



**Collective Empowerment through Information and
Communication Technologies:
Co-creation Processes in Underserved Communities
in Cape Town**

**Thesis Presented for the Degree of
DOCTOR OF PHILOSOPHY
In the Department of Information Systems
Faculty of Commerce
University of Cape Town**

June, 2018

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Lorini, M.R. (2016). "Collective creative processes in underserved contexts. Lessons of grassroots frugal social innovations". *GlobDev 2016*. 2. <http://aisel.aisnet.org/globdev2016/2>

Lorini, M.R., Sabiescu, A. and Memarovic, N. (2017). "Collective Digital Storytelling in Community-based co-design projects. An Emergent Approach". *The Journal of Community Informatics*, 13(1): 109-136.

Lorini, M.R, Chigona, W. and Garbutt, M. (2018). "Enablers of Egalitarian Participation: Case Studies in Underserved Communities in South Africa. Processes of Creativity 'Not for the Sake of it'". *IDIA 2018* (August 2018).

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Brief synopsis:

The research presents and evaluates three digital co-creation case studies which unfolded over a four-year project. The research utilises an approach based on emergence, flexibility, sensitivity and relationships to explore the specific social context and its relation with information and communication technology. The ‘inside’ understandings were used to engage in collective, inclusive, innovative and socially responsible grassroots processes.

The main contributions are presented through theoretical propositions and design principles to disclose and increase the potential of collective empowerment for community development and people’s emancipation.

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ABSTRACT

This research investigates the potential of Information and Communication Technology (ICT) to provide opportunities for groups of people to improve their lives and their communities. Further, the study explores innovative methodological approaches which could be conducive for collective empowerment. Grounded in current ICT4D research, the thesis tries to resolve the gap related to how to include collective approaches and participation in design. The study is framed by critical social theory and the capability approach but with special attention to collective and relational dimensions of agency, capabilities and empowerment. The analysis is based on three digital co-creation case studies which unfolded over a four-year project in underserved settlements in Cape Town, South Africa.

The study employed a qualitative methodological approach and followed abductive logic. The research evolved through cycles of ethnographic studies; co-design; and theoretical phases. Each cycle built on the previous one in theory and practice. The initial inductive approach employed open coding followed by content analysis to reflect on the discourses and meanings of ICTs originating from the focus groups in the communities. In the design phase, three case studies were analysed using strategies suitable for research involving cultural differences between researcher and participants. The processes were further evaluated during their development from the theoretical lenses of participatory design, frugal innovation and social capital theory.

Five papers provide an analysis of the research project highlighting its evolution, from the creation of digital storytelling until the development of social businesses, and discussing how social relations and group actions determine uses of ICTs and encourage collective ways for information access, information production, creativity development and networking. These concepts supported the analysis of the findings to deepen the use of the theories and to develop a process model for ICT4D projects.

The outcome of the research are four propositions and three principles for a sensible emergent approach for ICT4D projects. Their chances of success and sustainability increase if based on grassroots, collective, socially engaged co-creation initiatives. Theoretically, the process model has the potential to improve our understanding and support our way of operating to make ICT4D initiatives more inclusive, more empowering to participants, including the researchers, and to become oriented towards community development and people's emancipation.

To Nonceba,

Who introduced me to dozens of communities, hundreds of realities, thousands of people.

Encounters and relations with dreams full of hope and care.

ACKNOWLEDGMENTS

My journey started back in the cradle, where my family nourished me with feelings and values of solidarity, justice and love. The journey continued studying human rights and volunteering with missionaries in several African countries. The path moved forwards with the choice to dedicate my heart, soul and hands to improve the life of people through development projects working for international, non-governmental and community-based organisations.

All those steps, projects, lessons learnt, meetings and personal relationships became the soil of my Ph.D., a time to study further, to reflect deeper and to analyse how to increase and improve the potential impact of research and practice in development.

My heartfelt gratitude go to all the people I met along these years, starting from my family, who always supported my choices and believed in my dreams and capacities. And to my friends and colleagues who devoted their lives to justice and peace.

