

“What do others think?” An emic approach to participatory action research in Bangladesh

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Abstract Community informatics and Information and Communications Technology for Development research projects frequently focus on the appropriation of ICTs and the design of information systems to meet the needs of communities. Such projects typically involve a range of participants reflecting different cultures and depend for their success on the ability of the project to bridge differences. Using PROTIC (Participatory Research and Ownership with Technology, Information and Change), a 5-year collaborative project between Monash University, Oxfam Australia and Oxfam in Bangladesh as a case study, this paper reflects on the use of a “mainstream” form of participatory action research (PAR) as a tool capable of engaging in more sustainable projects by helping to identify and to take into account localised or context-specific social and cultural issues in the design of the information system itself, consequently improving the effectiveness and sustainability of the systems developed. The idea of emic understandings of culture have also been used to interpret

the project and PAR as an intercultural exchange around developing a community-focussed sociotechnical project.

Keywords Participatory action research (PAR) · Emic cultural practices · ICT4D · Bangladesh

1 Introduction

This contribution takes place within a framework informed by both Community Informatics (CI) and Information and Communications Technology for Development (ICT4D). With similar social concerns, though in the particular context of Global South issues, CI and ICT4D research and interventions often place themselves in the arena of cross and intercultural work. CI projects consider “lived-in and situated communities not as passive recipients of technological opportunities, but as actors engaged in the comprehension and ‘doing’ of community problem solving directed to social progress” (Stillman and Linger, 2009, p. 256). ICT4D, when concerned with problems of social development in developing countries, has a similar agenda. This is in distinction to the straightforward adoption of ICTs in developing countries without attachment to a specific project or program.

We draw on an emic approach to culture, which fosters a re-definition of methodologies and a self-reflective attitude about the assumptions that all the parties involved in a project bring with them. In particular, this paper reflects on the use of participatory action research (PAR) in an ICT4D project as a tool which facilitates project sustainability by taking into account localised or context-specific social and cultural issues. Second, this paper interprets the project and PAR as intercultural exchanges, and illustrates the processes of intermingling cultures activated by any

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encounter. The overall aim of the paper is thus to draw on a specific case study to reflect on the advantages that PAR and an emic approach can bring to the implementation of ICT4D projects, especially as regards our understanding of the nexus between researcher encounters and community engagement with ICTs.

We should also note that the notion of development (the D in ICT4D) is itself highly contested. Development is regarded here as forms of practice mediated by a “process of articulating knowledge and power through which particular concepts, theories, and practices for social change are created and reproduced” (Chae 2008, p. 145). There is not room in this paper to take this issue any further other than to acknowledge both theoretical and practical controversy. But if one takes a progressive, social-change oriented viewpoint, a feature of ICT4D is that it sees as part of its goal the development of community capacity as active agents in developing “pro-poor” solutions with technology, rather than passive consumers of products (Imam et al. 2017; Heeks 2016). Additionally, the importance of collaboration with and participation of the people at the bottom with forms of interpretive research has been highlighted as a critical success factor (Heeks 2009; Walsham 1995). ICT4D, therefore, requires a deep understanding of the cultural context in which projects are implemented, to foresee acceptance of projects by local communities and their long-term sustainability. Two broad approaches can be considered here.

First, the cultural premises which potentially affect project activity can be summarised using broad dichotomies such as Asian vs. Western background; Traditional/Rural vs. Modern/City environment; NGOs vs. University organisational cultures, International NGO vs. local NGO cultures. Cultural constraints and resources can further be examined in terms of power exchanges and imbalances, or contrasting norms and language and literacy differences that differentiate groups as well as individuals. Drawing a parallel with cross-cultural research, when these dichotomies are used to frame the culture–technology nexus, research and projects adopt an *etic* approach (Pike 1954). That is, they aim to reduce the continuity of the contexts to a limited set of discrete attributes and “to identify cultural regions within which cultures are more or less alike” (Triandis 1996, p. 408), using seemingly objective and valid typifications. The overall goal is to understand how to adapt technologies and systems that have been defined and planned elsewhere for a new cultural region in which they are expected to operate.

Somewhat in contrast, a truly responsive cultural approach suggests that the above dichotomies are social constructions, which (at times erroneously) objectify cultural variability and fail to grasp the complexity of local dynamics. Consequently, an *emic* approach to culture

(Pike 1954), suggests the adoption of a situated perspective without reference to external measures or typifications and the consideration of cultural boundaries as blurred and flowing. There is only enough space here to acknowledge the number of new questions opened by cultural approaches, including the mediated nature of perception, dialogical process of meaning making, the creation and use of artefacts as a way to transmit, preserve or transform locally meaningful practice, variant institutional cultures, or the importance of fully acknowledging indigenous knowledge (Valsiner and van der Veer 2000; Valsiner 2009).

Within this context, this paper will use PROTIC (Participatory Research and Ownership with Technology, Information and Change), a 5-year collaborative project between Monash University and Oxfam, as a case study. After several years of discussions, visits to Bangladesh, and negotiations with a private foundation the project was officially launched on June 7, 2015. Adopting a methodology based on PAR, PROTIC aims to work with rural women to help strengthen livelihoods and life opportunities by developing trusted mobile-centric information systems for agricultural development, in the areas of crop and rice cultivation, fisheries, livestock, poultry, and general horticulture. Women farmers are provided with smart phones and phone credit by the project, and information is provided via a call centre in conjunction with local community development activity. Additionally, as part of the PAR approach, it is hoped that the women will provide strong input into information system design and implementation on all aspects of the project. By documenting their opinions about the usefulness of information and the technology itself, it is also hoped that PROTIC will provide a community voice that can be used in advocacy, policy, and further research and development on the effective use of mobile-based information systems in such environments. It is expected that other areas of need including information rights, family violence, health and nutrition, and weather and disaster strategies will be considered for implementation as the project evolves (Stillman 2013).

The paper commences with some brief background on ICT4D and PAR in context before providing more detail about PROTIC from a research perspective, the methodology adopted, and how the project has developed to date. It will then report on the initial results, and will conclude with observations on the social and cultural issues that arose, and how the use of PAR helped to both identify and deal with them.

2 Background

2.1 ICT4D, culture and community

Within the field of CI, Day noted that

The agencies, organisations, groups and partnerships involved in community practice can be diverse and many in number. Community practice approaches, therefore, can be “top-down”, i.e. promoted and/or approved by statutory authorities, charities and voluntary bodies—in a “doing to” manner. Or they can emanate from within local communities, i.e. “bottom-up” in a “being done by” manner. Usually, top-down approaches tend to be associated with the community services approach. As community practices move toward a more action-oriented approach, so they tend to adopt a more bottom-up approach. (Day 2011, p. 4).

This picture can be similarly translated to the context of ICT4D, in its relationships between governments, NGOs, and different community structures or businesses engaged in sociotechnical development. The problems associated with institutional and local cultures not coming to a meeting point, resulting in limited ICT adoption or failure are well documented (Heeks 2002; Zheng and Heeks 2008).

