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Talk, Smartphones, Notebooks, and Brown Paper

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1. Introduction

The purpose of this chapter is to discuss oral and textual information and knowledge in traditional communities and their relationship to information technology. In its broadest terms, many traditional communities, governments, and non-governmental organizations (NGOs) are concerned about the loss of traditional knowledge and skills, as well as enhancing the life chances of vulnerable communities through the help of technology. If we understand an information ecology to be "[a] system of people, practices, values, and technologies in a particular local environment" (Nardi & O'Day, 1999, p. 49), traditional communities are faced with the challenge of digitally documenting their information and knowledge in a sustainable way—in a way that promotes human dignity and economic, social, and psychological sustainability. This is not the place to discuss the vast literature on sustainability, but as a point of reference, the Capability Approach with its emphasis on outcomes that promote human freedom and dignity is taken as a benchmark (Kleine, 2014; Nussbaum, 2000; Sen, 2001). A case study of village communities in

Bangladesh is used to illuminate the challenges of developing and sustaining such an endeavor for both local and international partners.

To an outsider, at first sight, the task of transferring local—particularly oral—community knowledge to a documented format (such as text, or electronic media, such as an application) might seem simple: With the community's permission, record as best as you can their oral stories, accounts, illustrations, physical activity, and practices (such things as drawings, performances, or agricultural processes). Then, the next task appears to be to redistribute authentic and correct information to that community in a useful form. Potentially, this information and knowledge could also go to other audiences, including other traditional communities or NGOs, or it could be used in research. In fact, it is a far more complex process than that just described, because much traditional activity is processual and heavily embedded in local cultures that may not be easily entered by outsiders. As well as this, not all the players involved have the same understandings of what is important or valid to document or preserve, nor may they have the same political understandings about whose knowledge is to be accessed and in what ways that is to be made available.

Most often, traditional communities live in collective environments, or ecologies, "in communion" with each other (Ketelaar, 2005, p. 45). Consequently, outsiders working in local contexts are interacting with what we can call *data cultures* in all their social, cultural, and political complexity. This chapter discusses data cultures in international development in the following ways. First, the project setting in Bangladesh is discussed. Second, key literature and concepts are reviewed. Third, the concept of the 'double hermeneutic' is reviewed, as a way of explaining the relationship between researchers and the researched. Then, participatory action research conducted in Bangladesh with villagers is considered as a case study in the transmission, creation, and sharing of knowledge in a traditional community though accounts of different activities in the project. Finally, conclusions and observations are drawn. We then offer key points and questions for reflection.

2. Project Setting

The PROTIC ('Participatory Research and Ownership with Technology, Information and Change') project is a collaboration between Monash University in Australia and Oxfam, through its affiliates in Australia and particularly Oxfam in Bangladesh. The acronym PROTIC fittingly means 'sign' in the Bengali language. Bangladesh has a population of approximately 160 million, of which around 80 percent live in villages and whose livelihood and

daily nutrition are dependent on agriculture or aquaculture. Geographically, it can be regarded as a fertile, mostly low-lying riverine floodplain adjoining the Himalayas to the north, with 230 rivers, though it is dominated by the massive Ganges-Brahmaputra delta. Floods, cyclones, earthquakes, and now climate change have negative impacts on food security and sustainable livelihoods for low-income people, and the security of the country as a whole (Asaduzzaman, 2016; Uttam, 2016). Bangladesh "is not so much a land upon water as water upon a land" (Novak, 2008, p. 23).

PROTIC in its first stage (2015–2019) was a participatory action research initiative to support and empower isolated village women with ICT in Bangladesh. The project has received funding for 2020–2025, with different foci. The main goal of the first stage of the project was to empower rural women through smartphone technology by giving them information in order to support the development of sustainable agriculture, aquaculture, and related issues. The development of suitable technology, content, and safe interfaces for women in Bangladesh is a recognized problem (Sambasivan et al., 2019).

Three hundred women farmers in three villages that were part of ongoing projects with NGOs were given smartphones and phone credit to enable them to access information on agricultural topics relevant to their everyday lives. The research focused on three isolated communities, chosen because they represent different ecological systems in this environment. One village is in the far northwest of Bangladesh, where sand islands form, and which is largely dependent on crops. The second is in the coastal United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site southern mangroves region, where the economy is dependent on aquaculture. The third, in the northeast region, is characterized by bowl-like depressions that form wetlands and vast inland seas. However, only the first two communities were involved for the research presented in this chapter.[1]

As a participatory action research project, PROTIC aimed to have as much participation as possible from the women themselves in the development of homegrown content based on their highly localized information, indigenous knowledge, and needs.[2] The academic research team itself is multicultural, with members from Australia, Bangladesh, Belgium, Indonesia, Italy, and New Zealand. The Oxfam Bangladesh staffing in Dhaka is Bengali- and English-speaking. In the target communities, the local NGOs have far less facility with English and in fact, at times, both Dhaka-based staff and the NGOs use a localized spoken and written English called 'Banglish' with which the foreign researchers have had to adjust. While this multicultural and participatory

research dynamic can only be briefly acknowledged here, it has contributed to a richly interpretive perspective on linguistic, textual, and cultural interactions in the research process (Sarrica, Stillman, Denison, Chakraborty, & Auvi, 2019).

The women were also provided with training and regular staff assistance to learn and use the devices and understand the information they received as part of the project. A media outreach company was engaged to provide localized agricultural information about crops, poultry, livestock, vegetable gardening, fish, crabs, and shrimp, as well as weather-related information based on the women's expressed priorities. Information was sent to them via short message service (SMS) and outbound dialing (OBD) on a regular basis. A call center that women could contact was established, with staff trained in agricultural and fisheries information. Local NGOs were also engaged by Oxfam to engage in training and support through onsite community development workers. In addition, two mobile phone apps—one on maize production, the other on the government subsidies available to villagers—were developed specifically for the project. As part of this training, the women were also shown how to use Facebook to share various information related to agriculture, as well as to discuss other topics of interest to them.

Significantly, the use of notebooks and communal brown paper posters by the village women participants for documenting the information and oral discussion and sharing in everyday life is a practice that developed autonomously and was supported by the local NGOs. This is in contrast with the digital information promoted by the project. This important aspect will be discussed more fully later.