My thanks to my supervisor, professor Wallace Chigona, for listening to so many little stories, evaluating all the evolving phases again and again, supporting the processes through networking and fundraising. But, above all, for believing and resonating with an emergent critical approach.

My deep esteem to professor Ngwenyama, who questioned my pretentious intention to change the world with a Ph.D. (!) and stimulate my reasoning till the final question of ‘So what?’

My appreciation to the valuable co-authors I had the pleasure to collaborate with: my supervisor professor Chigona who during time got used to my sometimes journalistic way of writing; doctor Izak van Zyl who introduced me to participatory design studies and methods; doctor Amalia Sabiescu who showed and thought me the potential of digital storytelling; Malcolm Garbutt who enquired about every sentence I wrote and pushed me to elaborate in a clearer and more structured way my study.

My recognition to the Department of Information Systems of the University of Cape Town, for funding and supporting the presentations, seminars and conferences I attended and the several activities carried on in the communities.

Last, but most definitely not least, my gratefulness and recognisance go to all the community members I encountered, worked with, established a relation and create some more hope, care and dreams.

ACRONYMS

CBO.....	Community-Based Organisation
DST.....	Digital Storytelling
HCD.....	Human Centred Design
HDI.....	Human Development Index
ICT.....	Information and Communication Technology
ICT4D.....	Information and Communication Technologies for Development
ICTD	Information and Communication Technology and Development
ICTs.....	Information and Communication Technologies
IS.....	Information Systems
ITU.....	International Telecommunication Unit
NGO.....	Non-governmental Organization
NPO.....	Non-profit Organization
PD.....	Participatory Design
UCT.....	University of Cape Town

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1 INTRODUCTION AND RESEARCH OBJECTIVE

1.1 A Relationship-based Approach to ICT4D

Twelve years of experience working on community empowerment in several African countries, collaborating with international organisations, non-governmental organisations and community-based organisations, has taught me the lessons and provided me with the skills applicable to my research. The most important lesson is probably the essential need to start every project by engaging with communities in interactive discussions with the aim of reaching a shared understanding of key issues and concerns. Over time, the spaces created for sharing perspectives and mutual learning shape relationships based on respect for, and acknowledgement of, community experiences, norms and values.

In this new internet era, technology-mediated societal changes remain inevitable. It is, therefore, crucial to analyse and verify how the use and implementation of technologies may lead to opportunities and improvements in people's lives, especially in the most vulnerable groups. The goal of my research has been to investigate this in practice: Would several locally based case studies be able to demonstrate tangible positive effects of the use of Information and Communication Technologies for Development (ICT4D)?

Based on my professional experience in the development sector, and to maximise potential positive effects and opportunities, I deemed it necessary to try to develop and implement a specific, alternative approach to ICT4D in such case studies. This approach was centred on the importance of interpersonal and group relationships, which are seen as an essential prerequisite to any ICT4D intervention. Further attention has also been given to the kind of ICT4D deployed, preferring the use of inclusive, socially focused, frugal and sustainable technologies.

I approached this research aware of the beliefs, assumptions, and pre-concepts derived from my background.

1.2 Is ICT4D a Universal Remedy?

There is little doubt that a significant part of any serious solution will require advances of technology, but that can only be part of the solution. Other major changes are necessary.

- Noam Chomsky, in *Optimism over Despair*.

In the current global context, modern technologies are undoubtedly growing in importance and becoming a significant factor both in world events and in everyday human experiences and interactions. In the macro and microenvironment, our lives are being shaped by technologies (Foucault, 1988).

