration shop] the ration dealer always claims that the rice is not there, that he ran out of it. New stocks always come very late (…) everybody knows that, in fact, the rice ends up somewhere else. (Naima, Edakkara village)

> Kerosene costs 53 Rs. on the private market, and 10 on the PDS. Hence, ration dealers sell kerosene on the private market, so they gain from the price difference. This happens all around the state, all around India (…) nobody does much about it, because people have got used to it. (Kiran, Muthankara village)

> It is well-known that ration dealers are corrupted. But they do this for a reason: selling goods on illegal trade is the only way in which ration shops can survive. (Rajesh, Neyyattinkara town)

The corruption implicit in the PDS, from which subsidized commodities are systematically diverted to the private market, is strongly perceived as the main issue of the programme, and makes it difficult for users to access subsidized goods on a regular basis. Leakage from the PDS is, therefore, strongly attributed to diversion, in the form of the "rice mafia" that profoundly affects the programme.

In principle, leakage from the PDS could be ascribed to a plethora of factors, related to issues of inadequate storage and transport management. Instead, corruption is strongly depicted as the main cause of it, and is ascribed, in the narratives above, to one specific level of the supply chain: namely, the final one, constituted by ration dealers and their shops. The theme that appears most frequently, when discussing leakage in the programme, is exactly that of ration dealers' misbehaviour, resulting in sales on the black market and in shortage of supplies to the poor: this problem, reported across all Kerala, is in fact a nation-wide one, as shown by the Planning Commission data on diversion from the PDS (Table 9). A further specification, made explicit by Rajesh above, openly states a nexus between ration dealers' corruption and one of its key factors: namely, the necessity of guaranteeing survival of ration shops, in spite of the difficult conditions induced by the transition to a targeted system (see Chapter 5).

In my first visits to governmental agencies, with particular reference to the Department of Food and Civil Supplies, I expected to find it difficult to elicit narratives on this problem,

especially in consideration of my identity as a foreign academic researcher. What I found instead was, to my surprise, very clear and detailed accounts of the problem of diversion, which was sometimes brought into discussion by interviewees spontaneously, without request. As the former Collector of Rationing reported,

> Kerala is known to have one of the best PDS in India, but it is still very corrupted (…) prices are higher on the market, so there is an incentive to sell [PDS goods] there. This problem has been there for a very long time (…) community monitoring organizations are very committed to stop this happening.

Beyond open admission of the existence of corruption, state officers engage in detailed descriptions of diversion mechanisms, and are practically unanimous in attributing the cause of this phenomenon to ration dealers' misbehaviour. Civil supplies officers are very clear on how corruption unfolds: diversion mechanisms consist, primarily, in creating the means to simulate sales to PDS beneficiaries, which cover real transactions on the black market. As observed in Chapter 5, the main tool for doing so is that of bogus ration cards, which are registered with ration shops in order to simulate transactions within the system. As reported by a PDS government officer,

> In Kerala there are a lot of bogus cards, which carbon-copy existing ones or invent households that do not exist (…) it is the ration dealers that fabricate bogus cards, not the customers. So, they can pretend having sold goods to the BPL, when instead they have sold them elsewhere.

This topic, recurrent in the narratives of PDS officers, is confirmed by the documentation produced, outside the state, at the level of central government. The Unique Identification Authority of India finds the same problem at the national level (UIDAI 2009: 2-3), asserting, on the basis of Planning Commission data (2005), that "of four rupees spent on the PDS, only one reaches the poor" and "57% of PDS foodgrains do not reach intended beneficiaries". The document also postulates a clear relation between these outcomes, and market diversion enacted by ration dealers: as a result, India remains far from able to benefit from a well-functioning food security system.

Narrative on the problem of diversion, with its strong attribution of corrupted behaviour to ration dealers, is systemically accompanied by another theme: this revolves, in turn, around the solution to the problem, which is constructed as embedded in the e-PDS technology. This solution, which goes beyond the TETRAPDS software in its current form, is

substantiated in the prospective integration with UID/Aadhar, aimed at completing the ration card management system with biometric identification of users.[33]

As it emerges, primarily, from narratives collected at the Department of Food and Civil Supplies, computerization is being focused primarily on the integration between RCMS and Aadhar: this is because integration, as it has been constructed, aims exactly at devising means to combat diversion from ration dealers. The instrument at the basis of this, as detailed in Chapter 5, is that of point-of-sale machines, which recognize customers through biometric details and reveal, in output, the exact quotas of goods to which they are entitled. Point-of-sale machines constitute a means of identification that outperforms the present one, based on barcodes: indeed, for unique that they may be, barcodes can potentially still be falsified, whereas biometric data leave little room for errors. The inclusion of Aadhar in PDS, strongly advocated by the Indian central government, is proposed, in Kerala, as the solution to the problem of diversion, through three mechanisms that come as a consequence of the transition to biometrics.

The first mechanism, which makes a problem-solution nexus come alive, lies in secure identification of PDS users through Aadhar. This is a direct response to the problem of bogus ration cards: on the one hand, as noted above, these cards constitute a key instrument of diversion, because they are used by ration dealers to simulate sales to PDS beneficiaries. On the other hand, Aadhar guarantees identification of each citizen through biometric details: therefore, if added to the ration card system, the "invention" of customers from scratch becomes *de facto* impossible, because each sale needs to correspond to a citizen registered in the Aadhar database. As reported by the Director of e-governance at KSITM, identification through Aadhar is key to secure identification:

> The system, as it is right now, is based on barcodes. These have been an important innovation, but now they are not good anymore (…) there were many instances of barcodes that were copied, and ration dealers claiming false sales as a result. With Aadhar, there is no risk of this, because ration cards need to be registered in the name of real citizens.

The second mechanism, through which e-PDS proposes to solve the problem of leakage, is that of monitoring the offtake of goods, at every transaction conducted at the ration shops.

[33] Indeed, particularly in the first interviews conducted at KSITM and NIC, I frequently experienced a slight misinterpretation of my questions: when I referred to e-PDS, several respondents started discussing the combination between RCMS and UID/Aadhar, rather than the existing TETRAPDS software. Many officers refer, indeed, to "e-PDS" when they discuss the third layer of computerization, rather than the system as a whole.

Beyond checking the identity of buyers, point-of-sale machines register exactly the amount of goods sold at every transaction: therefore, all exchanges are registered in the database, and this leaves no room for ration dealers to invent sales that never occurred. In addition, the system allows to verify that sold quantities match those received by shops after monthly allocation: in this way, ration dealers cannot pretend to be "running out" of PDS goods to mask diversion. For the very same reason, potential user misbehaviour is prevented: point-of-sale machines, indeed, register exactly the quota sold to each household, and do not allow customers to exceed the amount of goods to which they are entitled. As noted by the person responsible for Aadhar implementation at KSITM,

> The most important thing (…) is that the system will make sure of how many goods are sold, and to whom. Now, ration dealers always have that excuse, they claim that stocks are finished and sell them on the market. But now, the system will be able to track exactly who buys what (…) if implemented properly, this will eliminate corruption.

The third mechanism pertains to one of the prospective features of integration. This lies in the delinking of ration shops from registered households: in the present situation, dictated by the Kerala Rationing Order of 1966, every household is linked to a single ration shop, and can buy PDS goods only from it. As a result, if customers realize that the ration dealer is misbehaving (most likely, and most frequently, by pretending to be out of stock), there is no way for them to react: instead, Aadhar implies "portability" of the system, as point-of-sale machines can recognize citizens in the state as a whole. This implies that citizens, under e-PDS, will be able to opt out of ration dealers who misbehave: as reported by an officer at NIC Kerala,

> Ration dealers will be unable to count on their usual customers, because people will be able to buy [PDS] food from everywhere. Hence, they will have to start competing (…) they won't be able to compete if they continue their cheating.

These three mechanisms are those on which the problem-solution nexus, proposing Aadhar as the main way to eliminate corruption in the system, is predicated. On the one hand, secure biometric identification of citizens, and the monitoring of offtake at every transaction, are direct consequences of the operations conducted by point-of sale machines. On the other hand, the delinking of ration shops by their registered clients is predicated on future completion of the Aadhar database at the state level. Taken together, narratives around these mechanisms point towards the same argument: that is, integration of Aadhar into the PDS is optimal in order to eliminate corruption, as it physically prevents ration dealers from

misbehaving (mechanisms 1 and 2) and simultaneously removes, through competition, their incentives to do so (mechanism 3).

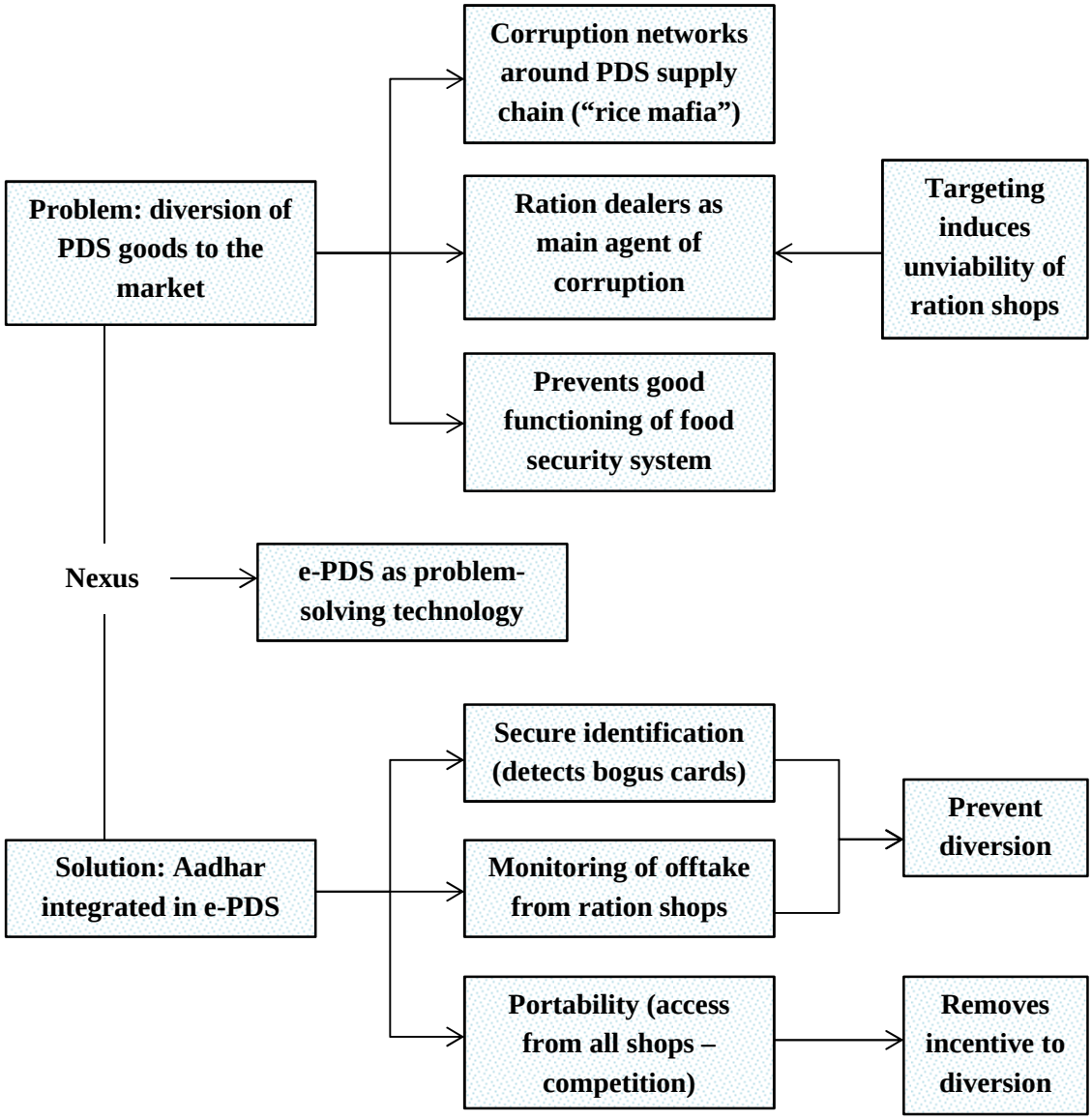

Figure 15: Reconstruction of Image of the State by Problem-Solution Nexus Inscribed in e-PDS

The two narratives analysed here, respectively on the main problem of PDS and on its technology-based solution, constitute, as illustrated above, a clear problem-solution nexus, strongly embedded in the narratives collected from representatives of government. On the one hand, the problem is represented in a well-defined way: it lies in the system's leakage induced by corruption, enacted by the ration dealers who divert subsidized goods on the market. On the other hand, the technological solution proposed, substantiated in a new e-PDS constituted by the combination of RCMS and Aadhar, aims at combating exactly that

phenomenon, making it impossible and ultimately undesirable for ration dealers to engage in corruption. As a result, the image of the state is deeply reshaped by this composite narrative: by representing itself as the developer of the "right technology" to solve the problem, the state appears as an efficient and accountable service provider, able to find the optimal solution to issues that affect the food security system.

6.2. Discussion: On Legitimization of the Mechanisms

So far I have investigated, through narrative analysis, the ways in which the government of Kerala utilizes e-PDS to reconstruct its image. This has been found to happen by the means of two mechanisms: first, the state includes e-PDS in the service provision of the Akshaya project, which moves the locus of state-citizen interaction from state offices to telecentres. Second, by including Aadhar in the fabric of e-PDS, the state inscribes a clear problem-solution nexus in the system: since the problem is identified with diversion of goods to the market, enacted by ration dealers, the prospective solution lies in a biometrically enabled e-PDS, to detect diversion and simultaneously remove the incentive to engage in the practice. These mechanisms, viewed in combination with each other, lead to a positive answer to my first research question, as they reveal two different forms of image reconstruction enacted by the government.

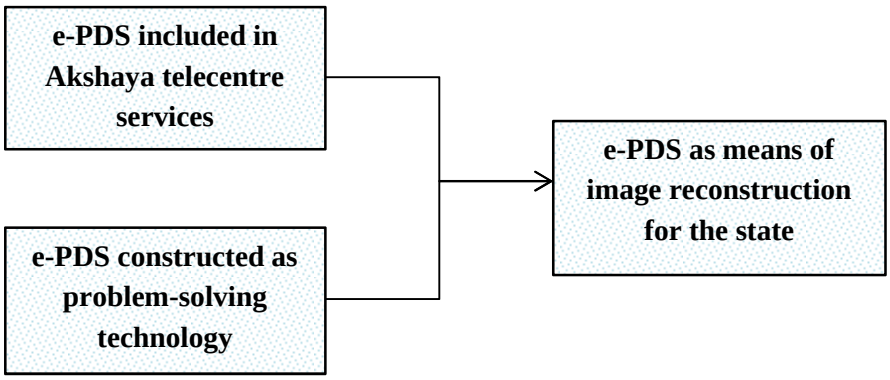

Figure 16: Synopsis of Mechanisms of Image Reconstruction Induced by e-PDS

In terms of the extent to which these mechanisms are legitimized, by the existing literature on PDS and e-governance in Kerala, I have been confronted with two different situations. On the one hand, the first mechanism is hardly under discussion: as noted above, literature converges on the argument that Akshaya centres reshape the image of the state, and through my data I have simply shown how this reconstruction has been extended to the PDS. Akshaya is, once again, a system that epitomizes the theory of technology utilized here: it is,

indeed, a structure of e-governance that translates the politics of Kerala into reality, in terms of bridging the digital divide and enabling democratization of access to ICTs. On the other hand, the second mechanism, which depicts diversion as the key problem of PDS and integration with Aadhar as the solution, finds some discussion around its arguments: in the light of this problem-solution nexus, it remains to be seen whether the literature confirms (1) the existence and relevance of the problem of diversion, and (2) the adequacy of the solution elaborated to solve it.

In terms of recognizing the existence of a problem of market diversion, the literature is unanimous. Over the last decade, several studies have focused on estimating PDS leakage, as related to illegal sales of commodities on the market (Government of India 2005a; Jha and Ramaswami 2010; Khera 2011b ; Sen and Himanshu 2011).[34] Leakage, as demonstrated by these studies, reaches extremely high levels across the nation: for example, as indicated by Planning Commission data (see table 9), in states in conditions of severe hardship, the estimated diversion amounts to more than 60% of the total availability of PDS goods. On the basis of consistency of this point, it can be argued that the problem of leakage is substantiated by the data, and is likely to represent an obstacle on the route to proper food security.

The question regarding the incentive to engage in corruption, as perceived by ration dealers, needs to be examined in greater detail: on this, interviews with ration dealers themselves – in their shops, as well as at the All Kerala Retail Dealers Association – have been highly detailed and exhaustive. As well as state representatives are coherent, in depicting them as engaged in systematic misbehaviour, ration dealers are consistent in explaining the root cause of corruption: the argument recurring in their narratives is that, on the basis of the sole monthly income from a ration shop, standard expenses cannot be sustained, as the business is highly unprofitable and difficult to maintain. As reported by the leader of the All Kerala Retail Dealers Association, extra sources of income are vital to preserve ration shops:

> Ration shops (…) are not viable on their own. Many of us have had a licence [for the shop] for a very long time, and have no chance to learn a new profession. Now [after 1997] things have

[34] As of Khera (2011b), the choice of the attribution of leakage to diversion is due to the fact that other sources of leakage (e.g. losses in transportation or storage) can hardly be observed or quantified.

> changed: many customers have left the shops (…) many have had to close down because of debt, so now there are many villages without a ration shop.

This stream of discourse, focused on targeting as the main cause of the problem of diversion, is matched by one related to its consequences, of which the words of a ration dealer in Chenkalchoola, a slum area of Trivandrum, are paradigmatic:

> We get a commission on the goods we sell, but that is very low, and not enough to sustain us. If we were allowed to sell other goods, other than just PDS, that would help us a lot, but the government has not yet authorized us to do so. This is why many people close down their shops, and people do not trust us anymore (…) because they say there is corruption, but we cannot live just with our profits.

In effect, since 1997, the problem of PDS shortages in Kerala has been particularly severe. With the reduction (see Chapter 5) of PDS supplies to less than 10% of the original amount, the average monthly purchase of foodgrains has diminished, as of Khera (2011b: 107), from 4.1 kg in 1996-1997 to 1.7 kg in 2002-2003. The general problem of ration dealers – induced by the targetization that has affected the nation as a whole – has been, therefore, maximized in Kerala: as noted by Suchitra (2004), the problem reached a situation of the utmost gravity in the first years of the targeted system, when ration dealer suicides, induced by debt, have become a frequent matter. It can be argued, therefore, that Kerala has witnessed the exacerbation of a problem of unviability that reaches dramatic proportions, to the extent that, as of Khera (2011a), corruption has now become an integral part of ration dealers' coping strategies.

Explanation of the phenomenon of diversion, while putting it in context, does not mitigate the impact of this problem on the proper functioning of the PDS. On the one hand, community monitoring and a tradition of political redistribution protect Kerala from reaching massive rates of diversion, as those reported by the Planning Commission data for states in eastern India (table 9). Still, at the same time, PDS corruption continues to represent a serious problem at the state level: the food-deficit situation of Kerala, which relies on food imports for the majority of its consumption, contributes to worsening the consequences of an ill-functioning food security system.

Having assessed the existence of the problem of diversion, its relevance, as the main issue affecting the PDS in Kerala, should be examined. There is, in effect, a wide food policy literature, that focuses exactly on the dynamics of the Indian food security system: as noted

above, this is a literature that explains the ineffectiveness of PDS with the outcomes of targetization, and contemplates, in particular, the exclusion errors involved by the measures taken in 1997. The main argument, sustained in this respect, is that the main problem implicit in the system does not pertain to ration dealers' misbehaviour, but to the structural level of the PDS: this is related to the way in which the APL-BPL dichotomy is constructed in the current system.

As far as the functioning of the APL-BPL dichotomy is concerned, literature seems to agree on the point that this division has proven, *de facto*, unable to generate improvements in the food security system (Swaminathan 2003; Drèze and Khera 2010; Jha and Ramaswami 2011; Ramakumar 2010; Sen and Himanshu 2011). The problem lies in the fact that, in each state, only a capped share of households can be classified as BPL, according to the estimates of poverty incidence made by the Planning Commission of India (Drèze and Khera 2010). The presence of capping leaves, by design, many households out of food security provisions: on the one hand, several states, as it has been the case for Kerala, have contributed to the system with subsidies from their own budget. Still, this does not correct the structural problem implied by capping, which may result in the exclusion of households from the system as a result of limited quotas, rather than of real situations of needfulness.

Swaminathan's (2008a) data, illustrated below, go into detail of the consequences of targetization, constructed on the basis of an APL-BPL dichotomy structured in this way. As she illustrates, targetization has induced massive rates of exclusion from the system: households classified as BPL or AAY, in India as a whole, are just 29.5% of the total, which means that – in a nation suffering highly from hunger and malnutrition – 70.5% of households are excluded from food subsidies. Also, this problem seems to be widespread among particularly vulnerable groups: categories affected by high exclusion rates include agricultural labor households (52.1%), scheduled caste (60.7%), and lower-income groups at the all-India level (Swaminathan 2008a: 16-19). This reveals, in powerful terms, that the APL-BPL dichotomy, as it is currently constructed, may constitute a serious impediment to the system's good functioning, which underlies the issue of corruption induced by ration dealers' behaviour.[35]

[35] In fact, literature on the negative impact of targetization is matched by literature on its benefits. As noted in Chapter 5, authors advocating targetization (Ahluwalia 1993; Radhakrishna 1996; Ramaswami and Balakrishnan 1997; Radakrishna and Subbarao 1997; Umali-Deininger and Deininger 2001) did so on the basis of the need to guarantee viability of the food security system, particularly during the financial crisis of the 1990s. Difference between the two visions depends on the priorities that they establish: one considers exclusion errors as most serious, one focuses more on the excessive expenses implied by inclusion of non-poor recipients.

Extent of inclusion and exclusion in the PDS		
State	**BPL/AAY**	**APL or no card**
Andhra Pradesh	56.5	43.5
Arunachal Pradesh	16.8	83.2
Assam	12.4	87.7
Bihar	17.4	82.6
Chhattisgarh	39.3	60.7
Goa	18.5	81.6
Gujarat	36.9	63.1
Haryana	18.6	61.4
Himachal Pradesh	16.8	83.2
Jammu and Kashmir	23.2	76.8
Jharkhand	25.8	74.2
Karnataka	51.7	41.3
Kerala	29.5	70.5
Madhya Pradesh	34.1	65.9
Maharashtra	34.9	65.2
Manipur	22.3	77.7
Meghalaya	26.2	63.7
Mizoram	38.1	61.9
Nagaland	6.7	93.3
Orissa	44.4	55.6
Punjab	12.1	87.9
Rajasthan	18.5	81.5
Sikkim	40.5	59.5
Tripura	40.4	59.6
Uttar Pradesh	16.3	83.7
Uttaranchal	25.7	74.3
West Bengal	30.5	69.5
All India	**29.5**	**70.5**

Table 11: Extent of Exclusion and Inclusion in the PDS

Source: Swaminathan (2008a: 16), computed from Government of India (2007)

This vision of the PDS entails a critique to the position of the Government of Kerala, which represents ration dealers' misbehaviour as the main problem: the real issue of the PDS lies, in this view, at the structural level, and cannot be modified by measures that simply target the domain of ration shops. This implies that the solution developed by the Government of Kerala, based on integrating Aadhar into the PDS, is targeting an effect, rather than a cause of the problem: on the one hand, this does not correct errors of exclusion, identified as the main problem in the PDS. On the other hand, this technology acts, paradoxically, exactly in

the opposite direction: as powerfully synthesized by Ramakumar (2010a), by providing secure identification of systems' participants, Aadhar reinforces the policy of targeting, inscribing it in the technology that will rule the system. Therefore, the solution developed by the government of Kerala prioritizes detection of errors of inclusion, but does not, in fact, take action to solve the problem that leaves so many needful households outside the system.

