ICTs for Inclusive Communities in Developing Societies

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Edited by

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* * *

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INTRODUCTION

Globalization, which could be argued to have begun when Europeans began colonizing the world, received an information and communication technology (ICT) boost in the 1990s. First the World Wide Web began to penetrate regions that in the past were poorly serviced by communication technologies. Then, since the new millennium, mobile communications exploded, which overcame the lack of wired network infrastructure in developing regions. The new mobile age enables communities previously at the wrong side of the digital divide to become connected – more so than with the wired connections of the past. It is against this background that ICT4D (ICT for Development) functions. However, ICT4D is not only about technology. It is also about the users of technologies.

There is considerable literature about the digital divide. This divide, however, is not the only divide that should be considered when technologies are deployed as new artifacts in communities who never had them before. The social divides are perhaps even more relevant than the technological divides. Even if deployed technologies operate technically optimally, there is no guarantee that the deployment is successful with reference to use. Social divides include those based on social position, power relations, gender, age, educational levels, and so forth. Specialized social communities ranging from health care, education and governance, to family life and creative activities who benefit from being connected also need to be understood against their cultural backgrounds.

Technical challenges certainly exist. Being connected in developing regions does not necessarily mean the same as in highly developed societies. Connectivity in New York is a very different matter to connectivity in a deep rural area, or even urban area in a setting that lacks infrastructure, energy, and supporting systems. As recent as the turn of the millennium New York City had more landline phones than the entire African continent. Support and maintenance systems are often not in place, which are obstacles in the sustainability of ICT4D projects. But the technical challenges seem to pale compared to social challenges. Challenges are multi-disciplinary, associated with the engineering, application and adoption of ICTs in developing societies and/or for

development. There are also “softer” challenges from the project's point of view, such as implications for design, usage, policy, and practice. Finally, there are user challenges that include the entire gamut of social properties. Language as well as device illiteracy, gender roles, local power struggles, lack of understanding the functions of technologies are just some of the challenges.

Given these complexities, how is technology deployment in developing cultures and communities to be understood? Classes of understanding often seem to depend on ideology rather than solid research methodologies. Despite mounting evidence against the paradigm of economic development, it still dominates in practice. Slowly newer approaches are filtering through ICT4D literature that redefine key concepts such as welfare, capabilities, ownership and a host of others that are not technological, but rather social, and extremely relevant in the deployment of technology. ICT4D is a socio-technical discipline.

In Africa and Latin America there is the perception that projects aimed at uplifting perceived divides are neo-colonial trojan horse invasions. This view is confirmed when projects are initiated and driven by donor agencies, typically from the *north*, as top-down initiatives. Most conferences and journals are also driven by the north, which suggests that ownership does not reside with those who are supposed to benefit from projects. To address this perceived problem, more recently there has been a shift in thinking towards concepts such as co-creation and bottom-up participatory approaches.

Just shy of ten years ago, the International Development Informatics Association (IDIA) was established as a platform for academics doing research on ICT and developing communities. IDIA is of the south, by the south, for the south – while “south” is here used as a catch-all word for a class of words referring to regions that lack the privileges of the most developed regions of the world. IDIA is ideology agnostic and participants are from all continents. Over the years of its existence, paper contributions were made from about 40 different countries.

The 8th IDIA conference was held in November 2014 in Port Elizabeth, South Africa, during which papers were delivered addressing some of the issues mentioned above. This volume consists of a selection of the papers of the IDIA2014 conference, some of which have been rewritten for this volume.

The impact of technology, the degree of impact (positive or negative), technology's usefulness or not, and its implementation into complex cultural structures are difficult to understand. The papers in this volume attempt to clarify the complexities to arrive at a better understanding of how technology impacts on societies, especially developing societies, and consequently what role particularly ICT could play in communities to change themselves into contemporary societies – if they wish to do so.

There are five sections in this volume: Theory, models and method, Society and communities, Generations, Gender, and Education and Health.