ICT4D has been given credit for its potential to address the macro issues, the global development priorities, such as access to information and infrastructures, welfare service delivery from governments (especially education and health) and business ICT related s, and ICT industry development (Duncombe, 2007; Vaughan, 2011). The aim is the improvement of conditions for underserved groups. Nevertheless, the ICT4D literature indicates a worrisome trend of digital exclusion. Grassroots development beneficiaries are frequently not involved in the development process, whether in conceptualisation or implementation (Andrade & Urquhart, 2010). Some authors claim that the introduction and promotion of ICTs has been based on market and profit-focused initiatives, and intrinsically linked with technocratic imperialism, Eurocentric visions and, maybe unintended, the pursuit of cultural hegemony (Zajda & Gibbs, 2009; Escobar, 2004; Papert, 1988). Zheng and Stahl talk about ‘technology’s ideological qualities and hegemonic functions’ (2011, p.75).

This research is based in South Africa, where the typical afore-mentioned ‘mega-problems’ (as per Heeks, 2008) are present, especially in certain areas such as the rural areas, the townships surrounding the cities, and the informal settlements, which are the most underserved area of the townships. Compared to other countries, South Africa has one of the highest rates of inequality (WorldBank, 2014). Adding to the country’s problems related to access and efficiency of the public services, unemployment and crime rates are high (Marais, 2011).

In the last twenty years, several ICT4D projects had been deployed in South Africa, particularly in the Western Cape Province. The possibility to access ICT, the necessary skills to use ICT and the adoption of ICT are the target of the Province to tackle the digital exclusion and develop projects to fight for social, economic and cultural equality (Western Cape Government, 2014).

The role of ICTs in solving issues of socio-economic relevance had been investigated in the field of ICT4D, in South Africa and the rest of the once so-called developing regions.

As in other parts of the world, in South Africa it had been recognised that evolution of local cultures, traditions and values has been triggered by new technologies, causing rapid changes in people’s ways of living (Krauss, 2013; Van Binsbergen, 2001). Despite ICT not being the universal remedy for all problems, and despite development being sometimes ‘based on ideas

of modernisation, evolutionism' (Andersson, Grönlund & Wicander, 2012, p.1), the role of ICTs in solving issues of socio-economic relevance is investigated in the literature within several contexts.

Two contemporary issues in ICT4D studies are of particular relevance to this:

- The role of ICTs in cultivating collective empowerment, as defined in relation to development and emancipation.
- The role that an emergent approach to participation in design should have supporting engaged, grassroots, social ICTs projects.

This research seeks to relate these two streams from a perspective that shifts the focus from the individual to the collectivity and from structured project implementation to an emergent approach. The aim is to limit the adverse effects of ICTs and unleash its potential to provide opportunities for communities of people to improve their lives and their communities.

Following the initial presentation of ICT4D and the latent potential and threats for a country such as South Africa, the chapter identifies problems related to ICT4D. Due to the number of issues, the research gap assesses the aspects of the research field to be addressed in this study. The research question and sub-questions seek to address this gap and strive for a series of implementation objectives. The chapter concludes with an explanation of the structure of the thesis.

1.3 Problem Identification

Over the past two decades, the research and practice area of ICT4D has crystallised around the concern with taking action to improve the conditions of poor and marginalised people (Heeks, 2006; Unwin, 2009). Following the main argument of the "digital divide" discourse (Moodley, 2005), the lack of opportunities and social exclusion of the poor could be resolved through access to technology.

Researchers and practitioners highlighted the possibilities offered by ICT to:

- deploy ICTs that are affordable, efficient, easier to build, serviceable, repairable, and simple to learn how to use;
- skip developmental phases by adopting solutions that were successful in other contexts;
- develop e-commerce for socio-economic purposes;

- study and develop further medical, agricultural and industrial information and knowledge;
- affect the socio-political sphere through e-Governance, e-democracy, activism, and digital networking; and
- ameliorate the schooling and health system through e-education and e-health (Unwin, 2009).

Within the deterministic technological school of thought, researchers and implementers made assumptions about how users respond to and interact with technology (van Dijk, 2006). In South Africa, as in other so-called developing countries, such determinism often underestimated the context and provided limited results. Failures to resolve some of the targeted problems and to bring assets, brought about renewed efforts for identifying the critical factors underpinning failure through monitoring and evaluation (Heeks, 2006).