The image reconstruction mechanism, retrieved in my narrative data, lies in designing a clear problem-solution nexus, between the problem of PDS corruption and the technology devised to solve it: from the narratives collected on field, integration of Aadhar in e-PDS emerges as the "right" route to follow, and the state is represented, as a consequence, as an efficient problem-solver through new technologies. A dominant stream of literature, though, disputes this view, proving that PDS corruption is more a symptom than a cause of the problem: the real issue lies, instead, in the exclusion errors determined by targetization. This implies that the second mechanism emerging here finds, compared to the first one, a lower degree of legitimization: the problem-solution nexus, on which image construction is predicated, is not universally recognized as dealing with the main issue of the Kerala PDS.

6.3. Summary and Conclusion

So far, through the analysis of narratives, I have answered my question on image construction: I have asked whether, and how, the Government of Kerala would use e-PDS to reshape its own image. The answer to this question lies in two mechanisms, which emerge directly from respondents' narratives: first, the state includes e-PDS in the infrastructure of Akshaya, which moves the key locus of state-citizen interaction from state offices to telecentres. Second, by including Aadhar into e-PDS, the state has inscribed a clear problem-solution nexus in it: if the problem, emerging from narrative at the government level, lies in diversion carried out by ration dealers, the solution, based on Aadhar, consists of removing incentives and opportunities for this practice. While the second one, as reviewed above, is questioned by the literature, the combination of these mechanisms leads to an affirmative answer to my question: the state is found, in two different forms, to be using e-PDS to reconstruct its image in the eyes of citizens. The next chapter, focused on my second research question, explores the dynamics of perception, through which citizens read the images constructed by the state through e-PDS.

7. Analysis – Part 2:
Image Formation through ICTs - A Citizens' Perspective

In Chapter 6 I examined, in response to my first question, the process through which the Government of Kerala uses e-PDS to reconstruct its image in the eyes of citizens. This process, as it emerged from respondents' narratives, is articulated in two different mechanisms: first, the state provides e-PDS through Akshaya e-kiosks, so that people's main space of interaction with the government is moved to the user-friendly environment of telecentres. Second, by including Aadhar into e-PDS, the state inscribes a clear problem-solution nexus in the technology: the Aadhar number, as embedded into the PDS, is depicted as the ideal way to eradicate ration dealers' corruption. On the basis of these mechanisms, my first question has been answered positively: indeed, the state seems to be using technology exactly in order to reconstruct its image, utilizing e-PDS to depict itself as a user-friendly, accountable solution provider.

In this chapter, I focus on my second question, which constitutes a direct consequence of the first one: I look at how images, reconstructed by the state through e-PDS, are perceived by the citizens to whom they are directed. This topic has not had, so far, a theoretical formalization in ISDC: Kuriyan and Ray, as noted in Chapter 3, elaborate a structured view of the domain of image construction, whereas that of perception is observed primarily through the lens of empirical statements. In answering this question, a conjecture could be based on Chatterjee's argument illustrated above, according to which the logic of governmentality, exerted by state powers in contemporary India, induces subjects to willingly submit to governing powers. As a consequence, citizens inscribed in this logic may absorb images of the state in a rather passive fashion: governmentality, as per Chatterjee's work, does not leave room for proactive participation, but leads people to willingly accept the image that governing powers provide of themselves.

In this chapter, I interrogate citizens' narratives on perception of state's images, as per the way in which they are reshaped through the technology of e-PDS. On the one hand, in the logic of governmentality observed above, image formation is intended as a top-down process, largely dictated and determined by the proactive agency of governing powers. On the other hand, citizens' narratives collected here seem to reveal that image formation, in users of the PDS, works in a different way: in constructing their views of the state, they make proactive use of inputs from their daily lives, through which they reconstruct the

images systematically received from the government. Faced with images devised by the state, citizens re-elaborate, rediscuss, and eventually rebuild them: this all happens thanks to inputs found in their civic existence, as they encounter both the PDS and its new computerized version.

Hence, in response to my second question, I have analyzed the "maps" of image formation processes produced from interviews, as they featured in citizens' narratives around PDS and e-PDS. As per Boulding's theory of knowledge utilized here, external *messages* (inputs of image formation processes) have been used as the main unit for the analysis of narratives: as a result, I have focused on the sources of people's sightings of the state, as they are produced in citizens' relation with it. As it emerged from analysis, inputs that contribute to forming these images acquire intrinsically diverse forms: to order them, I have used a system based on their *loci* of origin, i.e. the social and physical spaces in which inputs are encountered by subjects. By doing so, I have reached the conclusion that answers my question: PDS recipients, instead of simply absorbing sightings of the state in a passive fashion, tend to read them proactively, on the basis of the messages that they encounter in their daily lives. This, as it will be sustained in the discussion chapter, has important consequences on the state's capability to reshape existing images of itself through new technologies.

7.1. Perception of Images: Three *Loci* of Image Formation

To contextualize the analysis conducted here, Boulding's theory on the structure of image formation processes needs to be recalled. As illustrated before, Boulding theorizes the way in which images are constructed in the minds of people, in a process characterized by several elements: first, mental images of things and concepts result from a set of *messages*, i.e. all external inputs received by subjects in their interaction with the world around them. Messages are, in fact, all the forms of input that are relevant to an image: every image results, therefore, from the sum of all messages, which contribute to conceiving it and shaping its features. Second, messages are filtered by the *value systems* embedded in the subject's mindset and culture: these value systems are generators of concepts in human cognition, and contribute to creating the pre-images on the basis of which each message is accepted, interiorized, or rejected.

This means that, to study processes of image formation, the researcher needs to focus, in the first place, on the messages that contribute to their construction. Value systems, and the pre-images that result from them, are comparatively harder to elicit from narratives, due to their intrinsically tacit nature: however, work structured upon an ethnographic basis may be able

to give precious suggestions about these, as the researcher's immersion in the field can foster understanding of local systems of thought. To elicit processes of image formation, the researcher needs, therefore, to focus on narratives, and "map" them according to the messages that emerge as relevant in structuring people's sightings. These messages have been the key focus of my analysis, and are used here to respond my question about citizens' perception of images of the state.

The inputs found on field, in this respect, are numerous, and belong to diverse natures and sources. In response to my previous question, I had identified two clear, precise mechanisms: these were substantiated, respectively, in the incorporation of front-end services in Akshaya, and in the inscription of a clear problem-solution nexus in e-PDS. For the second question, though, this has not been the case: through the narratives of PDS users, many different inputs were found to be relevant in determining people's sightings of the state. These inputs, belonging to different domains, needed a specific ordering mechanism to be conceptualized.

This is why, in looking at citizens' narratives on PDS and e-PDS, I have read them through the spaces in which image-forming inputs have been generated. In doing so, I have identified three *loci*, i.e. social and physical spaces of image formation: these coincide with (1) the direct experience of PDS and e-PDS, (2) the representations of the programme in the social sphere, and (3) its productions in the sphere created by political circuits. This chapter is substantiated in illustrating how each locus, permeating the lives of PDS recipients, has been able to generate inputs that lie at the basis of their views of the state: as observed in the discussion, these *loci* are hardly reachable by the control of government, which the top-down logic of governmentality implicates. This influences, as it will be argued, the state's ability to use technology to govern citizens' processes of image formation.

7.1.1. Locus 1: Direct Experience

The first relevant locus of image formation, explored here, is found in users' direct experience of the local food security system. This refers to experience of both the PDS, as a national food security programme implemented at the state level, and the e-PDS, as the system that digitalizes the main functions of this programme. Indeed, the fact that images are formed through direct experience is almost self-evident, especially as far as the PDS, a system that matters profoundly to poorer people's food security, is concerned: it is reasonable, therefore, to think that citizens, faced with images of the state represented by the

e-PDS, filter them through the sightings of the programme that they encounter on a regular basis. To observe this, I start by reviewing the ways in which the PDS, as devised by the local government, is experienced by users in their daily lives.

Common parlance on the PDS in Kerala, as observed in the previous chapters, depicts the programme's public management as significantly better than the Indian average, due to Kerala's remarkable scores in government transparency and public vigilance. On the one hand, literature agrees on the argument that the functioning of the PDS, before the limitations induced by targeting in 1997, was significantly better in quality: still, in comparison with the rest of India, Kerala is reported to have maintained sensibly lower levels of corruption. This may lead to expect user narratives informed by a generally positive attitude, even if potentially mitigated by the difficulties that narrow targeting has brought. It was therefore slightly puzzling for me, in the early stages of fieldwork, to find the general trend of narratives to be leaning towards negativity: the two main themes, retrieved across interviews with users, are centred on (1) problems with PDS goods' delivery, and (2) the low quality of commodities provided through the system.

Focusing, first, on delivery of PDS goods, the problem is experienced, throughout the state, as an extremely severe one, caused by corruption of intermediaries along the supply chain. This is reflected, in citizens' access to the PDS, by chronic inability to avail subsidized food at the ration shops: indeed, not only ration dealers tend to "run out of stock" very frequently, but shops are, in several instances, kept closed for several days in a row, and reopened only at the discretion of the owner. The presence of severe problems in procurement, already reviewed in the previous chapter, constitutes a dominant theme in users' narratives:[36]

> The ration shop is there, but it is almost always closed. It is opened only out of convenience [for the ration dealer], and strangely, we almost never get as much rice and sugar as we need. Sometimes, when the food is not available at the ration shops, we just go to the market, even if it is more expensive (…) because that is the only other possibility for us to buy food. (Dinesh, Parassinikadavu village)

> Ration dealers always pretend to be out of stock, but it is not really so. They make money by selling rice to hotels and companies (…) we are left waiting for rice for many days, and even if we go there very often, we are rarely able to buy our quotas (Pratap, Payanoor town)

[36] Corruption is reported to be higher in northern Kerala, where economic prosperity is lower and institutional transparency seems to encounter more problems with respect to the south. It should be noted, though, that narratives of corruption and indignation towards PDS providers, in the responses of my interviewees, have been found as very similar in the northern and southern areas of the state.

Dinesh, the farmer from Kannur district cited above, has a quite sarcastic tone when he notes that "strangely", ration dealers tend to run out of goods very easily, and this forces even poorer people to give up their subsidy and buy food on the market. The narratives just reviewed mirror those reported in Chapter 6: as they reveal, the PDS does not seem to be working properly, because ration dealers are systematically unable to provide goods to their customers. Also, as noted in the previous chapter, citizens are clear on the cause behind this: that is, ration dealers divert goods to the private market in order to make a profit. This is why, in many villages, experience of the PDS is still negative, and affected by serious drawbacks in goods' delivery.

The second problem pertains to the quality of foodgrains, and food items in general, supplied through the PDS. Quality of supplies, available through ration shops across the state, is often reported to be worryingly low: on this, people point especially to food deterioration, resulting from exposure to atmospheric conditions or excessively long periods of storage. Several customers point out that, exactly as a result of low food quality, a high number of people has opted out of the programme:

> Those with an APL card do not use the PDS, because [after targeting], it is not anymore convenient for them. The rice that we buy at the ration shop is very bad sometimes, you can smell that it has been there for a long time, but at least, that is one rupee per kg. (…) the APL have to pay eight rupees [for it], and so they go to the market to get better food. (Ayesha, Edakkara village)

> PDS rice is not good, sometimes people even refuse to buy it (…) because rice is left unattended for months, exposed to rain in the godowns and trucks, and the FCI does nothing about it. This is why less and less people buy food from the PDS. (Shatha, Muthankara village)

> The FCI should take care of the PDS, but I never really see this happening. Rice is left rotting for long times, and then distributed just when it is not anymore fit for consumption. Nobody really knows what happens, before the rice reaches [the ration shops] (…) because it is, at the end of the day, more convenient to buy it on the market. It is more expensive, but it is eatable. (Nadeem, Malappuram town)

These narratives, coming respectively from two BPL users and a CPI(M) activist who has opted out of the PDS, are particularly important because they state both the problem, i.e. low quality of food supplied through the PDS, and its causes, which are identified as inadequate

measures of transportation and storage. It should be noted that, over the decades, the Government of Kerala has conducted several investigations around this theme: these involve primarily the FCI, which is responsible for PDS supply chain management across the nation. Repeated attempts to gain access to FCI representatives, as part of my fieldwork, were unsuccessful: this situation has therefore prevented me from examining the points of view of FCI members about the problem, and the arguments they would use in response to these accusations. Nonetheless, the problems of transportation and storage, which also feature in the media,[37] are factors that determine low quality of the goods supplied throughout the state.

The problem of the low quality of foodgrains seems to be, in citizens' perception, a serious one, which adds to the one of goods' diversion in determining people's low satisfaction with the PDS. Narratives collected in this respect reveal, beyond resentment towards the standards of PDS provision, a more profound feeling of mistrust, directed to the state administration that is responsible for the programme. Furthermore, as noted in Chapter 6, narratives are permeated by a strong causal component: citizens, beyond denouncing the problems that they experience, are generally confident in identifying the cause that underlies them, with the corruption of ration dealers and the mismanagement of the FCI. Hence, in spite of the parlance that identifies Kerala's PDS as one of the best in India, citizens' sightings of the programme seem to be predominantly negative, as a result of issues that prevent normal access to items of good quality.

This image, with its negative reputational outcomes, is the one that e-PDS, through its digital improvement of programme's capabilities, aims to modify at its very basis. It is to intervene on this issue that the TETRAPDS software, as described in Chapter 5, has been devised: the software's composite architecture, made out of four modules, is aimed at digitalizing each of the main functions of the PDS, and improving, by doing so, its functioning and outcomes. In the process of responding to my second question, citizens' experience of e-PDS is therefore paramount: as shown in Chapter 6, citizens use this programme to apply for ration cards from Akshaya telecentres, and avail information on WebPDS to maximize understanding of their entitlements. Back-end modules, on allocation of goods and monitoring of ration shop activities, should complete the picture by optimizing the supply chain: therefore, e-PDS should be instrumental in solving existing problems, and in leading citizens to improve their image of the state-level food security system.

[37] See, for example, http://www.thehindu.com/todays-paper/tp-national/tp-kerala/tonnes-of-foodgrains-rotting-at-fci-godown-in-thrissur/article3571807.ece, accessed 21st January 2014.

On the one hand, as far as front-end modules are concerned, the mechanism stated above seems to be working reasonably well. As revealed by the narratives on Akshaya and WebPDS, reviewed in Chapter 6, computerization has profoundly transformed users' view of these modules, by embedding them into the trusted, user-friendly space of Akshaya: these are narratives that reveal confidence in the potential of digitalization, as opposed to the long, problematic procedures that citizens had to undergo at TSOs previously. Therefore, as far as TETRAPDS modules based on direct interaction are concerned, it seems that the state is fulfilling its objective: it is, indeed, successfully reconstructing its image in the eyes of citizens, as that of an efficient and user-friendly provider.[38]

This mechanism applies, as reviewed, to modules 1 and 4 of TETRAPDS, which is mediated through the trusted space of telecentres and included under the Akshaya infrastructure. Yet, when focus is moved to users' recounts on the *grand design* of e-PDS, a major shift is witnessed in the tone of narratives: indeed, perspectives on the programme as a whole seem different from perspectives on its interface with users, experienced through the space of Akshaya e-centres. The main theme, emerging from recounts on e-PDS as a whole, can be synthesized as follows: experience of the programme, beyond its simple and user-friendly interface, is dominated by the absence of some features, which are perceived as required in a digital PDS. What is missing, as it emerged from interviews, is the systems' capability of monitoring the supply chain:

> Problems in the PDS are, first and foremost, problems of leakage, which should be the main focus of e-government. Yet, this is not happening (…) the government is spending a lot of money on the Aadhar project, but it is not looking at the problem of corruption: of the rice that comes from the FCI, maybe 10% reaches the poor, and the rest ends up in the market. Rather than looking so much at Aadhar enrolment, the government should make sure that the poor get their rice. (Anand, Trivandrum town)

> The PDS is not really digital, many things are still paper-based (…) except for the biometric identification that they are doing now. But Aadhar will not stop people from selling rice on the black market. If transportation [of PDS goods] is not monitored, the problem remains, because

[38] In fact, in my working paper published with CDS (Masiero 2012), I have discussed the presence of a drawback in the system, due to incomplete computerization of verification procedures by rationing inspectors. However, the ration card application still ranks third by number of users among services available at Akshaya, and narratives by users point towards a general confirmation of satisfaction with the service.

> that is the moment when rice gets stolen, even before reaching the ration dealers. (Prasad, Malappuram town)

> Why would I need a digital ration card, when the system does not work? The government is now making digital ration cards, but it is not intervening about the rest. This is not what people need (…) we need a technology that liberates us from corruption. (Sreeja, Perinthalmanna town)

These narratives reveal, in the first place, one point about the fabric of PDS computerization: few citizens, using the PDS in Kerala, have any knowledge of the very existence of TETRAPDS modules 2 and 3, in terms of the allocation of goods and, in particular, the monitoring of ration shop inspections. Citizens' narratives, revolving around this theme, are quite monothematic: the state, concentrating all its efforts on the digitalization of ration card management, has neglected to undertake computerized supervision of the PDS supply chain, leaving unattended exactly the most critical determinant of leakage in the programme. This creates a dichotomy between people's perception of modules 1 and 4, and their vision of the programme as a whole: while the former are seen as efficient and accountable, the *grand design* of the system is viewed as problematic, because it fails to give attention to the key features of allocation and monitoring of the supply chain. In fact, back-end modules are not really made known to the programme's users, and this results in most of them being completely unaware of their presence.

It needs to be noted here that my visits to TSOs, throughout the state, often matched people's perspectives on this point. It is true, on the one hand, that TSOs engage with the computerized management of ration cards: indeed, on a general basis, TETRAPDS module 1 seems to be known to the staff, and operating properly in its main functions. But, as soon as the conversation moved to modules 2 and 3, the situation seemed to be much different: in fact, as revealed by the interviews, most TSOs do not really use these modules, and two of those that I visited had, in fact, never implemented them. Lacking attention to modules 2 and 3, as it is perceived by users, seems to be largely coinciding with the reality: also, most staff members displayed reluctance to discuss this topic, and tended to avoid it in their interactions with me. It was, therefore, particularly difficult to get information about these modules at the TSOs.

Neglect of modules 2 and 3, by the offices that should manage them, seems to constitute a severe problem for TETRAPDS: indeed, on the one hand, the state insists on identifying elimination of corruption as its main objective, pursued through the combination of e-PDS

with Aadhar. But, as citizens' narratives reveal too, the problem-solution nexus observed above has invested everything on identification, and very little on other key aspects of the programme: modules 2 and 3 are *de facto* inexistent in public representations of e-PDS, and emerge, in the domain of conversations, only if the researcher explicitly mentions them. Citizens' narratives, complaining about incompleteness of the e-PDS programme, seem therefore to be based on solid grounds: the recurrence of this theme, among the interviews conducted, seems to weaken the credibility of the state's image, as an optimal provider of technological solutions.[39]

This first observation, related to citizens' perception of the *grand design* of e-PDS, is matched by another one, pertaining to the integration of Aadhar in the programme. As noted in Chapter 6, the government of Kerala is relying heavily on the inclusion of the Aadhar system within PDS: this is the basis on which the whole campaign, on fighting the programme's corruption through users' biometric identification, has been developed and grounded. It needs to be noted, in this respect, that the massive governmental campaign for enrolment of citizens into Aadhar, promoted primarily through the involvement of Akshaya e-kiosks as registration centres, is resulting into very positive outcomes: overall enrolment, at the moment of writing, is above 90% in Kerala, and the upward trend is continuing.[40] It appears that a large number of citizens, throughout the state, has appreciated the potential benefits of Aadhar, and these benefits have motivated them to enrol.

Nevertheless, when looking at people's narratives on this issue, the picture on perception of Aadhar seems to be more complex than what enrolment figures may indicate. One of the main problems, in this respect, lies in the fact that Aadhar registration is supposed to be voluntary, rather than compulsory: yet, when asked about this, several citizens have pointed towards a *de facto* mandatory character of enrolment. It is indeed the case that many state schemes, ranging from scholarship applications to registration of household documents, started listing the acquisition of an Aadhar number as a mandatory requirement, a phenomenon that has occurred in several instances throughout the nation.[41] The point is that making Aadhar compulsory may result, in effect, in an exclusionary practice, openly forbidden by the Supreme Court of India in September 2013: indeed, this practice would

[39] In effect, experiences of computerized PDS in other Indian states seem to confirm this vision: the digital PDS of Chhattisgarh, where focus is primarily on the use of digital technologies for monitoring the supply chain, is widely known as the best one in the nation (UIDAI 2010: 10).
[40] http://uid.kerala.gov.in/aadhaarKerala.htm, accessed 21st January 2014.
[41] See, for example, R. Khera's commentary on Deccan Herald, available at http://www.deccanherald.com/content/359968/focus-cash-transfer-not-target.html, accessed 21st January 2014.

result in excluding all non-registered citizens from schemes to which they are entitled. On this issue, the narratives collected at a pro-poor NGO in Trivandrum are illuminating:

> The government is breaking the law, by using various ways to make Aadhar compulsory for all citizens. It is simple to do so, making registration required for schemes of subsidies. In this way, the poor have two choices: either they register for Aadhar, or they do not get the money and the subsidies to which they are entitled. (Veena, community volunteer)

> Many poor people do not know of Aadhar, and only find out about it when their documents are not valid anymore. This needs to change, because people are now being obliged to registration, and have serious problems if they do not get it. (Tijesh, community volunteer)

The outcome of this process, since voluntary Aadhar registration is being made *de facto* compulsory, seems to be negative in terms of the trust that citizens place in the state authority. The narratives above, particularly concerned with the conditions of the poor and vulnerable, reveal exactly this tone of delusion: Aadhar, while portrayed by the state government as a means to include all citizens into optimal service provision, may end up, paradoxically, sorting out the opposite outcome, and excluding exactly those citizens that are most in need of public assistance. This idea, as suggested by the voice of the people, is adversely impacting the image of accountability that the state has constructed for itself.

Furthermore, when Aadhar is considered from the perspective of being integrated into the composite fabric of e-PDS, the discourse on collective perception of it becomes more complicated. Indeed, as a result of an extensive promotional campaign, Aadhar has been advertised to most of the Kerala population: this includes slum and village communities of poorer people, whose vulnerability creates a stronger need for food security under the PDS. Narratives collected in these communities, as they focus on the implications of registration, tend to crystallize around one specific aspect: that is, the likelihood of the programme to determine a shift, from subsidy to cash transfers on UID-enabled bank accounts. This measure, in spite of its potential economic benefits,[42] creates profound concerns for poorer citizens, as synthesized by a NGO volunteer in Karimadom, the main slum of Trivandrum:

> Just now, I pay one rupee for [1 kg of] PDS rice, because the state subsidizes it. But after Aadhar, I will have to pay 40, and the remaining 39 will go on a bank account, which I have,

[42] In fact, the point on economic adequacy of food stamps is also debated in the literature: see Swaminathan (2004) for a strong criticism to this thesis.