3. Literature Review

3.1 Traditional Communities, Indigenous Communities, and Anti-Oppressive Research

For the purposes of this chapter, *traditional community* is a term of convenience used to include both indigenous and other community groups that are closely linked to the land and traditional ways of life and that have a collective orientation. International development should aim to work well at this local level, which represents "the life and history of a people" (Escobar, 1995, p. 98). We have also adopted Sillitoe's (2006) conception of indigenous knowledge as relevant to the study here:

Indigenous knowledge informs behaviour, learnt from birth onwards. It focuses on provincial interests and concerns, often communicated in foreign idioms and styles, which we understand to varying extents. It is the heritage of everyday life, based on experience, often tested over centuries of use, adapted to local conditions. Repetitive practice may typify its learning, it being equally skill as formally transmitted knowledge. It is understanding, evolved over generations, subject to continual revision. While it is ever-changing and modified by information from elsewhere, it maintains its distinctive character, subject to ongoing local, regional and global negotiation.

(p. 2)

Furthermore, as the United Nations Declaration on the Rights of Indigenous Peoples makes clear, collective cultural rights and rights of control of culture and knowledge are to be recognized. Such recognition considers the collective orientation and the collective rights of communities over the information they produce and use. In other words, one should act as an *antioppressive researcher* (Bishop, 2005; Potts & Brown, 2005; Smith, 1999). Active participation of communities as research partners, not merely subjects of researcher control, is strongly encouraged, though there is considerable controversy over the reality versus the rhetoric of this kind of bottom-up participation. An outsider's taken-for-granted assumption that 'speaking openly' and 'democratic participation' will occur with village participants (assuming that these words and concepts can be adequately translated and understood) is a good example. In fact, such assumptions can easily come into conflict with traditional power relationships that determine who and how people talk, at least in public settings. Structural impediments can exist in the traditional village or via social or economic structures (Arens, 2011). Or, as was observed in the project, and is discussed in Section 4.3 of this chapter, unintended consequences of social media activity can hurt a community. Of course, similar behavior can occur in any setting, but in international community development, colonization and patronization by outsiders of traditional modes of communication and participation, however well-intended, can be seen as insulting and disrespectful and threatening to personal security. Outsiders, unless invited in to do so, should not unilaterally challenge what are seen as problematic community ways of doing and being, and even then, doing so demands great care and skill (Bryceson, Manicom, & Kassam, 2008; Chae, 2008; Potts & Brown, 2005). Consequently, a modified and culturally sensitive participatory orientation has informed PROTIC's research and implementation processes with the communities.

3.2 Information, Knowledge, and Information Ecologies

From an anthropological point of view applied to development projects in Bangladesh, Sillitoe (2006) speaks of information and knowledge as,

> any understanding rooted in local culture. It includes all knowledge held more or less collectively by a population that informs interpretation of things. It can vary between regions with similar populations. It comes from a range of sources, is a dynamic mix of past "tradition" and present invention with a view to the future.
>
> (p. 1)

However, there are multiple forms and interpretations of knowledge, and even points of entry to knowledge, as determined by community stakeholders, are qualified by Sillitoe's (2006) statement that there is no "grand repository" (p. 3). Some archivists also make a related claim that "there is no single collective memory. Even if members of a group have experienced what they remember, they do not remember the same or in the same way" (Ketelaar, 2005, p. 44). These nuances, when filtered through the dimension of community politics and power relations and access to resources, serve as an alert about naïve expectations and assumptions by outsiders concerning unitary and representative communal expression, memory, process, and participation. Traditional communities can be as riven by divisions, politics, and hidden stories and agendas as much as any community or institution (Bryceson et al., 2008; Christens & Speer, 2006).

If we accept that there is no such thing as a *grand repository* of unique, absolute knowledge to draw upon, some thinkers in information studies usefully suggest that information and knowledge should rather be considered as an information ecology, a system in which "people, practices, values, and technologies" interact in the complex ways suggested previously (Nardi & O'Day, 1999, p. 49). Lack of attention to the ecologies in technology projects can result in narrow and technical "tunnel design" that can ignore significant social factors making projects unsustainable. These limitations can "bite back"—and not infrequently result in constraints and failures to projects (Brown & Duguid, 2013, p. 1; Brown & Mickelson, 2019; Heeks, 2002).

Significantly, people (and objects) can have different points of intersection in this information ecology. For example, what suits external researchers in their understanding of information and knowledge processes (and researchers are under the publish-or-perish imperative), and how and when to obtain them, may be very different from what an NGO in Dhaka desires, or what people in a remote village—hundreds of miles away from Dhaka

by plane, bumpy road, and riverboat—have the capacity or will to make available.

In sum, the totality of information and knowledge relations in an information ecology come to constitute a *data culture*. Consequently, the way that people at various levels in an information ecology navigate cultural communalities, differences, and access to resources, the variant ways they create and obtain information, and the ways they access and interpret that information sets up cultural and structural conditions that enable and constrain the flow of information via different media. This in turn affects the sustainability of information flows. For example, information could be oral data filtered by the provision of certain written records via authorized spokespersons (for example, only certain parts of oral written-down community history that is regarded as private or sacred may be shared).

Consequently, while in a perfect world information or data flows between parties in an unimpeded manner, nothing in the real world functions perfectly and there are always constraints. We can, in fact, suggest that there exist at least two forms of data culture. One is the normative context or ideal for information literacy: "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 2020). This is akin to what is known in program evaluation as a program theory that sets out the conditions for what is supposed to happen with a particular intervention. Investigating what happens in the field helps to understand the reality of the program theory and its result in practice. In this specific case, we contrast the ideal of information literacy with the second type of data culture that actually exists on the ground (Chen, 2005).

3.3 Orality and Textuality

In comparison to written text, orality and related forms of culture, such as dance, music, and performance, have been regarded by some key thinkers in the West—at least since the time of Homer and the ancient Greeks—as the only authentic and genuine forms of communication. Thus, in

> [a]n oral culture learning or knowing means achieving close, empathetic, communal identification with the known. . . . Textuality (writing and documentation) separates the knower from the known and thus sets up conditions for "objectivity", in the sense of personal disengagement or distancing.
>
> (Ong, 1982, p. 45)

The previously mentioned privileging of oral culture continues in descriptions of indigenous culture, in contrast to the deleterious distancing effects of external, colonial textuality. Thus, we hear of the "'treasures of the ancestors', the collective wisdom of the ages, that guides and monitors everyday practice" (Bishop, 2005, p. 128). In fact, according to such influential critics as the Maori scholar Tuhiwai-Smith, to compensate for the effects of colonization and repression, "there should be methodologies and approaches that privilege indigenous knowledges, voices, experiences [and] reflections" (Tuhiwai-Smith, 2005, p. 87).

