Innovation and its Social Impacts:
The Role of Ethnography in the Evaluation and Assessment of ICTD Projects

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by

Balaji Parthasarathy
ICICI Assistant Professor
International Institute of Information Technology, Bangalore
26/C Electronics City, Bangalore – 560100, India
pbalaji@iiitb.ac.in

and

Janaki Srinivasan
School of Information
South Hall, University of California
Berkeley, California 94720-4600, USA
janakis@sims.berkeley.edu

Abstract:
Innovations in Information and Communications Technologies (ICTs) are being increasingly deployed in a range of sectors, from government to medicine, to foster social change, especially in less affluent regions. Even as there emerges an inter-disciplinary field of ICT for Development (ICTD), there are many conceptual issues that need clarification. One such is methodological, or the question of how to evaluate and assess the impact of ICTs on developmental outcomes. This paper will argue that there are at least three aspects to assessing ICTD projects: ICTs, development, and the question of ICTD for whom. After identifying the diverse disciplinary perspectives that the study of each aspect demands, and highlighting the methodological pluralism that such disciplinary diversity will demand, the paper will discuss the relevance of ethnographic techniques for assessing ICTD projects. It will also use the case of two ICTD projects from India to argue why ethnographic techniques are crucial to understanding their outcomes.

Information and Communication Technologies (ICTs) refer to 'the technologies and tools which enable sharing, distributing and gathering of information, and communicating with one another, one on one, or in groups' (Ramilo and Villanueva, 2001) and their deployment is increasingly perceived as crucial in various spheres of human activity. The focus of this paper is ICTs for Development i.e. the use of ICTs to reduce information asymmetries, by providing relevant content (such as the market prices of agricultural produce) and services (such as telemedicine or e-governance), to facilitate economic and social change. This paper argues that to understand the economic and social changes brought about by ICTD deployment, at least three components need analysis - the ICT itself, the 'development' that has occurred since its deployment, and who this 'development' has affected. It also argues that such a study must draw from diverse disciplines and deploy diverse methodologies. In doing so, it will specifically highlight the vital role for ethnographic methods in understanding the outcomes of ICTD projects.

Assessing ICTs to ascertain how the reliability and scalability of a technology in various operating conditions can lead to its deployment and diffusion is a question of using engineering techniques, a discussion of which is beyond the scope of this paper. In asking whether ICTs lead to development this paper will draw from economics and define development as improvement in total factor productivity (TFP). By doing so, development lends itself to being evaluated using econometric techniques. But such an aggregate *measure* of development cannot explain the *processes* of development. Examining the processes of development not only facilitates, following Sen (1999), a broader understanding of development as a means of granting human beings the freedom to do what they value, it also forces us to confront the important question of ICTD for whom. Indeed, economists

themselves acknowledge that productivity changes do not autonomously manifest themselves in the absence of attendant institutional change, and such change is always subject to social contestation. Identifying the beneficiaries of development requires an examination of the features governing social institutions. These features, according to legal scholars, are laws, norms, markets, and architecture or code, and they circumscribe how various people use the information that ICTs deliver.

Analyzing variation in the usage of information to track the trajectory of institutional change is where ethnographic techniques are most useful. Ethnographic techniques are effective in unraveling the processes of development, especially the specific options and constraints that various groups face in overcoming institutional barriers to harness the development potential of ICTs by using information. This is because ethnography identifies the issues and people who determine social outcomes by situating local relationships, understandings and meanings, within shifting polities and economies, at various spatial scales. According to Brown and Duguid (2000), the information age tends to be characterized by tunnel vision where information is the central focus and "inevitably pushes aside all the fuzzy stuff that lies around the edges – context, background, history, common knowledge, social resources" (p.1). We argue that ethnographic techniques provide an effective means of understanding the outcomes of ICTD projects by incorporating the 'fuzzy stuff'.