In fact, ICT4D projects fall somewhere in-between the extremes of top-down or bottom-up practice. However, as Stoecker notes in his influential handbook on community-based research in which he warns of simplistic approaches to understanding community dynamics.

One of the best ways to make sure that the research will be useful, and that the research will fit the culture of the group or community, is for the people affected by the research to guide it. (Stoecker 2012a, p. 33)

An exemplar of the implications of this perspective is Donner’s survey of 200 articles on mobile phone use in the developing world (Donner 2008). The author broke them down into a number of themes, focusing on those with the ICT4D framework: “the determinants of mobile adoption” (often focusing on questions of infrastructure), “the impacts of mobile use” (largely taking an economic perspective), and “interrelationships between mobile technologies and users”, focusing more on the evaluation or design of ICT4D projects (ibid., p. 143). It is this last category that we are interested in. In particular, he identified a small group of articles dealing with everyday use and patterns of usage and adoption by specific communities. For example, Wei and Kolko (Wei and Kolko 2005)

discuss “how cultural factors and economic constraints influence patterns of mobile use in everyday life in Uzbekistan and yet also posit ways in which technology might be transforming social relationships by fostering dependence on the device” (ibid, p. 148). As Donner also revealed, the use of mobiles in isolated rural areas has been explored by other researchers in the Philippines, India, and Nigeria. In the same survey, Donner also studied new practices designed to fit specific situations such as intentional missed calls/callbacks. Other studies, for example, Anwar, who looked at the use of technology by female entrepreneurs in Indonesia, have noted that Western studies often underplay the role of religion in livelihood activity (Anwar 2014).

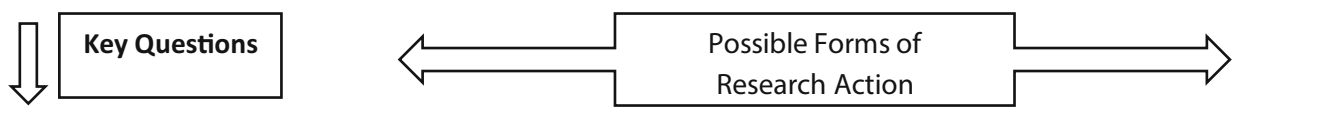
Ostensibly concerned with daily life, these issues, choices and strategies should be recognised as having an impact on ICT system design that is culturally and socially appropriate. However, the variety of cultural representations and practices covered by Donner is enormous. This put into question the usability of cross-cultural dichotomies and top-down approaches to implementing ICT4D projects, and suggests the appropriateness of emic perspectives and participatory approaches aimed at developing locally meaningful practices.

2.2 Participatory action research (PAR)

Participatory action research (PAR), also known as Community-based Research, Participation Research, Action Research, (Stoecker 2001, 2012a), or Participatory Rural Appraisal (Chatty 2011), originated in grass-roots partnerships between academic and community activists working to overcome disempowerment, discrimination and poverty in a variety of settings (Arnstein 1969; Fals-Borda 2001; Tinkler 2010). In Global South contexts it is also seen as a decolonizing form of research as it rejects uncritical approaches to knowledge and information production or technological appropriation by (formerly) colonized or dominated populations (Angeles 2011).

Ideal types for suggested forms of PAR along a continuum have been summarized in Table 1, drawn from the work of Arnstein 1969; Tinkler 2010; Angeles 2011. It is clear that PAR is distant from Positivist Research, but there tension between mainstream control of ownership of resources, knowledge, and authority by institutional players and authority holders and their transformation in the hands of more radical forms community of community action. This tension is also noted in the in the classic community-development typology of Rothman and Tropman (Rothman 1972; Rothman and Tropman 1970).

In practice, PAR represents a continuum from more traditional top-down research interventions to those more radical forms where communities engage as full partners in

Table 1 Forms of PAR and International Development (Adapted from work by Arnstein 1969, Tinkler 2010, Angeles 2011)


	Positivist research Manipulation	Mainstream PAR Partnership, delegated power	Radical PAR Citizen control
Who plans and implements?	Non-representative “expert”, external organisations Planned and carried out by people far removed from local reality—usually from first world	NGOs as brokers More collaboration, but key authority still rests between researchers and broker organisations	Grassroots organisations Planned and carried out by community members
Degrees of Collaboration What is the relationship between the researcher and the researched?	Highly bureaucratic and hierarchical relationship between the researcher and the researched	More collaboration, but key authority still rests between researchers and broker organisations	Researchers and researched negotiate and collaborate on a collaborative community-led partnership to generate activity, research mutually beneficial outcomes
Knowledge creation and control Who is in charge?	Top-down, expert approach are privileged, dominated by positivist approaches. Standardization and homogeneity are preferred	More collaboration, but key authority still rests between researchers and broker organisations	The community creates the knowledge or at least leads and directs those with expertise who accept this direction. Varieties of knowledge and methodologies are recognised as valid. No one size fits all
What are the power and inequalities and capacity for change?	Ignores or reinforces structural inequities in community. Not considered as part of the research agenda unless purposely focussed on it	Programmatic change More consciousness, but key authority still rests between researchers and broker organisations Issues include gender/s, North-South, dis/ability, age, poverty, disability, post-colonialism, race indigeneity, relations of production	Challenges power inequalities, privileges those with the least voice/power Aims for structural change

activities such as developing research questions, working on knowledge creation, analysis and communication, and community development for social change. Such an orientation is meant to contribute to a transfer in power relations resulting in community power and control over community development processes. It should be noted that PAR can be critiqued for a naïve idealization of the bottom-up social change process (Tandon 2008a). Despite this criticism, PAR can be considered as part and parcel of the broader academic agenda of developing critical and engaged Information Systems research agenda for social good (Toyama and Dias 2006; Walsham 2005).

The contention here is that PAR understood as both a body of theory and practice can help to extend and reframe the issues identified by Donner (2008). It possesses a substantial body of theory and practice guides for sensitive and reflective work which emphasizes collaboration to achieve community-oriented project goals and rich research data (Denzin et al. 2005; Brydon-Miller et al. 2011; Mohan 2014). Thus, PAR can help addressing the

design–reality gap identified by Heeks, that is the gap between how the system is imagined by the expert and the actuality of the context in which it is expected to be accepted/used/implemented in everyday life (Donner 2010; Heeks 2002).

Indeed, PAR, assisted by an emic approach to culture, aims at ensuring that material and immaterial artefacts developed in projects not only meet community needs, but are based on recognition of culturally embedded meanings and practices at both micro- and macro-levels of a project. PAR acknowledges that all the actors involved in a project—including diverse communities on the ground as well as researchers—are carriers of equally relevant cultural premises, and fosters their negotiation and blurring in the encounter with “the other”. This is even though an underlying premise can be that there is a power balance between “experts” and “communities” that needs to be redressed, with particular attention paid to developing a change in the values of a research to cherish the power, knowledge and skills transitions inherent in PAR (Tandon

2008b). An emic approach consequently “positions researchers in such a way as to operationalize self-determination in terms of agentic positioning and behaviour for research participants”, and the discourse which brings this about occurs “within the cultural context of the research participants” (Bishop 2005 p. 115).

