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Mapping and Explaining the Formation of Beneficiary Perceptions in ICT4D

Full paper, "Managing ICT4D Field Research in the Developing World: Challenges, Opportunities, & Innovative Solutions" Minitrack - ICTs in Global Development (SIGGlobDev) Track

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Abstract: one of the causes of failure in ICT4D is connected to field research, which is not always capable to understand the reality experienced by beneficiaries in developing nations. Here I present a research method devised specifically to map and explain the perceptions of beneficiaries in ICT4D projects. The method relies on the construct of subjective perception as *image*, and provides a type of narrative analysis aimed at "writing the history" of how perceptions are formed. Drawing on my research on food security in south India, I present the technique at work in the collection and analysis of data, illustrating its strengths and limitations in mapping the world visions of respondents. The technique is proposed to solve the conundrum of understanding users' reality in ICT4D research, hence avoiding the "design-reality gaps" that lead to failure.

Keywords: ICT4D, data collection, qualitative research, image formation, interpretivism

Introduction

Over the last 10-15 years, literature on failure in ICT for development (ICT4D) projects has been growing fast. Underlying this literature is the argument that most ICT-based projects in developing countries fail, largely due to limited ability of design to internalize the reality of beneficiaries (Heeks 2002). Failure in ICT4D poses theoretical problems, with which research in the field has engaged directly (Dada 2006; Dodson et al. 2012; Masiero 2016). But it deals, at the same time, with more practical issues: if we take Walsham's (2012) invitation to "make a better world" with ICTs, then it is important to study the root causes of failure, and to develop viable strategies to combat them.

One of the root causes of failure is connected to shortcomings in field research. ICT4D is a field in which the need for theorization is matched by a need for insights to help vulnerable communities, which comes across as a "moral imperative" for the researcher (Walsham and Sahay 1999). It is then of paramount importance to address data collection challenges, to gain a deeper understanding of the dynamic relationship between ICT and marginalized communities (Potnis 2015). More at large, the academic community is charged with contributing to understand failure in ICT4D, so that the objective of making a "better world" with ICTs becomes closer to reality (Davison 2012; Qureshi 2015).

And yet, our study of ICT4D may present some hurdles. Research purposes are often framed through an objectivist lens, focused on "what ICTs can do" for needful countries: technologies are studied as means to create new markets, increase access to services, fight corruption, *et similia*. This kind of frame is undoubtedly important, as it allows to tangibly conceptualize the positive contributions that technology

can make. And yet, this frame involves the risk of concealing the *perception* that recipients have of ICTs, and of the private and public providers behind them. For example when countries embark on e-governance, this transforms not only service delivery, but also the vision of the state that citizens derive from the mediation of ICTs. In other words, citizens come to “see the state” differently as a result of technology mediation (Corbridge et al. 2005).

The formation of perceptions is a tacit cognitive process, which makes its appraisal a relatively complex one. Only recently, through Madon’s (2005) work on telecentres in southern India, ICT4D has started dealing with perceptions as “images”, a term that indicates the subjective knowledge that people develop of the world around them (Boulding 1956). Yet my contention, in this short paper, is that the field would greatly benefit from a structured way to study the perception of beneficiaries, through a method that investigates the formation of such perceptions. This is fundamental to study the reality that citizens perceive, and to be equipped to avoid the “gaps” at the origins of failure.

This paper proposes a methodological technique to fulfill this purpose. It is illustrated through my research with slum dwellers and villagers in south India, faced with computerization of a food security programme on which they depend for their basic needs. My interest lied in how ICTs, by entering the lives of poorer people, would pragmatically influence their way of conceiving government: in practice, how do the poor “see the state” through ICTs? To investigate this, I needed to a way to map the formation of beneficiaries’ perceptions, to add to existing theory and provide useful advice to the designers of ICT-based food security measures.