ICT4D projects faced in the last two decades diverse criticalities, targeting both the developers of the projects and the beneficiaries:

- ‘poor management, resistance to change, complex power structures’ (Thapa & Sæbø, 2014, p.2),
- problems and needs are often assessed without the concerned people,
- lack of a consistent and constant participatory process along the development of the proposals,
- the shortfall importance of building sustainability,
- the limited relevance given to local and traditional knowledge,
- insufficient socially oriented solution based on the cultural values and norms of the affected societies (Avgerou, 2008).

To target some of those problems, this study seeks to address the questions about the type of improvement ICT4D projects are aiming for and the ways to achieve it. In particular, the study is grounded at the nexus of two primary research lines in current theory and practice of ICT4D to address the issues mentioned above:

- The meaning of ‘Development’ in ICT4D and related expressions (Dell & Kumar, 2016; Kleine, 2010; Walsham, 2013; Heeks, 2010). In this study, a reflection on the terminology and an elaboration of the intentions of local and external participants clarify the meaning of ‘for Development’ related to the research project undertaken.

- The growth of participatory approaches in ICT4D studies (Andersson et al., 2012). Several theories illustrate possibilities offered by ethnographic design, co-design, and reflexive design to tackle the problems of ownership, sustainability and embedded knowledge. This research aims at using a sensitive, inclusive, grassroots and egalitarian approach to participation.

1.4 Research Gap

The gap that this research tried to address in relation to the abovementioned problems is connected with an uncommon approach. It relied on two aspects that are emergent in the developmental literature: the potential to strengthen existing collective capabilities empowering groups in underserved urban communities through the utilisation of ICT; and the role that an emergent approach to participation in design could play.

1.4.1 Empowerment and ICT: Individual vs Collective Approaches

One of the gaps that the research will address is related to strategies of capabilities building or strengthening. A promising and growing approach in ICT4D field relates to the concepts of ‘agency’ and ‘empowerment’ and in particular to the writings of Amartya Sen (1999).

As expressed by Thapa and colleagues who tried to develop a collective capabilities approach, ‘The CA [Capability Approach] emphasises the development of individual capabilities. This view is echoed in the ICT4D literature.’ (Thapa, Sein & Sæbø, 2012, p.6). Vaughan adds that ‘[t]he debate on the need to accommodate collective capabilities within or as an extension of the capability approach is reviewed and emerging concepts are found to have resonance with the research findings.’ (2011, p.133). She underlines the fact that the term collective capabilities is not used consistently and that Sen also recognised the effect of others on the individual (Sen, 2009) as well as Stewart (2005) who connects the capabilities to the living structure that influences individual’s choices.

The capability approach has been criticised for its individualism in particular by Ibrahim (2006) who underlined the importance of collective capabilities in analysing situations where the focus on the individual cannot capture the complexity of factors that characterise either group action or, as expressed by Foster and Handy, patterns of relatedness among members of a community (2008).

1.4.2 An Emergent Approach for Participation in Design

The second gap the research is tackling refers to the methodology to achieve the expected benefits in ICT4D. To study the processes and interactions between ICT and society will support the understanding of failures related to the implementations of ICTs projects. ‘Very little analysis has been done on the role played by social factors—specifically structure, agency, and social capital—the actual program method and the extent to which programs are socially embedded, or *how* the program makes a real contribution to community defined measures of well-being’ (Vaughan, 2011, p.132).

In the literature on community-based participation, authors underline the importance of creating space and conditions for new participatory approaches to emerge (Lorini, Sabiescu & Memarovic, 2017; Winschiers-Theophilus, Chivuno-Kuria, Kapuire, Bidwell & Blake, 2010). Co-creative forms and new patterns to engage with communities might improve local participation, essential conditions for community interventions (Wyche, 2015; Lorini, Van Zyl & Chigona, 2014; Winschiers-Theophilus et al., 2010; Rodil, Winschiers-Theophilus & Jensen, 2012).