> but many poorer people don't have. I am worried about this (…) if the system, for any reason, does not work, we will be just unable to get our subsidies. (Anita, community volunteer)

As Anita reveals, people living in vulnerable communities tend to be scared about the forthcoming shift from implicit subsidy to cash transfers, for two reasons: first, this means that access to the system will be made conditional to ownership of a bank account, and this is not the case for many people at the margin of the Kerala society. Second, the dynamics of access to subsidy will be made, as described above, more complicated than they presently are: as Anita remarks, paying 40 rupees instead of 1, and waiting for the remaining 39 to be credited on a bank account, is a process with which most poorer people are not familiar, and which generates a fear of inability to access the subsidies. In fact, cash transfers may have undesired consequences for access to the system as people know it, as explained by a daily-wage head loader in Karimadom:

> For banks to give you an account, even a zero-balance one, you need to have guarantees that I don't have (…) if Aadhar becomes mandatory for PDS, we will remain outside [the system]. (Prakash, Karimadom slum, Trivandrum town)

Another problem, perceived with particular sensitivity by people in poorer communities, is that of infrastructural readiness, which will be required in order to implement the UID-enabled PDS. [43] On this, the concern is that many villages, still nowadays, suffer from systematic shortages in power supplies, and their banking system is not ready to handle large volumes of small transactions. This argument is voiced by a villager in northern Kannur:

> How will this work? Electricity here keeps coming and going. Every now and then, there is a blackout that leaves us without light for many hours (…) people have a right to the PDS, and we cannot lose it because of power shortages. (Anil, Periyar village)

To conclude, the problem of perceived exclusion, viewed above with respect to Aadhar in general, becomes particularly severe when referring to application of biometrics to e-PDS. Again, the Supreme Court of India has openly prevented states from making Aadhar a compulsory requirement for subsidy programmes, and linking the PDS to Aadhar would sort, in the view of some, a perverse effect of even stronger targeting:

[43] Preoccupations about the shift to a new system, and its implications in terms of access, seem to be reasonable in this respect: the pilot project conducted in the East Godavari district, in Andhra Pradesh, has had worrying outcomes in terms of exclusion. In fact, several cases have been reported of users made unable to access the system, due to problems in electricity supply and machines that would not recognize their biometric details (Forbes, December 2012).

The system will give access only to those who have Aadhar. All the others will be excluded (…) but many people do not even know of Aadhar, and will just need to register if they want to get their subsidies. This is no democratic process. (Kureish, Payanoor town)

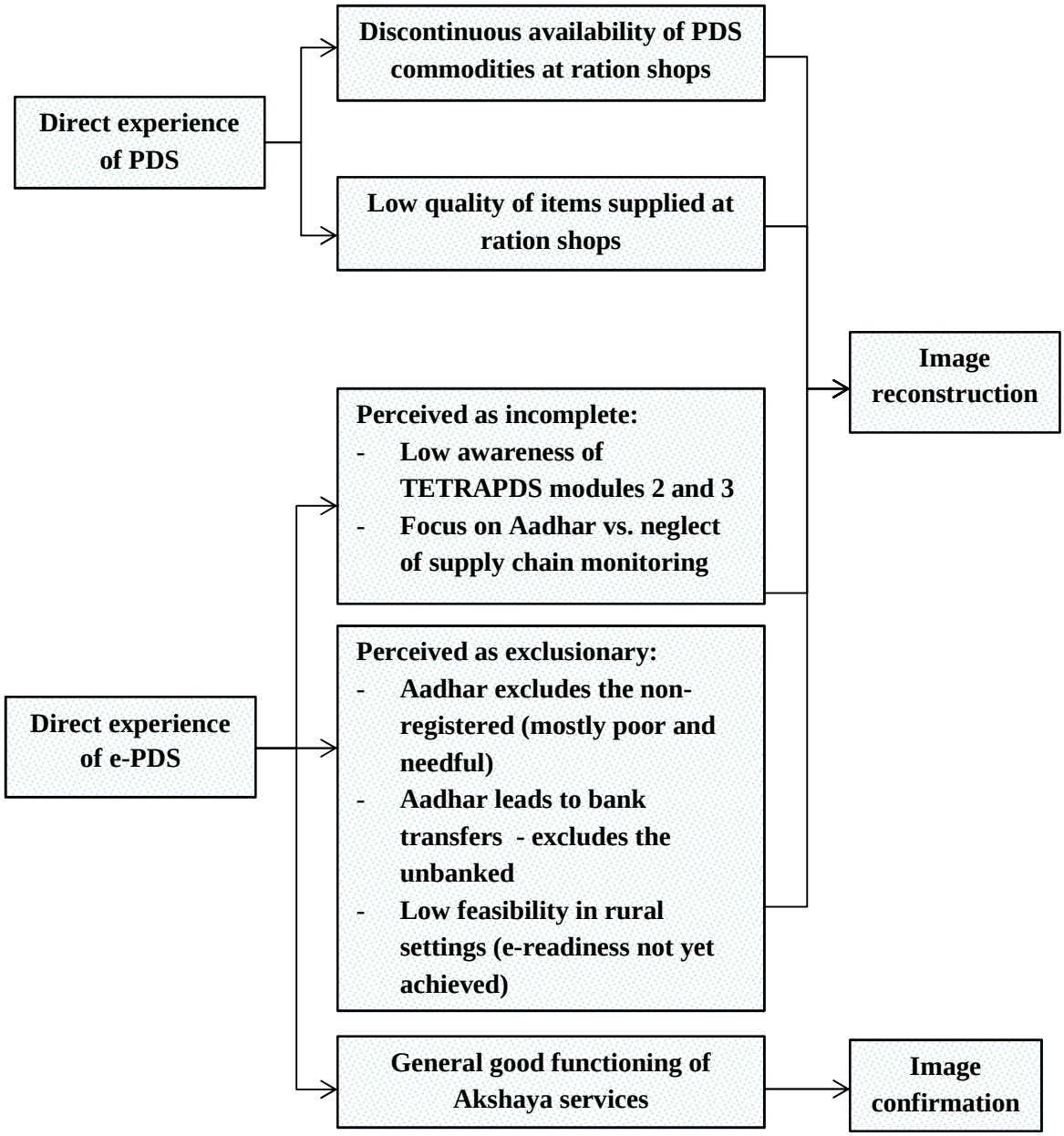

Figure 17: Map of Inputs to Image Formation – Locus 1: Direct Experience

The map above, a synopsis of the themes reviewed here, synthesizes the main inputs, *messages* in Boulding's sense of the term, in users' narratives about direct experience of PDS and e-PDS. On the one hand, the state aims to transmit, through Akshaya and a technology depicted as problem-solving, the image of an efficient and accountable service provider, which properly uses technology to optimize its food security system. On the other

hand, this image is altered by several of the inputs that users take from direct experience: first, in spite of new technologies, the PDS keeps incurring into deficits of goods' delivery and quality. Second, experience of its computerized version, notwithstanding the success of Akshaya, is viewed as partial (as it is unable to address both allocation and inspection) and exclusionary (as it is based on a system that will include only those registered into Aadhar). As a result, the image, which the state presents of itself, does not reach its intended recipients as planned: it is reconstructed, instead, by inputs taken from people's direct sightings of the programme.

7.1.2. Locus 2: Social Public Sphere

So far, I have elaborated on the role of direct experience, of both the PDS and its computerized version, in citizens' processes of perception of images of the state. To do so, I have examined the process through which inputs, taken from users' direct experience, contribute to reshaping the images that the government, by the means of e-PDS, constructs of itself: and still, direct experience does not constitute the only source, through which sightings of the state are discussed and reconceptualised. In fact, users' view of the PDS does not only derive from direct involvement with it, and with the technologies surrounding its transformation: at the same time, the programme is represented, in different ways, in the sphere of social interaction among citizens, in which the system is visualized and constructed. The same holds for e-PDS, whose real and potential impacts on food security are discussed in the domain of the social public sphere.

The concept referred to as a "social public sphere", viewed as an influencer of image formation processes, needs closer examination in this context. The main idea behind this notion, devised primarily in Kooiman (2003: 37-45), is that messages, which concur to people's construction of images, do not only come from direct involvement with reality: direct experience is completed, instead, with a domain of interpersonal interaction, in which "societal images of governing issues are formed, discussed and tested" (2003: 38). This domain is the sphere in which people, interacting with each other in their networks, concretely shape the images that they have tacitly formed: by doing so, through interaction with their peers, they also receive additional inputs, through which existing images are enriched or modified. Given the twofold role of the social public sphere, as a space in which images are both voiced and developed, this locus acquires major importance as a mediator in processes of image formation.

As far as the vision of PDS and e-PDS, in the contemporary Keralite society, is concerned, Kooiman's concept of a social public sphere needs to be further specified. On the one hand, this term is intentionally constructed as a broad one, encompassing all interactions occurring in people's social networks: inputs generated in this sphere belong, therefore, to spaces that range very widely, from informal (e.g. village congregations, social networks, *et similia*) to more formal contexts (e.g. NGOs, community based organizations, and all publicly recognized social congregations). On the other hand, Kooiman's work refers, in fact, to what he calls a "social and political" public sphere: it is the case, though, that in a field like Kerala, in which the role of political agency is deeply embedded in civic life, inputs generated in the political domain may deserve a specific, separate analysis. Therefore, the sphere observed here looks specifically at inputs found in people's *social* interactions: a different locus, reviewed later, is that of political circuits, through which a large part of civic life in Kerala is structured and regulated.

The main theme, recurring among narratives within the social sphere, is one that highlights a specific feature of the Indian food security system: this consists in a strong, widespread construction of the PDS as a highly corrupted scheme. The depiction of PDS as inherently flawed, by systematic diversion of subsidized goods to the market, seems to be dominating the public sphere, and the semantic domain of corruption is, by far, the one that recurs most frequently in citizens' narratives. As per one of the key mechanisms individuated by Kooiman (2003: 39), the construction of the PDS within local mass media seems to be playing a major role in shaping people's views: in fact, the depiction of the programme as portrayed in the news, which often report stories of diversion of subsidized commodities to the market, resonates very strongly in citizens' parlance. The narratives below are paradigmatic of this construction:

> There is a lot of mafia in the PDS (…) of what leaves from the central [FCI] godowns, only a very little part really makes it to the ration shops, whereas the rest disappears due to corruption. The government can do many things to improve the programme, but if they do not take criminality seriously, the system will remain corrupted as it is. (Dinesh, Parassinikadavu village)

> There is public vigilance on the ration shops, people know if the dealer cheats, but the only other option, apart from it [going to the ration shops], is the market, which is much more expensive. This is why public vigilance does not work (…) corruption happens in front of everybody, ration dealers can pretend that rice has finished, and sell it to hotels or where they prefer. (Pranab, Vengara village)

> Corruption works always along the same channels. The rice [imported through PDS] comes from Tamil Nadu, but a large share of it is retained from some groups at the border. These groups are in a network with private firms in Kerala, that sell it at high prices on the market (…) the system has been like this for a long time (Naima, Edakkara village)

These narratives show that the Kerala PDS, in spite of the culture of redistribution that is embedded in local politics, is publicly constructed as a highly corrupted programme. This is a message that mirrors, in fact, the narratives on direct experience reviewed above: on the one hand, those recounts were centred on how corruption is experienced in the microcosm of people's lives, by severe shortages of supplies at the ration shops. On the other hand, the macro-networks of market diversion cannot be "sighted" in a direct way: still, they can be appraised by the public construction detailed above, of the PDS as ridden with deep intrinsic corruption. This theme, profoundly affecting the public vision of the programme, seems to constitute a significant obstacle for the state, when embarking into transformation of its own image through e-PDS.

This introduces another important element, which emerges from users' narratives on PDS digitalization: in fact, the public image of the PDS as corrupt is matched by a symmetric one, of the e-PDS technology as a means to address the problem of corruption into the scheme. Most users, in effect, have not been fully briefed about PDS computerization: the software structure of TETRAPDS, as described in this work, is predominantly conceived like a back-end technicality, and is not, in itself, at the forefront of e-governance propaganda (differently from the highly publicized Aadhar technology). The e-PDS, in public imagery, is there to address (not the general issues of efficiency and accountability, but) the very specific problem of the corruption of intermediaries:

> Mafia in the PDS is a problem in the entire nation, but [in Kerala] we now have the digital system, which is there to fight it. In other states, there is much more corruption, because there is no monitoring and therefore the ration dealers are free to sell goods (…) with the new system, this will not be possible anymore. (Prasad, Malappuram town)

> There is a reason if the state is investing money in this, instead of other programmes that would need their attention as well. And the reason (…) is that this programme is very corrupted, and technology can contribute to make it more simple and transparent. (Naima, Edakkara village)

These arguments, symmetrical to those that construct the PDS as corrupted, are highly recurrent in citizens' narratives, and constitute a second theme demanding attention in this context. Indeed, the extent of people's knowledge of TETRAPDS technicalities does not seem to matter here: the recurring theme, among narratives by PDS users, is a strong belief in causality between corruption and e-PDS, connected to the vision of the digital programme as a specific response to corruption-based leakage. On the one hand, this constitutes a positive input for the state's image: in fact, regardless of outcomes, the programme is recognized as aimed at fighting corruption, which implies, in any case, some recognition of the state's efforts towards this objective. On the other hand, political contestation around the PDS impinges strongly upon the extent to which the e-PDS, in its current form, is actually capable to fight existing corruption: this is at the centre of the third locus (political circuits) examined later.

Further messages, which seem to play a key role in reconstructing images of the state, are based on the notion, elaborated again in Kooiman (2003: 38-39), of the social sphere as a public forum, in which existing perceptions of governing objects are voiced and discussed among individuals. With specific regards to the PDS, the public sphere seems to act as a space in which problems, encountered in the use of the food security system, are brought to the mutual attention of other users:

> It is very difficult to be recognized as BPL, even if one is actually so. [In this village] a lot of families are very poor, but if you see their cards, they are all blue [APL]. In the meantime, a lot of government officers, and people that they know, have got pink [BPL] cards, so they can get subsidies and also apply for grants, scholarships, and other reserved benefits (…) the government has invited all these people, that are not really BPL, to resign their cards (Sheena, Perinthalmanna town)

> Akshaya entrepreneurs can do many things, but they cannot give you a BPL card if you need one [in order to change your status]. So, nobody is there for those that need a BPL card, and cannot get one, because both Akshaya and the TSO are powerless (…) so they cannot go to the ration shop, and just claim that they need to pay less. This is why so many people are spending more money on the PDS than they should. (Vineeth, Payanoor Town)

In these narratives, citizens refer primarily to experiences learned from interaction with other PDS users, and these arise, along with direct experience, as significant inputs in image formation. The public sphere, as it emerges from this picture, has exactly the character of public forum that Kooiman suggests: it is, indeed, a space of discussion and contestation, in

which existing images are enriched, and potentially reinforced, from recounts by other citizens. In the case in point, accounts of PDS users seem to further highlight the problems of goods' quality and delivery: as these images, rather than remaining tacit, are voiced in the public sphere, this contributes to consolidating them, and to casting further doubt on the technology-based construction of the state as an optimal service provider.

Recounts of issues encountered by PDS users, as portrayed in the social public sphere, act as a completion to narratives derived from direct experience. Alongside these, narrative research has registered another stream of recounts on the public construction of the PDS, which elaborate on the very nature of the corruption implicit in the programme. These narratives argue that leakage goes far beyond the misbehaviour of ration dealers, affecting the PDS supply chain as a whole:

> Someone blames all the corruption on the ration dealers, but it is not really so. This is a very partial picture, because then, what about all the things that happen before the shops? (…) The goods that really get to the shop, and are not sold somewhere else, are just a small share. It is easy to say, the ration dealers are causing the system not to work, but we should talk more about goods being stolen during transportation. (Ayesha, Edakkara village)

> It is not all the fault of PDS if there is corruption. I mean, would there be any corruption, if private sector was not involved? There are many companies that buy PDS goods, repackage them, and then sell them on the market. Otherwise, the mafia could not exist (…) it doesn't make any sense to look so much at PDS corruption, as if the private sector was not responsible. (Rajesh, Trivandrum town)

These narratives, collected from recipients of the PDS, cast doubt on the very basis on which the technology of e-PDS was constructed. Indeed, as detailed in Chapter 6, the design underlying the programme – based on the integration of Aadhar in e-PDS, to detect corruption at the level of ration shops – is based on the idea that ration dealers constitute the main agent involved in diversion of PDS goods to the market. Nevertheless, as of the narratives above, there is a publicly shared idea that is closer to what part of the literature (e.g. Ramakumar 2010) suggested: diversion, rather than being entirely to blame on ration dealers, is endemically spread across all levels of the PDS, which means that all intermediaries involved can engage in it. Furthermore, as explicitly observed by Rajesh above, the black market networks around the PDS would not exist if private agents, which illegally buy and repackage PDS items, were not involved and complicit in this process.

This narrative denies, therefore, the validity of the problem-solution nexus, which the government has inscribed in the design of the e-PDS technology. Taking this line of thought to its extreme consequences, it may then be argued that e-PDS has been constructed on flawed premises: it has focused entirely on detecting corruption *within* the ration shops, when a large share of diversion really happens at the stages of transportation and storage. This view contributes to blurring the image of optimality constructed through e-PDS.

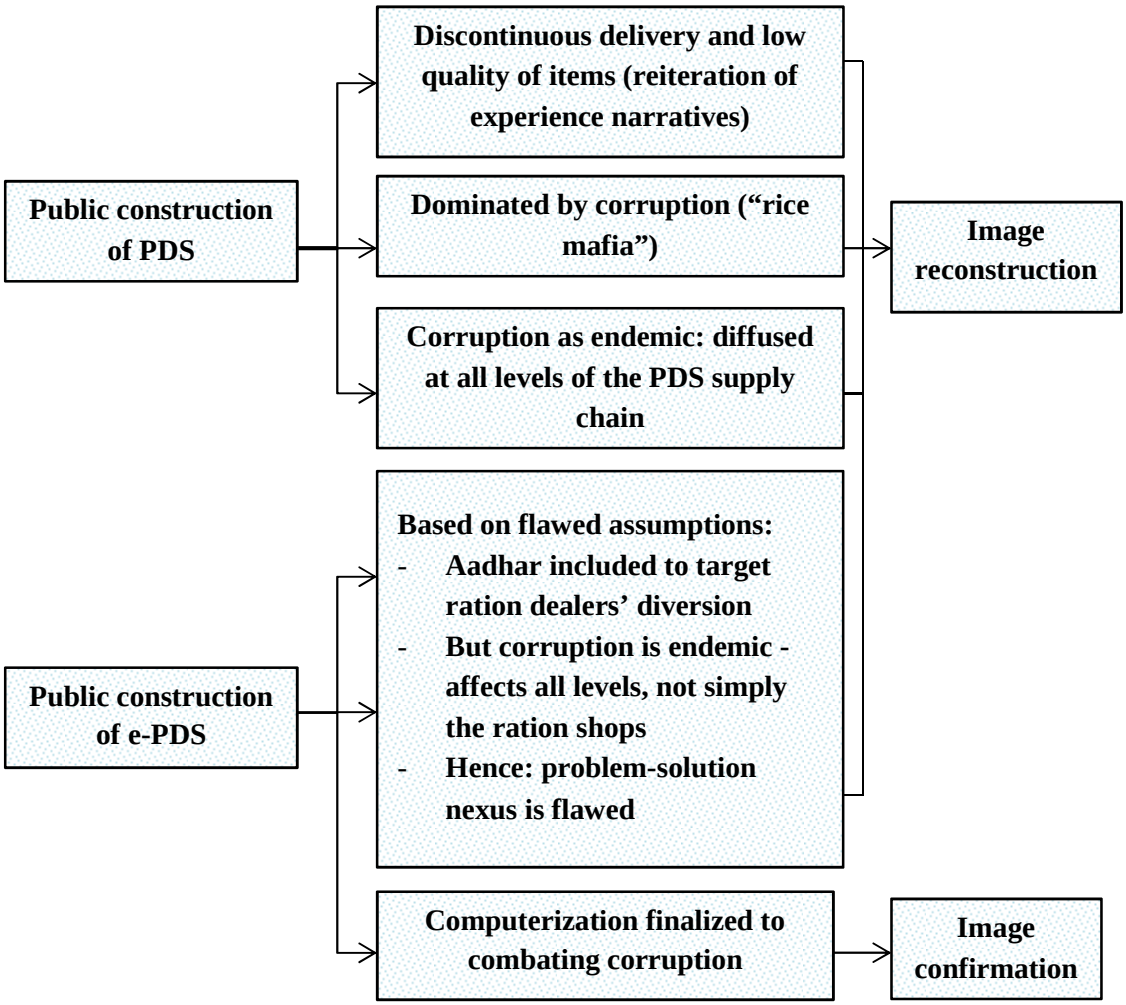

Figure 18: Map of Inputs to Image Formation – Locus 2: Social Public Sphere

Hence, on the one hand, the state is using the technology of e-PDS to reconstruct itself as an optimal service provider. On the other hand, inputs found in citizens' narratives, as constructed in the social public sphere, seem to have diverse effects on this image: first, the vision of PDS as deeply corrupt seems to make it harder for the government to improve its image, a problem that is mitigated by the shared construction of e-PDS as a tool to fight corruption. Furthermore, the problems by which the programme is affected, in terms of quality and delivery of foodgrains, are reiterated in the public sphere, and therefore strongly

perceived in collective awareness. To conclude, corruption is publicly depicted as an endemic problem: and this, counteracting the idea that ration dealers are the only ones responsible for it, casts serious doubts on the very assumptions of the e-PDS design. What is affected is exactly the idea at the basis of the problem-solution nexus, on whose basis the state is trying to recast its own image.

7.1.3. Locus 3: Political Circuits

So far, analysis of PDS users' narratives has led me to observe that citizens, faced with images of the state reconstructed through e-PDS, read them on the basis of inputs found in their everyday encounters with the programme. The first locus, in which these inputs are inscribed, revolves around direct experience of the PDS and e-PDS: through their interaction with the programme, citizens acquire messages that lead them to enrich their own images about the scheme's provider. Moving to the second locus, substantiated in the social public sphere, I have observed that indirect encounters – mediated by the social networks to which users belong – also play a role in image formation, as they allow a space for the public construction of the programme and its provider. While analysing the social sphere, I have realized that several productions of the programme are not, in fact, entirely *social* in their nature: the way in which the scheme is constructed, in this sphere, is profoundly conditioned by value judgements that belong to the *political* domain of action. The political circuits operating in Kerala seem to constitute a third locus of image formation, in which inputs for interpreting the programme are produced.