The term *image formation* is used here to indicate the process through which people’s perceptions of things are formed (Kooiman 2003). I have termed my technique a “historiography of images”, as it is a type of narrative analysis aimed at “writing the history” of the image formation processes experienced by respondents. The technique is grounded on Boulding’s (1956) theory on image formation, according to which what we refer to as our data results largely from constructions in the minds of people. In the theory, images result from two sources: the *messages* (external inputs) that the subject receives, and the *value systems* rooted in the subject’s mind. My method aims at structuring data collection to make images emerge, and data analysis to map the inputs and value systems that concur to image formation.

The paper illustrates the “historiography of images” through narratives from my research on usage of ICTs in the Indian food security system. I conducted an 8-month case study of an Indian state (Kerala) that was augmenting its Public Distribution System (PDS) with the biometric recognition of its users. Technology was pervading an intensively used anti-poverty programme, hence becoming an integral part of citizens’ access to the state. It was hence important to ask, how did ICT affect ways to “see the state” for PDS beneficiaries? The new technique enabled me to answer the question by mapping citizens’ processes of image formation on the theme in point.

The rest of this paper is structured as follows. In Section 2 I explore the problem, in terms of the need to abate the barrier between the reality lived by respondents and the researcher’s mindset. In Section 3 I advance the “historiography of images” as a method designed to abate this barrier. In Section 4 I illustrate the technique’s functioning, through three field stories collected and analyzed according to it. Section 5 presents the technique’s contribution to informing theory and practice in ICT4D.

The Problem: Appraising Users’ Reality

Some ICT4D research follows an interpretive tradition, in which respondents’ views are taken to represent reality (Walsham 2006). This vision stems from a social constructionist epistemology, in which reality is constructed from the continuous interaction between human beings and the world around them (Crotty 1998). A theoretical perspective acts as an interface between the epistemology informing theory, and the methodology resulting from it. It is in this picture that research methods are inscribed, as expressions of underlying philosophical visions.

The scientific method subsumes a causal stream of this kind. It features an objectivist epistemology (according to which an “objective” reality is out there to be studied), diverse theories aimed at establishing

the cause-effect relations between phenomena, experimental methodologies framed to answer questions, and methods that allow inference from the data. But if the assumption of an “objective” reality is challenged, how is the quality of research assured? This is the conundrum that a substantial amount of qualitative research aims to solve.

In an interpretivist worldview, no such thing as an “objective” world is assumed, as reality is a byproduct of the constructions operated by human beings in their socialized context. As a result, the researcher needs a device to convert social constructions into meaningful data, which can then be analyzed and inform existing theory. This is a task that needs to be accomplished, if the quality of qualitative research is to be assured (Marton 2013).

Moving from social science at large to ICT4D, the need to understand reality from respondents’ views becomes particularly strong. Recent scholarship on “making a better world” with ICTs clarifies this aspect: understanding the reality lived by recipients, and the socio-historical context informing its features, is essential to properly assist the communities concerned by developmental intervention. It is exactly a “gap” between design and reality, as powerfully synthesized by Heeks (2002), that makes us unable to tailor interventions to the needs of respondents, resulting in failure.

What can be done about this? The problem lies in the need to abate the often invisible barrier between the reality lived by users and the researchers’ mindset. If the researcher is external to that reality, appraising it can be hard in principle, and may be made more complicated by lack of experience with context. Interpretive research suggests different methods to tackle the issue, but we need one to methodically explain how users’ lived reality is formed and sustained. A method tailored to do so would help us to better navigate the domain of ICT4D research.

A New Technique: Historiography of Images

The idea for a new technique to achieve this purpose stemmed from my early research on ICTs and poverty reduction. Existing literature focused more on indirect mechanisms of poverty alleviation – ICTs were depicted as connecting isolated regions, enabling access to services, providing market-relevant information, and so forth. But surprisingly less was being discovered on *direct* mechanisms, through which ICTs would strengthen the very programmes through which governments were taking care of the poor. This led me to focus on how ICTs were changing the PDS, a food security scheme that enables the Indian poor to buy primary necessity goods at subsidized prices.