Theory, models and method

ICT4D does not have a theory of its own, but borrows theories from many other disciplines ranging from sociology, political studies, anthropology, to economics and other disciplines. It is thus not surprising, given the range of contributing disciplines, that an extensive range of scientific methodologies has featured in ICT4D literature. Given its cross-disciplinary nature, this is to be expected. The challenge, though, is to find the most suitable methods for specific contexts. Chapters in this section are attempts on route to a clearer understanding of these complexities.

Maria Rosa Lorini, Izak van Zyl and Wallace Chigona follow a Critical Discourse Analysis in their contribution, *Digital technology for inclusion: a critical discourse analysis of urban poor groups in South Africa*, in an attempt to understand ICT in poor urban groups in South Africa. They conclude that "lack of skills and the lack of knowledge about existing opportunities" prevent members of such communities to use ICTs for purposes other than for personal communications. They propose that projects be designed *for* participation.

In their chapter, *Investigating ways to assess ICT4D's impact on the larger community*, Marita Turpin and Joan Mwenda address the important matter of how to assess the success of ICT4D projects. They consider Sen's Capability Approach, the Sustainable Livelihoods Framework as well as Social Autopoiesis as tools. Their analysis indicates that in ICT4D literature these qualitative tools feature less than quantitative tools, as they are more time consuming and perceived to be complex.

There is ample evidence in ICT4D literature that top-down approaches to project implementation do not work. Over the past number of years several

bottom-up approaches have been proposed. In the chapter *An experimental methodology to promote and evaluate the use of community networks for civic engagement*, Mònica Garriga, Jorge Salcedo, Narcís Vives and Roc Meseguer introduce civic engagement using participatory media in Poblenou, a suburb of Barcelona. Their tool set includes Content Analysis, Social Network Analysis (SNA), Blockmodeling and Descriptive Statistics, Ethnographic Action Research (EAR), Network Action Research (NAR), and the Most Significant Change (MSC). They noted a slow change of the community from traditionally familiarity with top-down approaches to a bottom-up stance by taking ownership through the use of media as a tool, and more civic engagement.

Aaron Ciaghi, Adolfo Villafiorita and Lorenzo Dalvit propose in their chapter, *Introducing a Maturity Model for ICT for Development Projects*, that present ICT4D research is dominated by social theory which results in the technical aspects being neglected. In particular the project management of many projects "is often unstructured and rarely documented." They propose a Maturity Model that offers a set of guidelines that could hopefully be used for more efficient resource management.

Given the multi-disciplinary nature of ICT4D, there is no common theory used as basis in this domain. One might say that the discipline reflects a hodgepodge of theories and frameworks, published in more than 40 different journals. Finding papers relevant to a specific topic is a daunting task. In the chapter *Conceptual framework for ICT4D*, Judy van Biljon and Trish Alexander attempt to create a framework for shared terminology that may indicate more precisely the theoretical underpinnings, research methodology, and content and context of ICT4D publications. The advantage of such a system would be to find relevant topics more easily among the tens of thousands of articles published in this domain.

In the field of ICT4D there are ample research papers published in more than 40 journals, and from many different theoretical perspectives and ideologies. A large number of role players on this stage have an activist engagement approach attempting to "uplift" communities through the use of ICT. This results in two problems. On one hand there is the danger of accepting the findings of ICT4D literature, or worse, of mass media publications, at face value without performing more research in an attempt to replicate the research to falsify, confirm, corroborate or justify (depending on one's favorite scientific method) published findings. On the other hand, perhaps due to the perceived life-changing power of ICT on

communities at the wrong side of the divides, the claims of publications regarding the positive impact of ICT on communities are sometimes accepted without scrutiny. According to Jacques Steyn and Mohan Das, in their chapter *Claims of mobile phone use by Kerala fishermen not supported by fieldwork*, a case in point concerns one of the most cited papers in ICT4D literature. The claim promoted by Robert Jensen that fishermen use mobile phones to determine the best market prices along the coast of Kerala, and then sell their catch at those best markets which leads to increased economic welfare, is refuted by the fieldwork and literature study of these authors.