The adoption of PAR is also considered to have significant advantages over more traditional non-participatory frameworks, particularly with regard to the project evaluation stage. By engaging communities in developing research questions, methods, and reflecting on process, PAR has the potential to identify more accurately what is important to those communities and the processes through which they arrive at their decisions, and so provide richly grounded data. If practiced throughout the main stages of diagnosis, prescription and implementation, it can provide critical longitudinal data that maps the trajectory of the research and the community, and so avoids the reliance on “static, one-shot, cross-sectional studies”, identified as problematic in the area of sociotechnical research (Orlikowski and Baroudi 1989, p. 54).

It is in this context that we now turn to PROTIC as a case study, so as to reflect upon cultural issues and PAR in practice.

3 PROTIC as a case study

3.1 PROTIC: background

Oxfam considers community empowerment to be critical from a moral or ethical perspective to change the “top-down” and directive orientation of many international development programs, and this includes the provision of information that can change people’s lives. It is felt that “community voices” should be heard in a much more unfiltered way by donors, governments and policy makers, and ICT connections appear to be a way to make this happen.

PROTIC’s main goal is:

To develop current, accurate, comprehensive, reliable and trustworthy Bengali-language interactive and localised information services and information provision skills for the community, particularly for women in agriculture, by providing access to information that enables them to act to improve their, and their communities’ well-being and livelihoods.

PROTIC has been developed as a specific project activity within Oxfam’s larger 7-year Resilience through Economic Empowerment, Climate Adaptation, Leadership and Learning (REE-CALL) program which works with local NGOs, village-based community associations or

organisations (known as CBOs). A number of other organisations are involved in various aspects of the project. These have included local universities, WinMiaki (a telecommunications company who provide the call centre service and related services), and Shushilan and Pollisree (local NGOs working directly with the two villages). The Research Initiatives Bangladesh (RIB), an organisation specialising in community development through PAR has been engaged to support the project in this area. Other organisations will assume a direct role in further stages of the project.

3.2 PROTIC: developments to date

The steps completed by the project thus far can be summarised as follows: (1) identification and engagement with two pilot communities; (2) continuous engagement with those communities including PAR training, formal encounters with local stakeholders, as well as informal meetings among the parties; (3) baseline data collection on the villages; (4) design and deployment of the initial mobile-based agricultural information system; (5) first round of pilot data collection; (6) ongoing evaluation and refinement of the project based on discussions with the communities and other partners. These are described below.

3.2.1 Getting in touch with participants

Village boundaries were arbitrarily imposed by the British in the 19th century for administrative purposes upon different types of historical and cultural collectivities. Populations vary from the hundreds to the thousands (Islam 2014). There are approximately 90,000 villages, and many have voluntary associations called community based organisations (CBOs). In addition to the village structure, there are 5 levels of government. Following an initial design phase which included intensive consultations with stakeholders including villagers, PROTIC selected two sites for the Pilot Stage. The villages of Dakshin Kharibari and Borokupot were chosen as they represent different areas of the country (the far north and far south), are engaged in diverse rural economic activities, are vulnerable economically and face uncertainty due to climate change. Two nearby control villages were also chosen, to control for the changes due to the diffusion of ICTs, which is naturally ongoing.

Dakshin Kharibari is a typical char land village in the Nilphamari District, Rangpur Division. Chars are “sandbars that emerge as islands within the river channel or as attached land to the riverbanks” (Rahman and Rahman 2012, p. 145). It has a population of 3500, most of whom are agricultural workers and farmers. Cattle rearing is widely

practiced. With a population of 4000, Borokupot village of Satkhira District, on the Southern Coast of Bangladesh, is particularly vulnerable to natural disasters and climate change. In 2009 Cyclone Aila caused severe flooding which damaged the river embankments of the Khalpatua River, with serious economic consequences. Increased saline intrusion in land and water bodies is an ongoing problem. Both villages are isolated geographically not just from regional centres that are some hours away by vehicle, but over a day's travel by plane, van and even boat from Dhaka. For villagers, travel is a physical, financial, time, and even cultural (women travelling alone can be frowned upon), burden. For Dhaka-based staff, and academics, travel time is also considerable, and for foreign academic researchers, time, distance and logistics are at a premium.

A baseline survey designed by Monash and Oxfam was conducted in the four villages (selected and control) in December 2015. In addition to basic demographic data, it included questions on education levels, income and economic conditions, water and sanitation, agriculture, health, disaster vulnerability and coping strategies, women's rights, and information seeking behaviour, and mobile phone ownership and use. PROTIC's Bangladeshi academic partners also undertook some preliminary work to establish the overall situation in Bangladesh with regard to agricultural conditions; natural resources and disaster-preparedness; PAR; ICT and Mobile phone use for agriculture and finally, women in agriculture.

To gain better understanding of cultural nuances, qualitative data were fundamental. Two consultation meetings, organised by the local NGO (Shushilan), were held in Borokupot village on June 15 and 16, 2015 with the villagers and the researchers. Each meeting—about 90 min long—was the outcome of 2 days travel to the village and 2 days subsequent return. Given this time and investment, there were participatory expectations from the researchers that were not always met. The meetings were intended to explain the project and to gain some basic information and buy-in through extensive input from the villagers themselves. The first was attended by approximately 30 villagers, mostly women, and some Shushilan organisers. The discussion covered issues such as existing use of ICTs, other sources of information, and the sorts of information that might be useful, for example, information on climate change in a comprehensible manner. Writing after the event, Larry Stillman commented on the extent to which the local NGO took control of and directed the meeting: “they assemble, we sit in front, talk, they talk” (Stillman 2015), and that there were continuing cultural differences on the meaning of participation with the local NGO staff, notwithstanding language and translation issues. He further reflected that the NGO will probably always be the organiser and take a lead role.

In November 2015, further workshops were organised for each of the two target villages with women from the villages, fieldworkers and local NGO representatives. These were originally intended to be held in the villages. However, because of security concerns, the researchers were unable to visit the villages. As an alternative, the women from the villages came to the Oxfam office. This change posed two challenges, it removed the natural setting of the consultations and reproduced the power imbalance between researcher and researched which we aimed to reduce by adopting PAR. To address these limits, a participatory mapping exercise was conducted: they were asked to draw and describe detailed maps of their villages and communication linkages, emphasising those aspects that were important to them. Being a group task, this exercise was also useful to identify shared meanings associated with places as well as contested elements that required to be negotiated among participants before being represented on the map.

Culturally meaningful media such as local radio and billboards were also used in PROTIC. Commencing January 2016, community radio station Radio Nolta located in Satkhira broadcast thirteen programs dealing with specific topics such as crabs, shrimp, and vegetables, and focus group discussions were held with villagers to discuss the usefulness of the information. Awareness-raising activities at the local level have included posters and a number of billboards erected in the villages and highly popular “street dramas” conducted by theatre troupes to convey project messages to villagers.