However, the question needs to be asked: Is there truly such a thing as an indigenous culture that has not suffered from politics or intrusion? World history points to a dialect between culture and politics from the earliest times of which we know. Oral culture and written culture coexisted in ancient Mesopotamia from the time of the invention of writing, as even the earliest texts from the late fourth millennium BCE reflect the intersection between indigenous knowledge (legends, scholarship) and prosaic recordkeeping and the development of particular documentation priorities. However, orality was always valued because relatively few people could read clay tablets, and texts were written to be read out loud. Additionally, the tradition of reading out loud and extemporizing continued to be widespread until very recently in many cultures, though oral traditions and practices continue to be valued within some religious communities up to this day, albeit within a canonized format (Kelber & Avery-Peck, 1992; Steinkeller, 2004; Civil, 1974).

Consequently, a fixation on the privileged place of oral indigenous culture against colonizing effects of Western writing and other technologies misses the point that it is not just a question of suggesting that there is a privileged place for indigenous culture. The circumstances in which that culture is created and transmitted also needs to be interrogated. Male-dominated indigenous cultures can be as unconsciously intolerant and repressive as that found in so-called developed societies. Oral tradition should not be equated with unquestionable cultural truths. In fact, we have to guard against a "noble savage" (Belich, 2011, p. 6) syndrome that can result in erroneous imaginaries, with myopia to intolerance and repression contained in wisdom of the past (the secondary status of women is the most obvious dimension of many traditional societies).

While the connection with a project in Bangladesh might seem remote from these points, it is not so distant a step away. Rural women in Bangladesh live in an enormously rich culture that has produced masterworks of world culture (e.g. Ranindranath Tagore's songs and the Rabindra Sangeet are known by one and all), yet women have been subject to systematic economic

and social repression and exclusion for centuries, and this repression still continues (as it does in urban, middle-class contexts). Women's informational liberation lies in working with their strong oral way of knowing as a community and their current literacies, in order to provide new ways of knowing and to help transform gender oppressive structures. All this enters into a new dimension in encountering information and communications technologies, but it is not without its challenges.

Thus, women in a remote Hindu and Muslim village in Bangladesh can interpret pictures and labels to navigate tasks in seeding or marketing produce; can write on scraps of paper and then collect in notebooks lists of medicines and seeds and advice received via SMS; and can calculate on their smartphone—forms of literacy not sufficient enough to be able to read a novel, but enough to learn to put simple posts and photos on Facebook or navigate app icons. They are capable of sharing traditional knowledge and religious texts and songs orally (and can also share and listen to them on phone apps!). However, this has come via gaining the confidence of their husbands and relatives to participate in a project that breaks traditional cultural constraints. They are not in an imagined benign world of the village, but face the shocking realities of horrific second-class status—violence, early marriage, and an unforgiving environment, as depicted in Mallabarman's (1995) classic ethnographic novel of Bengali village life. A more recent anthropological account of the anxieties over mobile phones in northern India has been detailed by Doron (2012).

In the face of such challenges to developing a healthy informational and environmental ecology, they are equally capable—with a combination of their oral knowledge, traditional ways of doing, and modern technology—of adopting modern scientific terminology relating to animal husbandry within the context of the traditional, gendered environment in which they live. They can organize and write out in notebooks the important messages they have received, and this information and knowledge are shared orally with those who are not sufficiently literate, whether informally in the family courtyard or *uthan*, over the phone, or in a community meeting. Consequently, as Sillitoe (2006) suggests, "The mix of orality and literacy become a dynamic mix of past 'tradition' and present invention with a view to the future" (p. 4).

Thus, there are different literacies and textualities to be dealt with (writing a note on paper, reading information off a medicine bottle, interpreting the text/visual/aural information from an app or Google search, or sharing high culture as in the songs of Tagore). All these are social resources that are pooled into their information ecology. From the point of view of what is known as new literacy studies, that has sought to problematize the notion of *social literacy* in international development, we can assume there

to be a variety of literacies in different contexts, no clear boundary between literate and illiterate, and a range of cognitive and social skills associated with orality and literacy. Everyone in society has some literacy difficulties in some contexts; where oral cultures can be the predominant means of communication, we need to think of a continuum of social practices that conceptualizes and investigates the relationship between language, literacy, and society differently (Street, 2013, p. 31).

In summary, indigenous knowledge—primarily oral knowledge—should not be regarded as ideal or unchanging, despite the effects of colonization. History shows us that the interaction between orality and writing and documentation has contributed to the growth of both indigenous and external information and knowledge that contributes to social, psychological, and physical sustainability and resilience, even though we have become particularly aware of factors that inhibit access, such as gender, disability class, culture, religion, or caste (Steyn, 2011).

3.4 An Integrating Perspective: The Information Continuum

The dynamics of working with the ecology of oral and other information in traditional communities can be viewed through what is called the Information Continuum Model. This conceptual framework has had considerable influence in information and archives thinking internationally, since its original conceptualization in the 1990s by researchers at Monash University in Australia (Upward, 2000; Upward & Stillman, 2006). The model drew upon the structuration theory of the British sociologist Anthony Giddens in interpreting the dynamic between human agency and social structure, including the idea that both were dependent on the reproduction of information and knowledge as part of everyday life, as well as on material resources such as food. This theory of information and knowledge reproduction has had a strong influence in information systems thinking, as well as in the library sciences (Giddens, 1984; Jones & Karsten, 2008).

The Information Continuum Model analyzes how "information is represented, recalled and disseminated" (Upward, 2005, p. 95). It has also been adapted for generic community development (Schauder, Stillman, & Johanson, 2005) and heritage studies (Upward & Stillman, 2006). In this chapter, it is interpreted for the purpose of understanding the pluralization of information and knowledge in traditional collectivities. However, because of space limitations, we can only briefly note that traditional gendering and systems

of social control found in many developing countries must also be acknowledged as an important factor in determining the dynamics of the model (Rai, 2011).