ICTs and Development

Before asking whether ICTs lead to development, it is important to define the contentious term 'development'. One way to define it is to draw from economics, and understand it as an increase in TFP. Following the work of Solow (1957), many economists, such as Krugman

(1994) and Romer (1990), have pointed to the importance of raising TFP for economic growth, which is implicitly equated with development. Improvement in TFP, in turn, is determined by technological change, and especially important in this regard are general purpose technologies, or those that "….transform an economy by finding new applications and fusing with existing technologies to rejuvenate other, preexisting sectors of the economy" (David, 2000:75). ICTs can also be classified as general-purpose technologies and lie at the heart of what is widely viewed as the third industrial revolution or the information age (Castells, 2000).

However, the above definition of development is problematic because economic growth is always characterized by socio-spatial unevenness and there is no reason to believe that the characteristic has changed under informational capitalism (Castells, 2000). The unevenness, in turn, is a reflection of the fact that economic consequences seldom occur in isolation; instead, they are accompanied by social and political changes. But, these changes, to the extent that they do not have direct economic consequences, or lead to a change in TFP, are not taken into account by an economistic understanding of development. Thus, such an understanding of development is not only a narrow lens through which to understand the changes accompanying the introduction of ICTs, but it also leads to the adoption of measurement techniques that prove limiting in this context.

By relying on easy to measure data for well-defined indicators, econometric techniques may well suffice to measure development as a change in TFP. But as described earlier, development also leads to changes that are not economic, and not all social changes lend themselves to measurement using well-defined indicators. In fact, anthropologists argue that

not all change is even measurable.[1] Even ignoring for a moment the anthropologists' argument, and assuming that efficiently functioning markets manage to capture all necessary information about economic and social change, there is a another limitation to the techniques used by economists: they measure outcomes rather than processes (Bardhan and Ray, 2006).

Processes are at least as important as outcomes because, as David (2000) argues, the effects of technological change are neither immediate nor widespread. When a new technology is introduced, there is a "regime transition", or a combination of technological and institutional adjustments that offer insights into its effective use to facilitate widespread diffusion. He points to evidence from the impact of electrification on manufacturing. Although dynamos began to substitute for waterpower and steam engines as prime movers soon after electrification began in 1881 in the United States (US), the productivity effects of this substitution were not felt until the 1920s when the electrification of mechanical drives crossed the 50% mark, thanks in part to falling prices. More crucially, by the 1920s it was also understood that the substitution was far more effective when accompanied by redesigning factory layouts to shift from centralized power transmission to supplying machines and tools with separate 'secondary' electric motors.

It was in similar vein that Solow (1987) remarked how, despite years of investment in ICTs in the US, especially with the falling prices of general-purpose personal computers since the 1970s, the computer age was "everywhere but in the productivity statistics". Although firm-level studies in the US eventually provided evidence of productivity gains from investments, the studies showed that the gains were not uniform (Brynjolfsson and Hitt, 2000). They were

[1] For more on the epistemological and methodological differences between anthropologists and economists, refer to the collection of essays in Bardhan (1989).

greater in those firms that had made significant organizational changes, such as decentralization of decision-making and vertical disintegration. The variation in outcomes, despite the widespread reliance on consultants to help “re-engineer” firms to take advantage of ICTs (Brown and Duguid, 2000), not only indicates that the processes adopted by some firms to achieve optimal organizational structures are more effective than others, but also highlights the importance of studying institutional adjustments to understand the processes of development.

Understanding the institutional adjustments and arrangements that have enabled firms such as Dell, Amazon.com or e-Bay to profitably make use of ICTs requires detailed case-studies (Brynjolfsson and Hitt, 2000), since econometric techniques are neither meant nor equipped to analyze the relationships and processes leading to an outcome. Economist Pranab Bardhan's methodological critique is relevant in this connection: "In fact, our preoccupation with accurate quantification often takes us away from the more important causes of a phenomenon and we concentrate on variables that are better measured but may be socially and economically less significant...We tend to work with a thin conceptual menu and a large box of precision instruments. In contrast, sociologists and anthropologists spend much less time on honing these instruments, and more on a richer understanding of the processes, relations and dynamics." (cited in Sen, 2005:5644)

Development for whom?