3.2.2 Encounters among organisations

The multiple facets of PROTIC require a number of organisations to be involved. It is necessary, of course, that projects are run by locals, particularly local NGOs. However, this adds further levels of complexity to cultural encounters, which manifest in the way participation, action and research are interpreted and implemented by the organisations involved. Locally-based NGOs are as much caught up in local cultural dynamics, patterns of authority and ways of doing.

Together with Monash and Oxfam, two local NGOs, Pollisree (Dakshin Kharibari) and Shushilan (Borokupot) were engaged to conduct a variety of activities in the villages, including: beneficiary selection, community orientation and capacity-building, facilitating academic partners' research activities, and implementing monitoring and reporting activities.

The awareness of different organisational cultures led to organise a number of meetings aimed at understanding reciprocal expectations and needs, and to confront the project with actual possibilities for implementation.

In June 2015, RIB hosted 2 days of workshops with staff from Oxfam, the NGOs and other institutional stakeholders. The aim was to develop a shared understanding of PAR, its strengths and weaknesses, particularly as related to bottom-up activity, and to focus specifically on the effects of gender on community action and the development of a community voice. The workshops were fundamental to provide a historical understanding about the power relationships and meanings associated to PAR in Bangladesh. Indeed, there has been a strong tradition of PAR activity in Bangladesh. Known as “Gonogobeshona” (peoples’ research), PAR was associated with the country’s struggle for independence and empowerment of its peasants (Fals-Borda and Rahman 1991; Rahman 1994), though its popularity had declined for political and other reasons such as a preference for more managed forms of development. On the side of researchers, the acknowledgement of the local situation solicited new understandings of PAR in a Bangladeshi context. On the other hand, while those workshops made some progress, the participants stressed that PAR was not sufficiently understood today, and that there remained a lack of capacity in terms of facilitating PAR activities.

The first encounters with villagers and even the local NGOs further made apparent that there were certain differential behaviours and traditional hierarchies (the emic element) for respected people such as community organisation chairs, professional staff, or foreigners. This tendency needs to be resisted in the PAR process and may be a challenge to conventional roles and ways of conducting activity that needs to be approached sensitively by outsiders. In recognition that a more conscious approach to PAR was needed by the staff, further meetings were arranged with RIB with the project team. Meghna Guhathakurta, a leading PAR expert in the country, summarized the principles of PAR from the RIB perspective, emphasising that a key feature of their PAR training is the use of field “animators” who are generally recruited from participating communities and trained in facilitation methods. She also noted that RIB did not place a high priority on documentation for action research purposes (as distinct from community outcomes), an activity regarded as crucial for the outcomes of PROTIC, given the important role of information.

A 5-day Capacity Building Workshop on participatory action research and the Right to Information (RTI) was subsequently conducted by RIB from 31 January to 4 February, 2016 at Saidpur, Nilphamari. The workshop was designed to build the skills and capacity of the relevant PROTIC stakeholders including key village women, with a special emphasis on addressing challenges and prospects faced by women farmers. Approximately 30 people participated, including 16 villagers selected by

Pollisree and Shushilan, academics from the University of Dhaka, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Hajee Mohammad Danesh Science and Technology University, students from Khulna University, and staff from WinMiaki and Oxfam. It should be noted that in this third workshop the participation of villagers was not aimed at “collecting information” but at engaging them as active and informed researchers and practitioners.

3.2.3 Encounters with Government

Understanding and negotiating village and local political relationships with an inevitable cultural element requires sensitivity and tact when developing international projects. Research is entirely dependent on local contacts and expertise to negotiate this complex and hierarchical system (Lewis 2016), often through formal meetings or other symbolic events as described below.

In 2014 and at the end of 2015, Oxfam staff met with local Government officials (elected and civil service) and members of civil society in Borokopot, to introduce and discuss PROTIC. The government officials including the Agriculture Officer and the Livestock Officers expressed their commitment to help the action research intervention, though it is also clear that such meetings in government offices are also a way of demonstrating the legitimacy and importance of local authority and patronage to Oxfam and Monash.

Other awareness activities for key stakeholder groups undertaken during the Pilot included two PROTIC orientation workshops aimed at Union (local government) information centres with local government officials, executive committee members from Union Parishad (the lowest and smallest local government unit) and Upazilla (sub-district, akin to a county) attending to discuss government schemes, subsidies and safety net programs focusing on agriculture. These workshops were specifically geared to the needs of villagers in Dakshin Kharibari (Pollisree, March 2016) and Borokopot (Shushilan, April 2016).

Beyond that, there has been a continuing attempt to involve the community base or at least representatives at significant public events. Representatives have been invited to events in Dhaka and a meeting with the State Minister for IT, and encouraged to speak at such events. Community leaders have featured in news coverage. This does not appear to be unusual in Bangladesh, but is expected of NGOs in Bangladesh that work with communities.

In fact, in Bangladesh there appears to be a considerable amount of culturally-important symbolic behaviour in the NGO and government sector; formal visits, large banners, launches, conferences, and a minister’s attendance if possible. Role playing, speech-making and making a formal

presence is very important in Bangladesh in a hierarchical society where authority and status has to be acknowledged. NGOs and universities, including foreign universities, need to engage in this as much as any other organisation, sometimes with little warning. Noir and Walsham also note the myth and ceremony attached to ICT4D in India, and its role in supporting institutional legitimacy in an era of modernization and change (Noir and Walsham 2007).

4 The Pilot phase: developing and implementing an information system

Because of the desire to involve the women in the villages in the design process by adopting PAR, only a skeleton service, based on initial consultations, was initially put in place, with the expectation that the design would be fleshed out as the project progressed.

The prototype mobile-based information system noted earlier was introduced by providing smartphones (Symphony H120) to 100 participants in each of the two Pilot villages and establishing the call centre. The recipients of the smartphones were selected by the Steering Committee of the villages' community-based organisations (CBO), according to three criteria: (i) female-headed families, (ii) persons with disabilities, (iii) to reflect the economic profile of the overall village population. The Pilot phase was also intended to collect sufficient information on patterns of mobile phone usage and need, so as to identify priority areas and implemented strategies for the main phase of the project.

After some initial “train the trainer” sessions by WinMiaki, Pollisree and Shushilan, they conducted mobile phone training in the villages, introducing basic functions including: using a smartphone, managing contacts, messaging, taking photos, browsing the Internet, and using Facebook. It was assumed that the local NGO workers would encourage women to give their informal feedback on their reactions to and use of smartphones and this information would be conveyed to Oxfam and Monash. To achieve this, they also provided training in PAR, to encourage village women to have a voice and effect the project direction through CBOS meetings and general conversations with NGO workers.