The main characteristics of the model are its four dimensions—Create, Capture, Organize, and Pluralize—that can be used to analyze how information objects of different sorts are manipulated in different ways by different stakeholders. In this case, as noted, the model is adapted for understanding the information and knowledge process in the traditional village environment and its relationship to other stakeholders and technologies like the mobile phone. However, it needs to be understood that the process of transmission is not one way, but recursive; the information and knowledge process goes backward and forward, in line with structuration theory. There is a relationship between the parts to the whole; the structures of communication also interact with what is produced—each informs the other. Of course, this model is an ideal. There can be any number of hindrances or constraints that result in things only working partially and sometimes not working at all. For example, a constraint could be cultural (a constrained woman's world), or social-technical: Individuals in an NGO and the ICT designers might not always understand each other's specialist needs adequately.

In Figure 2.1, the Information Continuum is reconfigured as a Community–Pluralization Continuum. Information objects are created though communicative actions (Dimension 1). These information objects are then captured in different systems to be kept as memory or documentation objects of different types based on the community's social literacy that can later be drawn upon as a resource (Dimension 2). Memory or documentation objects are then organized within a system that activate or draw upon collective memory of an organization in environments such as the family or village association. This is done so that the documents can be accessed and used over time and space—for example, between different villages when conveyed in a phone call (Dimension 3), and then pluralized and embedded in the structures of a larger memory and action systems like that of an international NGO like Oxfam or in the world of university research (Dimension 4).

As an example, the collective memory of a community about growing, harvesting, and processing techniques for a particular product, such as jute, is produced or reproduced through collective talk and action and perhaps through work songs (Dimension 1). Potentially, if the community desires it, aspects of this complex agricultural and technical process (which involves the cutting of plants, further soaking, drying, and weaving of fibers) could be transformed into written or other documentation, which represents an abstracted higher form of memory storage (Dimension 2). Recursively, this also influences how
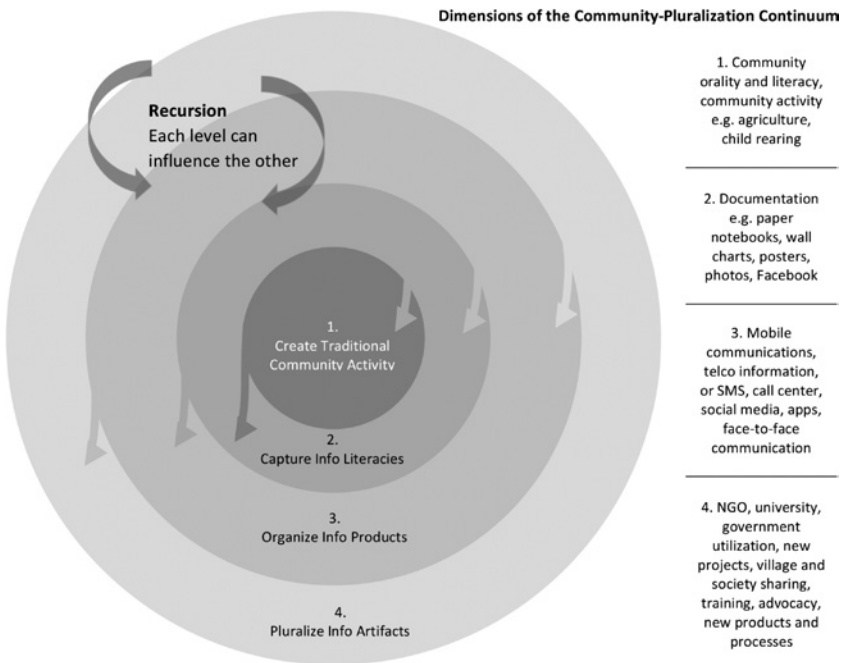
Figure 2.1 Community–Pluralization Information Continuum

agriculture can be practiced back in the community and potentially, the app could educate many other farmers in a region about jute processing, made freely available via an app on Google Play (Dimensions 3–4). However, if the designers of the app fail to consider what information is important to the community, or provide incorrect or incomprehensible information, or design an unusual interface, or even produce an app that requires too much time online (which is expensive), then as a form of knowledge and information transmission the app fails (Brown & Mickelson, 2019). That is why such an Information Continuum needs to be two-way; information and knowledge that is 'extracted' for a product fails unless it is useful, and there needs to be a two-way 'vector' or recursive relationship.

However, in line with Sillitoe's (2006) observation that in fact there is a kind of meridian of interests and intersections at play, the model cannot be viewed in a unidimensional fashion. It also needs to be understood from the perspective of academic researchers and other parties, such as NGO workers and ICT developers, because they are also engaged in, are being influenced by, and are themselves influencing the form of the information and knowledge through their participation in the creation of an information ecology.

Academics should be able to engage in critical and emancipatory self-reflection about their own roles in the project, the project activity, and the theory frameworks within which they work (Krauss & Turpin, 2010).

3.5 The Double Hermeneutic Effect

By introducing new concepts or practices about the use of oral and textual information and knowledge into the project, and in turn being influenced by what the village women provide as oral, textual, or user-feedback; researchers and others are engaged in what Giddens (1984) has called a "double hermeneutic" (p. 20). This idea has been very influential in the social sciences because it discusses the immutable connection between researchers (and others) and the 'researched.' The double hermeneutic consists of interconnected cycles of meaning in which the community's "lay concepts" (Giddens, 1987 p. 71) are provided with higher level "metalanguages" (1984, p. 374), such as the language of social science, of systems design, or of international development in order to speak to particular expert communities. But this metalanguage entirely depends on its connection with the community's own conceptual framework.