Firstly, a point is to be clarified as to why political circuits, conceived in the terms dictated by the field (in this case, the party politics of Kerala), would constitute a different domain, separated from what is referred to as the social public sphere. In effect, this division is not drawn in my literature of reference: Kooiman's work, utilized for conceptualizing locus 2, refers to a "social and political" public sphere, rather than to two domains ascribing to different fields. Still, analysis of my respondents' narratives strongly indicated the existence of two different *loci*: on the one hand, a social sphere encompasses all inputs derived from interpersonal interactions, in which public constructions of governing objects are concretized and communicated among the people. On the other hand, party coalitions engage in specific, politicized constructions of the programme, and condition the views of citizens with specific strategies and objectives. As observed above, the difference may be blurred in general, but it emerges very clearly in a politically sensitive field as that of Kerala: people's high political awareness, and the strength of civic engagement within the state, led me to observe the

specific implications of political belonging, on the way in which different images are formed. What is remarkable, with respect to my research, is the influence of coalitions' views on the images of the state that citizens form through e-PDS technologies.

As I focus on the impact of political circuits, on the processes at the centre of my attention, a synoptic overview of Kerala politics first needs to be provided. In Kerala, the parliament is divided between two coalitions: the United Democratic Front (UDF), in power at the time of writing, ascribes to the programme of the Indian National Congress, whereas the Left Democratic Front (LDF) is led by the Communist Party of India (Marxist) – CPI(M). While the CPI(M) remained in power for two decades after independence, from the 1980s onwards the two coalitions have been alternating with each other in power: as a result, politics in Kerala is often considered to be a dialectics between the two coalitions, whose composition has remained quite uniform over time. It should be noted, furthermore, that almost all existing parties belong to either one of the two coalitions: the right-wing Bharatiya Janata Party (BJP), the third party in the state by size, has never obtained a seat in parliament.

As far as the vision of e-governance, within political programmes, is concerned, the dialectics among the two coalitions unfolds along consolidated lines. Historically, the UDF has acted as the main promoter of the use of ICTs to foster good governance, and several of its leaders have been the political champions at the core of promotion of computerization projects. The LDF, on the other hand, has often acted in opposition to the digitalization of government: political considerations, prevailing in the semantics of this group, are rooted in the role of technology in restructuring the balance of power within society, through channels that tend to privilege private entrepreneurs, rather than actually empower the people. This dispute has come alive with particular strength when the Akshaya project has been scaled up to the state: as observed by Gopakumar (2007), promotion and opposition towards the initiative occurred exactly along these lines. In that case the UDF, especially through Malappuram's representative (now the Kerala IT minister) P.K. Kunhalikutty, advocated Akshaya as a key project, to transform access to government throughout the state: exponents of LDF, on the other hand, contested the initiative on grounds of power distribution, which would be shifted, in their view, towards telecentre entrepreneurs and away from citizens.

The dialectics between the two coalitions has been reproduced with e-PDS, along lines that mirror very strongly those described for Akshaya. The politics of the UDF government, in power since June 2011, is clear in this respect: UDF representatives have chosen Aadhar, and its integration in the PDS, as the main tool in order to end corruption in the programme.

The UID-enabled PDS, which will be piloted soon in Trivandrum, is being strongly advocated by the government: indeed, Prime Minister Oommen Chandy has acted, since the launch of the initiative, as its political champion. The vision promoted by the UDF is reflected in citizens' narratives:

> Thanks to Aadhar, which is the same [technological structure] for all citizens, India can become equal and democratic. Just now, access to government schemes depends on documents, and the poor are often unable to obtain these, so they have more problems [than other citizens]. But Aadhar is just a number, and once registered, there is no more need for documents. (Pranab, Vengara village)

> With Aadhar, we can fight the corruption of ration dealers (…) people will have to use their fingerprints to buy rice, so the dealers will have to sell it to real people [genuine beneficiaries], and if this does not happen, the inspectors will know. Making the system biometric is the only way to stop ration dealers from selling rice to private companies. (Varsha, student activist, UDF Trivandrum)

> Aadhar will allow access to PDS from everywhere. So, if a ration dealer cheats, his customers will be able to buy their goods from another one (Vikram, UDF activist, Kollam town)

These narratives, by citizens belonging to UDF circuits, reveal the presence of specific political constructions, which concern both Aadhar *per se*, and its utilization within the PDS. The advocacy of Aadhar, as an instrument in itself, is based on three different considerations: the first one, mirrored by Naima's point above, pertains to the social inclusion that the system intends to generate. Indeed, if all citizens are identified by a twelve-digit number, their treatment by the public administration will be based on that device: this will come as a substitute to the present situation, in which poorer people are weakened by their inability to obtain entitlement documents. Secondly, this democratizing technology is also devised to result in administrative simplification: while, at present, most government services are based on provision of numerous documents, with Aadhar a number will be enough to receive all services. A third, additional reason to support Aadhar – advocated by the Congress at the national level – is one relating biometric identification to local security, as the system will work as a device against security threats.[44]

[44] The opposition critique to Aadhar, diffused within the Indian nationalist parties led by the BJP, lies in the fact that the system enables non-Indian citizens to obtain registration, and this is linked, in the political rhetoric in point, to concerns for the security of the nation. See, for example, http://www.thehindu.com/todays-paper/tp-national/aadhaar-scheme-not-approved-by-parliament-says-bjp/article5263103.ece, accessed 21st January 2014.

Furthermore, in terms of the advocacy of Aadhar as a tool to improve the PDS, these narratives mirror exactly the problem-solution nexus described above. This implies advocating introduction of point-of-sale machines in all ration shops, ensuring that, as recommended in the report by the Justice Wadhwa Committee on PDS (2007), biometric identification can be performed directly during transactions. The argument of Varsha clarifies the beneficial implications of this: with Aadhar, it will no longer be possible for ration dealers to sell their goods outside the PDS, because all transactions will have to occur with real registered individuals. Foodgrains, in this way, will not possibly "disappear" from the system, through the means of illicit transactions on the black market.

Furthermore, Vikram illuminates the additional feature of portability, which will allow users to access the PDS from all ration shops in the state. This, as specified in Chapter 6, is not only a matter of ease of use, but also a means to remove incentives to corruption for ration dealers: indeed, thanks to portability, users will be able to opt out of shops perceived as cheating or inefficient. A final observation here is that Aadhar will also devise a way to optimize allocation of goods: foodgrains will be provided, to each shop, on the basis of the number of users monthly authenticated to it, through point-of-sale machines (UIDAI 2010). This will remove the necessity of TETRAPDS Module 2, because allocation will be performed automatically on the basis of Aadhar.

These narratives reflect, therefore, the way in which the UDF has constructed the programme, as the optimal solution to the existing problems in PDS. The inputs emerging from this, as it appears from citizens' narratives, seem to have, as desired, a positive effect on image formation, as they are devised in order to reinforce the image of the state as an optimal service provider.

Symmetrically, a political construction of the e-PDS has been carried out by the LDF. As noted above, the respective standpoints of the two coalitions around e-governance have crystallized over time: in this debate, the LDF has maintained a skeptical position, on the basis of considerations out of which e-governance is unable, *per se*, to really empower the poor. When it comes to Aadhar, the coalition's viewpoint is particularly negative: in August 2011 the former LDF Prime Minister V.S. Achutanandan (now leader of the opposition) has explicitly asked the government to abandon the project, due to its perverse implications on

privacy and security of data.[45] The construction of the LDF, which particularly criticizes Aadhar's integration in PDS, is revealed by citizens' voices:

> Aadhar is not at all inclusive, in fact it excludes the poor (…) because it excludes all those that are not registered, and many poorer citizens are among these (Julian, NGO leader, Muthankara village)

> Aadhar will dismantle the food security system, because it will make cash transfers mandatory for everyone. This is very difficult for the poor, who may have never been into a bank at all, and also for other citizens, which struggle to understand how this works. (Swetha, LDF activist, Malappuram town)

> The real problem with Aadhar is not now, it will be in the long term. Since people will be able to use every ration shop, ration dealers will not know how many customers they have, and so they will not be able to require the right amount of foodgrains. The only way is that of giving licences to grocery shops, so that they can sell PDS goods, and the ration shops will be closed. With this process, the PDS will disappear, and people will have to use the market. (Rajesh, LDF activist and worker, Trivandrum town)

Starting from the construction of Aadhar *per se*, the thesis expressed by Julian above is that the programme, in spite of what is claimed by its supporters, is not at all an instrument for social inclusion. It is, on the contrary, a tool that will make all government provisions conditional to Aadhar: and this, apart from being illegal as per the order of the Supreme Court of India, will result in exclusion of all those that, for any reason, may not have enrolled in the programme. Poorer citizens, whose information on Aadhar may be limited, are among those at higher risk of exclusion.

Shifting from Aadhar to its integration into e-PDS, the standpoint of the LDF becomes even more critical, exactly because the exclusion of non-registered people may affect a key anti-poverty device. Here there are two problems, which already appeared when reviewing poorer people's direct experience of the PDS: the first one, flowing directly from the point epitomized by Swetha above, is that, making the scheme conditional to Aadhar, non-registered citizens will be, by design, excluded by the principal food security net in the nation. The second problem, epitomized by both Swetha and the interviews to Karimadom volunteers presented before, points to the fact that the programme will force a shift from normal subsidy to cash transfers: and this will, most likely, increase the complications of

[45] http://news.in.msn.com/national/article.aspx?cp-documentid=5394800, accessed 21st January 2014.

access, because people will need to avail a bank account and access it regularly to get their subsidies. This leads to the conclusion that the system, as it is designed, may exclude poorer people instead of including them, and strengthen the power imbalances that LDF views as related to e-governance.

The point that explicates, perhaps, the most profound LDF critique is made by Rajesh, and contemplates the long-term consequences of transition to Aadhar in the PDS. In this view, with integration of Aadhar in the system, ration shops will not anymore be fundamental in the PDS supply chain, and ration dealers, as a result of portability, will not be able to properly quantify their customer base. Hence, the only way to solve the problem will be to move the sale of PDS goods to grocery shops, which will be freely competing with each other: taking this to the extreme, ration shops will lose the rationale for their existence, and the PDS, in its current form of management, will be dismantled (Ramakumar 2011). This is interpreted, in common parlance at the LDF, as a consequence of the Congress' policies, viewed as leaning, over time, more and more towards neoliberalism: this will result, in the construction of the LDF, in dismantling the food security net that protected the Indian poor for decades.

These points result, in the vision by the LDF, in a deeply negative picture about e-PDS: this is revealed in the argument that technology, far away from the objective of uplifting the poor, will make access difficult, if not impossible, exactly for the needful and vulnerable. What seems to be happening, with respect to the e-PDS, is a reproduction of the argument of Mooij (1999), focused on the role of PDS as a political object: in her studies of food policy in India, Mooij argued that the PDS, beyond its main function as a food security net, also acted as an object of political contestation, used by the different parties to crystallize their respective positions. My data reveal that, as far as e-PDS is concerned, the situation is in fact very similar to this one: as well as the non-computerized PDS analysed by Mooij, the digital programme at the core of my research is used, indeed, as an object of competition among political groups. The image of the state, derived by the construction of the LDF, is that of an agent using e-PDS to put exclusionary policies in place: this goes against the image of optimal service provider, which the government has constructed through the same technology.

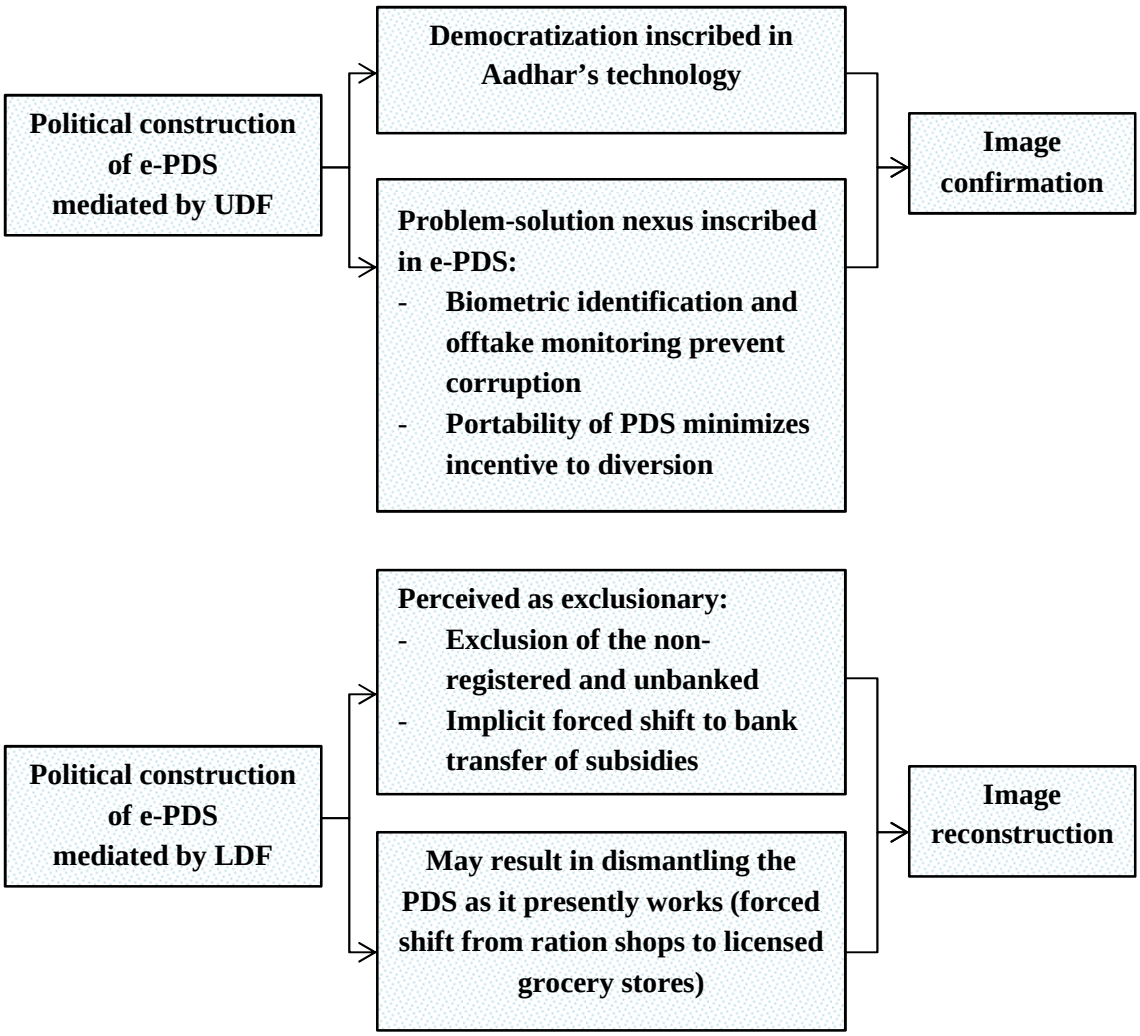

Figure 19: Map of Inputs to Image Formation – Locus 3: Political Circuits

Hence, the third locus of image formation, retrieved and mapped here through citizens' narratives, is that of political circuits, which play a major role in the civic life of Kerala. On the one hand, part of these recounts is influenced by the government, since the UDF is currently into power: on the other hand, though, political inputs are largely outside its control, as the LDF seems to be equally powerful in diffusing its arguments among the people. Inputs designed by the LDF, which talk about serious problems of access and exclusion, add to the other external messages observed here, in casting doubt on the image of the state as an optimal provider of services through new technologies.

7.2. Discussion: On Spaces of Image Formation

In this chapter, in response to my second research question, I have explored citizens' perception of images of the state, as represented in the narratives of PDS users. To do so, I

have mapped the recounts collected in my interviews, on the basis of Boulding's theory of cognition: I have focused, therefore, on individuating the *messages* (external inputs) at the roots of people's sightings of the state, as mediated by the technology of e-PDS. In order to classify these inputs, I have grouped them on the basis of the *loci* of image formation to which they belong: these ascribe to (1) the direct experience of the programme, (2) the constructions of images in the public sphere, and (3) the vision of the state as mediated by political circuits. The inputs found in these *loci*, and the processes of re-elaboration of images that they originate, have led me to a composite scenario, summarized by the map below.

The argument emerging from my analysis is that the initial conjecture, related to the logic of governmentality in image formation, is not confirmed from the data: images of the state, reconstructed through e-PDS, do not seem to be passively absorbed by subjects. Instead, these images are proactively and continuously re-elaborated by the messages that citizens receive, in the fields of direct experience, social public sphere, and political circuits that they encounter in their daily lives. Hence, Chatterjee's logic of governmentality has a limited space here: the *loci* of image formation, on which citizens seem to ground the visions of the state that they express, are only very partially controlled by the government, and are left, for the remainder, entirely to the discretion of citizens themselves.

7.3. Summary and Conclusion

This chapter, viewed in complementarity with the first part of the analysis, completes the response to my research questions: on the one hand, through the two mechanisms of self-reconstruction examined above, the state is using e-PDS to recast its image as an efficient, accountable service provider. On the other hand, this chapter has shown that the image so constructed does not reach recipient citizens as planned: it is, instead, re-elaborated by them through the inputs that they encounter, in their sightings of the state occurring through the *loci* of direct experience, social public sphere, and political circuits. This conclusion, by theorizing the domain of image perception, provides a completion to the theory utilized here: in the next chapter, I make the transition from my case study findings to the elaboration of a theoretical contribution in this respect.

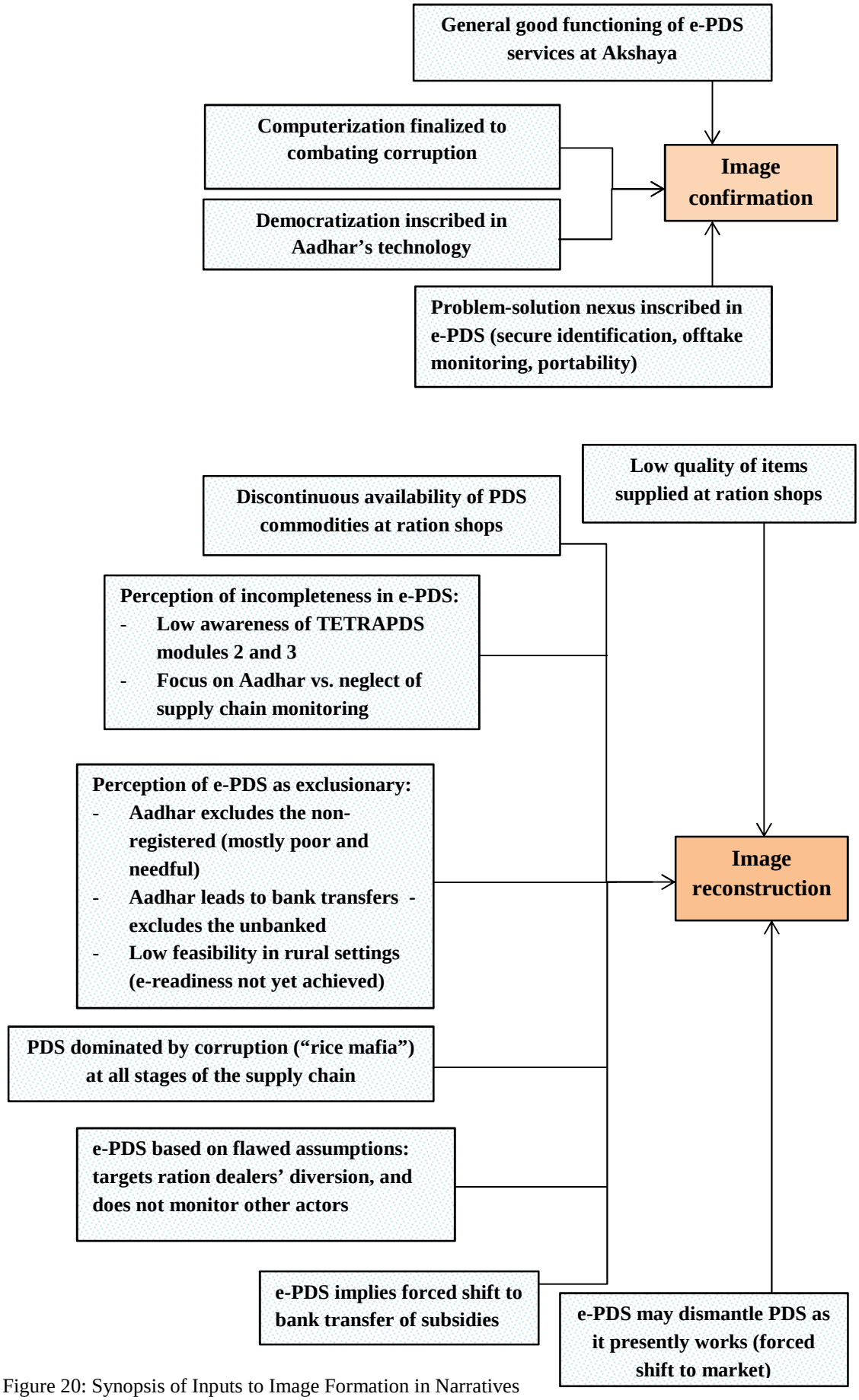

Figure 20: Synopsis of Inputs to Image Formation in Narratives

8. Discussion:
From Case Study Findings to Theory

In this chapter, as I discuss the findings that have emerged from my data analysis, I focus firstly on how these results, read through the conceptual framework utilized here, influence the theory through which I have framed this work. As noted above, chapter 6 confirms the theory of technology stated by Kuriyan and Ray, as it identifies two mechanisms that make the self-reconstruction of the state, exerted by new technologies of governance, come alive in the use of e-PDS by the government of Kerala. Chapter 7, building on this, explores the domain of citizens' perception of self-reconstructed images of the state, which is not explicitly dealt with in existing formulations of theory: in doing so, it finds that there are limits to self-reconstruction, lying in the spaces of image formation that citizens encounter in their daily lives. By confirming existing theory, and exploring a domain of it that had not been explicitly conceptualized before, my findings extend the theory of technology utilized here, through the narrative-based exploration of images of the state in citizens' perception.

To move from the findings of a particular field study, to the extension of existing theory, a process of generalization needs to be carried out, and made explicit in its main components. In this chapter, I firstly explain the steps through which I have used the process of analytic generalization, described by Yin (2003), to develop and structure my theoretical contribution. Having explained this process, I focus on the scope and limitations of generalization in this work. Before moving to the conclusions, I detail the contribution that my thesis makes to the domain of e-governance for development at large, devising a *twofold enabling mechanism* in which ICTs are viewed as potential enablers of human capabilities through institutional improvement.

8.1. A Theory of ICT-Based Image Formation

The process of building theory from case studies, extending conclusions from one particular instance to broader domains of applicability, has been highly debated in the literature on social research methods. A diffused claim, casting doubt on the feasibility of this process, points to the fact that case studies do not lead to statistic generalization, as the case study method, *per se*, does not allow to "synthesize" a population in the form of a representative sample. More radical views, as that of Guba and Lincoln (2000), argue that the impossibility of generalization from case studies is rooted in an even deeper, semantic perspective: they

note that the very concept of generalization, grounded in the gnoseological field of statistics, loses its meaning in the non-numeric, non-representational domain of case study research. These points reveal that case studies may not yet be universally recognized as a viable means to carry out generalization, from a single study to a broader analytic domain.