The literature shows the importance to relate with and boost the relevance of the local context and use the approaches in creative ways (e.g. Crabtree, Hemmings, Rodden, Cheverst, Clarke, Dewsbury et al., 2003; Graham, Rouncefield, Gibbs, Vetere & Cheverst, 2007). Participatory design will then focus on enabling conditions instead of crystallising on tested methods and tools. Leaving behind pre-defined methods of approaching and engaging participants, this approach suggests a flexible, emergent process, which privileges community agency. These frameworks and approaches resonate with the amethodical approach described by Truex, Baskerville and Travis (2000) for information systems design.

This line of thought is carried further and tested during this research project. The concepts of emergence and amethodical approaches to design, though scarce in literature, are examined thanks to locally co-created initiatives that did not employ predefined methods, but were configured through the agency of community members.

The dissertation aims to probe and expand these concepts connecting the role of ICT in cultivating empowerment for groups and strengthening the collective capabilities through flexible, sensitive, participatory approaches. The under-researched collective empowerment and emergent approach may contribute to solving problems facing ICT4D.

1.5 Research Questions

The focus of interest for this study is to analyse and verify how an emergent approach for participation in design may lead to opportunities and improvements in people's lives, specifically the strengthening of the collective capabilities of vulnerable groups, with the use of digital solutions.

The main research question is: *How can ICT contribute to collective empowerment in underserved urban communities?*

At the theoretical level, answering this question the study produced insights regarding fine-grain processes and relations by which the social and technical sphere interplay in the transmission of information and networking that can support the expansion of people's capabilities and choice array in underserved communities. The theoretical outcomes provide an incremental increase in knowledge from grounded understandings of fundamental concepts to the conceptualisation of complex processes. Each step detailed through the forthcoming sub-questions was intended to result in valid contributions for the advancement of ICT4D knowledge in filling the gap related to collective empowerment and emergent methodologies.

To answer the main question focused on the methodology to reach the aim of collective empowerment, the first sub-question investigates the context and the work with collectivities: How do people develop new capabilities and how can people be empowered through joint activities and group actions mediated by ICT?

The second level of analysis that emerged along the process, relates to the approaches to ICT4D initiatives focused on capabilities: What approach can encourage the co-creation of ICT products and services by which people expand their capabilities and choices?

The analysis moved on detailing the approaches focused on reinforcing existing collective strengths, answering the sub-question: How can ICT4D researchers and practitioners operate to attune and boost local mechanisms of empowerment, interaction and sharing in group settings?

The last sub-questions investigate innovative approaches to support the development of every participants' potential through grassroots initiatives: Which methods can support a grassroots, sensible and inclusive approach to ICT4D? Which approach and enablers can unleash the potential of every participant to contribute to ICT4D projects?

The main question relates to the potential of ICT as a catalyst for collective empowerment in underserved urban communities through participatory projects. As such, this research aims to contribute to the body of knowledge that investigates the role of ICTs in cultivating capacity-building and empowerment for underserved communities. Before finding and suggesting ways to reach the aim, the study deepened the analysis concerning the meaning of the objective, the elucidation of the existing structures and the intentions of the several stakeholders. The results found solutions for giving voice to the local participants, to introduce themselves, to express their desires and to agree about potential activities and ways to develop them as part of the research.

The research followed an ethnographic design emergent approach to verify the way empowerment and capabilities are determined within the social sphere (people, activities, relations, and communication flows), the technical sphere (ICT availability, knowledge, appropriation), and within the convergence of the two (ICT social meanings and ICT usage patterns). The analysis of the co-creation processes that resulted from this research project highlighted the conditions and enablers for their development.

1.6 Research Objectives

The research aimed to produce theoretical and design contributions to advance research and practice in the domain of ICT and empowerment. The research is addressed at all academics and practitioners focused on ICT4D. From the different disciplines, such as Humanities and Computer Science, to local and international non-governmental organisations directly involved in the exploratory and participatory sections of research and practice, and to the members of the communities participating in ICT4D interventions.