Thus, a community provides its indigenous knowledge or expertise to researchers, who in turn interpret it in terms of their particular needs (for example, in designing an information system or an app interface). This can then be fed back into the community as a new way of doing things, or a new terminology. In the PROTIC project, we saw women with very basic education adopt expert language on a number of occasions—for example, talking about what the concept of a sustainable information network meant to them. Yet before the project, they had no such term or idea of what an information network was, or what it could be. Here, it originated directly from the project intervention, through mutual activity with the project workers and researchers. The recursive process of research, community development, and discussion with women produced new knowledge (Brogden, 2010). A double hermeneutic was at play. The women came to realize that a sustainable information network was something that was based upon shared knowledge among themselves. At the same time, the villagers' interpretation of an information network modified what the researchers had come to believe was an appropriate model through their conscious self-reflection. In this particular case, they saw that their emphasis on an electronic network was incorrect, since the emphasis should have been on a model for a human-centric network, based on shared knowledge between women in their particular ecology.

4. Case Study: Literacy Research in Bangladesh Villages

The case study here primarily investigates the dynamics around oral and textual information that has been used for learning in the PROTIC project. At the same time, we see how the researchers are influenced by what the women have done and understood. The episodes discussed here include a workshop and a visit to a village. Publications are being developed on this aspect of the project (Frings-Hessami, Oliver, Sarker, & Anwar, 2020).

4.1 Workshop: Digital Literacy

The first workshop, in March 2019, was designed by one of the Australia-based authors. The aim was to investigate the nature of information literacy among the women. Further insight into cultural process, as well as facilitation, was provided by one of the co-authors who is of Bangladeshi origin with years of experience in village-based international development programming. This added to the double hermeneutic process because the women villagers' ways of talking and being literate influenced the researchers, while at the same time, new ideas were brought back to the women to educate them about particular concepts and issues.

The original plan was to conduct the workshop in one of the PROTIC villages, but because of a security alert, the workshop had to be conducted in Dhaka. The villagers had to travel for many hours by foot, boat, and then a long bus ride to Dhaka to get to the workshops from their geographically isolated village. They had to arrange for care for children and animals, and their husbands needed to consent to their presence. One side effect of the project is that even as women called their husbands and vice versa to check on each other, the women were also proud of this new freedom to travel. Participants were 12 women from two rural regions of Bangladesh and four facilitators (all Bengali speakers). The participants were randomly divided into four groups, and a Bengali facilitator was assigned to each group. At the conclusion of the workshop, the facilitators reported on activities to the non–Bengali-speaking researchers.

PowerPoint slides with drawings and handouts were used to help ensure clarity and understanding. Participants were very lively, active, and engaged. Each activity was completed on a group basis rather than individually. The group approach compensated for the fact that some individuals could not read very well. People assisted each other, in line with the communal sense of being.

There was an interest in facilitating further access to information resources for agriculture and climate-related issues, and to link them with local government, NGOs, and the market. Looking at the issue in terms of the Information Continuum (Figure 2.1), local village information (in Dimension 1) could be used to inform and develop information resources for Dimension 2 (local government, NGO, or the market), and these information resources could also be fed back into the oral and local text culture (diaries, community charts, and diagrams) at the village level. Alternatively, Dimension 2 could feed into Dimension 3 (telcos, call centers) for the design of different information products such as apps or call center services that would be adopted by the community.

While various activities were conducted, due to limitations of space, only a summary of two activities is presented. The first activity involved information mapping. Upon request, the male academic participant excused himself from this part of the discussion, as women's health issues were discussed, even though he did not speak Bengali. The first activity was designed to understand women's information needs and seeking methods. The facilitators reported that information mapping provided a new way of thinking about information for the women (again, the double hermeneutic at play). Their discussion explored interconnections and different types of information. The activity also illustrated the communal way of thinking. In assessing their information needs, participants included information related to health (especially for pregnant mothers and newborns), market, food and nutrition, literacy and education, legal matters, and employment for older children. However, it was known that none of the women at the workshop was pregnant. The fact that they mentioned pregnant women and babies, and other family issues, indicated that that they were thinking of a communal informational ecology. This information would ultimately become oral knowledge in the village setting.

The second activity covered the basics of online safety. A short presentation was given to the whole group on basic privacy and safety protocols, including creating and managing passwords. This was followed by small group discussion. The facilitators reported that the women shared personal stories about sharing passwords. It appears that there is a general agreement that passwords need to be shared because the women feel that they might forget their password and that the smartphone account is project related, not personal. Consequently, passwords should also be shared with community development workers and with other family members. For these women, the importance of ensuring access to the smartphone overrides the view that the password is something personal or confidential that

needs to be kept private. Sharing the password with trusted others was seen as a logical measure of personal *and* group security in a communal environment. This interpretation of privacy and security—contrary to what is emphasized for cybersafety—is in line with the view that information and knowledge is to be shared with others, such as family and trusted community group members. The catch here is that women's usage of the smartphones is often checked by husbands, and other male members of his family can inhibit usage. This cultural factor offers a challenge for the developers of security systems.

The workshop also illustrated the collective nature of decision-making. Working in groups seemed to enhance participants' capabilities in analyzing information. Often, when looking at information at a glance, one might jump to a quick conclusion, but having another person/team member provided a checking mechanism. However, group dynamics also showed that more important individuals in the community dominated decision-making, in accord with traditional customs. In this case, group decisions tended to favor those who were considered to be more knowledgeable (for example, if a person could read and write better than others), but oral communication with others was critical, whatever the medium. As well as this, cultural and emotional attachments to the source of information (for example, if a person was Hindu or Muslim) could color responses. In any case, knowledge and information are overwhelmingly fed back into the traditional common space found in the 1st dimension of the Information Continuum.

4.2 Second Workshop: Cybersafety

A second workshop was then held in Dhaka in September 2019, focusing on cybersafety issues. It was designed based on what was learned from the first workshop. Improved access to online information and platforms, such as Facebook, had resulted in increasing cybersafety challenges to women. This has become a significant issue in Bangladesh in both rural and urban areas, and was also reflected in discussions and development of clear ethics and management protocols around these issues for Oxfam and the research team. The workshop on cybersafety went into further detail about online safety, including privacy and surveillance, online security, and cyberbullying. The participants were in fact aware that cyberstalking was a phenomenon that was even present in isolated communities. The one-day workshop with 12 of the PROTIC participants from two different areas and four Bengali-speaking facilitators was conducted in Oxfam in Bangladesh's main office. Once again,

the villagers from different parts of the country had to travel for many hours and make family-care arrangements. As with the first workshop, participants were also divided into groups and a facilitator was assigned for each group.