Nevertheless, this stream of thought has found, in more recent methodological literature, several opponents, providing a clear rationale on which to justify generalization from case studies. The basis of this rationale, starting from the very same sematic perspective observed here, lies in an expansion of the meaning of generalization, from the domain of statistics to that of theory: as noted by Yin (2003) below, generalization can proceed not only from samples to populations, but also from localized conclusions to broader theoretical propositions. This is the basis on which many researchers, looking at the domain of applicability of case study conclusions, have sustained the validity of case studies as a means to generalization (e.g. Becker 1990; Myers 1997; Avison and Myers 2002; Silverman 2013). In the work of these scholars, the concept of generalization loses its statistical meaning, as an extension of results on the basis of a representative sample: it acquires, in its place, the signification of theory-building, i.e. moving from particular conclusions to theoretical assertions in a broader domain.

Beyond sustaining the validity of this process, scholars have engaged in elaborating guidelines on how it should be conducted: in this respect, seminal work has been carried out by Eisenhardt (1989), who details a specific, codified method in order to generate new theory from case studies. On the basis of existing literature in this domain, Eisenhardt notes that grounded theorists (Glaser and Strauss 1967; Strauss 1987), while advocating the possibility for theory-building from case studies, have never detailed a specific, usable procedure for doing so: her work fills a gap in this respect, providing a clear set of guidelines in order to move from case study research to theoretical propositions. Eisenhardt's method is closely related to grounded theory, and to the coding procedures that it involves: this method is, as stated by the author (1989: 546), deeply grounded in a positivist epistemology, which allows to move from case study findings to general, objectivist laws regulating observed phenomena.

While acknowledging the ground-breaking impact of Eisenhardt's method, the procedure used here, to move from data analysis to theorization, involves a departure from it. This is due exactly to the discrepancy between my epistemological stance and the abovementioned, positivist nature of this method: the semantic domain of objectivism, concretized in the

coding procedures and fixed categorizations of grounded theory, does not belong to the social constructionist stance adopted here, and does not fit the interpretivist method through which I have analysed my data. Indeed, as illustrated in Chapter 4, narrative analysis focuses on grasping the full meaning of respondents' recounts, and is therefore not amenable to the fragmentation implicit in coding procedures: as remarked, again, by Riessman (2008), any generalization from narrative data should involve coherence with the narrative method, and with its focus on the interview as a complete, undivided unit of meaning. For this reason, my method to move from case study data to theory cannot be based on Eisenhardt's coding, but needs to be grounded on the narrative technique that I have detailed in Chapter 4, and illustrated in practice in Chapters 6 and 7.

A method for doing so, preserving the meaning of narratives as full units of signification, lies in the process of "analytic generalization" designed and illustrated by Yin (2003). Yin's work, cited in Walsham's (1995) paper on interpretive case studies in information systems, embodies exactly the conceptual shift in the meaning of "generalization", from the field of statistics to that of theory:

> "How can you generalize from a single case study?" is a frequently heard question (…) the short answer is that case studies (…) are generalizable to theoretical propositions. (Yin 1989: 21, cited in Walsham 1995)

While sharing Eisenhardt's notion of generalization as theory-building, Yin does not advocate a procedure based on coding, and on the construction of fixed categories in which to inscribe data. Instead, he puts forward the procedure of analytic generalization, a way to move from data to theory while preserving, at the same time, the methodological rigor that theorization requires. Analytic generalization, as devised by Yin's work, consists of two passages:

> Analytic generalization may be defined as a two-step process. The first involves a conceptual claim whereby investigators show how their case study findings bear upon a particular theory, theoretical construct, or theoretical (not just actual) sequence of events. The second involves applying the same theory to implicate other, similar situations where analogous events also might occur. (Yin 2003: 68)

The two passages of analytic generalization, detailed by Yin, allow moving from a single case study to general theoretical propositions, which have a broader domain of applicability with respect to research on a single case. As Yin continues,

> All research takes place in the form of single studies. The significance of any given study depends not only on the study's findings but also on the broader implications of the findings - the extent to which the findings can be "generalized" to other studies and other situations. (Yin 2003: 69)

Reliance on single case studies, and its form as a two-step method amenable to build conceptual claims from narrative data, substantiate the argument that analytic generalization constitutes, for my research, the optimal method to move from case study data to theory. The method detailed above has been, therefore, applied to my research: starting from my narrative data, I have (1) informed the theory of technology from which I have started, and (2) extended that theory from the domain of food security in Kerala to that of e-governance, with specific reference to developing countries. Below, both steps are described in detail: first, I look at how my findings inform theory on the technology-induced self-reconstruction of images by the state, confirming it under the point of view of construction, and expanding it under that of perception. Second, I apply this theory out of the case study context, identifying Kerala-specific elements in the case study and separating them from those which have validity in a broader domain. Having done so, I explain the scope and limitations of analytic generalization in this work.

8.1.1. Analytic Generalization – Part 1: Conceptual Claim

The first step of analytic generalization, as observed above, is substantiated in the conceptual claim that findings from a case study, analysed and interpreted by the researcher, can make a substantial contribution to a particular theory. I sustain, with reference to the case study conducted here, that my findings inform the theory of technology utilized in this work: that is, as reviewed above, a theory on the use of e-governance by the state, to reshape its own images in the eyes of citizens. This paragraph illustrates the twofold way, comprising both confirmation and extension of theory, in which my findings act upon the assertions in point.

As observed above, there are primarily two ways in which my findings, derived from the case study conducted here, bear upon the theory of technology that I have utilized. The first question asked in this work, which examines the correspondence between theory and field data, is answered through the analysis conducted at Chapter 6: evidence is sought on whether, and if so how, the state is found to be reconstructing its image through the technologies of e-PDS. At Chapter 6, through analysis of respondents' narratives, this theory

is essentially confirmed: the study finds, indeed, two mechanisms that illustrate how e-PDS is used, by the Government of Kerala, for the purpose of reconstructing its own image. The first mechanism consists of the inclusion of e-PDS in Akshaya, the telecentre project that has transformed state-citizen encounters throughout the state, whereas the second one lies in inscribing a clear problem-solution nexus in the technology of e-PDS. Both mechanisms, extracted from respondents' narratives, seem to constitute evidence of a technology-based process of self-reconstruction by the state, which leads me to conclude that the theory of technology, in this respect, is confirmed by the data found on field.

Nevertheless, this theory, while precise in detailing the *construction* of the state through new technologies, is less specific with regard to the *perception* of images, as it occurs in the perspective of recipient citizens. Kuriyan and Ray, in detailing how e-governance reconstructs state images, do not give equally in-depth consideration to image perception: their work constitutes more a recount of field dynamics, than an attempt at theory-building in this respect. This observation is at the root of my second research question, answered through the narratives illustrated in Chapter 7: here I have studied, on the basis of Boulding's theory of cognition, the way in which state images, reconstructed through e-PDS, are perceived by recipient citizens.

It is here, in the answer to the question related to image perception, that the main theoretical contribution, derived from this thesis, is substantiated. Indeed, studying the "historiography of images" that emerged from citizens' narratives, I have found that users of e-PDS do not absorb reconstructed images of the state as they are presented: instead, they read, rediscuss, and ultimately re-elaborate them on the basis of the spaces of image formation that they encounter in their daily lives. These spaces are substantiated, in the first place, in their direct experience of the programme in point: but at the same time, the experience that matters is also indirect, mediated through the arguments constructed in the social public sphere and in the political circuits in which people are embedded. This implies that the state does not seem to have, on its citizens, the power of top-down influence that the logic of governmentality, as applied by Chatterjee to postcolonial developing countries, would suggest: citizens seem to think through their own spaces of image formation, rebuilding self-reconstructed images of the state through the inputs that they encounter on an ordinary basis.

Furthermore, to make sense of these spaces of image formation, I have proposed a method of classification, based on the origin of the image-forming messages appraised through the means of the historiography of images. This method is grounded, once again, on Boulding's

theory, as it classifies *messages* – the external inputs of image formation as per his theory of cognition – on the basis of the physical and social *loci* from which they are derived. This way of reading and ordering narratives has helped me structuring my data in a clear way, giving a readable response to my research question. This method has been, ultimately, the one that has enabled me to outline my conceptual contribution, structuring a theory on the relatively unexplored domain of citizens' perception of images of the state.

As a result, my work has informed an existing theory of technology in two ways: by confirming it, through the two mechanisms detailed at Chapter 6, and by expanding it, through the three *loci* of image formation explained at Chapter 7. Hence, my findings confirm existing theory with respect to image reconstruction, and extend its views in the relatively unexplored domain of citizens' perception. A first argument of this work, viewed now in its entirety, may then be that the state can, as theory suggests, reconstruct its image through new technologies: and still, its capability of doing so is limited by the spaces of image formation that citizens encounter in their daily lives. It seems therefore that the logic of governmentality, applied by Chatterjee to technologies of rule in postcolonial developing nations, is not found in the processes of image formation that citizens, embedded in the same context, experience in their relations with the state.

To sum up, this paragraph has substantiated the first step of analytic generalization, as related to my study: I have demonstrated that my findings influence, through both confirmation and expansion, a theory on the role of technology in ISDC, related to citizens' processes of image formation on the state. As a second step of the process, this theory needs to be applied outside the context of the case study, in order to establish the extent to which the claim sustained above can be generalized.

8.1.2. Analytic Generalization – Part 2: Moving beyond the Case Study

Having established, through examination of the conceptual claim above, that my findings bear upon the theory of technology utilized here, the second step of analytic generalization needs to be taken: this means, according to Yin's procedure, that the same theory needs to be applied outside the case study context, to imply situations where events of the same kind may occur. I have concluded, on the basis of the data collected here, that citizens do not take the images of the state, reconstructed by the means of governance technologies, at face value: instead, they re-elaborate these images in a proactive way, through the spaces of image formation that they encounter in their daily lives. The contribution implicit in this

conclusion, and in the process through which I have reached it, is twofold: firstly, as noted above, existing theory on image formation in ISDC is expanded, through exploration of the domain of image perception by recipient citizens. Secondly, from a methodological perspective, a conceptual structure is proposed, in order to frame and conduct this exploration: this is based on the *loci* of image formation, in which images of the state are conceived and developed. To complete the second step of analytic generalization, both contributions need to be observed outside the boundaries of the case study, to ascertain whether they can be extended beyond the domain in which they have been formulated.

The first contribution, derived from the "historiography of images" that I have conducted on citizens' narratives, lies in the argument that users' reception of images, reconstructed by the state through new technologies, is influenced by the image-forming inputs that they encounter, through normal routines, in their daily lives. This leads to an important conclusion, in terms of the state's capability of reshaping its image through e-governance: this capability, as it results from my case study, finds a limit in the spaces of image formation, which pervade people's existence and interactions. The question to be asked here is, can this conclusion be extended beyond the boundaries of my case study? Or, more precisely, which parts of this contribution are Kerala-specific, or pertain particularly to the e-PDS programme – and which parts of it, on the contrary, can be extended to a broader domain of application?

On the one hand, a context-specific component, which deeply permeates the field of my case study, is constituted by the strong social orientation and political awareness that prevail in Kerala. Referring to literature on the socio-political history of the state (Heller 1995; Isaac and Tharakan 1995; Franke and Chasin 2000) and on its development model (Kannan 2000; Parayil 2000; Véron 2001), one can argue that Kerala constitutes, as noted above, a *sui generis* context in both respects: a history of class mobilization and political action, deeply marking the developmental path of the state, resulted in a strong governmental orientation towards social development. The potential relation of these features with my findings is that, in a context of strong political mobilization, a proactive behaviour of citizens towards what is put forward by the state – including new, technology-based images of itself – can constitute a natural consequence of engagement: the fact that people, instead of being subjected to the top-down logic of governmentality, re-elaborate images of the state proactively, may therefore be seen as a consequence of their political activism. Indeed, the *sui generis* nature of Kerala in this domain is visible, and there is a strong possibility that, in

a field with these characteristics, image formation on the state can be more autonomous, and more strongly dictated by political mobilization, than elsewhere.

On the other hand, leaving the Keralite context on the one side, my thesis is grounded on a theory of image formation, applied to the study of state-citizen relations in a postcolonial developing nation. Given the conceptual basis of my study, to what extent may its results matter outside the boundaries of e-PDS in Kerala? In effect, a limit to generalization can be constituted by the politically mobilized behaviour of citizens, revealed especially by the third locus of image formation reviewed above. But this limit, pertaining to my field of operation, does not seem, *per se*, to affect the concept emerging here, i.e. a mechanism for which citizens observe the state through the lens of real-life inputs and encounters: Boulding's theory, through which this concept has been developed, is not indeed influenced by context variables, but works as a general theory of cognition. This theory, viewing human cognition as constructed on the basis of image-forming messages, does not include contextual factors in its development: therefore, while the factor of political mobilization is field-specific, the theory utilized to read my data is universal, and leads to a process of generalization that transcends the limits of contextual boundaries. Hence, the argument of my work may have been developed in a *sui generis* state, but the theory on which deduction has been grounded is not limited by the specificities of the field.

The second contribution, devised above, consists in the identification of three *loci* of image formation, on whose basis I have structured my reading of the *messages* implicit in citizens' narratives. To what extent is this Kerala-specific, rather than extendible to a broader domain? On the one hand, as noted above, the strong relevance of inputs that lie beyond direct experience – related to debates inscribed in political circuits, but also in the constructions of the state embedded in the social sphere – can be considered as a specificity of the field, pertaining to the particular development model of Kerala. Also, as noted in Chapter 7, my decision to draw a line between the "social public sphere" and "political circuits", identifying these as two diverse *loci* of image formation, is to be ascribed to the specific nature of the field: Kooiman (2003: 33-39) does not, in fact, make a separation between these domains, but merges them in what he calls the "social and political public sphere". My decision to operate a division between them was due, once again, to the need to maximize the understanding of the different origins of images in a domain, as that of Kerala, in which political circuits are so strongly delineated, to be the source of very specific image-forming messages on the state.

Even in this contribution there is, therefore, a field-specific element, pertaining, as in the previous case, to the *sui generis* nature of political mobilization in Kerala. But even here, the core of the contribution seems to be generalizable beyond this specificity: and the core lies, in this case, in the choice of codifying people's image-forming messages on the basis of the *loci* in which these were generated. This technique, devised in order to answer my question on image perception, has allowed me to read my data in an accurate and adequate way: accurate, as it has provided a coherent structure to the "historiography of images" rooted in citizens' narratives, and adequate, as it has allowed me to focus exactly on the origins of image perception, identifying the sources of the inputs ("messages" in Boulding's sense) that took part in the process. Indeed, the three *loci* found in this work are specific to the case study: but the method based on identifying them, investigating spaces of image formation according to Boulding's theory, has worked here as a suitable technique to conduct narrative analysis, with respect to questions revolving around the dynamics underlying image formation. I conclude, therefore, that this method may be utilized beyond the boundaries of this specific case, and may indeed constitute a valuable addition to existing techniques in the field of narrative analysis.

The second step of analytic generalization, substantiated in this paragraph, can therefore be summarized through its two contributions, each of which has been applied outside the boundaries of the case study. As far as my theoretical contribution, on citizens' perception of self-reconstructed images of the state, is concerned, generalization is grounded on Boulding's theory of cognition, which has informed my research design and data analysis and does not resent, in itself, from field-specific factors. Therefore, this work aims to contribute to theory on e-governance at large, in terms of how citizens form images of the state: particular implications, reviewed below, are drawn for developing country contexts, in which e-governance can be instrumental in improving institutional behaviour.

8.1.3. Scope and Limits of Generalization

Before summarizing the theoretical propositions derived here, I need to define the scope of generalization and its potential and actual limits, in the form in which it has been conducted from my case study. As noted above, analytic generalization aims at moving from findings to broader propositions, in a process that mirrors the transition from empirics to theory detailed by Lee and Baskerville (2003): the domain of validity, in which theorization is conducted, is a consequence of research design, and of the methods chosen to analyse and

interpret my data. Here I summarize, therefore, the potential and actual limits of generalization, as they apply to the research design selected for this study.

The first potential limit lies in the fact that generalization, as devised in this work, is based on a single case study, that of the e-PDS programme in Kerala. As noted at the beginning of this chapter, critiques to the case study method as a generator of theory are based on a specific interpretation of the notion of "generalization", pertaining to the field of statistics and representative sampling. In this work I have used, though, a different notion of generalization, which consists in moving from empirical findings to theoretical propositions: having chosen Yin's analytic generalization as a basis for theory-building, I have followed the two steps that this process involves, showing how my findings inform existing theory and extending this formulation beyond the context of my case study. I can conclude, therefore, that the first potential limit, related to theorization from a single case study, has been acknowledged and dealt with, in this research, by adoption and usage of Yin's notion of analytic generalization.

Another potential limit, in a research design like my own, pertains to the state of Kerala, and to the set of historical and developmental features that may configure it, as reviewed above, as an "extreme" case in Yin's sense of the term (2003: 81). A critique that recurs with high frequency, when attempting to generalize from a case with "extreme" features, is that replicability of findings outside the case, as predicated by the second step of analytic generalization, may be limited: therefore, even adopting a non-statistic notion of generalization, the *sui generis* nature of the context or phenomenon may reduce the validity of theorization from it. This problem, as noted above, needs to be tackled by an explicit examination of what, in the case in point, may pertain specifically to the context: field-specific factors, that constitute "extreme" elements in this respect, need to be distinguished from those that constitute, when theorizing, the basis of generalization. As reviewed above, in my case, the socio-political factors that make Kerala a *sui generis* case do not overlap with Boulding's concepts, on whose basis existing theory of technology is extended: Boulding's theory provides, as reviewed above, a general view of image formation processes, which does not resent from the influence of contextual factors. This is why Kerala's nature as an "extreme" case, in this particular instance, does not seem, *per se*, to influence the validity of the process of generalization conducted here.

These reflections constitute the reason why, with respect to the research design adopted here, it can be argued that the use of a single case study, which may also be defined "extreme"

under certain characteristics, entails potential, but not actual limits to analytic generalization. On a final note, a different kind of limitation may be implicit in the conceptual framework utilized here: Corbridge et al.'s theory, looking at the production of state-citizen encounters through top-down technologies of rule, is a theory constructed *ad hoc* for postcolonial developing countries. Yet, the theory that forms the basis of generalization – in terms of the processes of image formation at the core of the thesis – is Boulding's theory on human cognition, whose domain of application is universal: it is on the basis of this theory that I have conceived the idea of *loci* of image formation, through which citizens develop their perception of the state. On the one hand, the specific *loci* found in this research may be specific to the context of Kerala: on the other hand, what can be generalized is the view of image formation processes as structured through spaces of a physical and social nature.

Hence, the limitations implicit in drawing theory from a single case study, and from its "extreme" nature with respect to some factors, have been acknowledged by the researcher, and counteracted by the notion and procedures of analytic generalization adopted here. The implications of my research for theory, methodology, and practice on e-governance in developing nations will be stated in the final chapter.

8.2. E-Governance for Development: A Twofold Enabling Mechanism

Before concluding, it needs to be noted that the extension of an existing theory of technology, which lies at the core of the thesis, is integral to the domain of ISDC. Indeed, that is the basis for a contribution made to the field of e-governance for development at large, which is detailed below in its main tenets and implications. This contribution places ICTs, and e-governance specifically, in an enabling role with respect to development processes, and leverages on the discussion around the meaning of development that was undertaken in Chapter 2.

As I initially reviewed the main conceptual approaches to the meaning of development, I have stated my adherence to the capabilities approach, in continuity with my vision of development as a multidimensional process: this implies that, in the vision of development sustained here, a polymorphous set of capabilities needs to be achieved for people to fully develop their own life plans. In particular, I subscribe to the stream of literature that applies the capabilities approach to ISDC (Madon 2004; Zheng and Walsham 2008; Lunat 2008; Zheng 2009; Kleine 2010 and 2013), seeing ICT as a potential means for people's capabilities to be improved: development results, in this perspective, from the more or less direct action of technology on the enhancement of human capabilities. On the basis of this

perspective, I have conceptualized e-governance in Kerala as a means for maximizing the capability of recipients to access subsidized foodgrains through the PDS.

The contribution resulting from my research lies in identifying the means, or at least one of the existing channels, through which a capability-oriented mode of development can be enabled through ICTs. The means in point coincides with institutional improvement: on the one hand, as of Sen (2001), institutions are key to liberating human capabilities, as they are functional for citizens to be supported in the development of their own life plans. On the other hand, the role of technology is antecedent to this mechanism: technology, configured through e-governance plans, is designed in order to optimize institutional functioning. What results from this reflection is a particular view of the role of technology within development: ICT, if properly devised, has the power of enabling institutional improvement, which is functional for people's capabilities to be liberated. My contribution, to the field of e-governance for development at large, is therefore substantiated in the twofold enabling mechanism illustrated in the figure below.

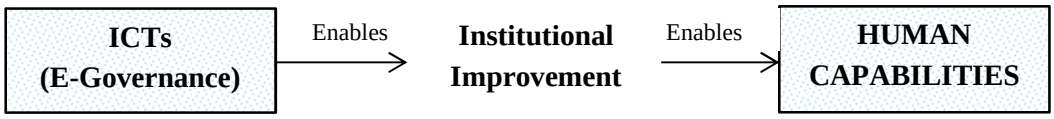

Fig. 21: E-Governance for Development – A Twofold Enabling Mechanism

The twofold mechanism illustrated here can be seen in action with reference to the case study examined in the thesis. Leaving technology on the one side, the second part of the linkage can be identified with respect to the PDS *per se*: state-level institutions, in this programme, have the purpose of enabling one core capability for recipients, that of accessing subsidized food as per the programme's provisions. This, in the context determined by targetization of the PDS, does not only mean optimizing the supply chain, but also removing the obstacles to redistribution, consisting primarily in the systematic diversion of subsidized goods to the market. Therefore, the main task of governmental institutions is that of enabling people's capability to access subsidized food items under the PDS, which means activating well-functioning monitoring mechanisms against diversion.

The question then becomes, how is ICT exactly involved in this process? As argued above, it intervenes on the first part of the linkage: in other words, e-governance needs to improve institutional functioning, for this to maximize people's capabilities. In effect, e-PDS has been designed for a specific purpose: that is, improving the internal functioning of the PDS

programme, through the creation of a monitoring mechanism which allows to control diversion. On the one hand, as noted in chapter 7, citizens' voices clarify the reasons why this mechanism is still suboptimal: indeed, this monitoring device only focuses on ration dealers, and neglects the whole supply chain through which they receive PDS items (as well as the root cause of diversion, found in targetization). Yet, leaving implementation on the one side, system design in the e-PDS is oriented exactly to institutional improvement: indeed, ICT is utilized exactly to improve those mechanisms that result into people's capabilities to access subsidized food. This is how the twofold enabling mechanism, identified above, takes shape in the case in point.

As noted above, this idea is inscribed in an existing stream of literature, which approaches the study of ICTs for development through the capabilities approach. The idea that ICTs are instrumental in countering capability deprivation (Zheng and Walsham 2008), and that the state in India plays a key role in this process (Madon 2009), is already well-established in the literature: as I devise the present contribution, I am building on these notions, explaining the mechanism that links e-governance to human capabilities through institutions. The idea of a twofold enabling mechanism, exemplified by the case studied here, should be seen as a theoretical paradigm to examine e-governance dynamics in developing nations: furthermore, this paradigm has relevant normative consequences, as it invites governmental institutions to design e-governance interventions with a view of maximizing the human capabilities of recipients.