To complement the distribution of the smartphone, a Knowledge Hub (call centre) was established in partnership with WinMiaki with initial services activities including SMS/IVR content development on agriculture. Commencing June 2016, regular messages tailored to the local dialect of Bengali have been sent once or twice a week through SMS, interactive voice message and call-backs. Monthly reports on messages sent and other call centre activity are provided to Oxfam.

4.1 Initial results: patterns of technology use and engagement

In addition to records of phone use kept by WinMiaki, 40 in-depth interviews were conducted in the two target villages, and a survey of 387 people in the working and control villages was conducted in August and September 2016, to provide some initial data on the first outcomes of the project. The survey instruments were designed by Monash researchers and Mauro Sarrica from Sapienza University in collaboration with Oxfam. The survey was conducted by four anthropology students; three of them from Jahangirnagar University and one from the University of Dhaka. Some of the village women in each of the sites assisted with data collection. For reasons of space and the interim state of the data, only a summary is presented.¹

From both the quantitative and qualitative data, there is an overwhelming disjunct between the stored potential of a Smartphone *beyond* its use as a phone (particularly the use of apps for problem solving and information exploration) and the current *confidence and expressed capacity* of the villagers to take advantage of it.

Quantitative and qualitative data indicates that the women feel empowered using their own phone, as distinct from a borrowed or shared phone, and feel entitled to make more calls and to call also to discuss important issues, extending the range of purposes of phone calls to include business and information seeking or provision calls. Some calls are in direct response to information provided by the call centre, but there are calls to independent providers of services including vets, doctors, local NGOs, and their village CBO. Some interviewees are also using the phone to extend their connections or advocate on local political or other issues to local councillors.

One obvious contributing factor to the increase in the number and typology of calls is the fact that the villagers taking part in the project do not have to pay for their calls. It is also possible, however, that the increase is in part due to stronger personal, economic and social network relationships that have developed, often in a micro-business or social-network unit, with the women serving as hub that coordinates from home the activities of children and men in the field, at the market and in other working environments.

With regard to specific features of the Information System that had been set up, SMS appears to be the weakest link. Although the questionnaire results show that

¹ 387 women from four villages completed the survey. The main characteristics of the four samples are similar in terms of age, marital status and occupation: women, aged around 30 years old, married and mainly (> 80%) housewives. Open questions were transcribed and summarised in English. Textual data were submitted to analysis of similarity (ADS) and to content analysis (CA).

SMS usage has increased, the qualitative data suggests that the use of SMS is actually mediated by new generations, who read messages to parents who have limited literacy in Latin script (sometimes used for Bengali) or the Bengali script. The data from WinMiaki suggests that there are a range of other problems associated with the use of SMS, including problems with reception, phones being turned off, and deleted messages, indicating an inability to manage features heavily reliant on text. The overwhelming preference is for spoken information, and if the use of SMS is to be continued, it may be more useful to use messages as a multimedia starting point rather than an end in themselves.

The villagers have also reacted positively to new visual options offered by smartphones, including photos and video capabilities to enhance their communications with relatives and veterinarians or doctors. Such practice appears to have become an everyday, domesticated use of smartphones. Forms of infotainment are also extremely popular, including music or entertainment videos, or religious songs.

Many people are using Facebook, essentially for personal communication with known people. This use includes photos of crops, people, and events such as flood or erosion damage. Some use religious apps, and in Borokoput, a directory of local services, for example veterinarians, has proved very popular.

In general, there is a desire for further training and support to help with particular agricultural and business problems. Focussing on daily agricultural, fish-related or business problems as the starting point for problem resolution rather than the abstract concept of an “app” appears to be the way to encourage use and experimentation. The social nature of use (many people get help from relatives if they don’t understand something) means that any further strategy needs to take into account the social nature of learning. In summary, the results suggest that the women have readily incorporated smart phones into their everyday lives and are actively pursuing new uses beyond those narrowly associated with the project.

The results are also providing feedback that will be used to further refine the PROTIC Information System. For example, there remain interface issues in the use of more advanced features, particularly those that are text-heavy, which suggests a move away from text-oriented SMS into more voice activated applications, and WinMiaki is working on an IVR (Interactive Voice Response) system (organising the information via hierarchical menus that become more and more specific) which will not only remove the text issue but solve the problem of information being lost due to deleted messages.

The preference for audiovisual materials also has strong implications for the design of apps which are now being

planned and which are seen as a good fit as long as their subject content is well-targeted. Again, the women have provided good feedback on the type of information they find useful, and this will be taken into account in the system design.

5 Discussion

The actual implementation of PROTIC, so far, has been characterised by a mix of planned activities and ongoing adaptations. Drawing on this case study, a number of insights can be brought to the fore.

5.1 Adapting the project to the local community

The lack of encounter between institutional and local cultures has been recognised as one of the key factors that affect the sustainability of ICT4D projects (Heeks 2002; Zheng and Heeks 2008). Ideally, guidance of locals and collaboration between participants and researchers has been deemed fundamental for developing locally meaningful projects, and thus to assure their success and sustainability (Donner, 2008; Heeks 2009; Stoecker 2012b; Walsham 1995).

Many important social and cultural issues with the potential to impact on the project were identified in PROTIC. It was recognised in the original proposal and project design stage that it would be difficult to implement PAR as a logical 4-stage model as suggested by Stoecker’s four-stage model: diagnosis, prescription, implementation and evaluation (Stoecker 2012b). In such a complex project with its long chain of NGO-based or associated stakeholders, representing as they do various needs, organisational and national cultures, social norms, languages, and unequal economic and power relations the method is far more responsive and emergent. Prescriptions or project strategies were developed concurrently, in part because the combination of diagnosis and design was as much a process of discovery about the complexities of the project by the project team, particularly with regard to community engagement. During this time the broad framework for the project and a detailed design for the Pilot was developed, based on activities such as the selection of participant villages, gender and stakeholder analyses.

The participatory approach and an emic cultural perspective was fundamental to allow the project to adapt to local constraints without losing its main goals. Stress-points that required the project to be adapted included intra and inter-institutional contestations over authority and power, cultural, class and gender differences, differing objectives and perspectives, and financial and resources (Denison and Stillman 2012; McKemmish et al. 2012).

Although intended as a non-hierarchical activity, communication proved problematic in encounters with locals. The setting initially suggested a clear hierarchical distinction between those who research and those who are object of study. Further inevitable distortion and compression of detail happened when translating between languages, and perceptions about the relationships between those present went unchallenged. For example, in the participatory mapping exercise the women were experienced in consultation processes with NGOs and started giving what they thought were expected perspectives (for example, number of households, typology of cultivations). It required some effort to make them feel at ease and let them free to draw what they believed was important to describe their village. The international researchers' intervention was further limited: they took notes, received part-translations, partially recorded and translated conversations, took photos and scans, and some videos clips in which villagers talked about their experiences. This was an attempt at unimpeded person-to person, participatory, community mapping and data collection between villagers and researchers in a very short amount of time, but many of the cross-cultural subtleties of the event proved elusive and difficult to capture.