My field research days started with a problem, indeed a quite common one across junior researchers. At the onset of fieldwork, my awareness of the reality that respondents lived in was limited, as well as my previous exposure to it. I had no knowledge of the language spoken in the state I researched, and had no first-hand experience of the reality lived in the slums, villages, and contexts in which I would have worked for several years to come. And even if I had some awareness, a problem would have emerged in disentangling “first-order” from “second-order” data (Van Maanen 1988), i.e. respondents’ constructions of reality and my own construction of their views (Walsham 2006). I was surely eager to understand respondents’ reality, but was not exactly sure on how to go about it.

Looking for answers I reviewed theoretical literature, and encountered the notion of *image formation* that informed my work ever since. I was aware, from Kuriyan and Ray (2009), that the state may use e-governance to recast its image, for citizens to come to see it as a skilled and accountable problem-solver. What I was not aware of was the process that followed, namely how re-constructed images of the state would, in turn, be perceived by citizens. In Boulding’s theory (1956), articulated on the cognitive mechanisms of subjects, I found a useful instrument to approach image formation.

Boulding studies the cognitive process of creation of images in the minds of people. By *image* he refers to the subjective knowledge of things, i.e. the personalized construction that every human being makes of reality. Image formation processes are articulated on a contingent and a structural level: the contingent phase involves the absorption of *messages*, i.e. all the external inputs that add information on an object of knowledge. The structural level acts when subjects internalize messages, i.e. when they filter inputs

through the *value systems* that belong to them. The reaction to a message will hence depend on its coherence with the pre-conceptions embedded in the individual's cognitive structure.

When I receive a message, this may influence my image of something in diverse ways. Let's say, for example, that I have an image of university X as a good school. I get to know (message 1) that a certain fiction writer (whose work I do not know) has graduated from university X: since I do not know that writer, my image of the school remains unchanged. I then learn from the Internet (message 2) that this school scores high in a well-reputed ranking, which I am well aware of: I do trust this ranking, hence my image of university X as a good school is reinforced. But after some time I learn (message 3) that the school has been involved in a plagiarism scandal: my value system has been shaped to consider plagiarism as deplorable, hence my image of the school is negatively affected. The effect of a message is always a sum of the input *per se*, and the value system through which it is filtered.

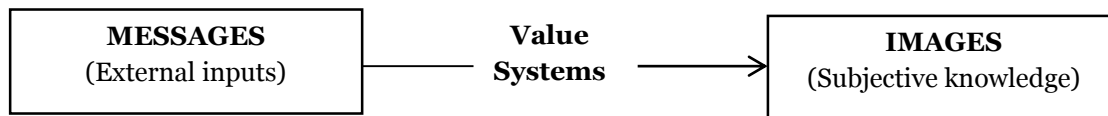


Figure 1. Synopsis of Boulding's (1956) Theory on Image Formation

Figure 1 summarizes image formation as conceptualized in Boulding's theory. This has provided the cognitive basis for the methodological technique presented below.

The technique is based on narrative analysis, as it is conducted by Mishler (1986). Mishler questions the notion of an *interview* as a structured form of interaction, involving an interviewer asking a fixed schedule of questions to a respondent. By doing so the interviewer limits the capability of collecting data, as this forces the respondent into a constrained scheme of answers. This may prevent them from articulating concepts that may matter to the research, and so Mishler redefines the interview as a *co-constructed* situation, in which both parts share equal power in the construction of meaning.

In a research aimed at grasping processes of image formation, narrative data are of fundamental importance, as they provide the only way to articulate an otherwise tacit process. My fieldwork has involved multiple interactions with users of the computerized food security system, aimed at grasping the role of ICT mediation in their vision of the state. To "write the history" of image formation as lived by PDS beneficiaries, I have adopted an interviewing technique articulated in three phases.