The last point to be made explicit, in terms of the enabling mechanism that the thesis devises, pertains to the link between this mechanism and the theory of technology sustained throughout the research. This theory, as per the above, is substantiated in the argument that citizens "see the state" through the *loci* of image formation that they encounter in their daily lives, therefore technological mediation counts as far as it permeates these *loci* in a functional way. This argument is indeed complementary to the observation related to the twofold enabling mechanism stated above.

The root cause of this complementarity lies in one property that characterizes *loci* of image formation: these can and should be, indeed, themselves conceptualized in terms of human capabilities. In particular, in contexts of capability deprivation – of which the food-insecure Kerala constitutes a paradigmatic example – this is perhaps the main perspective that citizens adopt: in effect, as the narratives collected in this research reveal, capability deprivation affected the vision of the PDS well before the digitalization programme was

undertaken. Before the policy changes in 1997, food insecurity constituted a severe burden for the state, but this was mitigated by a well-functioning PDS: this is conceptualized, in recipients' words, by the idea that an efficient PDS allowed them to access subsidized foodgrains on a regular basis. Reading this in Sen's perspective, it then emerges that the PDS was *per se* an enabler of people's capability to properly benefit from the food security programme.

After 1997, though, the system started suffering from the consequences of targetization, and that was when the e-PDS was devised as a solution to the new problems. Faced with the widespread, newly emerged unviability of ration shops, and with the consequent failure of the system to meet citizens' needs, institutions resorted to digitalization to seek improvements: in other words, the first part of our twofold enabling mechanism came into action. In fact, as noted throughout my narrative analysis, citizens tend to conceptualize the influences of technology exactly through its effect on their perception of the system: their recounts detail the effect of digitalization on diversion to the market, on perceived corruption of intermediaries, and on the actual amounts and quality of commodities that they can access through the ration shops. Ultimately, Sen's perspective is implicit in the narratives collected here: citizens conceptualize their *loci* of image formation exactly in terms of their *capabilities* to properly access and use the food security system.

This observation acts as a close to the theoretical circle running between the theory of technology sustained here, and the broader vision of e-governance for development to which it belongs. Its normative consequences, along with practical implications of the thesis as a whole, will be explored in Chapter 9.

8.3. Summary and Conclusion

In this chapter, I detailed the process that I followed in order to generalize from my case study findings to theoretical propositions on technology-based image formation. As illustrated here, this process has been organized through the two steps of analytic generalization as described in Yin (2003): first, I have demonstrated that my findings bear upon existing theory, by both confirming and expanding an ISDC vision on the role of technology in image formation. Second, I have extended my findings outside this domain, identifying, in my results, the elements that are Kerala-specific, and those that can be extended to a broader domain of generalization. Having done so, I have illustrated the scope and limitations of the process carried out here, in terms of moving from case study data to

theory, and detailed the contribution of my thesis to the field of e-governance for development at large. As I move, in the last chapter, to the conclusion of my thesis, this contribution is also viewed in the practical context provided by e-governance in developing nations.

9. Conclusion

This chapter presents the conclusion to the thesis, and structures its final remarks by answering the three main questions on a PhD project, namely: what the research project has consisted of, what are the key implications of the research, and how does the author aim to build on the insights developed through the PhD. The first question is answered through a summary of the thesis, which provides a synopsis of the content of each chapter and, ultimately, of the key contribution made by the work. The second question is dealt with by outlining the implications of my research, in the domains of theory, methodology and practice. The final question, on pointers for further research, is addressed by conceptualizing the directions in which I plan to continue the work presented here: my discussion of this, as developed in this chapter, is related to some of the main lessons that I have learned during the four years of my PhD.

9.1. Summary of the Thesis

In the introductory chapter, I have focused on the thematic object of my work, and on the motivations that led me to undertake this study. My problem area revolves around the role of e-governance in influencing image formation processes, as experienced by citizens in developing nations. In the present historical phase, characterized by a globally increasing use of new technologies in governance, profound changes may affect not only the nature of public services, but also the way in which the state itself is viewed and conceptualized by the people: in this perspective, studying the role of ICTs in image formation means studying the key device through which the behavior of citizens, which shapes relations between them and the state, is informed. As part of these introductory remarks, I have anticipated my intention to frame the research through the study of an Indian anti-poverty programme, looking at the ways in which its computerization may influence citizens' processes of image formation on the state.

In Chapter 2 I have described my research domain, and positioned my own area of interest within it. First, I have provided an overview of ISDC, as the field to which my contribution is directed, with particular reference to the sub-field constituted by e-governance in developing nations. Then, I have observed the process through which the Sociology of Governance has introduced, in the sub-field under discussion, the theme of the formation of governing images, seen as constitutive of the *interactions* that constitute the analytical core of this approach. The introduction of image formation in ISDC, as illustrated here, has

resulted in the generation of a new stream of literature, to which my work aims to contribute: pioneered by the work of Madon (2005) on the role of telecentres in governance, this constitutes a novel theoretical space, which enriches knowledge of how ICTs may play a role in citizens' ways of conceptualizing the state. This theoretical space, with its questions on the dynamics of image formation in governance, constitutes the area of interest in which my work is inscribed.

This domain, conceptualized as a relatively broad one in the early stages of this work, has been converted into specific research questions at Chapter 3, through adoption of a specific theoretical perspective. The conceptual framework, utilized to structure the study, consists of the combination of two theories: the theory of action, chosen to explain processes of image formation on the state, is the theory on "seeing the state" through direct encounters with it, developed by Corbridge et al. (2005). The theory of technology, selected to explain the role of technology in these processes, is the one by Kuriyan and Ray (2009), which views e-governance as a way for the state to reconstruct its image in the eyes of citizens. The broader problem area, centered on the role of e-governance in image formation, has been converted, through theory of technology, in two questions, mirroring the two symmetric domains of image *construction* and *perception*: do new technologies provide the state, in developing nations, with a way to recast its image, and if so, how does this happen? And, how do citizens receive new, technology-induced images of the state? While the theory of technology has been utilized to structure the two questions, the theory of action has played another fundamental role: namely, it has framed the study, by identifying anti-poverty technologies of rule as the key space of image formation on the state in the postcolonial developing world.

In Chapter 4, I have detailed the methodology through which I have conducted my research. To do so, I have relied on Crotty's (1998) scheme on the foundations of social research: a social constructionist epistemology, reflected by the choice of an inherently subjective unit as the image, has been matched by my choice of answering the research questions through an interpretive case study. In terms of the methodology utilized, the chapter has highlighted two lines of continuity: the first one connects the theory of action to the choice of my case study, which led me to study a food security programme as an image-forming technology of rule. The second one connects the research questions to my method for data collection and analysis: to questions on the image of the state, constructed and perceived in the mind of citizens, I answer with a method aimed exactly at extracting the components of image formation processes, as they feature in people's narratives. This method, based on

Boulding's theory of cognition, is centered on what I have termed a "historiography of images": based on the narratives of respondents, I have identified the *messages* (in Boulding's sense as external inputs) contained in them, and observed the ways in which these are combined in the formation of images of the state. An additional form of learning has focused on *value systems* in image formation, appraised through long-term work in close interaction with the studied communities.

In Chapter 5, I have described the case studied in this work: given the combination of two objects, i.e. a food security programme and a technological artefact computerizing it, I have articulated my recount in three different levels, i.e. the food security programme (the Public Distribution System, or PDS) in India as a whole, its implementation in the state of Kerala, and the state-level software through which it has been digitalized. The technological object of my study is the computerized PDS in Kerala, known as electronic PDS or e-PDS: computerization, from which the programme has resulted, has been developed through three layers, the first one of which consists in the digitalization of ration card records for all PDS users in the state. The second layer consists of TETRAPDS, a software implemented in the administrative units of PDS, known as Taluk Supply Offices (TSOs), to automatize the four main functions of the programme: ration card management, intra-district allocation of commodities, monitoring of the supply chain, and web-based communication with users. The third layer of computerization, currently moving towards implementation through a pilot project in Trivandrum, consists in the integration of TETRAPDS module 1 with UID/Aadhar, the system aimed at guaranteeing all Indian citizens unique identification through biometric details. The sum of these three phases, resulting in the distributed artefact known as e-PDS, is the core of my study: through it, I have observed how technology influences the construction of state images, and their perception in the eyes of citizens.

Having described my case study, I have presented the analysis of my data: chapter 6 answers my first research question, on the role of e-PDS in the process through which the state attempts to reconstruct its own image. Based on the messages retrieved in respondents' narratives, I have found two mechanisms through which this process unfolds: the first one lies in the inclusion of the front-end modules of TETRAPDS, namely the ration card application and WebPDS, in the system of services at Akshaya, the telecentre project that has changed Kerala's main space of encounter between the state and citizens. The second mechanism lies in the problem-solution nexus that the programme, as it is constructed, embeds in its technology: by depicting ration dealers as the main agents of corruption, and biometric identification as the solution to the problem, e-PDS is portrayed as an optimal

problem-solving technology, which constructs the state as an efficient and accountable provider. These two mechanisms, extracted from narratives, lead me to answer positively to my question: the state seems, indeed, to use e-PDS beyond its technical functions, in order to recast its image in the eyes of citizens.

In Chapter 7 I have presented the continuation to my analysis, consisting in the response to my second research question, on the perception of the state's self-reconstructed images from citizens using the PDS. On this, in contrast to the domain of image construction, Kuriyan and Ray's vision does not offer a structured process of theorization: therefore, in answering this question, I have used my own concept of a "historiography of images", as a tool to frame and order my data analysis. To do so, I have used the maps of image formation processes, through which I have organized my respondents' recounts: my technique, based on Boulding's vision of image formation processes, has led me to understand the messages contained in interviews, which concur to the formation of images of the state. The numerous forms of input, collected in this space of analysis, have been classified in three areas: these belong to the direct experience of the programme, to its constructions in the social public sphere, and to its productions in the political circuits in which people participate. What emerged from this is that citizens, in appraising images of the state, do not take them at face value, but re-elaborate them through the spaces of image formation that they encounter in their daily lives: the real capability of the state, in reconstructing its own image, seems therefore to find a limit in the inputs that people experience on an ordinary basis.

In Chapter 8, I have described the process at the root of the theoretical contribution presented here, which consisted in moving from my case study findings to broader theoretical propositions. To do so, I have followed the process of analytic generalization as described by Yin (2003): this is substantiated in two phases, i.e. a conceptual claim that findings bear upon a particular theory, and an extension of this claim to a domain that exists beyond the case study. In terms of the conceptual claim, I have shown that my findings bear upon existing theory in two ways: in terms of image construction, I have confirmed the main argument of Kuriyan and Ray's theory of technology, as evidence of self-reconstructing behaviour of the state through e-PDS is found in the form of two different mechanisms. As far as image perception, which Kuriyan and Ray do not conceptualize explicitly, is concerned, existing theory is instead expanded: through my view of a "historiography of images", I have found a way through which citizens structure their perception of these images, through the inputs that they encounter in their daily lives. These results, which imply confirmation and simultaneously extension of existing theory, are then transferred

outside the case study, through the theorization of a twofold enabling mechanism linking e-governance to human capabilities through the means of institutional improvement.

The outcome of this process of theory-building, or, more specifically, of expansion of theory through the findings of my case study, has been illustrated as a conclusion to Chapter 8, and constitutes, in itself, the main contribution of my thesis. My PhD can be seen, overall, as a project in which a theory of technology, developed in the field of ISDC, is confirmed in its main argument on image construction, and extended to the previously unexplored domain of perception of the state's self-reconstructed images. As noted below, implications of this work extend to the domains of theory, methodology and practice: the heart of the thesis, as a PhD project in information systems, lies in the extension of an existing theory of technology, which illuminates relevant dynamics in e-governance for development.

9.2. Implications

My results, and the conceptual propositions developed from them, have implications that pertain to the domains of theory, methodology, and practice. Beyond contributions to existing theory, a new technique for data collection and analysis is proposed, which introduces the "historiography of images" in the domain of narrative analysis. Besides, practical considerations are made with respect to the implementation of e-PDS, both in Kerala and in India as a whole, and more broadly to the field of e-governance in developing countries. Implications for each domain are outlined below.

9.2.1. Theoretical Implications

This research has been grounded on a twofold conceptual framework, resulting from the combination of a theory of action, focused on explaining citizens' processes of image formation on the state, and a theory of technology, which articulates, with reference to developing nations, the role of e-governance in the processes under discussion. Conceptual implications emerge with reference to both domains.

Theory of action: my work has been centred on image formation through the PDS, conceptualized, as per Corbridge et al. (2005), as a technology of rule that plays a major role in shaping citizens' images of the state. The findings from my case study reveal that citizens' processes of image formation are based on inputs that they encounter in their daily lives: these are situated in spaces on which political control, which governing powers may

exert, is limited. Images of the state, as found in my research, are constructed primarily through ordinary practices, in a way that mirrors Corbridge et al.'s notion of an "anthropology of the everyday state": their roots are found in citizens' encounters with service providers, and with the institutions to which they belong. Encounters may be structured through direct experience, or mediated by the depictions of providers embedded in the spheres of society and politics: these spaces, lying largely outside governmental control, limit the capacity of the state to reconstruct its own images. Viewed from this perspective, Chatterjee's application of the logic of governmentality to postcolonial developing nations, which postulated a top-down, controlling nature of anti-poverty technologies of rule, seems to enjoy limited power in determining the ways in which people form their images of the state.

This conclusion is to be harmonized with Corbridge et al.'s (2005) perspective on Chatterjee's theory. On the one hand, as the authors observe *ex post*, Chatterjee's work on governmentality in contemporary India constitutes the stream of theory that looms largest in "Seeing the State" (Corbridge et al. 2007: 612). On the other hand, as compared to this vision, the same book argues for a higher capacity of Indian governance structures to determine recipients' participation: recent anti-poverty measures, developed in the context of decentralization implied and enacted by the Panchayati Raj reforms (see Chapter 3), have determined "more direct sightlines of the state" (2007: 613), which systematically increase local governments' capability of dialogical interaction with programme beneficiaries. Corbridge et al., therefore, build on Chatterjee by re-elaborating his view: in response to the top-down logic of governmentality, which lies at the core of the "politics of the governed", they propose an alternative, more participatory conception of Indian governance structures.

In arguing that citizens' processes of image formation on the state are determined, beyond purposeful reconstructions, by spaces encountered in their daily lives, my contribution can be read in the perspective of this debate on governance. The standpoint of Corbridge et al. is indeed optimistic, albeit cautiously so, on the capability of recent reforms to determine citizens' involvement in anti-poverty strategies: the top-down nature of development measures, which emerges from Chatterjee's work, is therefore countered by the participatory moves that the new anti-poverty strategies involve. What my research has found, in the field of citizens' image formation on the state, is another, complementary limit to this logic: indeed, citizens seem to think of the state in a more independent way, dominated by direct and mediated encounters with it, rather than by pre-existing structures of government. My argument, for which the logic of governmentality does not extend to citizens' processes of

image formation, acts therefore as a complement to Corbridge et al.'s view, on the extent to which this logic is really surfacing in governance structures in contemporary India.

Theory of technology: the extension of the theory utilized here, on the role of technology in developing country citizens' processes of image formation on the state, constitutes the heart of the thesis. The theory on which my conceptual framework is based views e-governance as a tool for the state to reshape its image, reconstructing itself as an efficient, accountable service provider. My contribution to this, as detailed above, is twofold: first, theory on image construction is confirmed, as the state is viewed in action – through two mechanisms of reconstruction – as it rebuilds itself through computerization of an anti-poverty programme. Second, theory is expanded with respect to image perception, as I openly theorize on the way in which these images are received by citizens, arguing that perception is grounded on inputs that people encounter in their daily lives. An additional contribution, in the analysis of these inputs, proposes to identify them on the basis of the physical and social *loci* in which they find their origin.

Implications of these findings, extended to broader theoretical propositions through analytic generalization, are related in the first place to ISDC, the field in which the research is inscribed. In this domain, as illustrated in Chapter 8, my work entails the confirmation and expansion of theory by Kuriyan and Ray (2009), which conceptualizes the technology-based construction of images, but does not openly structure a view on their perception in the eyes of citizens. As a result, the stream of theory started by Madon (2005) on image formation in ISDC is enriched by additional insights, pertaining to the study of governing interactions that the Sociology of Governance introduces in our field. This constitutes, as viewed above, the essence of my theoretical contribution: an existing theory of technology, designed and applied in the field of ISDC, is confirmed with respect to its main argument, and expanded through theorization of the domain, so far not yet explored in theoretical terms, of image perception through technologies of e-governance.

Albeit my research has been purposefully articulated within the domain of ISDC, my work can be read, at the same time, from a broader information systems perspective, which has informed the gnoseological bases of my theory of technology. Reading my thesis from this angle leads to additional implications, pertaining, beyond e-governance in developing nations, to theories in the field of IS at large. First, the vision of technology as a "carrier of policies" – articulated by Cordella and Iannacci (2010), in terms of how ICTs are used by governments to advance their own political targets – features strongly throughout my

empirical study: the government of Kerala is found to constitute, indeed, a paradigmatic case of this use of technology. This emerges in the very construction of the state's e-governance infrastructure, based on telecentres in which the values of accountability are enhanced, through the strategic construction of trust relations with users: technology is utilized, in this respect, to turn the objective of empowerment through technology, conceived in abstract terms and prescriptions, into reality. Existing IS theory is therefore reinforced by my case study, as the use of e-governance in Kerala shows how technology, due to how it is designed and implemented, can act as a physical carrier of the politics of empowerment.

Second, the contribution developed here entails expression of a view in a longstanding debate in information systems, reviewed, in Chapter 3, in terms of a dialectics between *situatedness* of technology and *regulation* of human behavioural dynamics through it. As detailed above, Kuriyan and Ray's view of technology is located at the interface between these two visions: the former, arguing that technology is by nature malleable and interpretable by its users, is countered by the latter, based on the implicit power of ICTs in determining user behaviour. My contribution, read in the perspective of this debate, seems to partially support the standpoint of regulation: indeed, in the absence of technology's influence on human action, ICT-based mechanisms of image construction, adopted by the state, would have no consequence on citizens' behaviour. And still, there are limits to this perspective: these coincide, as reviewed above, with the spaces of image formation encountered in people's daily lives, on which the action of the state, even when mediated by technology, is found to be constrained. Hence, the possibility of "governing through technology" is supported, in my research, only to an extent: in trying to do so, governors encounter a limit, based on the *loci* of image formation which lie beyond their control.

An important note here is that these observations, while based on a piece of work in ISDC, transcend the domain delimited by this field of research, and feed into considerations that belong to the perspective of the IS domain as a whole. The presence of these considerations, and their capability, implicit in their very nature, to bridge the gap between ICTs for development and general IS theory, confirms the argument of Avgerou (2008), for which visions developed in ISDC have significant potential to contribute to the domain of information systems as a whole. Indeed, only reading my work through an IS perspective has led to conceptual emergence of these implications: this seems to prove, in the microcosm pertaining to my research, the presence of a process of cross-fertilization, which leads general IS and ISDC to mutually learn and take insights from each other. As argued below,

further exploration of these dynamics of cross-fertilization constitutes one of the main fields in which my future research will be directed.

9.2.2. Methodological Implications

In this work, I have asked questions related to the construction and perception of images of the state, and studied these processes on the basis of respondents' narratives. To do so, I have developed a particular technique to carry out thematic (content-based) narrative analysis, aimed at "writing the history" of the image formation processes contained in the recounts of people. This technique, as detailed in Chapter 4, has been articulated on three phases: first, an *ad hoc* construction of the interviews' topic guide, aimed at grasping the elements that concurred to shaping state images in particular ways. Second, a study of respondents' narratives on the basis of the *messages* (intended, as of Boulding's theory, as external inputs to images) contained in them, which allowed me to re-write interviews in the form of maps of image formation processes, a procedure which I have termed a "historiography of images". Third, a final synopsis of the processes identified, in response to my two questions: this synopsis, illustrated through the visual means of macro-maps, has brought to light two mechanisms of ICT-based image construction, and a plethora of inputs of image perception, structured in three different *loci* of formation.

This method, for how it has been conceived and developed, is inscribed in the stream of narrative analysis started by Mishler (1986) with the notion of co-construction of interviews, as a process of active collaboration between interviewer and respondent. Which implications does this new technique, explicitly aimed at using narratives to grasp the dynamics of image formation, have for the field? On the one hand, the use of respondents' recounts to look at images does not imply, *per se*, a high degree of originality: processes of image formation occur, in fact, in the domain of the individuals' cognitive sphere, and narratives constitute the only way to make it explicit and researchable. Still, the novelty implicit in my work lies in the usage of a specific theory, i.e. Boulding's work on human cognition, to structure both the collection and the analysis of interview data: in my technique, the construction of interviews is aimed at grasping image-forming messages, while the analysis is made out of maps that trace processes connecting messages to the resulting images. Value systems, an element of Boulding's theory whose tacit nature is hardly translatable in narratives, have been appraised etnographically, through long-term work in close contact with respondents' communities. This technique has resulted in a method that articulates, through the building blocks of an existing theory, the study of image construction and perception.

The method centred on the "historiography of images" constitutes, therefore, my contribution to the methodological domain of narrative analysis. Indeed, studying image formation on the basis of narratives does not automatically constitute an innovation: what my work contributes is, instead, a structured way to undertake this type of study, based on a theory that specifies exactly the ingredients that concur to the formation of images. Boulding's work, which I have used to create this method, has fitted exactly this purpose: by using an existing theory of cognition, I have created a technique to answer in a structured way to questions of image construction and perception, organizing these processes in the elements of narrative that constitute their building blocks. It is, therefore, my view that my contribution, embodied by this novel technique, finds its relevance in its capability of providing a systematic, theory-based method to study image formation processes on the basis of people's narratives.

9.2.3. Practical Implications

My research, focused on the computerization of an Indian food security programme, looks at the role of e-governance in citizens' processes of image formation on the state. Practical implications from this work arise at three different levels: first, there are lessons which arise with reference to the specific case studied, constituted by the e-PDS programme in Kerala. Second, considerations emerge at the all-India level, since the PDS is implemented in the nation as a whole – and several states, at the present time, are undertaking computerization of its logistics. Third, conclusive lessons from the study are applied, in broader terms, to the domain of e-governance in developing countries.

PDS in Kerala. As found in my study, computerization of the PDS in Kerala is based on four modules, each of which revolves around one of the key functions of the programme: ration card management, allocation of commodities, monitoring of the supply chain, and interaction with users through WebPDS. My research, investigating the programme in the field, has found that digitalization is highly more developed on module 1, based on the ration card management system (RCMS), than on the back-end modules of allocation and monitoring: these parts of the TETRAPDS software, in fact, are still in an early stage of development, and lacking from provision in several TSOs. The analysis of narratives at the government level has led to a potential explanation for this: module 1 is, indeed, the one at the centre of the problem-solution nexus embedded in the e-PDS technology, through which the state is attempting to reconstruct its own image. This nexus, presenting ration dealers'

misbehaviour as the main problem of the PDS, puts forward RCMS, and its integration with Aadhar, as the optimal technology to detect corruption.