Society and communities

ICT4D ultimately is about communities. Literature in ICT4D has addressed formal and informal communities, ad hoc communities, organizational and social communities, and briefly, any group of people with some common goal, however vaguely defined. In this section investigations are reported of ICT implementations in a diversity of communities. The remaining sections of Generations, of Gender, and of Education and Health also address particular communities, but they are separated from these more general discussions as special cases.

In their chapter, *Towards self-sustaining community networks in rural areas of developing countries: Understanding local ownership*, Carlos Rey-Moreno, Amalia Sabiescu and Masbulele Jay Siya propose that rural communities are typically not aware of the advantages of ICT, or when indeed aware, do not have the confidence to deploy ICT projects, which are most often deployed by external agencies. This leads to a lack of ownership, which in turn results in failure. The authors introduce a model that could be used to analyze and operationalize local ownership.

Laurie Butgereit's paper, *Enabling Intra-Community and Inter-Community Support in Lean Societies*, is about a practical mobile tool that communities could use for information and knowledge access and sharing. The tool was tested in both inter-communities (with support across communities) and intra-community (with support within the community). Butgereit in essence proposes that such tools are useful in any society, and in this sense the term development is redundant and we should, (following Olopade), rather speak of lean societies (in which production and consumption are scarce) versus fat societies (where there is oversupply).

Migrant workers might be considered as communities on the move. The money moved between countries by migrant workers is staggering. In India migrant workers is a major source of the GDP of the state of Kerala. In Singapore migrant workers move USD1.4 billion through remittances. Narendiran Sundararajan, Mohamed Sirajudin, Mohamed Jinnah and Arul Chib investigate the social impact of modern modes of remittances (i.e. mobiles) in their chapter Migrants, Mobile Finance and Marginalization: Exploring Remittance Processes and "Ghettoization" in Singapore. They found that even though m-Banking might result in easier and less time-consuming transactions, participants preferred traditional methods that allow more time for socialization at the locations (such as the vicinity of banks) used for the payment process.

The developing world arrived later to the world of connectivity than the developed world. The longer history in the developing world using ICTs brought about higher levels of awareness regarding risks using technologies. Although there certainly are security risks in any context where ICTs are used, the lack of a longer history of exposure to technology risks might result in lower levels of awareness about such risks in developing communities. In their chapter, *Developing user security metrics towards awareness creation*, Fungai Shava and Darelle van Greunen present a case study of the Polytechnic of Namibia and conclude that due to low levels of policy and secure behavior awareness, significant security threats exist in this organization.

Generations

In this section the use of ICT by two groups on the extreme ends on the axis of human life are investigated: the young, school going community, and the elderly.

In 2006 ICT4D projects commenced at Dwesa in a remote rural area on the east coast of South Africa. Projects in the area are well-reported. The main project is known as the Siyakhula Living Lab. A comparative study of ICT use among school children in Dwesa was conducted by Lorenzo Dalvit and Fortunate Gunzo in 2011 and 2012, and reported in their chapter *One year on: A longitudinal case study of computer and mobile phone use among rural South African youth*. They found that the use of ICT and multimedia grew at a tremendous rate during that timespan.

At the other end of the age scale, in their chapter *Do Mobile Phones Enhance the Quality of Life for the Elderly?*, Brett Mealor and Jean-Paul Van Belle found that “social media and multimedia had a positive contribution towards the quality of life” of the elderly. The elderly, of course, have not grown up with the more recent ICTs, particularly the world wide web and mobile phones. Although the authors found a positive contribution to life experience, some negative experiences were also reported, particularly unsolicited phone calls and text-based message advertisements.

The impact of ICT cuts across all age groups and across all kinds of communities.