The activities were designed as a series of group work, presentations, and individual sessions. A Bengali-speaking Ph.D. student assisted in contextualizing the workshop content and activities. Initially, abstract concepts related to online safety were difficult to explain, but when a facilitator asked them to compare online safety with the physical world, such as in the village, the women were better able to convey their perceptions. They talked about how their online activities are dictated by social norms within the community. Interestingly, in a society where personal behavior is being constantly monitored by others (houses are by and large just large rooms with verandas grouped around shared courtyards or *uthan*), the Internet is seen as a way to look for information without being monitored. Unfortunately, the women perceive no sense of potential danger, nor do they possess the ability to distinguish online fact from fiction. One participant explained,

> When we search anything on Internet, we don't need to say anything to anyone. We can search those things as well which we do not talk about to others in the community, because we feel shy.
>
> (Research Participant)

During the second session, a facilitator presented important issues around online security, particularly creating strong passwords and keeping passwords safe. This was followed by open questions and answers at the end of the session. The issue of password sharing with family was also discussed. Participants said that they liked the method that was presented to create strong passwords. Many participants had been using easy-to-guess phrases, their birth date, or personal names as passwords.

The third session was a group brainstorming activity where participants were presented with several scenarios on online safety around privacy and digital trails. The scenario-based activity, which depicted likely events that participants could relate to well, prompted discussion within groups. It was evident that the way participants internalize information was influenced by their view of how women in their community should behave. An example was a scenario of a girl who accidentally posted on Facebook a group photo in which her sari was slipping. Some participants responded with a caution that the girl should be more careful, while others said they would feel sad for the girl for any potentially negative treatment she would experience.

The last session was designed to encourage women to tell stories about cyberbullying/online abuse they or others (who they know) have experienced or how they feel about it and their/others' coping mechanisms. More than half of participants agreed to share their stories. The importance of face-to-face oral discussion came across strongly in their narratives, as it conveyed intimate details that they would not have been willing to share in text or online. In fact, a similar sense of caution can be associated with their Facebook posts, where by and large, their shyness was revealed in the innocuous nature of the posts they made on the project page, as there were very few comments made on posts (though there were often likes). The women only posted things that were considered innocuous by them, matters such as agricultural advice or even photos of babies or young children that they have found on the Internet as an illustration for holiday greetings. This is very different from the highly social nature of communication that is characteristic of social media. Posting something about agriculture does not necessarily give to individuals the confidence needed to post something more personal (such as photos, as we saw previously). The women's concern for reputation more than likely made them reluctant to post too much about themselves. This desire for privacy of self online—ironically coupled with interest in the world around them in a new online visually oriented culture—is an issue that needs much more careful research.

4.3 Village Visit: Notebooks and Sheets of Brown Paper

After the first workshop, a follow-up field visit to one of the villages was conducted in April 2019, when the security situation improved. Two focus group discussions were held to explore and further investigate some of the research questions related to the information literacy and documentation practices of the participants. Fifteen of the most active women participants of PROTIC attended the focus group, and most brought their notebooks with them, as well as the sheets of brown paper they kept for their groups. These women were more literate and engaged more than most of the others in the project, but—as the data show—their textual literacy was also used to support oral information and knowledge in the community. The discussion focused on exploring the documentation practices of the PROTIC participants, including how they started their documentation practices, who initiated them, how they evolved over time, the types of information they usually documented, and their reflections on the process, its usefulness, and its challenges.

Significantly, women kept the notebooks as a non-digital backup to what they were receiving by SMS or from the call center. They also knew that smartphones could be unreliable; some had been broken or suffered damage from water or heat, solar chargers could be drained, or people could be out of phone credit. People also found that they or their family were accidentally deleting old SMS messages. From early 2017, the women started writing down the information they received from the call center and SMSs on loose pieces of paper. They then started to organize information by using notebooks instead of on bits of paper. They called the paper record '*bhuleo muchbena,*' which means 'not be erased mistakenly.' They found this useful because they could easily get to the notebook to refresh their memories or pass on information to a family member, a neighbor, or someone else. Even if a notebook gets soaked with rain, once it dries out, it tends to be legible for many years to come.

Using notebooks was also faster than contacting the call center that had limited operating hours or might be busy. Notebooks were instantly at hand. In addition to using their notebooks, the women also transcribed the SMS messages onto sheets of brown paper, sorted them by topic, and hung them in their community meeting places. This use of notebooks to record knowledge in a structured way, and sharing on brown paper sheets, was a clear innovation in the village. Others—PROTIC villagers and non-participant villagers—could read them, or they could be read out to people who could not read what was presented. From an ecological perspective, the development of an indigenous form of sustainable content was useful not only for the project participants but also for how researchers and others came to further understand, at the micro level, community understandings of information processes that could positively affect community capital, food security, and livelihoods. The big question for the future, beyond the life of the current project, is how the many subtle learnings of the project can be fed back into the development of local networks in a way that both takes advantage of local ways of doing and knowing and ICT through the continuing participation of villagers in the research process.

5. Conclusions

The case studies permit us to draw a number of conclusions and observations about the relationship between oral and textual (including electronic cultures) activity, at least in one traditional and gendered village environment in Bangladesh. We explored this through an examination of a range of concepts associated with orality and literacy, as well as through the lens of the

Information Continuum, which we adapted to represent a recursive or double hermeneutic process of community activity (orality, action, various forms of literacy) to wider adaptation and pluralization as outlined in Figure 2.1. This occurs as follows.

The primary form of communication and knowledge in the referenced village is via oral communication and community activity (agriculture, husbandry, child-rearing), expressed within a traditionally gendered culture with a variety of connected social literacies. This occurs in Dimension 1 of the Information Continuum. Even if a person can read or write to some degree and can use a phone, she will share relevant information via her own personal documentation (notebooks) or a kind of public bulletin board (brown paper posters) for her or others to read out to those who cannot read. In this regard, we see an ongoing relationship or recursion between the oral and written information, because one can lead to, and influence, the other activity.