Despite the limitations, the workshops were valuable because they demonstrated the situated knowledge that the women were able to easily document. For example, in one village houses as physical objects were apparently unimportant because they were often destroyed by natural disaster, and a higher value was placed on crops, animals and agriculture. In another map, participants took a lot of time to draw trees on the embankment, affirming that they were important for the safety of the village, and that it was their own interest to look after them. A third example comes from the meaning associated to roads: in one village, they were intended as connection with the outside, in the other village, they were used to divide the areas of village itself and to create a hierarchy among areas. The workshop also demonstrated that despite the artificial setting, in Dhaka, the women had the capacity and agency to articulate their expert knowledge and then document it, albeit in maps rather than text narrative.

Further adaptations were required due to broader societal tensions faced by the country. Bangladesh, like many other countries, also faces outbreaks of politically motivated disorder or terrorism affecting the capacity of NGOs to conduct their work. Staying overnight in villages is not permitted for Oxfam or other persons as a matter of policy, meaning that travel to and from local accommodation takes time and that localized, in-depth, ethnographic research can only be conducted for the project at a remove by local NGOs or other contracted staff. On a number of occasions, members of the Monash team have been unable to travel in the field or had visits cancelled due to security conditions.

This is an ongoing condition which continues to affect the capacity of the project to engage in village-based PAR.

Consequently, a radical form of PAR was not practicable. The historical and political roots of PAR in Bangladesh, as well as the prominence given to local sensitivity and request suggested a more “mainstream” or partnership PAR research (Table 1): to be as collaborative as possible, and to enhance capabilities at the grass-roots, particularly when community skills and connections are lacking. Although this limited the voice of the community, it is clear that much was achieved in taking critical first steps to enabling community voices, and engagement, and of course use of a technology through a more conventional, managed and brokered approach. While it had been hoped that the women would engage in developing strong feedback about their phone experience in a participatory fashion with the NGO workers, this arrangement was limited, probably because the NGO workers were themselves not used to engaging in a participatory way without an explicit protocol from Oxfam and Monash to work to encourage community feedback. However, rich data was still obtained through more conventional research means. Overall, there is evidence that the villagers are coming to see themselves as part of a research team as opposed to recipients, and that they are both finding their voice (for example, advocating on issues with their local councillors) and becoming more comfortable with the technology (for example, starting to use multimedia functionality to capture local data). These trends are an important change, with the additional benefit being that the villagers are moving beyond the service provided by the project to the use of independent apps and services such as Facebook.

5.2 Blurring organisational cultures

ICT4D projects often require multiple partnership among organisations, operating at international and local levels, and motivated by different goals. Despite these complex chains, conflicts between organisational cultures are seldom recognised.

The PAR process revealed and enabled negotiation of potential divides or factors related to organisational differences—between the Monash and the NGOs, between Monash and the other universities, between Oxfam and the local NGOs, and even, for example, the recognition of traditional, gendered hierarchies in the community-based organisations themselves.

It was recognised from the beginning that working in partnership with a foreign research university would challenge Oxfam in terms of how it conceives research, practice and implementation. From a university perspective, such activity is also an intellectually and practically challenging partnership, bringing a technology faculty into

alignment with a major player in international development and its practical, rather than research interests, as well as local Bangladeshi culture and ways of doing.

Different cultural frames emerged already from the way the PROTIC team had first conceptualized it. Mauro Sarrica, one of the authors of this article and a researcher from Sapienza University, summarized its aims by stating that:

The project trials innovative information and communications strategies in rural communities, it has a focus on capabilities and empowerment, and follows a participatory action research perspective. These, I thought, are the core ideas that inform the way we have been looking at the relationships between communities and informatics in recent years. Moreover, the multiple facets of the project and the involvement of villagers, local representatives, and national NGOs and authorities, give it the potential to contribute to a deep sociotechnical transformation.

Tapas Chakraborty, PROTIC's Oxfam Project Manager and a co-author of this article, also welcomed the opportunity to work on a project that adopted a more nuanced and holistic view of community, commenting that

NGOs don't often understand the real context of what they are doing. I see the problem of simplistic program design and implementation from overseas models. For example, there can be a too simplistic understanding of community structures that assumes that communities are flat and equal structures and that all activity is somehow good. This is wrong. There are rich and poor people and different stakeholders. But if you only meet and work with the poor then you aren't actually working with the whole community to solve a community problem.

One related problem is that NGOs frequently end up working in their comfort zone, working with the same participants or choosing those who will fit into a particular program. Or, as already noticed, there can be an inhibition or lack of confidence to independently working in new ways that are outside the box—such as working in a participatory and exploratory way with village women. Pridarshine Auvi, Senior Program Officer for Oxfam commented.

From PROTIC we have discovered that we have a long management and communication chain. One thing is that academics have to be proactive, another is that there is a cycle of activity after working in the field with the community, it means engaging with academics and NGOs. But the problem in Bangladesh is that generally, things are getting worse. You can have your project aims and so on, but that is in the

context of the overall situation in society. Technical partners can be very narrow, focussed on content, but there are huge societal gaps and problems and it is necessary to think outside the technical box.

The point is one that the researchers were alert to, and they shared her concerns. This particularly relates to the length and complexity of the communication chains and different service-delivery responsibilities (SMS, training, participation), the multi-layered organisational, social, cultural and language barriers that need to be negotiated in that chain, the political situation, and the subtle and not-so-subtle ways that information is filtered as it negotiates its way between Bengali and English. As Mauro Sarrica commented,

I had doubts concerning the actual encounter between the multiple spheres of knowledge involved in the project. I wondered whether and how our (western, academic) understanding of the project could be translated into the languages of the many stakeholders involved. These languages include those of national and international NGOs, embedded into a growing society that is facing rapid and chaotic urbanization and development; the languages of local practitioners who work in the field; and of course the language of the villagers with their culturally rooted knowledge of agriculture and fisheries, and of what life is in rural areas (with all the differences among and inside each of the villages).

For Larry Stillman from Monash, the chain of relationships with distributed authority that needs to be negotiated often finds expression in cultural issues.

A question I have is, can we really find out what the others think? Even the students call me "Sir" which is quite standard in Bangladesh as sign of respect. But for more democratically-oriented Australians, such titles come as a shock. What can I expect when I am in the village, working through a structured situation with Oxfam and NGOs? It's never a level playing field, and how do I know if I really know what is going on? Is it ever possible to gain more than a filtered picture of what is happening on the ground through the eyes and ears of our field workers? And it is of course even more complex than that, because I don't speak Bengali. These are difficult questions that appear in all sorts of anthropological and ethnographic literature. Thus, being able to have trust in our key informants that they give us a high quality impression of what is going on is critical in this sort of research.

5.2.1 Documentation and research

Effective documentation is pivotal to any academic research project. In the ICT4D field it is fundamental to grasp the transformation processes and to avoid the reliance on one-shot studies (Orlikowski and Baroudi 1989), which do not document the situated domestication of technologies. Documentation (whether written, drawn, observed, or recorded), requires a detailed description of the activities, observations and outcomes that take place. The creation of such documentation is complex in any project, but is much more so in a multi-site, multi-level, multi-cultural, multi-stakeholder and multi-lingual environment.