Gender

Considering the large monetary contribution of migrant workers to their home bases via remittances, it is evident that in the absence of their men, women run the homes. In cases where younger women also leave to work elsewhere, the remaining adults are the elderly and middle-aged women. In the chapter *Women, participation and design in ICT4D: addressing barriers using a co-creation approach*, Ronel Smith reports on a project in a remote rural agricultural community in South Africa with the goal to make ICT more accessible to such middle-aged women who have had no exposure to ICTs other than mobile phones. Due to gender biases the design of ICTs do not address the needs of these women, resulting in poor uptake, which in turn reinforces the biased male view that ICTs are not for women. For this project a method of co-creation was followed involving the women in the redesign of an ICT platform.

The well-being of women in a deep rural region was also investigated by Manti Grobler and Carina de Villiers, as reported in their chapter, *Translating the need for social support services utilizing ICT: case study of rural women in Limpopo Province*. Their interest was in finding a conceptual framework that could be used to investigate how to approach a project for using ICT for access to information about government social services. They used Sen's Capability Approach as interpreted by Robbeyns.

Education and Health

Kanya Nkula and Kirsten Krauss investigated the use of ICTs in marginalized schools in South Africa. In their chapter, *The integration of*

ICTs in marginalized schools in South Africa: Considerations for understanding the perceptions of in-service teachers and the role of training, they point out that many schools in South Africa do not have ICTs, but even among those that do have ICTs there are many that do not use technology adequately. They distinguish between schools that integrate ICTs sufficiently in the learning process (generative use), and those that merely teach the use of ICTs, or where ICT is used for knowledge presentation (representational use). Their investigation was done in a deep rural area in South Africa where tablets were deployed in schools. They conclude that several social factors need to be addressed for the successful integration of ICTs in schools. Some of these factors are relationship building, leadership, local buy-in, and ownership.

Unlike some developed countries, the adoption of Personal Health Records in South Africa is very poor. In their chapter, *Personal Health Records in the South African Healthcare Landscape: A SWOT Analysis*, Avuya Mxoli, Nicky Mostert-Phipps, Mariana Gerber identify contributory and inhibiting socio-technical factors of the adoption of such a system. They use Socio-Technical System (STS) theory as an interpretative framework.

Finally…

The few chapters included in this volume address barely touch on the magnitude of the possible topics in the field of ICT4D. The lessons learned from the research presented here will hopefully contribute to a better understanding of this complex beast. There is still a lot to learn. Perhaps it is too idealistic to hold onto the activist view that technology could be used an agent for change. This very sentence is loaded with ideologies, assumptions, biases and notions that require more intense debate. Nevertheless, it is only through debate, informed by research, that we could reach valuable conclusions.

Jacques Steyn

THEORY, MODELS AND METHOD

CHAPTER ONE

DIGITAL TECHNOLOGY FOR INCLUSION: A CRITICAL DISCOURSE ANALYSIS OF URBAN POOR GROUPS IN SOUTH AFRICA

MARIA ROSA LORINI, IZAK VAN ZYL AND WALLACE CHIGONA

Introduction: the problem of exclusion

South Africa has one of the highest rates of inequality in the world (World Bank 2014). This is most observed in rural areas, townships, and informal settlements. Foremost development issues here include lacking and inaccessible public services (health, education and infrastructure, *inter alia*), high unemployment, violent crime, and recently, widespread xenophobia. With the advent of information and communication technology for development (ICT4D), digital technology has been earmarked to address global development priorities (or 'mega-problems' as per Heeks 2008) connected with income generation, access to services, and socio-economic equality (Duncombe 2007). This has concerned, at least idealistically, the improvement of conditions of underserved groups. Yet, an initial reading of the ICT4D literature indicates a worrisome trend of exclusion (Chigona et al. 2009). Often, beneficiaries of ICT4D initiatives are not formally involved in the development process, be it in conceptualization, implementation or ownership (Andrade and Urquhart 2010). This indicates a twofold problem of digital isolation for already under-resourced groups: (1) intended beneficiaries are primarily excluded from the generation of technological solutions (Winschiers-Theophilus 2012); and (2) they are further excluded from having sufficient access to digital technology (Lesame 2014). In South Africa, particularly in the Western Cape Province, digital exclusion is recognized as a significant obstacle in addressing issues of social, economic and cultural equality (Western Cape Government 2014). The main concerns here include the

level of access to ICT, the widespread lack of e-skills, and the effective use and adoption of technology for purposes of empowerment (ibid.).