We have observed instances of information being shared publicly beyond self-interest because of the collective culture, for example, in the case of information for new mothers. Thus, organized information products can be something as simple as notebooks and brown paper posters. These represent Dimension 2 of the Information Continuum, where people capture information and knowledge with which they have come into contact. They classify and sort, also creating information products—in this case, the notebooks and brown paper posters. This was an independent innovation in the project. In fact, there is very little research literature available on the creation of such sustainable personal documents, "an aspect of life that is so common and so prevalent that it is almost invisible to us" (Trace, 2007, p. 148), yet one that can be overlooked easily. Here we have an example of it occurring in practice.

We have also seen that although the PROTIC project directed much of its implementation activity toward system design and online information adoption and use (SMS, some advice apps, Facebook, searching or contacting the call center, the electronic Dimension 3 of the Information Continuum), the villagers have been much more selective and pragmatic in their approach. Consequently, they can use the smartphone for personal phone calls and connecting to other people, but at the village level, the preference appears to be for simple and sustainable information self-organized in a way that is meaningful for them. This is very important for any information campaign that can easily aim too high in its goals! As much as researchers and developers may be enamored of multipurpose aims, there is a clear message from this research: Start work where the community is comfortable and give the intervention time to gestate. Let the people become familiar with the technology in their own way, and support whatever emerges. In time, there will be innovation.

As for the pluralization Dimension 4 of the Information Continuum, this hardly enters into the lives of the villages. This, rather, is the domain of the NGOs and researchers as they seek to use the information and knowledge that they have gained as participants in the project (particularly derived from work in researching Information Continuum Dimensions 1–2) for their institutional purposes.

However, we need to be conscious of what the Information Continuum does not tell us about the information ecology. The workshops show us that there is considerable naïveté among the women with whom we worked. These things are highly relevant to any activity with ICT with vulnerable populations. We also know from other work that the women do not have effective skills at judging the veracity of information. Furthermore, their activities are also constrained by social rules that limit women's agency, and they are reluctant to develop a personal presence online. That itself is not necessarily a bad thing, but it can hinder access to information and relationships with people who have useful information. The great challenge is to develop education and practices with women that are sensitive to that context based in the intersection of their oral and text culture, values, and life experience that enable them to take advantage of the tremendous informational opportunities that now exist globally.

Significantly, the concept and practice of cybersecurity is a difficult one for them. This leaves them exposed to all sorts of potential problems. But we also know that a strength that they have is a sense of community and sharing of information and knowledge they deem to be valuable. The women live within a particular societal ecology, and within this, they (and those who work with them) experience a particular information ecology in which, as was cited earlier, "the spotlight is not on technology, but on human activities that are served by technology" (Nardi & O'Day, 1999, p. 49).

Overall, adopting a development perspective that does not privilege ICT outcomes over and above the community is not only important, but also imperative if it is to promote sustainable human, crop, and animal well-being (Steyn, 2011). Sensitivity to the dynamics of the community ecology on the ground, its data culture, and its relationship to others is critical for project success.

Issues in Brief

As Street has written, we need to think of a continuum of social practices that conceptualizes and investigates the relationship between language, literacy, and society differently (Street, 2013). This is particularly the case when

developing a technology project that engages different forms of literacy at individual and community levels. This can also be compounded by the effects of gender, where cultural factors can serve to inhibit women's engagement in innovation. In this case, innovation did occur, though of a sort that used a very simple but robust technology (the notebook), rather than the mobile phone. Consequently, members of a project or development team need to be very open to unexpected consequences, because what may be of most technological use to a community may not be what was expected, though it suits the social literacy needs of a community.

Key Messages

- Information and knowledge are embedded in local culture and practices. Any innovation involving ICT needs to take account of the local "information ecology" and particularly the range of interactions and capacities for engaging in oral and text-based information and knowledge exchange.
- The preferred medium for information and knowledge is not necessarily the most sophisticated one.
- Communities can be quite innocent and vulnerable when it comes to their interaction with ICT. Important ethics and practice issues are raised that need to be considered in any project.

Reflection Questions

- In a development community, how would you go about assessing different forms of literacy?
- How would you identify the information ecology in a development project or community?
- Are frameworks like the Information Continuum useful in identifying informational processes and important social factors? How would you modify or redevelop such tools for adoption?

Notes

1. An account of the project, focusing on 'success stories,' has appeared in the Climate Tribune Supplement of the *Dhaka Daily Tribune* as "Bangladesh's climate champions" (December 2019), available at https://tinyurl.com/u475xhv.

2. In this chapter, we use the terms 'information' and 'knowledge' interchangeably, though knowledge tends to be interpreted as having more of an applied sense: 'information-in-use.'

References

American Library Association. (2020). Information literacy—welcome to ALA's literacy clearinghouse. Retrieved from https://literacy.ala.org/information-literacy/

Arens, A. M. J. (2011). *Women, land and power in Bangladesh: Jhagrapur revisited*. Dhaka: University Press Limited.

Asaduzzaman, M. (2016). Climate change. In Ali Riaz & M. S. Rahman (Eds.), *Routledge handbook of contemporary Bangladesh* (pp. 440–458). London: Routledge.

Belich, J. (2011). European ideas about Māori—Modern racial stereotypes. In *Te Ara—the encyclopedia of New Zealand*. Retrieved from https://teara.govt.nz/en/european-ideas-about-maori/page-6

Bishop, R. (2005). Freeing ourselves from neo-colonial domination in research: A Kaupapa Mäori approach to creating knowledge. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (pp. 109–138). Thousand Oaks: Sage.

Brogden, L. M. (2010). Double hermeneutic. In *Encyclopedia of case study research*. Retrieved from https://dx.doi.org/10.4135/9781412957397.n122

Brown, J. S., & Duguid, P. (2013). The social life of information—introduction: Tunneling ahead. *First Monday*. doi:10.5210/fm.v5i4.737

Brown, S., & Mickelson, A. (2019). Why some well-planned and community-based ICTD interventions fail. *Information Technologies & International Development*, *15*, 49–61.

Bryceson, D., Manicom, L., & Kassam, Y. (2008). The methodology of the participatory research approach. In R. Tandon (Ed.), *Participatory research: Revisiting the roots* (pp. 178–193). New Delhi: Mosaic.

Chae, Y-G. (2008). Development discourse. In W. Donsbach (Ed.), *The international encyclopedia of communication*. Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1002/9781405186407.wbiecd027

Chen, H.-T. (2005). Theory-driven evaluation. In S. Mathison (Ed.), *Encyclopedia of evaluation* (pp. 416–420). Thousand Oaks: Sage.