Just as history shows that the effects of technology are never uniformly felt across firms or an industrial sector, how various members of a community adopt and are affected by ICTD interventions depends not just on the individual agency but also on institutional constraints.[2]

[2] Economics mainly understands social phenomena in terms of individual choices and motives, and treats the preferences of individuals as exogenously given and unchanging (Bardhan and Ray, 2006). In contrast, without

Institutions, according to North (1981:201-202), "….are a set of rules, compliance procedures, and moral and ethical behavioral norms designed to constrain the behavior of individuals in the interest of maximizing the wealth or utility of principals" where principals are those whom individuals work for either voluntarily or otherwise.

Lessig (1999) identifies four distinct but interdependent constraints on behavior, whether in real-space or cyberspace. "Norms constrain through the stigma that a community imposes; markets constrain through the price that they exact; architectures constrain through the physical burdens they impose; and law constrains through the punishment it threatens" (p.88). Although the constraints work function differently, and the effect of each is distinct, they work together. However, whether they work cross-purposes or reinforce one another depends on the context. This is because each constraint can be changed, with the exception of certain architectural constraints that are absolute (such as gravity). Similarly, law, norms and the market are constraints that are enacted only when a person or group chooses to do so, unlike architecture which, once instituted, is self-enacting. Thus, understanding how and why certain constraints are enacted and changed, who enacts and changes them, is essential to understanding how different groups within a community experience them. As the use of judgment, about when and how to enact a constraint, or against whom to enact it, is linked to relations of power between various individuals and groups, understanding these relations is crucial to understanding 'development for whom'. This paper argues the importance of ethnographic studies in capturing such relations and their implications for development processes.

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underplaying the role of human agency, we believe that human agency is not the sole determinant of actions. It is worth mentioning here that 'agency' itself can be conceived of in several ways, and this paper subscribes to the position that agency is influenced and constantly shaped by socialization.

The key to ethnography is the focus on a detailed understanding of a specific place, in its own terms (Tacchi, Slater and Hearn, 2003). Ethnography literally means to 'write (or represent) a culture' and is typically based on long-term engagement in the field of study. In describing local relationships, understandings and meanings, an ethnographer seeks patterns to make sense of every feature of a place and a project in relation to the social setting and the social relationships it encompasses. Simultaneously, the local is also contextualized in wider contexts (e.g., the wider economy, government policies and politics). Ethnographic case studies differ slightly from ethnography in that they are conducted over shorter spans of time than full-fledged ethnographies. In addition, ethnographic case studies explore narrower fields of interest than complete ethnographies of places and activities. But the most distinctive feature of ethnography, viz. contextualizing the problem in wider spheres, also extends to ethnographic case studies.

Since ethnographic studies focus on identifying forces, factors, histories and people who play decisive roles in determining social outcomes issues, by situating local relationships, understandings and meanings, within shifting polities and economies, at various spatial scales, they are effective in unraveling the processes of change. Specifically, this means that ethnographic studies can be used to generate hypotheses,[3] which are especially crucial for a relatively new field of enquiry such as ICTD projects, and they make it possible to reshape research midway based on field experiences. Further, since ethnographic techniques involve a long-term engagement (through conversations and observations) with the community, and case studies are seldom based on one-time interviews with individuals, they enable building a

[3] The danger with an approach that seeks to measure only quantifiable changes using well-defined indicators is that the study may fail to identify the forces most crucial to understanding the functioning of the project.

trust relationship with participants in the research. This allows the researcher to ask people directly about their concerns and examine sensitive issues like corruption that are of great importance in projects that, for example, claim to increase transparency.[4] In addition, close and multiple interactions also afford an opportunity to understand the power relations and contestation that form an integral part of development projects of which ICT projects are an instance. Thus, interactions with participants in multiple arenas over a relatively long period of time yield a richer account of the lived experiences of the project. Such an account then allows an examination of how place-specific characteristics influence the constraints on behavior. Understanding these characteristics, and how they shape the constraints faced by groups within a community, helps address the question 'development for whom'. Indeed, an ethnographic account may even attempt to explore what 'development' *means* for all these groups.