- *Phase 1 - descriptive questions.* Interviews began with questions on the general description of the objects of interest. For example I would ask, "what exactly is the PDS? Can you tell me more about it?" and let the narration start from there. This phase, characterised by purposefully broad questions, aims at instilling confidence in respondents, and allows to visualise the main elements participating in their construction of things.
- *Phase 2 - identification of images.* This happens when an image is flagged, meaning that the interviewee presents a subjective vision of an object of interest. For example that is what happens when a PDS user, describing the system, reports that "the local shop steals rice from the PDS". The researcher then asks precise questions on that image of the ration shop: why would it be so? Which factors have concurred to shape this view? This is where we set to elicit the messages that contribute to an image, and the cognitive filters through which the subject interprets them.
- *Phase 3 - iteration on images.* Questions in phase 2 normally continue till the narrative on a given image is saturated. Once the researcher feels that all the relevant data on that specific image have been obtained, the interview continues, with more descriptive questions or re-starting from where the narration had been interrupted. The interview has the purpose of mapping inputs to image formation, in this case with particular attention to the role of ICTs.

This technique has structured the whole process of narrative data collection in my study. My choice of a quasi-ethnographic method, relying on observation in the physical spaces of utilization of the PDS, aims at grasping the *social milieu* that shapes the value systems of people (Boulding 1956).

Data analysis was based on the transcription of interview notes, which were then mapped based on the themes that were found to be relevant to image formation. This is a form of thematic analysis, as it is detailed in Riessman (2008): themes are identified in each narrative, and common ones are then traced across interviews in the corpus of data. In my research I have identified inputs based on the *loci* of origin of images, namely direct experience, social networks, political circuits, and so forth. As illustrated below, this has helped me mapping reality as constructed in the narratives of PDS users.

Before moving to the empirics, two points need to be specified, the first one being the value-added of this technique for interpretive research. To be sure, an interpretive epistemology endows the researcher with a clear mindset, which qualifies our data as “our own constructions of other people’s constructions of what they and their compatriots are up to” (Geertz 1973, cited in Walsham 2006, p. 320). However, epistemology does not automatically equip the researcher with an operational technique to study people’s constructions, dividing their genesis into different phases to be identified and analyzed systematically. This is what I do with the technique proposed here, using a structured scheme to analyze image formation as experienced by respondents.

Secondly, the technique devised here is centred on beneficiaries, and could hence possibly imply a notion of them as passive recipients of development projects (Corbridge 2003). While the term could indeed be ambiguous, the concept of “beneficiaries” in this paper does not carry a connotation of passivity, but simply identifies my main group of interest with the recipients of anti-poverty programmes, particularly the food security scheme that I study. In fact many beneficiaries, while constructed as “recipients” of development programmes, actually play very active roles in them, some instances of which are described below. Hence the term “beneficiaries” is to be read etymologically, beyond the preconception of passivity that is sometimes associated to it.

Application: The e-PDS in Kerala

At the onset of my fieldwork in November 2011, Kerala was computerizing its food security system, augmenting the PDS with digital recognition of its users. Through the PDS, primary goods (mainly rice, wheat, sugar, and kerosene) are sold at affordable prices to poorer households. The programme is based on procurement by a government agency, the Food Corporation of India (FCI), and on redistribution through licensed *ration shops* scattered in urban areas and villages across the nation. Members recognized as below-poverty-line (BPL) turn to the ration shop with a document of entitlement, called a *ration card*, and are hence enabled to obtain goods at highly subsidized prices, for example rice in Kerala is sold (in rationed quotas) at 1 rupee/kg, instead of 42-43 rs. in the market.

The PDS used to be universal, but after structural adjustment in 1997 it became targeted to users below the poverty line. Many citizens report that numerous households, while factually poor, are not recognized as such by BPL statistics, and are hence denied access to the PDS (Swaminathan 2002). But also the ration dealers, who own and manage the shops through which goods are distributed, suffered from the transition to a targeted system: since the programme became targeted, their number of users dropped, and this has put their financial situation in peril. Ration dealers often divert PDS goods on the market, depriving the beneficiaries from access to their subsidies (Khera 2011).