However, in our case study of the Pilot, grass-roots documentation proved problematic. An ethnographic or reflective style was not part of the NGO or CBO style of activity. They have been accustomed to more formalized and hierarchical accountability and monitoring statements that are a significant part of international development practice today. The other type of more reflective, PAR-based documentation requires a cultural change (the emic element, again). Moreover, it should not be underestimated the fact that there may well be some resistance to documenting contradictions, complexities, problems, or failures, something that is conventionally avoided, and this may be particularly the case in working with village women. However, workshops and ongoing verbal discussions have proven to be crucial in enhancing this aspect of the project, perhaps because they are less demanding, and are oriented to group rather than individual activity. The orientation to the group is strong in Bangladesh. In the next stage of the project, NGO field workers will be asked to work with the communities on a monthly basis to fill in a pro forma on process issues, and audio-tape the sessions. These recordings and notes will then be analysed by Bangladeshi PhD student assistants who are also attuned to village dynamics. This activity will be a key test of local NGOs capacity and preparedness to give their community “beneficiaries” a more active, group-oriented, and unfiltered voice in discussing their successes, failures, problems, and suggestions. If such a convivial solution to documentation problems can be found, it should contribute to the villagers having a greater influence on the conduct of the project.

5.3 PAR impact on project design

There are many strands to ICT4D and clearly potential for there to be inequalities and misunderstandings along the lines of gender, North/South divides, researcher/organisations and communities. It is hoped, however, that where these sorts of inequalities have arisen, careful reflection on

cultural dynamics using an emic-orientation has mitigated their effects, particularly on the part of the researchers.

From the outset, PROTIC has sought to understand local conditions and to empower women in the villages, not just in terms of ongoing village life, but also in terms of their role in the project. Interventions necessarily involve issues of community and group power and we need to engage in a dialogic, rather than monologic, discourse. This issue was further reinforced through discussions with anthropologists from Jahangirnagar University and the Independent University, Bangladesh who argued that a central issue in PAR is establishing trust and understanding local structures, including the traditional distribution of community power and authority. This does not mean that women are always as disempowered as is often assumed, but they have authority within their gender and kinship circles and beyond. As another example, local courts can be seen as negative and conservative, but older people often have wisdom and this may be deferred to. Where PROTIC has challenged relationships, it is within the research process, not within the village, partly because without the active assent of local power players, nothing will happen.

Consequently, according to Tapas Chakraborty, women in the villages feel more engaged with the project even in a symbolic way at this time, because they can see themselves as direct stakeholders in the project and have more ability to influence what happens in the project, due in part to having ownership and possession of the technology and in part to the value that local and central governments place on the project. From the perspective of the academic researchers, they feel that they have gained the respect of NGOs for their recognition of Bangladeshi ways of doing and being, whether in the NGO or at the village level.

6 Conclusion

In this paper we drew on PROTIC as a case study to illustrate how emic and self-reflective approaches to the PAR process are as important as the “community engagement” and the “technical” results in ICT4D. In PROTIC, Oxfam, Monash University, and others have developed a heightened sensitivity to the role that culture and community play. At the same, the project has highlighted the complexities of managing PAR. It is clear that much was achieved in taking critical first steps to enabling community voices, engagement, and of course adoption of a valued technological asset.

While the design of the PROTIC Information System was created by the project, it was done in such a way as to fit in with the women’s needs and enabled them to not only make it part of their information ecology, but allowed them to decide what additional components, for example

Facebook or local apps, they would introduce. The women themselves have taken part in a variety of activities that gave them a voice which influenced the design and conduct of the project, and their concerns influenced the design of the initial information system.

Despite villagers' initial unfamiliarity with the technology, it is expected that reliance on local knowledge will increase over time as the women become more familiar with the phones, their potential, and the ways in which they might be able to adapt it to their particular circumstances. Co-creative responses to the technology are being seen in the rich data that indicate how the Smartphones are being used by the community. The villagers have domesticated the technology, and in this regard, they are beginning to implement a form of control over it.

At the broadest level, then, issues related to the project design, governance, implementation, and evaluation, have had to take into account the divergent needs and capacities of all the stakeholders, and although this reflects a demarcation of roles, it has required real collaboration between those stakeholders, based on the trust established through the PAR process to achieve the desired outcomes. An emic understanding of cultural issues has particularly informed the attempt to create a level playing field for interchange and collaboration.

The feeling of the PROTIC team is that PROTIC is meeting these challenges, and despite the fact that in practice PAR has not conformed to the radical aspects of the PAR model, its use, even in a limited way, has helped to build trust between the partners. It has provided for a large degree of flexibility in the management of the project (friendly delegation of responsibility) and strong feedback loops that ensure that the views of all are considered. Oxfam and Monash University, as the key managers and brokers (see Table 1), now have heightened insight into the complexities of inter-organisational and trans-continental collaboration and are better able to articulate this and move onto the next stages of the project. Mauro Sarrica provides an eloquent summary of how most view the project:

The visits last year and this year gave a positive answer to my concerns. These have been unique opportunities to meet all the actors of such a complex project and to discuss with them the role of mediated communication in enhancing community resilience and empowerment. Meetings with representatives of local communities, and the exploration through multiple methods of their own representation of community needs and resources, gave us a first understanding of local meanings and practices attached to ICTs, and to the actual interaction between expert and citizens knowledge. In a nutshell, the first steps of implementation of the project show

that—even though a thoroughly participatory approach is difficult to reach—listening to the voices of the participants, supporting them in the development of locally valid practices, and accepting the mutual transformation of the meanings attached to project is the only way to build a long-term sustainable project, able to foster community empowerment through ICTs.

While Giddens notes that researchers must be sensitive to the time–space constitution of *social life* (Giddens 1984, p. 286), this can be taken a step further. We must be sensitive to the time space as well as the cultural constitution of *research life* as practiced by universities and their partners. However, given that a cohort of PhD students, including Bangladeshis, is being attached to the project, it is hope that our research insights have an impact on their socialization and training as sensitive researchers and practitioners working with a major NGO like Oxfam.

Consequently, in terms of research experience about PAR and ICT4D, the project has shown us thus far how complex and difficult a process of engagement is, and will continue to be on the ground, but that in terms of building trust, shaping project design, and developing team skills to meet participant needs, it is a deeply rewarding process capable of producing rich data and insights for research and outcomes that provide skills and voice to the communities themselves.