This paper uses two case studies to illustrate the value of ethnographic techniques in studying ICTD projects. One is the information kiosk based Sustainable Access in Rural India (SARI) project in Melur *taluk* of Madurai district in the Indian state of Tamilnadu. The other is the Computer-aided Administration of the Registration Department (CARD) project in Andhra Pradesh that computerized land records administration.

SARI[5]

SARI was initiated in 2001 to aid the economic and social development of rural communities by fulfilling their information and communication needs. The project set up village

[4] Helper (2000) talks about the importance of fieldwork for economists because it can help them directly ask people about their constraints.
[5] This section draws from Srinivasan (2004) unless otherwise mentioned.

information kiosks with a computer and internet connectivity[6] to offer various services to the local community. Partnerships with the Aravind Eye Hospital, Madurai, and agricultural colleges, enabled the provision of health services and advice on agricultural issues, while government offices in Melur helped with the provision of some form of e-governance.[7] E-mail, voice mail, video conferencing, booking of tickets, online education programs, job searches and placing of classified advertisements were the other services offered. While the provision of the various services at the kiosks was to overcome the limitations of architecture (such as distance from government offices), it was also an attempt to create a market for these services to ensure that the project was a financially sustainable, even profitable, endeavor.

SARI kiosks were run by two groups - n-Logue, which also provided the connectivity, and DHAN, a local non-governmental organization (NGO) that had worked with women for years to alleviate poverty using various tools, ICTs being one among them. The day-to day workings of the n-Logue and DHAN kiosks as well as their long-term goals differed.[8] For the purposes of this paper, two differences prove crucial. One, n-Logue kiosk operators (KOs) were a much more loosely bound group than the DHAN operators.[9] Two, since DHAN's

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[6] Connectivity was provided using corDECT WLL (wireless in local loop) technology from n-Logue Communications Private Limited, a Chennai company.

[7] This included an e-governance website that provided information on all relevant government departments, the schemes they offered citizens and details of how to make use of them. The information ranged from eligibility criteria for Old Age Pension schemes, women's welfare schemes, loans from the District Industries Centre, and for courses in various colleges, to the application procedures for a driving license. Since application forms for these schemes were also made available as downloadable documents that could be filled out before printing, it was possible to use email to apply for birth, death, income, community, nativity, legal heirship and encumbrance certificates, and to send petitions and complaints to high ranking government officials

[8] n-Logue believes that social and economic development will follow once kiosks are made commercially viable. DHAN believes that financial sustainability will follow from fostering social networks and training. (Narender and Nirmala, 2003).

[9] Both n-Logue and DHAN employ a KO at each kiosk. The KO is the person that the local community deals with on a day-to-day basis. The responsibilities of the KOs include the provision of Internet access to the community, raising awareness about the services offered by the kiosk, and channeling the information needs of

focus, from the inception of the project, was to recruit women whenever possible, the number of women KOs with DHAN was much higher than with n-Logue.

Neither the n-Logue nor the DHAN kiosks were financially successful and, as a result, a number of kiosks have shut.[10] It is reasonable to characterize the project as a failure if its outcome is measured either in terms of the income generated by the kiosks or even in terms of the number of people it has affected. Measuring indirect effects, whether in terms of village income, education or employment levels, is also unlikely to suggest that the project has made a dent. Thus, using the project's own metrics and parameters of change, a study that gathers data for a pre-determined set of questions and indicators may well conclude that the project 'failed' to bring about 'development.'