Computerization started from the need to combat diversion (known as “rice mafia”) of PDS goods. A first step was the creation of a database of all PDS users, whose data digitization was delegated to a social help group (Kudumbashree). A second step lied in a software, named Targeted, Efficient, Transparent Rationing Allocation Public Distribution System (TETRAPDS), which enabled back-end operations in the administrative bureaus of the programme. A third step, more visible to users, has focused on the last mile: in a set of ration shops, transactions have been regulated by point-of-sale machines that recognize users

through their fingerprint. These machines place a firm monitor on ration dealers, as they are designed to ensure that goods are sold only to entitled users.

My study focused on the mechanisms through which PDS users would “see” the state, as a result of the computerization that reframed access to the programme. Over the eight months of my fieldwork I spent long times with beneficiaries, living and working in the physical settings of usage of the programme. I moved across different slums and villages, and in particular spent many hours inside the ration shops, which constitute the physical interface through which users access the subsidized commodities. Speaking to users, I have conducted a “historiography of images” on their narratives.

Pramit, Pallithottam Village (Kollam)

Pramit is a fisherman in Pallithottam, a small coastal village in Kollam district (south Kerala), led by a vibrant fishermen’s community and characterised by high reliance on the PDS. It is the early days of my fieldwork and I am still getting acquainted with the programme. I start with descriptive questions, to which Pramit responds with long narratives on how his family always used the local ration shop to purchase oil, pulses, cereals and other goods. All of a sudden, Pramit calls his local ration dealer a “liar”, saying that he often pretends having “ran out” of goods to sell them elsewhere at higher prices. I become interested in understanding the genesis of this image.

My interview then enters phase 2, in which I ask specific questions on image formation. In Pramit’s narrative, several inputs emerge as relevant: first, Pramit (as many Keralan citizens) is well aware of historical and political context, including the fact that the move to a targeted PDS pushed many ration dealers into corruption. Second, he reports that the local shop often “runs out” of goods in the first days of the month, when commodities should have just arrived from the FCI, hence leading to the widely diffused suspect that some transaction is being concealed. Third, the fishermen’s community in Pallithottam is very cohesive, and views on the ration dealer being connected to “weird” markets is a frequent object of conversation. All inputs, intertwined with each other, lead to an image of the dealer as unreliable.