Christens, B., & Speer, P. W. (2006). Review essay: Tyranny/transformation: Power and paradox in participatory development. *Qualitative Sozialforschung/Forum: Qualitative Social Research*, *7*(2). Retrieved from http://nbn-resolving.de/urn:nbn:de:0114-fqs0602223

Civil, M. (1974). Lexicography. In *Sumerological studies in honor of Thorkild Jacobsen on his seventieth Birthday* (pp. 123–157). Chicago: University of Chicago Press.

Doron, A. (2012). Mobile persons: Cell phones, gender and the self in North India. *The Asia Pacific Journal of Anthropology*, *13*(5), 414–433.

Escobar, A. (1995). Encountering development. In *The making and unmaking of the third world*. Princeton, NJ: Princeton University Press.

Frings-Hessami, V., Oliver, G., Sarker, A., & Anwar, M. (2020). Documentation in a community informatics project: The creation and sharing of information by women in Bangladesh. *Journal of Documentation*, *76*(2), 552–570.

Giddens, A. (1984). *The constitution of society : Outline of the theory of structuration*. Berkeley: University of California Press.

Giddens, A. (1987). *Social theory and modern sociology*. Stanford: Stanford University Press.

Heeks, R. (2002). Information systems and developing countries: Failure, success, and local improvisations. *The Information Society*, *18*(2), 101–112.

Jones, M. R., & Karsten, H. (2008). Giddens's structuration theory and information systems research. *MIS Q*, *32*, 125–137.

Kelber, W. H., & Avery-Peck, A. J. (1992). Oral tradition. In D. N. Freedman (Ed.), *The Anchor Bible Dictionary* (Vol. V, pp. 30–37). New York: Anchor Books.

Ketelaar, E. (2005). Sharing: Collected memories in communities of records. *Archives and Manuscripts*, *33*, 44–61.

Kleine, D. (2014). *Technologies of Choice. ICTs, Technologies, and the Capabilities Approach*. Cambridge, MA: MIT Press.

Krauss, K., & Turpin, M. (2010). Towards the emancipation of the ICT4D researcher: Reflecting on a case study in deep rural South Africa. ICT and Development—Research Voices from Africa. *International federation for information processing (IFIP)*, Technical Commission 9—Relationship Between Computers and Society.

Mallabarman, A. (1995). *A river called Titash*. Berkeley: University of California.

Nardi, B., & O'Day, V. (1999). *Information ecologies: Using technology with heart*. Cambridge: MIT Press.

Novak, J. (2008). *Bangladesh. Reflections on the water*. Dhaka: University Press Limited.

Nussbaum, M. C. (2000). *Women and human development—The capabilities approach*. Cambridge: Cambridge University Press.

Ong, W. J. (1982). *Orality and literacy : The technologizing of the word*. London and New York: Methuen.

Potts, K., & Brown, L. (2005). Becoming an anti-oppressive researcher. In L. Brown & S. Strega (Eds.), *Research as resistance: Critical, indigenous and anti-oppressive approaches* (pp. 255–285). Toronto: Canadian Scholars' Press/Women's Press.

Rai, S. M. (2011). Gender and development: Theoretical perspectives. In N. Visvanathan, L. Duggan, N. Wiegersma & L. Nisonoff (Eds.), *The Women, gender and development reader* (pp. 28–37). London: Zed Books.

Sambasivan, N., Batool, A., Ahmed, N., Gaytán-Lugo, Sanely, L., et al. (2019). They don't leave us alone anywhere we go": Gender and digital abuse in South Asia. *CHI Conference on human factors in computing systems proceedings (CHI 2019), May 4–9*, Glasgow, Scotland, pp. 1–14.

Sarrica, M., Stillman, L., Denison, T., Chakraborty, T., & Auvi, P. (2019). "What do others think?" An emic approach to participatory action research in Bangladesh. *AI & Society*, *34*(3), 495–508.

Schauder, D., Stillman, L., & Johanson, G. (2005). Sustaining and transforming a community network: The information continuum model and the case of VICNET. *Journal of Community Informatics*, *1*(2). Retrieved from https://openjournals.uwaterloo.ca/index.php/JoCI/article/view/2045

Sen, A. K. (2001). *Development as freedom*. Oxford: Oxford University Press.

Sillitoe, P. (2006). Introduction: Indigenous knowledge in development. *Anthropology in Action*, *13*(3), 1–12.

Smith, L. T. (1999). *Decolonizing methodologies: Research and indigenous peoples*. London; New York: Zed Books.

Steinkeller, P. (2004). Archival practices at Babylonia in the third millennium. In M. Brosius (Ed.), *Ancient archives and archival traditions: Concepts of record-keeping in the ancient world* (pp. 37–58). Oxford: Oxford University Press.

Steyn, J. (2011). Paradigm shift required for ICT4D. In J. Steyn & G. Johanson (Eds.), *ICTs and sustainable solutions for the digital divide: Theory and perspectives* (pp. 19–44). Hershey, PA: IGI Global.

Street, B. (2013). *Social literacies: Critical approaches to literacy in development, ethnography and education*. London: Routledge.

Trace, C. B. (2007). Information creation and the notion of membership. *Journal of Documentation*, *63*(1), 162–164.

Tuhiwai-Smith, L. (2005). On tricky ground: Researching the native in the age of uncertainty. In Norman K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (3rd ed., pp. 85–107). Thousand Oaks: Sage.

Upward, F. (2000). Modelling the continuum as paradigm shift in recordkeeping and archiving processes, and beyond—a personal reflection. *Records Management Journal*, *10*, 115–139.

Upward, F. (2005). Continuum mechanics and memory banks. *Multi-Polarity Archives and Manuscripts*, *33*(1), 84–109.

Upward, F., & Stillman, L. (2006). Community informatics and the information processing continuum. In L. Stillman & G. Johanson (Eds.), *Constructing and sharing memory: Community informatics, identity and empowerment* (pp. 300–314). Prato, Italy: Cambridge Scholars Publishing.

Uttam, K. D. (2016). Agriculture and food security. In A. Riaz & M. S. Rahman (Eds.), *Routledge handbook of contemporary Bangladesh* (pp. 257–282). London: Routledge.