An ethnographic case study of the project, however, suggests that these indicators do not suffice to understand the changes brought about by the project.[11] Interviews with KOs and

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the community through n-Logue to the application and content providers. Depending on the agency they are attached to, the KOs are trained by either n-Logue or DHAN. DHAN believed in intensive and regular training programs for its KOs. This included training sessions and regular meetings for KOs where the progress and problems of individual operators were also discussed.

[10] n-Logue kiosks have to meet their expenditure with the revenue they generate through service provision. Since the kiosks are mostly established using loans, those who are unable to break even over a period of time prefer to shut. DHAN takes the revenue from its kiosks and pays for all the costs irrespective of whether the kiosks break even.

[11] The first phase of the study (May 2004) involved visits to several SARI kiosks and interactions with operators, users and non-users. In the second phase (June 2004), the focus was on select kiosks. The choice of these kiosks was based on several factors such as the type of kiosk (DHAN/n-Logue), the gender of the KO and their success as perceived by the parent agency. The fieldwork included extended conversations with the KOs and users who came to the kiosk; with people who never used the kiosk; and with the local government officials. Data was collected from the user books maintained by the kiosks. In addition, interviews were conducted with the SARI manager, people in the DHAN Information Technology project, and the staff of n-Logue. Attending meetings organised by DHAN and participating in the collective canvassing efforts by KOs also provided an understanding of how kiosk services are marketed. To learn about the government's view of the project, interviews were conducted with the employees of government offices in the *taluk*. A similar study was carried out in April 2005 to trace changes in the operation of the kiosks examined the previous summer and the evolution of the project in general.

users of the kiosks, as well as observations of the kiosk on their working days, suggest that KOs and users constitute distinct groups with distinct experiences of the project. While the project has brought about many changes in the lives of the KOs, users have been much less affected (though gender and caste create further groups amongst users and these groups had different accounts of their encounters with the project). Further, DHAN KOs seem to have experienced a wider spectrum of changes than the n-logue KOs, and the women more than the men. None of these categorizations is obvious and their importance became apparent only after spending time with the actors - KOs and their families, users, n-Logue and DHAN staff - in the project. Nor was it possible to know at the outset what 'measures' of development were important.

Even amongst those affected the most by the project, the KOs, the obvious choice of an indicator of change – income - was one that they themselves talked the least about. While the KOs agreed that the salary was among the initial motivations for accepting the job, it was no longer the prime concern, though it obviously was important. The women KOs, in particular, talked more about the changes in their lives that came about as a result of their social status as KOs rather than about the financial benefits of the job. Most women KOs talked of the difficulties they faced in convincing their families to let them work outside the traditional sphere of 'women's work'. They also talked of the various experiences they had gained as KOs and how these had touched all aspects of their lives. They said that interacting with government officials for e-governance services and marketing their services to customers increased their social status. In particular, they were proud to be role models for young girls and women in their villages, where being a KO became a more acceptable option for a woman than it was at the inception of the project. Frequent meetings also gave the KOs an

opportunity to meet people and express their opinions among people outside the family, which many women found a new and rewarding experience.

What was the institutional incentive structure within which women became KOs? Women were drawn to the post largely *because of* incentives offered by the market (a paid job). The support offered by DHAN, a well-established NGO in the region, also encouraged the women, *in spite of* social norms dictating that they not take up a job that was not on the traditional list of 'women's work'.[12] As a result, by 2005, a majority of the DHAN KOs were women. With time, as these women built a reputation and gained in status, the norms themselves underwent a change and being a KO became something young women in villages aspired to. Thus, institutional constraints shaped women's decisions to become KOs but, over time, their decisions and actions shaped the constraint itself.

Identifying how architecture, markets and norms interacted and changed one another,[13] helped specify the shifting institutional incentives for one set of stakeholders in the project – women KOs. Although neither changes to the architecture of service provision nor the efforts to create a market for services made an impact in terms of meeting the information needs of the communities, much less aid their economic and social development, there were normative changes in terms of the social status of KOs and in the definition of "acceptable" work for women. The case of women KOs shows how ethnographic techniques facilitated an analysis of the differential impact of SARI on different of categories of people and helped track the unforeseen shift in social norms.