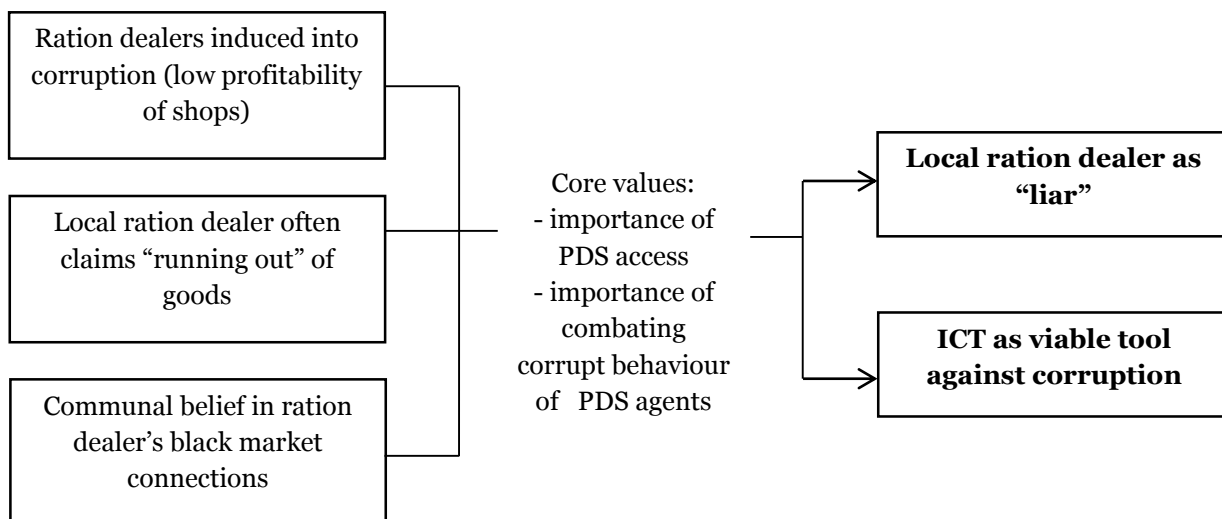


Figure 2. historiography of images on Pramit’s narrative

Pramit’s value system, partially observable through interaction with his community, is characterised by deep belief in the importance of redistributive policies, and by the vision of corruption as a particularly shameful act for those involved. As a result, Pramit is happy about the novel use of biometrics in the PDS, because he believes this will make it much harder for the ration dealer to steal rice. In his set of priorities,

capability to access PDS is very important, and it is hence through this aspect that he filters the majority of the inputs that he receives. He believes that if ICTs may reduce the scope for corruption, and increase people's chance to get PDS goods timely and at the right price, then computerization is the way to go.

Ayesha, Parassinikadavu village (Kannur)

Ayesha is a young social worker living in Parassinikadavu, a rural village of Kannur district bordering a tribal area. She works with a community organization involved in pro-poor assistance, and among the households turning to her there are those of two former ration dealers, who had to shut down their businesses due to debt. She tells me that biometric technology in ration shops is “useless”, as it targets “the wrong problem” in the first place. I ask her to elaborate more on that image.

First, Ayesha too has a firm grasp of the historical context she is dealing with. She knows it especially from the eyes of the vulnerable households with whom she works, whose struggles for a livelihood she witnesses on a daily basis. Second, she reports having learnt a lot from ration dealers' struggles: from them she knows that many commodities are diverted well before they even reach the ration shops, during the earlier phases of transportation and storage. Furthermore, she is familiar with the kind of pressure to which ration dealers are subjected, and she tells me that the system is taking the wrong form of action, as it is monitoring the shops without giving an alternative to corruption. It is still very hard for a non-corrupted ration shop to survive in Kerala.

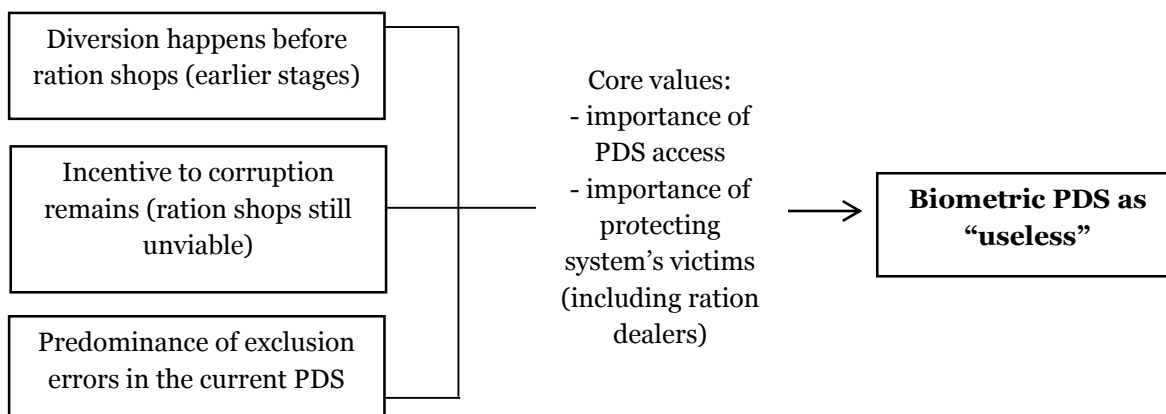


Figure 3. historiography of images on Ayesha's narrative

Ayesha's cognitive scheme sees the needs of the poor as a top priority, and this leads her to deem the current computerization effort as “useless”. Her inputs are filtered through a strong pro-poor conception, for which the roots (incentive) to corruption, not only its effects, should be attacked by ICTs. Filtered through this vision, her knowledge of computerization leads her to depict it as a biased scheme, which will monitor the ration dealers without giving them a real opportunity to make a living.