In response to this context, this study describes the collective discourses around ICT that emerged through qualitative exploration, and in particular interviews, focus groups and participant observation. Moreover, it seeks to explore the uses, meanings and roles of ICT in cultivating empowerment, if and however possible, for underserved groups in the urban areas of Cape Town, South Africa. We frame this issue critically, and explore the perceptions that undergird the adoption and use of ICT in marginalized settings. Shifting the focus from the individual to the collective, we seek to understand how respective community groups converse about ICT to evaluate how such conversations affect its use and adoption. This is an initial point of departure for understanding how ICTs cultivate agency and capabilities at group level.

Our study is guided by the following research question: "What are the discourses associated with ICTs among collective groups in marginalized communities?" In addressing this question, this study represents an initial step to contribute to theoretical and empirical discussions of discourse in ICT4D (Bladergroen et al. 2012), collective capability (Ibrahim 2006), ICT-enabled empowerment (Avgerou 2010), and participatory and inclusive development (Fuchs 2010). In light of this, we will uncover the social appropriation of ICTs by communities to build toward more inclusive, contextual and socially responsive technologies and approaches.

Research problem and context

The research and practice of ICT for development has crystallized around creating the conditions under which the livelihoods of poor and marginalized people can be improved using digital technology (Unwin 2009). Historically, the dominant discourse in the field was that of the 'digital divide' (Wresch 1996), where a prevailing argument was that socio-economic exclusion could be resolved through technology access. In particular, the evolution of the field was marked by the many 'hyper connected promises' that ICT could offer. Such technology was ubiquitous, cheaper, more affordable, more efficient, easier to deploy and a means of instant communication (Unwin 2009). Within such a deterministic school of thought, researchers and implementers had similar idealistic assumptions about how users will respond and interact with technology (Van Dijk 2006). Not least in the South African context,

deterministic and 'techno-centric' assumptions negate the complexity of social and cultural dynamics, and have prompted both failure and unsustainable 'techno enthusiasm' (see Roode et al. 2004, Oyedemi 2009). Repeated failures of ICT4D projects motioned renewed efforts toward monitoring and evaluation, with the purpose to identify the critical factors underpinning failure (Heeks 2008). Several issues common to local and international ICT4D projects have been identified as critical to address, both theoretically and empirically: participatory processes in the identification of problems and development of research proposals; the mutual negotiation and framing of sustainability; the relevance of local and indigenous knowledge; the symbolic narratives that underpin technology adoption, and the cultural values and norms of the groups involved in the process, among others (see Sabiescu et al. 2014).

Ultimately, as ICT extends in reach through hyper connectivity and digitization, it enters new domains and territories of development. This is not to deny the threats of determinism, or of 'techno-centrism', as engendered in many ICT4D projects. In this regard, it becomes necessary to consider how digital technologies are perceived, negotiated, and utilized (Van Zyl 2013). Following these common issues, a critical analysis of discourses from community groups will allow for the emergence of unspoken and under-explored factors and dynamics to be addressed in employing ICTs for inclusive communities in South Africa.

A critical discourse analysis of social groups

Critical discourse analysis (CDA) is employed in this study as an analytic approach to give voice to the discourses that emerged from the field. CDA is a form of critical social research and views "discourse – language use in speech and writing – as a form of 'social practice'" where "discourse is socially constitutive as well as socially conditioned" (Fairclough and Wodak 1997:258). Despite the different schools of CDA, researchers share the perspective that discursive practices contribute to the creation of the social world (Pennycook 2001). In this regard, CDA offers not only an explanation of words and their contexts, but also examines the implications thereof and, possibly, seeks to change reality (Myers and Avison 2002:15, Gee 2014:9).

CDA has its roots in critical social theory, which addresses ethical and moral questions by seeking emancipation for all the involved groups (Wodak and Meyer 2009): researchers (with their assumptions),