References

- Angeles LC (2011) Participatory development. In: Forsyth T (ed) Encyclopedia of international development. Routledge, London, pp 506–511
- Anwar M (2014) The impact of mobile phones on the well-being of micro-entrepreneurs in Indonesia (PhD Thesis). Monash University
- Arnstein SR (1969) A ladder of citizen participation. *J Am Inst Plann* 35:216–224
- Bishop R (2005) Freeing ourselves from neo-colonial domination in research: A Kaupapa Māori approach to creating knowledge. In: Denzin NK, Lincoln YS (eds) *The SAGE handbook of qualitative research*, 3rd edn. SAGE, Thousand Oaks, pp 109–138
- Brydon-Miller M, Kral M, Maguire P et al (2011) Jazz and the banyan tree: roots and riffs on participatory action research. In: Denzin NK, Lincoln YS (eds) *The SAGE handbook of qualitative research*, 4th edn. SAGE, Thousand Oaks, pp 387–400
- Chae Y-G (2008) Development discourse. *The international encyclopedia of communication*. In: Donsbach W (ed) Blackwell Publishing, Blackwell Reference Online
- Chatty D (2011) Participatory research methods. In: Forsyth T (ed) *Encyclopedia of international development*. Routledge, London, pp 513–514
- Day P (2011) Community informatics—the purpose of research and practice: an applied interpretation. In: Stillman L, Denison T

- (eds) CIRN Prato Community Informatics Conference 2011, Monash Centre, Prato, Italy, 9–11 November 2011; Prato
- Denison T, Stillman L (2012) Academic and ethical challenges in participatory models of community research. *Inf Commun Soc* 15(7):1037–1054
- Denzin NK, Lincoln YS, Guba EG (2005) Paradigmatic controversies, contradictions, and emerging confluences. In: Denzin NK, Lincoln YS (eds) *The SAGE handbook of qualitative research*, 3rd edn. SAGE, Thousand Oaks, pp 191–315
- Donner J (2008) Research approaches to mobile use in the developing world a review of the literature. *Inf Soc* 24(3):140–159
- Donner J (2010) Framing M4D: the utility of continuity and the dual heritage of “mobiles and development”. *Electron J Inf Syst Dev Ctries* 44:1–16
- Fals-Borda O (2001) Participatory (Action) research in social theory: origins and challenges. In: Reason P, Bradbury H (eds) *Handbook of action research: participative inquiry and practice*. SAGE, London, pp 27–37
- Fals-Borda O, Rahman MA (1991) *Action and knowledge: breaking the monopoly with participatory action-research (PAR)*. Apex, New York
- Giddens A (1984) *The constitution of society: outline of the theory of structuration*. University of California Press, Berkeley
- Heeks R (2002) Information systems and developing countries: failure, success, and local improvisations. *Inf Soc* 18:101–112
- Heeks R (2009) *The ICT4D 2.0 manifesto: where next for ICTs and international development?* Development Informatics Group, University of Manchester, Manchester
- Heeks R (2016) Examining “Digital Development”. The shape of things to come? Development Informatics Group, Institute for Development Policy and Management, Manchester
- Imam N, Hossain MK, Saha TR (2017) Potentials and challenges of using ICT for climate change adaptation: a study of vulnerable community in riverine islands of Bangladesh. In: Kaur H, Lechman E, Marszk A (eds) *Catalyzing development through ICT adoption. The developing world experience*. e-book, Springer, pp 89–106
- Islam S (2014) Village. In: Chowdhury AI (ed) *Banglapedia* (online edition)
- Lewis D (2016) Non-governmental organizations and civil society. In: Riaz A, Rahman M (eds) *Routledge handbook of contemporary Bangladesh*. Routledge, London, pp 219–235
- McKemmish S et al (2012) Working with communities. *Inf Commun Soc* 15(7):985–990. doi:10.1080/1369118X.2012.711846
- Mohan G (2014) Participatory development. In: Desai V, Potter RB (eds) *The companion to development studies*. Routledge, London, pp 205–210
- Noir C, Walsham G (2007) ICT as myth and ceremony in the Indian healthcare sector. *Inf Technol People* 20(4):313–333
- Orlikowski WJ, Baroudi JJ (1989) The information systems profession: myth or Reality? *Off Technol People* 4:13–30
- Pike KL (1954) Language in relation to a unified theory of the structure in human behavior. Mouton, The Hague
- Rahman MA (1994) *People’s self-development*. University Press, Dhaka
- Rahman AM, Rahman MM (2012) Char formation process and livelihood characteristics of char dwellers of alluvial river in Bangladesh. In: ICSE6 Paris—August 27–31. Paris, pp 145–152
- Rothman J (1972) Three models of community organization practice. In: Cox FM (ed) *Strategies of community organization*. FE Peacock, Itasca, pp 20–36
- Rothman J, Tropman JE (1970) Models of community organization and macro practice perspectives: their mixing and phasing. In: Cox FM (ed) *Strategies of community organization*. FE Peacock, Itasca, pp 3–26
- Stillman L (2013) Participatory action research & inclusive information and knowledge management for empowerment. In: ICTD ‘13 Proceedings of the Sixth International Conference on Information and Communications Technologies and Development: Notes. Cape Town: ACM. pp 163–166
- Stillman L (2015) Field notes
- Stillman L, Linger H (2009) Community informatics and information systems: how can they be better connected? *Inf Soc* 25:1–10
- Stoecker R (2001) Community-Based Research: The Next New Thing. <http://coserver.sa.utoledo.edu/drafts/cbrreportb.htm>
- Stoecker R (2012a) Community-based research and two forms of social change. *J Rural Soc Sci* 27:83–98
- Stoecker R (2012b) *Research methods for community change: a project-based approach*, 2nd edn. SAGE Publications, Thousand Oaks
- Tandon R (2008a) From clarity to anarchy: participatory research approach. In: Tandon R (ed) *Participatory research: revisiting the roots*. Mosaic, New Delhi, pp 193–196
- Tandon R (2008b) Participatory research: main concepts and issues. In: Tandon R (ed) *Participatory research revisiting the roots*. Mosaic, New Delhi, pp 22–40
- Tinkler B (2010) Reaching for a radical community-based research model: two community-based research experiences lead to a conceptual model that puts control in the hands of the community. *J Community Engagem Scholarsh* 3:online
- Toyama K, Dias MB (2006) Information and communication technologies for development. *Computer (Long Beach Calif)* 41:22–25
- Triandis HC (1996) The psychological measurement of cultural syndromes. *Am Psychol* 51:407–415
- Valsiner J (2009) Cultural psychology today: innovations and oversights. *Cult Psychol* 15:5–39
- Valsiner J, van der Veer R (2000) *The social mind: construction of the idea*. Cambridge University Press, Cambridge
- Walsham G (1995) Interpretive case studies in IS research: nature and method. *Eur J Inf Syst* 4:74–81
- Walsham G (2005) Critical engagement: why, what and how? In: Howcroft D, Trauth EM (eds) *Handbook of critical information systems research: theory and application*. Edward Elgar, Cheltenham, pp 225–243
- Wei CY, Kolko BE (2005) Resistance to globalization: language and internet diffusion patterns in Uzbekistan. *New Rev Hypermedia Multimed* 11:205–220
- Zheng Y, Heeks R (2008) Conceptualizing information culture in developing countries. Development Informatics Group, Institute for Development Policy and Management, Manchester