Rajesh, Karimadom slum (Trivandrum)

Rajesh is a rickshaw driver living in Karimadom, the biggest slum in the state capital (Trivandrum), and is a militant activist in a workers' trade union. Households in his community are highly reliant on the PDS, and it is in Trivandrum that the pilot project of computerization of ration shops has been started. We are still in the descriptive phase of the interview, and he is already furious: he tells me that the digital PDS is a “scam”, which will “exclude the poor” instead of helping them access the system. I set to trace the history of that image.

Rajesh has been an activist for a very long time, and is aware of the key debates on social policy. In particular, he insists that the central government wants to use the unique ID scheme (Aadhaar), which captures the biometric details of the citizens enrolled, to dismantle the current PDS and replace it with a system of cash transfers. The debate on direct benefits (advocated, by some, as an alternative to PDS) has not yet been translated into action: but Rajesh's fear is that this will dismantle the food security system to which people are used. He presents cash transfers as biased and exclusionary, and depicts technology as inevitably linked to the government's enactment of this type of reform.

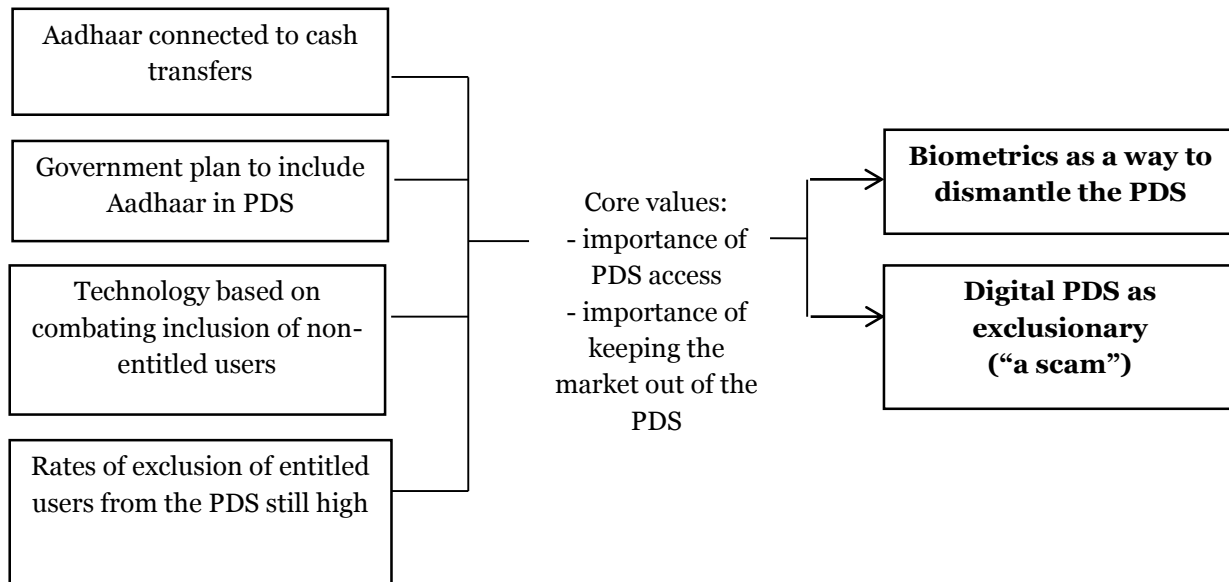


Figure 4. historiography of images on Rajesh's narrative

Rajesh's value system, rooted in the left-wing stream of Kerala politics, sees it as inappropriate for the market to interfere with a state-led food security scheme. As a result, he filters most of the inputs relating to a computerized PDS through a state-market division, in which ICT adoption signals the transition to a market-led cash transfers system. This leads him to a deeply critical vision of ICTs, constructed as an exclusionary tool rather than a means to construction of a more effective PDS.