On the one hand, in the logic of image construction that I have observed here, the strategy focused on this problem-solution nexus makes full sense, as a well-functioning front-end module can reasonably be able to increase the perception of state's efficiency in the eyes of citizens. Yet, on the other hand, full focus of software development on a single module may lead to a significant drawback: namely, that of neglecting implementation of other modules, especially the one focusing more directly on monitoring the supply chain to detect corruption. As shown, in particular, by citizens' narratives in this study, the "rice mafia" and its consequences are still very real in Kerala: and this problem, substantiated in endemic diversion of PDS commodities to the market, is hardly solved by full focus on the biometric identification of buyers. Data on e-PDS programmes conducted outside Kerala, with particular reference to Chandigarh – whose experience of computerized PDS is known, as noted above, as one of the most successful in India, support the conclusion that supply chain monitoring needs to be at the core of PDS digitalization.

With specific regards to Kerala my research suggests, therefore, a change in the current computerization strategy, which should move from overreliance on RCMS – prospectively integrated, as noted above, with the Aadhar system – to a more holistic approach, involving equal development of the back-end modules of TETRAPDS. On the one hand, RCMS and Aadhar do not seem to constitute, *per se*, a wrong direction for e-governance: notwithstanding the issues (reviewed below) raised by citizens towards this, the argument implicit in the problem-solution nexus seems to be solid, and proposes a concrete strategy to prevent misbehaviour of ration dealers. Yet, the situation found on field is one in which this is accompanied by relative neglect of other modules, especially the one that, through inspections and monitoring, is more direct in facing the problem of the "rice mafia". Should this situation continue, back-end modules developed as anti-corruption tools will continue to suffer from significant underdevelopment: this is why I advocate, with respect to Kerala, more explicit focus on the monitoring aspect of PDS computerization.

PDS in India. As observed in Chapter 5, the PDS programme is an all-India one: its guidelines and regulations are established by the central government, whereas its implementation is managed at the state level. The study conducted here, viewed in a nation-wide perspective, has implications for other states, especially as the National E-Governance

Plan (2012: 5) openly recommends computerization of PDS logistics for all local governments. Lessons at the all-India level can be grouped into three themes.

The first consideration is an extension, to the other states embarking in PDS computerization, of the lesson just derived with respect to Kerala. What I have argued above is that the state, in performing its process of image reconstruction, is highly prioritizing one of its front-end modules: this makes sense from the perspective of image construction, but it results, problematically, in neglect of back-end modules, whose capability of detecting corruption could potentially be significant. The lesson for other states, here, lies in the importance of carrying out balanced implementation of different modules: it is, indeed, in the back-end part of the system, with specific regards to supply chain monitoring, that technologies aimed specifically at combating the "rice mafia" are located.

The second implication lies in a lesson learned from citizens' narratives, which, as noted in Chapter 7, features very strongly across respondents' recounts. Interactions with PDS users have taught me that the "rice mafia", revolving around diversion of PDS goods to the market and resulting in discontinuous supplies at the ration shops, is perceived very strongly in the collective experience of the system, and still constitutes, to the present day, a reality that strongly calls for action. Unlike similar initiatives, the PDS does not seem to suffer from generic problems, to be tackled through a standard approach to computerization: users' narratives, confirmed by the literature reviewed at Chapter 5, strongly point towards the existence of a specific problem of diversion, which results in putting in peril the food security of many households. This implies, in my reading of the data, that state-level computerization of PDS should be conducted in a highly purposeful way: e-governance programmes, rather than unfolding through the four, general functions of Heeks (2001, reviewed in Chapter 2), should be explicitly aimed at tackling the "rice mafia", and consequently developed to address this objective.

The third lesson, for Indian states engaging into computerization of PDS, is related to integration of Aadhar in the new system. On the one hand, campaigns for Aadhar enrolment are being conducted throughout the nation, and the benefits of integration of this system with PDS emerge strongly from the problem-solution nexus reviewed above. Nevertheless, citizens' narratives present, in many instances, a set of serious concerns on this: these are motivated, in the first place, by the potential exclusionary effects that a move to UID-enabled cash transfers, in a state with largely unbanked communities, could determine. Secondly, citizens point to the fact that corruption is endemic across the PDS supply chain,

whereas Aadhar's technology, focusing on the identity of buyers, only enables detection of transaction at a single level, the one of ration shops. Finally, a more radical critique observes that Aadhar may, in fact, dismantle the PDS as it is currently organized: ration shops, delinked from the pool of households registered with each one, may become *de facto* unnecessary, and be substituted by a system of licensed grocery stores. Information on Aadhar, contained in these recounts, may be sometimes incomplete or politically biased: still, the picture emerging from people's narratives entails serious doubts, which should be taken into consideration by states attempting integration of Aadhar into the PDS.

The National Food Security Act, passed by the central government in August 2013, has significantly influenced Indian food policy, maximizing entitlements to the BPL and further reinforcing targetization. This constitutes a deeply relevant policy change at the national level: yet, the centrality of PDS, as the nation's main and widest food security programme, remains unchanged. In a nation where poverty and hunger still rank among the highest in the world, and where the food security system is significantly hindered by criminal diversion of commodities to the market, the necessity to use technology to solve these problems is real, and clearly stated in the prescriptions of the National E-Governance Plan. In this situation, characterized by a so highly widespread and serious problem, the urgency of problem-solving through e-governance constitutes a much higher priority with respect to the need for image construction.

E-governance in developing countries. To conclude, transcending the geopolitical domains of Kerala and India observed so far, I reflect on a few broader implications, pertaining to the field constituted by e-governance in developing nations. In particular, there are three lessons derived from this research, whose contribution ascribes to the domain of e-governance for development in a general sense. The first lesson, derived from the case study of e-PDS, pertains to design decisions within e-governance programmes in developing nations: the second one proposes, instead, a particular reading of the notion of good governance, which departs from the established normative meaning of this concept. The third lesson concludes by stating the normative value of the twofold enabling mechanism that links ICTs to better institutional behaviour, and this in turn to the achievement of human capabilities.

In my case study of e-PDS, the use of technology in anti-poverty programmes has been observed under a twofold perspective: this involves, firstly, a target of improvement of service provision, which constitutes the main objective for which e-governance systems are constructed. A parallel vision, on which this work has focused directly, is that of using

technology within the self-reconstruction of the state's image: with computerization, governments change (not only the nature of their services, but) also the way in which they structure the representations of themselves to citizens. In the thesis I have noted, with respect to the e-PDS in Kerala, the presence a trade-off between these perspectives, as considerations related to image improvement – through sheer enhancement of TETRAPDS module 1 – have led the government to factual neglect of the remaining parts of the system.

The first lesson derived here is that, in the context of developing nations, the trade-off between service improvement and image reconstruction strongly calls to be solved in favour of the former. On the one hand, the state's capability of constructing an image of itself as efficient and accountable, through the means of e-governance, is a positive thing, as it can foster dynamics of trust that may result in solid state-citizen relations. On the other hand, in the thesis I have dealt with conditions of geopolitical and institutional frailty, which constitute, as of Brett (2003), a common denominator to the developing world: these situations, epitomized here by India's food security problem, call for image construction to be seen as secondary, when balanced against the need to improve the substance of service provision. If a trade-off of this kind exists, when designing e-governance programmes, it needs to be tackled by prioritizing technologies that optimize the actual capabilities of the state.

The second implication of my research refers to the significance of "good governance" resulting from it, viewed with respect to what Rose (1999), as described in Chapter 2, refers to as the "normative meaning" of this term. In this vision, as noted above, governance is referred to as "good" when it results in rolling back the state, and introducing NPM incentives to optimize efficiency in public administration. In other words, good governance coincides with a lower presence of the state, and a higher utilization of market-based incentives in government: as reflected in the NPM philosophy, this is aimed to achieve optimal outcomes in terms of efficiency, decentralization, accountability, and ultimately "marketization" of the administrative machine. This view is problematized, as noted above, by Kooiman's theorization of the Sociology of Governance, in which governance is regarded as good (not when the state is rolled back, but) when interactions among the "governors" and the "governed" work in a mutually beneficial way.

In the light of these different meanings, does the case study of Kerala, as recounted in my thesis, constitute a paradigm of "good governance"? On the one hand, the government's strong intervention on food security provisions, especially as a result of the system's

collapse induced by targetization, makes it very distant from the idea of a rolled-back state. By re-estimating internal poverty levels, providing special concessions to ration dealers, and redesigning the PDS through digitalization, the government has intervened directly on the reconstruction of the food security system at the state level. In the standard, normative meaning of the term, the government of Kerala is therefore far from providing an example of "good governance": redistribution of primary necessity goods, traditionally seen as a key pillar of local policy, has been enacted through direct intervention of the state, conflicting, at times, with the prescriptions of structural adjustment (e.g. maintaining, in spite of targetization, a subsidy on PDS commodities to the APL).

On the other hand, the insights gained through my research, and the observation of a programme in which digitalization is functional to the construction of a more accountable system, led me to think of "good governance" in a way that departs from the one implicit in NPM. The Kerala development experience tells the story of a state that takes action towards fair outcomes in the redistribution of resources, and follows the same line when intervening in order to revamp the food security system. The story recounted here, through the microcosm of e-PDS, reveals that "good governance" does not necessarily mean "less government": Kerala is a state in which governmental action, as it has been devised, is reconstructing a food security system that was led to collapse, in effect, exactly by those structural adjustment policies that should have improved the systems' outcomes for all India. The lesson I have learned here, mirroring Madon's (2005) problematization of this core concept, is that "good governance" is far more complex than a simple act of rolling back the state: it results, instead, from a set of measures that, harmonizing the "governors" and the "governed", lead citizens to obtain entitlement to the goods and services that they demand.

The third implication brings me back to the twofold enabling mechanism, identified in Chapter 8 as the link that this research finds between ICTs and human capabilities, passing through the means of institutional improvement. I have argued that technology is a potential enabler of better institutional behaviour, and that this plays, in turn, a specific function in development: namely, that of enabling people to maximize their capabilities, towards the pursuit of their own life plans. This results in a theoretical paradigm that establishes a connection between ICTs and capability-oriented development: at the same time, this paradigm has practical consequences, because it invites institutional behaviour along specific lines of action in e-governance. It is to these lines of action that I now turn.

As noted when outlining the research domain of the thesis, e-governance has been viewed, over the last few decades, as one key means for the improvement of institutional mechanisms in the developing world. However, the recurrence of failure in e-governance interventions (Heeks 2005), along with the concern that ICT diffusion may actually reinforce the dependency of developing countries (Wade 2002), lead to the question on what exactly can be done, to maximize the capability of ICT-based interventions to result in positive outcomes for their beneficiaries. As taught by contemporary history of ICT-based development, the deterministic idea according to which diffusion of new technologies automatically results in higher prosperity is not found to match the reality of facts. What is needed, in the place of deterministic linkages, is a set of indications on how technology can be practically translated into better development outcomes.

The strength of my approach, from a practical point of view, lies exactly in the fact that it entails a specific recommendation for institutional decision-making, by suggesting a way to devise e-governance interventions on the basis of citizens' needs. According to this approach, e-governance design should be carried out with an explicit orientation to human capabilities: in other words, when ICTs are used to improve the public sector, intervention should be carried out in the light of specific functionalities to be optimized. Paradigmatically, this is what the Government of Kerala aims to do: having identified the need to maximize citizens' capability to access subsidized food, it informs system design according to this specific capability-oriented purpose. There are, indeed, roadblocks at the stage of implementation, but the intentionality behind the system (Masiero 2012) is in line with the idea of capability-oriented development. When tailored in order to expand people's capabilities in one domain, e-governance finds a clear sense of purpose, and this constitutes the root of alignment between intentionality and actual intervention.

This is the practical lesson with which I conclude my review of implications: in order to be informed by citizens' needs, e-governance interventions should be aimed at maximizing people's capabilities. This type of system design provides locally relevant content, as it is informed by the capabilities that need to be expanded in a given setting: at the same time, it maximizes alignment between technology and people's ability to develop their own life plans. In contexts of institutional frailty, commonly encountered in the developing world, e-governance should be the root of institutional interventions that place human capabilities at their core.

9.3. Further Research

The end of a PhD, as it comes into sight now that my four-year research time has come to a close, does not constitute a "conclusion" in the etymological sense of the term. Over the last four years, my academic path has been crossed by a plethora of pointers for further study: the end of my PhD project coincides, in my intention, with the beginning of my exploration of these areas, informed by the many lessons that the time spent as a doctoral researcher has taught me. In conceptualizing the directions in which my research will evolve, the relevance of these lessons has been paramount: I firmly believe that looking forward, at the end of a PhD, is indivisible from looking backwards, at what such a long-term, intensive research project has left in the cognitive vision of the researcher. My way of detailing my pointers for further research is, therefore, deeply imbued with the main lessons I have learned in the years of my doctorate.

From the point of view of theoretical domains, my purpose is to continue, as I have done in the present project, to dedicate my contributions to the field of ISDC. Four years in this area have impelled me to come to terms with a challenging factor in this respect: the point is that ISDC research is not, *per se*, automatically part of the information systems domain, and inscribing it in this field may sometimes constitute a problematic moment for the researcher. The reason for this, according to my interpretation, lies in the intrinsically interdisciplinary nature of our field: there are instances, and they constitute the norm in ISDC, in which technology does not tell the whole story to be recounted, and, to be conceptualized as a research object, it needs to be harmonized with considerations in domains as varied as development, geography and politics. It is, as the last four years have taught me, this nature at the interface between several domains, that constitutes the main factor of richness in ISDC: and still, at the same time, it can be seen as its main weakness, as it drives us away from the nature of "pure discipline" that acts as a source of strength in other fields.

Nevertheless, another key lesson has been that the effort of positioning one's ISDC work in IS, making arguments in order to sustain our presence in the field, can be deeply rewarding from the point of view of learning, which makes the above challenge a worth one to be taken. As the research process has taught me, and as I have illustrated in the theoretical implications of my work, ISDC is a domain that can provide important contributions to the IS field: not only can it apply IS theory, often developed in and for the Western world, to developing country contexts, but it can also be able to generate new theory, adding to the systems of knowledge that already exist. Furthermore, the reverse has proven to be true: an

IS perspective can be, and it has been in my case, deeply useful to the study of ICTs for development, as revealed by the fact that the argument of my thesis – based on the expansion of an existing theory of technology – is a direct byproduct of an IS perspective, and could not have been developed outside it. This process of cross-fertilization, between ISDC and IS at large, has been seen in action for the whole duration of my PhD: it is my intention, as I continue my intellectual journey, to carry on exploring it and demonstrating its fruitfulness.

From the point of view of methodological insights, in this work I have conducted narrative analysis through a method developed *ex novo*, centred on the technique of the "historiography of images" framed in response to my research questions. Starting from the existing method of thematic narrative analysis, I have adapted its technique to the gnoseological object of my research: this has given rise to a novel way to conduct and analyse interviews, based on examining inputs to image formation processes as they are represented in respondents' narratives. This method, as it combines a firm grounding in an existing technique with innovation in its actual workings, has led me to the visualization of processes that, as per the cognitive nature of image formation, can occur in a dominantly tacit way: this has constituted an optimal device in terms of the work conducted here, and has fostered my willingness of strengthening this technique by applying it to further questions on image formation processes. In the continuation of my research, the potential of the "historiography of images", as a tool for analysing people's sightings of the state and the mediation of technology within them, will be further developed and explored.

Finally, from the point of view of empirical contents, the object of my work, i.e. the way in which the Indian Public Distribution System is being computerized at the state level, is a highly relevant one in the present historical phase. Its importance is based, beyond the centrality of PDS as the main food security system in the nation, on the requirements of the last National E-Governance Plan, which openly calls for all Indian states to undertake computerization of the programme: research on these efforts needs, at this stage, to go beyond a single-state perspective, and capture the dynamics occurring outside Kerala. Over the last four years, research on the empirics of PDS computerization has been an integral part of my studies, and has been embodied in several pieces of work (see Appendix 3 for a list of publications): in collaborating on this with dedicated institutions, i.e. the LSE Asia Research Centre and the Centre of Development Studies Trivandrum, my focus has been on the practical aspects of digitalization, and on the lessons that the case of Kerala can yield for other states starting the same process. As I look to the future, I see my continued

collaboration with these institutions as paramount, to contribute insights into one of the most relevant processes of innovation in the Indian anti-poverty system.

A vision strongly embedded in my work, formulated by Flyvbjerg (2002) and deeply represented in my theory of action, points to the importance of "making social science matter", by putting the lessons learned from research at the service of practical problems and situations. By working on my PhD, I could appreciate the implications of my research for the biggest food security programme in India, and for its implementation at the state level in Kerala. Seeing the implications of the use of technology, towards the diversion problem that systemically threatens Indian food security, has led me to reflect anew on the nature of my research, and to understand how practical involvement, for action against diversion to be taken through e-governance, was indivisible from my intellectual journey. In other words, my PhD has led me to understand, by means of experiencing it in first person, what it means to really engage in "making social science matter": this has been the key lesson of my doctoral work, and one that will inspire my research in the future.

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Appendices

Appendix 1: Affiliation to Centre of Development Studies Trivandrum

1.1. Application – Affiliation as Foreign Researcher

Centre for Development Studies
Prasanth Nagar, Ulloor
Trivandrum 695 011, Kerala, India

London, 13th January 2011

To Whom It May Concern:
Affiliation to Foreign Researcher - CDS Trivandrum

Dear Sirs,

My name is Silvia Masiero, and I am a PhD candidate in Information Systems at the London School of Economics and Political Science (LSE), London, United Kingdom. Having visited the Centre of Development Studies in Trivandrum, during my last trip to Kerala in December 2010, and having spoken to several members of the faculty, as well as to the Academic Registrar Mr. Soman Nair, I am now writing to request affiliation to CDS as a foreign researcher. The purpose of affiliation is that of conducting fieldwork for my PhD Dissertation, which pertains to e-governance for the Public Distribution System (PDS) in Kerala, and the period for which I would like to be affiliated goes from November 2011 to June 2012.

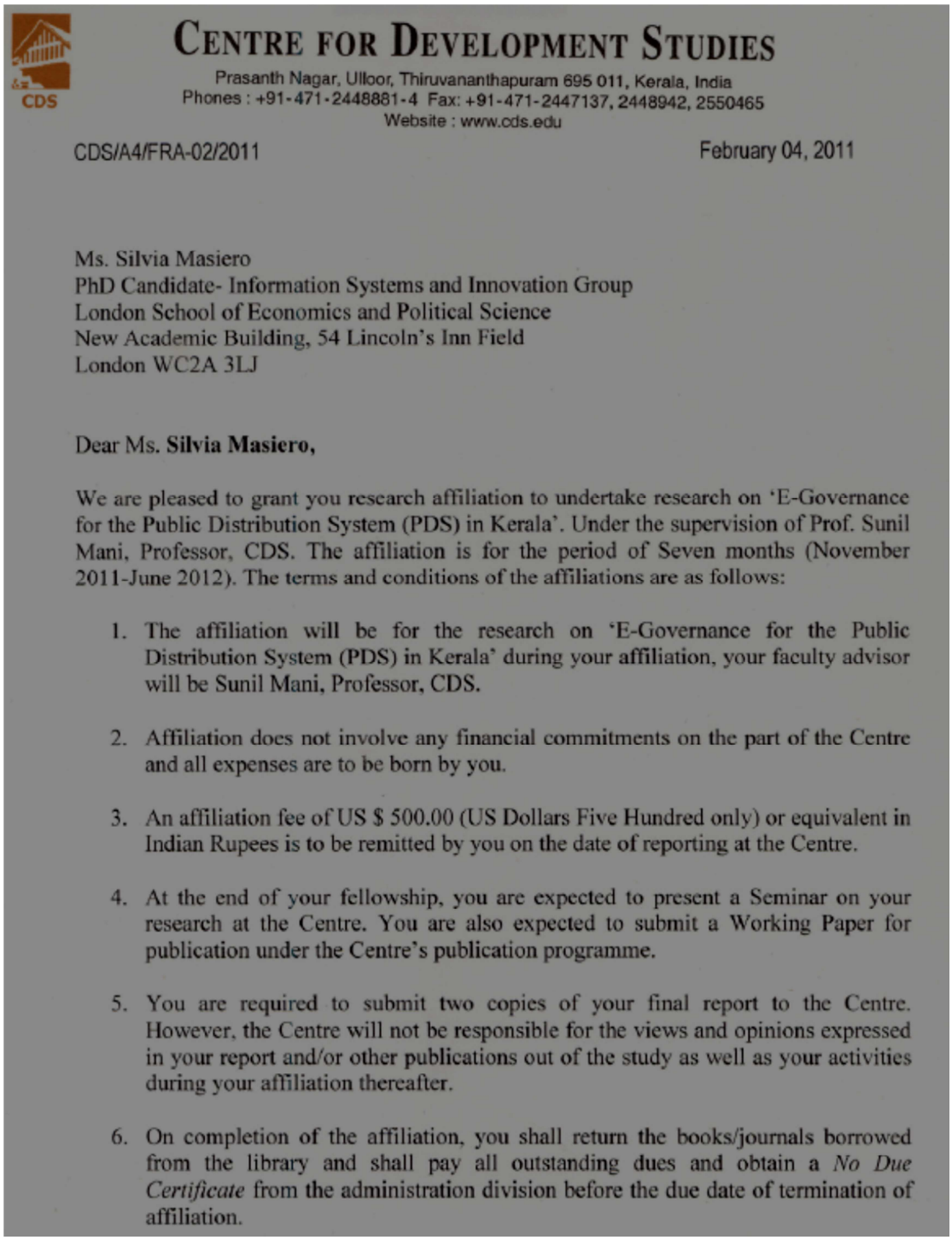
As you can see from my enclosed PhD Proposal, the purpose of my research is that of assessing the role of computerization in the implementation of the Public Distribution System, as carried out by the Government of Kerala through the department of Civil Supplies. With Prof. Sunil Mani, I have discussed my research, and his role as a local supervisor in the context of affiliation to CDS. As discussed with Prof. Mani, the key directions of my research will be (1) a clear inscription of PDS-related software within the Kerala e-governance landscape, and (2) a clear mapping of the actors involved in the PDS supply chain at the local level.

As required for the purpose of affiliation, please find enclosed my detailed PhD proposal, my passport details, and a letter of recommendation from my PhD supervisor, Dr. Shirin Madon. I am looking forward to getting to know the outcome of my application, and, in case of success, to getting an invitation letter from CDS for my study, as discussed with Mr. Soman Nair. This letter will, indeed, fit into the procedures related to obtaining a Research Visa from the Government of India, for the period of my study.