[12] A 3-year (2001-2004) long drought, which affected family incomes drastically, also left women with more time on their hands.

[13] There were no changes to the law playing a direct role in this context.

CARD[14]

CARD was implemented in 1998 to improve the working of sub-registrar's offices (SROs) in Andhra Pradesh by digitizing property records and automating various steps in the registration process.[15] There were two aspects to improving their working. One was to make them more efficient by speeding transactions. The second was to increase procedural transparency and reduce corruption, thereby decreasing the reliance of citizens on middlemen for help with baffling and time-consuming procedures on one hand, and the discretionary powers that such procedures vest bureaucrats with on the other. But an ethnographic study of the project, describing the land registration process after the implementation of CARD, found that while the project increased efficiency, it did not reduce corruption.[16]

CARD reduced registration time from many days to a day, by doing away with the manual recording of transactions and the physical retrieval of property records. Digital records were easier to store and faster to retrieve than manual records, and computers calculated registration duties more quickly. But corruption was not reduced for two reasons. One reason was that not all steps in the registration process were amenable to computerization. Determining the duty to be levied remained a matter of bureaucratic discretion that continued to provide opportunities for bribes. This, in turn, did not eliminate the role for middlemen in the registration process. The middlemen were the document writers who, operating outside

[14] This section draws from Malhotra (2005) unless otherwise mentioned.

[15] In accordance with the Registration Act (1908), the primary function of SROs is to register transactions on immovable property and to issue supporting documents such as encumbrance certificates and certified copies. The registration process involves securing the approval of the sub registrar and paying a series of duties for the registration. Registration details are then recorded in government documents for future reference.

[16] The study was conducted between mid-July and early-September 2001 in SROs in Hyderabad and Ranga Reddy districts. While most of the time was spent observing the working of the SROs, the study also relied on forty interviews with citizens, SRO staff and seniors officials in the Registration department.

the SRO premises, helped citizens complete the registration process, going to the SRO only for the signatures to validate the process. Not only did the document writers charge citizens a fee for help with the paperwork, but they also negotiated the bribes on behalf of the SRO staff. This helped the SRO staff avoid direct bribe taking while the document writers, as private operatives, could not be investigated for using a public office for rent seeking.

The bribes were shared among the SRO staff and served three purposes. One, it supplemented their incomes. Two, senior officers in the Department responsible for staff postings had to be paid off, especially for transfer to lucrative SROs i.e. those where a large number of high value transactions meant that the potential for bribes was high. Politicians too influence transfers and seek political contributions, especially in a system where there is no public funding of elections. Finally, the bribes are used to pay workers hired by the SRO staff to help cope with their workload in the office. The private hiring was a result of a recruitment freeze by the Andhra Pradesh government since 1983 to contain personnel costs under pressure from the World Bank. Ironically, even as the formal SRO staff is transferred every three years, the document writers and the private workers are the only permanent fixtures. Similarly, even as the World Bank lauds CARD as a model of e-governance, its actions have forced the reliance on private workers and enhanced the pressures for rent seeking. Thus, corruption at the SROs was intimately tied to the larger political economy of the state.

The ability of CARD to partially meet its goals, i.e. increasing efficiency, can be understood as an outcome of partial changes to the law and the architecture governing the registration process. Since the replacement the older manual system of land registration and

administration by CARD was legally mandated, bureaucrats at the SRO had no option but to accept the partial change in architecture. Although citizens benefited from the shortened registration time, CARD did not benefit them entirely as proposed because the bureaucrats did not share the objective of reducing corruption. In practice, the larger context meant that rent seeking was an important objective for the bureaucrats.[17] The changes to the law and changes to architecture were only partial: the law was not changed to overturn the recruitment freeze in the government, or to publicly fund elections; nor did changes to the architecture, from the manual to the CARD system, adequately remove bureaucratic discretion. These partial changes made little difference either to the market "rates" for transaction rents as the state continued to retain monopoly rights over the provision of registration services, or to the norms governing the social acceptability of rent seeking and bribe giving.