These stylized vignettes convey some symbolic bits of the research, which involved 126 interviews structured as described above. It was a complex journey inside citizens' image formation, which led me to confront diverse views of the intertwining between technology and the PDS. My focus on images, and on writing their "history" based on their inputs and underlying value systems, led me to engage with users' reality, and to articulate its study in a methodical way. By connecting the themes emerging across data, I devised a structured vision of how the poor "see the state" through ICT.

Applicability to ICT4D and Generalization

This method led me to confront specific data on the formation of beneficiary perceptions, which could not have been elicited through narrative analysis in its generic form. Over fieldwork, I found that the poor in the Kerala context do not "see the state" through the material aspect of ICTs, but through their impact on the entitlements that they are granted under the PDS. Many citizens are not aware of how technology actually works, but they have clear views, shaped by socio-historical context, of the consequences that its adoption will have on their access to the PDS. Citizens "see the state" based on its capability to sustain their livelihoods, and ICTs are viewed in terms of their ways to enable or constrain that process.

More at large, researchers in ICT4D are called to become aware of users' reality, to avoid the flawed preconceptions in which the "gaps" at the origins of project failure are rooted. The "historiography of

images” designed here has led me to collect data on users’ image formation, and to analyze them based on the inputs and value systems involved in the process. The interviewing technique adopted here, and the construction of “maps of images” for each interview, have allowed me to explore the making of people’s views, and to study their construction of existing reality. These processes have been instrumental in answering an interpretive question as the one asked here.

There are two caveats with which to conclude. First, as it emerges from the interactions on the field, the perceptions shaped in the minds of users are far from being independent on each other. There are diverse forms of mutual influence, for example if a citizen is suspicious towards the government, readiness to accept a new e-governance project may be limited in spite of the quality of the project *per se*. As image formation processes are mapped, it is hence important to flag interdependences across perceptions, and trace their origins as connected to value systems and external inputs.

Second, these cognitive processes are not homogeneous, but find their origins in different spaces of image formation, which go beyond direct experience of the programme studied. One of these spaces lies in the social sphere, in which people interact with each other and voice their perceptions, acquiring new inputs of image formation too. A similar space may be found in political circuits, i.e. the formal and informal domains of politics in which people are inscribed, which influence the types of inputs received and the value systems through which subjects think. Spaces of image formation are numerous, and coexist with each other in image formation processes: a useful way to organize this type of data is hence that of classifying them based on the source of image formation.

As it often happens in ICT4D, during the project I acted at the interface between theory and practice. This was because, despite the academic nature of my position, I was frequently asked for advice on how to better tailor new technologies for the PDS, by the very officials and designers whose work I was observing. The “historiography of images” has backed my role as an advisor too: thanks to this method I found that the poor see ICTs through their *entitlements* to access the PDS. I have hence dedicated my advice to practical ways to tailor ICTs to improve people’s access, by minimizing gaps with ration dealers and simplifying procedures for excluded households to obtain a ration card.

The technique described here hence yields both a theoretical and a practical value for ICT4D research. Theoretically, it places beneficiaries at the core of the question, conceiving their reality as the main unit to be analyzed in the study. Practically, it leads the provision of advice to be grounded on people’s needs, as appraised and represented by their own voices. If we wish to “make a better world” through ICTs, these aspects should be taken into direct consideration.

The technique presented here is still being experimented with, and most surely there are areas of improvement for it. First, what Boulding proposes is a theoretical framework, hence not *per se* tailored to be used as a methodology, it may hence need refinement under this aspect. Second, its contribution to IS literature (outside ICT4D) still needs to be explored in detail. While bearing in mind these limitations, a “historiography of images” still yields significant potential in discovering user reality, hence limiting the chance for design-reality gaps to lead to failure of ICT4D projects.

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