Yours Sincerely,

Silvia Masiero
PhD Candidate - Information Systems and Innovation Group
London School of Economics and Political Science
New Academic Building, 54 Lincoln's Inn Field
London WC2A 3LJ
Phone (UK): 0044 7580366863
Email: s.masiero@lse.ac.uk

1.2. Certificate of Affiliation



CENTRE FOR DEVELOPMENT STUDIES

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CDS/A4/FRA-02/2011 February 04, 2011

Ms. Silvia Masiero
PhD Candidate- Information Systems and Innovation Group
London School of Economics and Political Science
New Academic Building, 54 Lincoln's Inn Field
London WC2A 3LJ

Dear Ms. **Silvia Masiero,**

We are pleased to grant you research affiliation to undertake research on 'E-Governance for the Public Distribution System (PDS) in Kerala'. Under the supervision of Prof. Sunil Mani, Professor, CDS. The affiliation is for the period of Seven months (November 2011-June 2012). The terms and conditions of the affiliations are as follows:

1. The affiliation will be for the research on 'E-Governance for the Public Distribution System (PDS) in Kerala' during your affiliation, your faculty advisor will be Sunil Mani, Professor, CDS.

2. Affiliation does not involve any financial commitments on the part of the Centre and all expenses are to be born by you.

3. An affiliation fee of US $ 500.00 (US Dollars Five Hundred only) or equivalent in Indian Rupees is to be remitted by you on the date of reporting at the Centre.

4. At the end of your fellowship, you are expected to present a Seminar on your research at the Centre. You are also expected to submit a Working Paper for publication under the Centre's publication programme.

5. You are required to submit two copies of your final report to the Centre. However, the Centre will not be responsible for the views and opinions expressed in your report and/or other publications out of the study as well as your activities during your affiliation thereafter.

6. On completion of the affiliation, you shall return the books/journals borrowed from the library and shall pay all outstanding dues and obtain a *No Due Certificate* from the administration division before the due date of termination of affiliation.

7. You will be governed by the rules, regulations, policies and directions as in force at the Centre during the period of your affiliation.

8. It shall be your responsibility to obtain an appropriate VISA and all other clearances from the Government of India for visits connected with the affiliation and stay in India. You will adhere to the terms and conditions stipulated by the Government of India in granting you the VISA and residence in India as an affiliate of the Centre.

Affiliation at CDS provides:

a. Temporary Membership of CDS Library with a provision to borrow three Books and three journals at a time without payment of any membership fee. The books/journals borrowed will have to be return by you before the due termination of affiliation.

b. Access to computing facilities in the Computer Lab during office hours including Internet. You will have to make your own arrangements for printing of your reports and other materials. Facilities of photocopying can be availed on payment.

c. Single room accommodation in the Hostel by payment of monthly rent subject to availability. The present rate of rent is Rs.2500.00 per month (subject to revision)

Please confirm acceptance of the affiliation in writing at the earliest.

With best regards,

Yours sincerely,

Soman Nair
Registrar.

Appendix 2: Collection and Analysis of Narrative Data

Appendices 2.1. and 2.2. provide a paradigmatic illustration of the narrative technique utilized to collect and analyse my data. As detailed in Chapter 4, the method centred on the "historiography of images" constitutes a particular form of thematic analysis, aimed at eliciting, from respondents' narratives, the key elements of image formation processes. This technique, predicated on Boulding's theory of the image as constructed by a sum of *messages* (external inputs) filtered through people's systems of cognition, is substantiated in three phases of action:

- An **interviewing technique** aimed at grasping processes of construction and perception of images of the state,

- A **construction of narratives for enquiry**, conducted, in this case, by "mapping" the image formation processes found in interviews,

- A process of identification of the **common themes** across interviews, which are, then, utilized in order to answer the research questions.

The third phase of the technique, related to answering the research questions on the basis of themes found in the narratives, has been shown at Chapters 6 and 7. Here I provide, instead, a practical illustration of the first two phases of the process: first, in Appendix 2.1., I show an example of my interviewing technique, articulated in the three phases (description-flagging-iteration) described at Chapter 4. Second, in Appendix 2.2., I provide a practical example of construction of narrative for enquiry, by converting the interview data provided above into a map of processes of image formation – that is, a "historiography" of images, as described and presented in this research. Through these materials, I give an illustration of my narrative technique, on whose basis I have structured the data at the root of my theoretical contribution.

Appendix 2.1. Example: Interviewing Technique

The piece below is an excerpt from an interview conducted with a telecentre entrepreneur in Kondotty, Malappuram district, in August 2012. The script has been extracted from extensive notes, taken during and after the interview, as the conversation was not tape-recorded. The conversation was conducted in English, but a translator was present, and helped the interviewer by translating in the local language (Malayalam) the questions that the interviewee could not understand completely. The interviewee communicated in English for most of the time, but used translation for a few concepts. In the text below, words in square brackets have been added by the researcher, to contextualize the assertions of the interviewee.

I use this script to illustrate my interviewing technique, articulated in the three phases described in Chapter 4, namely:

Phase 1 – **descriptive questions**, to break the ice and establish a common ground for communication,
Phase 2 – **flagging of images**, in which an image emerges in the speech of the respondent, and the interviewer concentrates on it,
Phase 3 – **iteration on images**, in which the interviewer asks a set of questions for the interviewer to elaborate more on that specific image.

These elements, and the recursive process occurring between phases 2 and 3, are identified and highlighted in red in the script below.

Interviewee: Mr. Salim K., Akshaya Centre Entrepreneur
Interviewer: Ms. Silvia Masiero, Affiliated Researcher, CDS Trivandrum
Translator: Ms. Noora Farooqi

Date: 20th August 2012
Location: Kondotty, Malappuram district

[Start with Phase 1: descriptive questions on telecentre and its main services]

Which services does your telecentre offer?

The main service is that of ration cards. Ration cards are provided here – well, they are not actually provided here, but the application for a new card can be done from the telecentre. People come along, with the documents they need, and apply for a ration card online.

The second service is Aadhar. Many people come to the telecentre to register for Aadhar. There is a technician that comes every day, and registers them into the system, with the equipment provided [one machine for iris scanning, and one for capturing fingerprints].

Then, there is the scholarship application. This is very important to the students, because they need to fund their studies, and there is a lot of competition for these scholarships now. They can apply from here, with the documents required and an online form.

Then, there are other services, like e-grants. It's the same, people come here with documents, and apply for these grants. Also, health insurance – many people come here for obtaining the health insurance that they need. Or, E-Krishi – this is a system for the farmers, that come here and can sell their produce online. That was provided in this telecentre, but now is not here anymore, because farmers were not using it a lot.

In your view, why is your centre important to the people?

Because the Akshaya centre is connecting the local community. Before, people would wait ages at public offices, and queue for a very long time. Now, they come here, and they have all the services that they need. So, the Akshaya centre is important for them.

You mentioned that people can apply for ration cards here, how does this work?

Some people need a new ration card, because the previous one has expired. Or, they get married, and then they need a card for the new family. They come here, bring the documents that they need, and make the application. One member of the staff does the application online for them. Then, they wait for some time, and they get the new card from the Taluk Supply Office.

How long does it take for the Taluk Supply Office to produce the new ration card?

I don't know, because we only do the application, what happens next depends on the Taluk. But, I think it is one or two weeks. There is a receipt that comes with the application, and it says in one or two weeks, the ration card is ready. If the application is rejected, because some documents are missing, people get all the documents required, and then they can apply again.

Why is it important to provide a ration card service at Akshaya?

The ration card service is important because it gives a new way to use the PDS. Before, people had to wait for long times at the Taluk Supply Office, file a paper application, and go with it. Maybe, their ration card would never come, they could go back to the office many times, and always find that the card was not ready yet. Now, they apply on the Internet, and they get a receipt that tells them when to go to the Taluk to get their card. Now, the system is accountable, because it is automatic, it does not depend on the officers at the Taluk.

Also, now the ration card is provided by computer, so it is unique, and people cannot get another card that is equal to it. Sometimes, people make copies of ration cards, so they can get more items, and sell them for more money (on the market). But now, there is a barcode, and it is controlled by the system, so people cannot easily create fake ration cards anymore.

[Phase 2: flagged an image – computerized cards as enablers of accountability. Triggers beginning of Phase 3: iteration on image 1 – questions aimed at exploration of the messages that concur to image-making, and of the relations between them]

What would happen when cards were not barcoded?

People stole. Basically, they would buy more goods that they could (i.e. they would exceed their quota of rationed goods), and sell these to private vendors. The ration dealers are very corrupted here, because the card has a barcode, but the register (of the goods they sell) is still paper-based. So, they can write on the register that they have sold all their rice, and then people come to the shop, and they say that there is no more rice, but instead, they have sold it to the black market, or to the hotels that pay more money for it. They can write what they

want on the register, and the government cannot really control them. So, a lot of people cannot really buy PDS rice, because the ration dealers sell it to the black market.

So, this is still happening, even with the e-PDS?

Yes, because the ration cards are now made by computers, but many things are still on paper, like, the registers of the ration dealers. The ration card is important, but the government has to control that the ration dealers do not steal. If you want to know how much rice has arrived to your ration shop, you cannot go online: you have to ask the ration dealer, which can do what he likes with it. And it is not only the ration dealers, because trucks arrive from the state government, and we don't know what happens with them: in the middle, between the government [i.e. the godowns at the Food Corporation of India] and the ration shop, all things can possibly happen. So, we never know if we are getting the amount of rice that we should get. The government now wants to put GPS devices on the trucks [which transport rice from godowns to shops], so they can control that the trucks go on the right road, and do not stop for too long time, maybe for doing illegal things.

So, barcoded cards have really reduced this problem?

Yes, now it is less easy for people to make new ration cards, to buy more food and sell it. Also, ration dealers are more controlled, because they were also making new ration cards, and claiming that they were selling food to people that, in fact, did not exist.

Ration cards are different for APL and BPL. Is the application procedure the same one?

Yes. When citizens apply for a ration card, they always get an APL card first, even if they are BPL. Then, if they can prove that their status is BPL, they can claim it to the Taluk Supply Office, which then verifies the details, and, if everything is regular, provides a BPL card for them. But, they cannot do this from Akshaya telecentres – all they do, from here, is sending the application online, with all documents, to the Taluk. All the procedures that come next, including obtaining a BPL card instead of an APL one, do not depend on us.

Does this represent a problem for citizens? I mean, is it difficult, to your knowledge, to obtain BPL status in Kerala?

Yes, sometimes this is a problem. There are big slums in the cities, where most people have an APL card, because they cannot prove BPL status – either they don't know how to do it, or they just don't have documents to prove that they are poor. Also, there is another problem, because many people obtain BPL cards through friends, or by paying a bribe. BPL is not only a PDS thing, it also gives people more chances to have scholarships, employment schemes, health insurance, and many things… so, many people want to have a BPL card, if they can. And to get a BPL card, they go to the politicians, they use their connection, or simply they find a way to get this by bribing someone.

I have heard this from the media, that many Kerala politicians were invited to resign their BPL cards…

Yes, that has happened. Many government people had BPL cards, exactly because it is easy for them to obtain this type of documents. So, one of the things that the new government (*in charge from June 2011*) has done was that of revealing this to the public, and inviting all politicians to resign their BPL cards if they had one. It seems that there was some control on this, because many people have then really resigned their cards to the system. Now, if someone is caught with a BPL card without being BPL, they get a big fine out of this. Maybe this has not completely solved the problem, but it is a signal that things are changing, and that the government wants to be more accountable.

Still, if ration card applications can be made online, why go to Akshaya centres? More and more people can connect from their family house nowadays.

This is because we know how to do the application. The procedure is not easy, there are many fields to be filled, and several documents to be provided. Normally, citizens come first to ask which documents they need for this, then they get the documents, and they come here to do the application.

So, this is why they come to Akshaya for most of their government services?

Yes, because we know how to deal with this. I have had this centre for many years, and people come at all times for their applications. Akshaya has been the first project to get rid of black and white, and make everything automatic: people know it, and so they come here. Now, we are making a new project called E-District, in which all the services provided by

the government will be outsourced to Akshaya centres. This project is now piloted in Kannur and Palakkad, and will come to the rest of Kerala soon.

The thing is, that services made on paper are never secure, everything that is in your hands, and not on computer, can be duplicated. Here, we work with computers, so people are sure that their applications and their bills are really being sent, and they get a receipt. So, this works very well: in fact, I see it myself, when I need some service. Beforehand, I would have to go to my bank every time I needed to sort something out, now I can do everything on computer, so I go there maybe once every year.

You have mentioned Aadhar registration as a second important service here. How does it work?

Basically, people come here to register with Aadhar, so they can access many government schemes with their (*12-digit UID*) number. They come here, and there is a separate technician that uses the Aadhar registration machines, taking the iris scan and fingerprints of citizens. After having registered their biometric data, they fill in some forms, and in two weeks they get their own UID number. With that number, they can apply for scholarships, require health insurance, and do a lot of other things much more easily than before, because the number is enough to substitute many documents.

[Phase 2 again: flagged another image – Aadhar as enabler of accountability in PDS. Triggers beginning of Phase 3: iteration on image 2 – questions aimed at exploration of the messages that concur to image-making, and of the relations between them]

Is Aadhar registration compulsory by the law?

No, it isn't, but the Aadhar number is needed for many services and applications. So, a lot of people are coming here for the registration. We have registered people in Aadhar since September last year, and now more than 2000 people have registered through this telecentre.

What are the advantages of Aadhar registration for citizens?

The main advantage is that the Aadhar number is unique. I mean, instead of having many documents for everything we need to do, we will just have a number, and that can serve for

everything. Also, the system is secure, it can identify people properly because it registers the biometric details, so people know that they will be identified in all cases, and other people cannot steal their identity. Also, it will be easy to get terrorists and criminals, because everybody's fingerprints will be stored in the system.

So, how is Aadhar related to the PDS?

It is, because ration cards are now [going to be] linked to UID. So, all citizens will have their biometric details, which will be checked every time that they go to the ration shops. In the shop, there will be a fingerprint machine, and people will have to prove their identity through fingerprints, when they go to buy their rations. So, it will be impossible for people to steal identity from somebody else, and the ration dealers will not be able to invent fake customers to justify their sales.

It seems that Aadhar will introduce a system of bank transfers in the PDS, is it so?

It will take a lot of time for this to happen, because many people do not have a bank account. But, yes, with Aadhar, the [subsidy] money will go on the bank account of the buyer. So, the ration dealer is sure that the money goes to the right person.

But this means that people will have to pay the full cost? Like, 40 rupees for rice, instead of just 1?

Yes, but it will be the same, because that money will go on the bank account.

How do people feel about this? Are they happy with the change?

Some people are not happy, and they are protesting about Aadhar. But, that is because this system will prevent them from stealing, and from paying and receiving bribes. Those that protest against Aadhar do so because they have something to hide, because the system will make it easy for the government to identify all types of misconduct. Indeed, more than 2000 people have registered from this telecentre alone, and people are still coming down for registration these days. This means that citizens want to register, because they want a more accountable government.

But what about poorer people, many of whom do not have a bank account?

The government will provide a zero-balance account for them. This is better, because now, everyone can go with a fake ration card, and claim the quota of rice of somebody else. It happens with a lot of goods, not only rice: for example, kerosene, because PDS kerosene is blue, in order to make it recognizable from non-PDS one. But, in the private shops, many times you can find blue kerosene. So this means that this good has been acquired illegally. With Aadhar, this will not be possible.

Also, it seems that Aadhar will enable people to get their quotas from all ration shops, not only from the one they are registered with. Is it so?

Yes. With the Aadhar number, every person will be able to buy PDS goods from every shop. So, if a ration dealer is corrupted, customers will be able to go somewhere else. This is very good, because ratio dealers are selling many goods to the black market, so at least their customers can choose, and leave their shop if they do not trust it.

But, will this put in danger the financial viability of ration shops? Ration dealers may lose many customers as a result of this.

The survival of the shops is already in danger. Now, only the poor go to these shops. I do not go, because the rice there is very bad, and only the BPL are still going there. But many poor people have an APL card, because they don't know how to get a BPL one, or they just can't. So, the shops already have few customers. Maybe there will be no more shops in the end, because Supplyco [the main corporation managing the second tier of Kerala PDS] will do everything on its own. But, the shops are not profitable, so even the ration dealers would be better off doing something else.

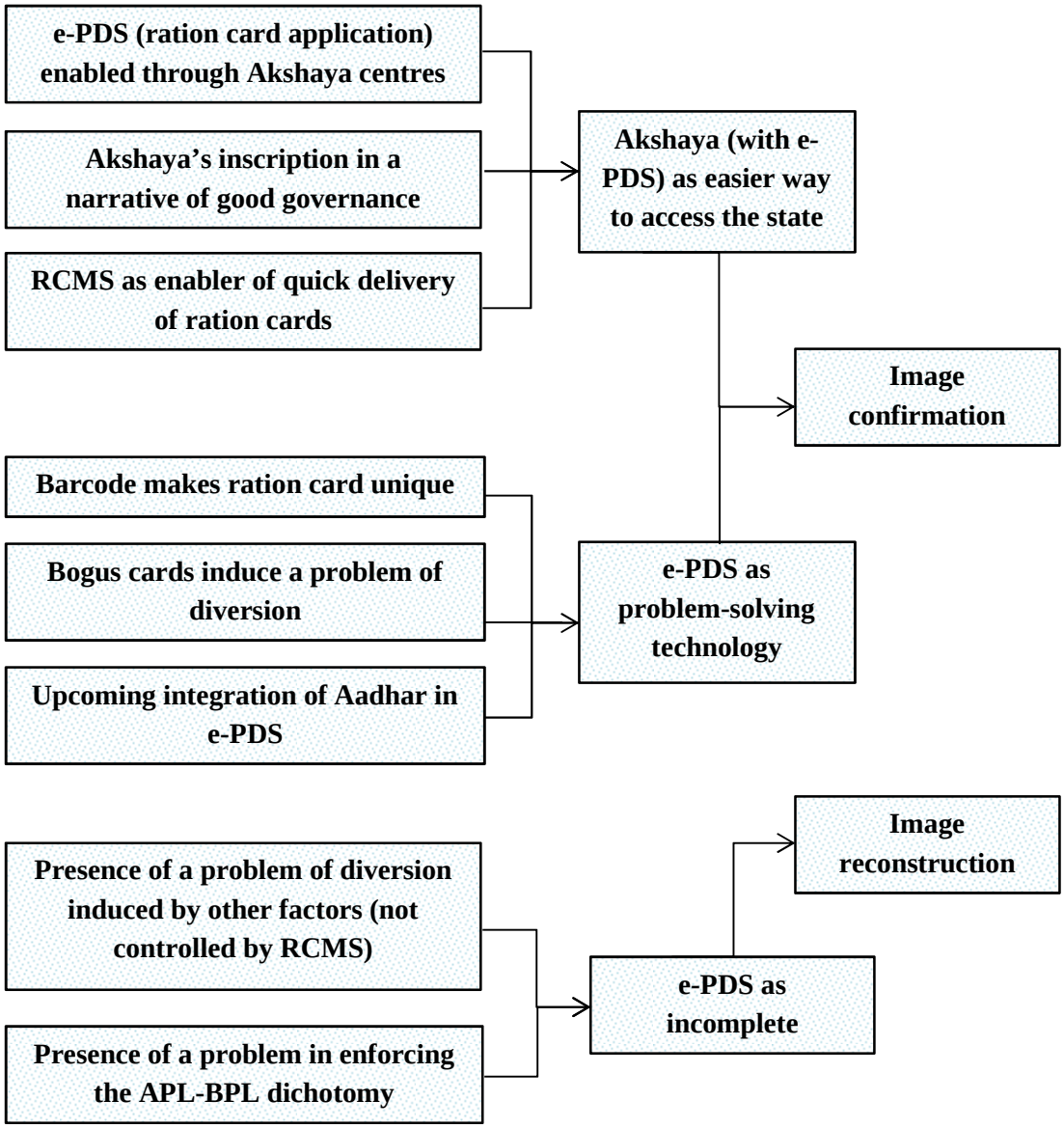
Hence, would you say that including Aadhar in the e-PDS is a good thing?

Yes, because it will make the system more secure. Also, it will make it more simple, because with a 12-digit number, instead of documents, we will be able to do everything.

[End Phase 3: interview continues with more descriptive questions]

Appendix 2.2. Example: Construction of Narratives for Enquiry

As described above, the second phase of analysis consists in the construction of narratives for enquiry, i.e. in the structuration of interview data in order to elicit answers to the research questions. In this case, interviews are "mapped" according to the image formation processes that emerge from them: interview maps are used, in this way, to reconstruct the "historiography of images" contained in the narratives. In this example, Salim's narrative is re-written in the form of cognitive processes, leading to his images of e-PDS and in turn, of the state that provides it.



This process, repeated on all the interview scripts collected, has led me to identify a set of common themes across them, related, in recurrent ways, to the construction and perception of images of the state through e-PDS. These themes, as illustrated in my analysis, have been the basis of the answers to my research questions, synthesized in the thematic maps at Chapters 6 and 7. The process illustrated above has been profoundly instrumental in the research: indeed, I have used it exactly to convert narrative data into operational information on image formation processes.

Appendix 3: List of Publications

Masiero, S. 2013. Reconstructing the State through ICTs? A Case of State-Level Computerization in the Indian Public Distribution System. Proceedings of the Sixth International Conference on Information and Communication Technologies and Development – ICTD 2013, Cape Town, 7th to 10th December 2013.

Masiero, S. 2013. Innovation and Best Practice in Mobile Technologies for Development. Helpdesk Review at Economic and Private Sector – Professional Evidence and Applied Knowledge Services (EPS-PEAKS), LSE Enterprise, London School of Economics and Political Science (LSE).

Bailur, S., and Masiero, S. 2012. The Complex Position of the Intermediary in Telecenters and Community Multimedia Centers. *Information Technologies and International Development*, 8(1): 27-42.

Masiero, S. 2012. Transforming State-Citizen Relations in Food Security Schemes: The Computerized Ration Card Management System in Kerala. Working Paper 451/2012, Centre of Development Studies (CDS) Trivandrum, http://cds.edu/wp-content/uploads/2013/09/WP451.pdf.

Masiero, S. 2012. Getting It Right: The Importance of Targeting Structural Causes of Failure in E-Government. In: Hercheui, M., Whitehouse, D., McIver, W., and Phahlamohlaka, J. (eds.) *ICT Critical Infrastructures and Society*, Amsterdam: Springer.

Masiero, S. 2012. Design-Intentionality Gaps: Explaining Expectation Failure of Information Systems in Developing Countries. Newsletter of the IFIP Working Group 9.4., 22(1), http://www.iimahd.ernet.in/egov/ifip/feb2012/silvia-masiero.htm.

Masiero, S. 2011. Conceptualizing Accountability in ICT4D: Complementary Perspectives of Information Systems and Development Management. *African Journal of Science, Innovation, Technology and Development*, 3(3): 202-225.

Masiero, S. 2011. Reframing Empowerment: A New Paradigm for ICT4D. *iSChannel*, 6(1): 6-13.

Masiero, S. 2011. Financial vs. Social Sustainability of Telecentres: Mutual Exclusion or Mutual Reinforcement? *European Journal of Information Systems in Developing Countries (EJISDC)*, 45(3): 1-23.

Masiero, S. 2010. Book Review - E-Governance for Development: A Focus on Rural India. *African Journal of Innovation, Science, Technology and Development*, 2(3): 253-258.

Masiero, S. 2010. Digital Technologies and Human Development. Working Paper for The Innovation Knowledge Foundation (*THINK!*), http://www.thinkinnovation.org/portfol/digital-technologies-and-human-development/.