Resistance to the full realization of the potential benefits of CARD points to the contested nature of development. But removing corruption and answering the question 'development for whom' without understanding the practices of corruption at the SROs is impossible: CARD could not counter corruption because bribes flowed to and through informal channels that the project could not officially acknowledge. While corruption is difficult to investigate because of its sensitive nature, insights into why it did not decline despite CARD would not have been possible but for the adoption of ethnographic techniques. Ethnography helped identify the distinction between the discourse about ICTs in government and the practices surrounding its deployment. It also showed the tension between the absence, on one hand, of a sharp distinction between state and society as manifest in the ties between the formal agents

[17] All bureaucracies depart from the Weberian ideal of coherence and rationality and are characterized by informal networks and flows (Evans, 1995:49). The extent to which such "non-bureaucratic elements of a bureaucracy", analogous to Durkheim's "non-contractual elements of contracts", reinforce or weaken the Weberian ideal depends on whether the incentives offered by the larger political economy encourage patronage and rent-seeking, as in the case of CARD, or a rule-bound meritocracy.

of the state (the SRO staff) and their informal agents (the document writers and private workers), and the prevailing power asymmetries on the other, between the agents of a regulatory state, and its citizens. In other words, ethnography showed the social significance of bribery, and the specific mechanisms through which corruption has prevailed in the interstices between state and society, the formal and the informal, beyond official statistics and despite computerization.

Conclusions

This paper argues that to understand the economic and social changes brought about by ICTD deployment, at least three components need analysis - the ICT itself, the 'development' that has occurred since its deployment, and who this 'development' has affected. It also argues that such a study must draw from diverse disciplines and deploy diverse methodologies. Limiting itself to the question of whether ICTs lead to development, and the question of ICTD for whom, the paper highlights the crucial role of ethnographic methods in understanding the outcomes of ICTD projects.

As a point of departure, the paper adopted the definition, from economics, of development as improvement in TFP. Although doing so allows development to be evaluated using econometric techniques, such an aggregate measure of development cannot explain the processes of development. Since productivity changes do not autonomously manifest themselves in the absence of attendant institutional change, and such change is always subject to social contestation, we confront the question of ICTD for whom? Answering this question requires an examination of the features governing social institutions - laws, norms, markets,

and architecture - and how they circumscribe the usage, by various people, of the information that ICTs deliver.

The two case studies show how ethnography plays a vital role in analyzing variation in the usage of information, thereby tracking the trajectory of institutional change. Ethnographic techniques are effective in unraveling the processes of development, especially the specific options and constraints that various groups face in overcoming institutional barriers to harness the development potential of ICTs by using information. In the case of SARI, outcomes that are relatively easily to measure, such as revenue growth, were hard to discern despite a new architecture of information provision centered round the kiosks and the efforts to create a market for the services that they offered. However, the project triggered tangible, but hard to measure, changes in the norms governing what was acceptable work for women, and enhanced the status of women KOs the villages, that would not have been identified without an ethnographic study.

Ethnography also identifies the issues and people who determine social outcomes by situating local relationships, understandings and meanings, within shifting polities and economies, at various spatial scales. In the case of CARD, there were measurable improvements in efficiency thanks to partial changes in the laws and architecture governing the registration process. But the partial changes by themselves proved inadequate to achieve the goal of reducing corruption; they also failed to alter either the market for illegal rents in registration transactions, or the norms governing the acceptability of corrupt behavior. Ethnography showed why the project held different meanings for citizens and for the SRO staff – the

channels of corruption could not be officially acknowledged while the practice itself was rooted in a broader socio-spatial realm.

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