Particular attention was given to the beneficiaries of the different projects involved, from the first introductory meeting until the last presentation of the results exposed by the local participants to the academic community. One of the potential outcomes was to give them control over the project cycle management, providing them with the capability of withdrawing a proposal to the decision to elaborate, develop and manage one.

The study fostered the understanding of how social relations and group actions determine uses of ICTs and encourage group-specific ways for information access, information production, and networking. It conceptualised the social processes of inclusive participation by which members of underserved communities strengthen collective capabilities, with progressively

reduced support by participants external to their community. It produced considerations and recommendations on the co-creation of socio-technical artefacts owned by the community, beneficial to the community and sustainable in the middle and potentially into the long-term. The idealistic aim of the research project is connected with the social theory concept of people's emancipation. Suggestions to advance along that path are presented for researchers and practitioners within the ICT4D sector.

More specifically, the aim is to find locally embedded and sensitive approaches to reinforce and expand existing capabilities, through ICT, in order to strengthen collective empowerment. Due to the complexity of the context, determined by the limited services available and by cultural diversity, and due to the choice to build on local strengths, a series of research objectives were considered before evaluating the final results and answer the main question. The objectives are interrelated and complement each other:

- To investigate the meanings of development, empowerment and emancipation in relation to the role that ICT can play in expanding people's strengths in underserved urban communities.
- To evaluate the meanings and uses of ICTs in underserved communities using discourse analysis and ethnographic design solutions, such as storytelling.
- To elucidate participants' intentions and assumptions for transparent, shared and ethical purposes.
- To identify, probe and assess ICT co-creation solutions that can enable and empower local community groups, based on internally defined conditions and relations.
- To formulate theoretical propositions for the methodological approach to co-creation and design guidelines and principles for the creation of new ICT products and services instrumental to fostering inclusive participation, collective empowerment, and potential emancipation.

Regarding the first objective, this project intended to present a brief historical overview and focus on the use of those words when related to ICTs design solutions and processes. The claim stresses the relevance of the terminology to understand the intentions of the participants and to evaluate the co-creation processes findings and outcomes.

The second objective aimed to evaluate the discourses, from interviews and focus groups as well as from locally created videos, around ICT from the participants' perspective. The issue of knowledge, use and socio-cultural dynamics of ICT is addressed from the 'excluded' perspective, and in particular, from the collectivities operating in groups (van Dijk, 2006).

The second objective together with the third objective of the intentions of participants encourages the researchers and the practitioners to rethink how ICT can address the emancipatory interests of the 'developing community' according to local understandings, assumptions, and needs (Krauss, 2012).

The fourth objective builds on the understandings reached through the exploratory phase to accompany the formulation and co-creation of design solutions based upon local mechanisms and aimed at strengthening agency and capabilities for a group.

The fifth objective represents the core scientific concern of this research, which is that of elaborate further on methodological approaches to participation, in particular in underserved realities with limited resources. It aims to understand and shape theoretical propositions and design principles on how projects supported by ICTs can contribute to improving collective empowerment – thereby serving to advance community development while aiming for the emancipation of everybody, starting from the researcher, the other involved participants and the affected community.

This study seeks to advance ICT4D research and practice producing knowledge which can inform fieldwork activities, programs and policies for furthering community development and emancipation of peoples.

1.7 Structure of the Thesis

Following the presentation of existing problems in this chapter with the research gaps and the scope of the research, the dissertation will continue as follows.

To better understand the debate and complexity around ICT4D, chapter two clarifies terms and explains their use in this research. It then provides an exposition of the literature on the main theories used in the study to support the explanations, analysis and evaluation of the research. Critical social theory and the capabilities framework represent the theoretical foundation of this study while several other theories are used to analyse and evaluate the processes that developed over time.

Chapter three presents the methodology of the research project. An explanation of the abductive strategy and its validity for this type of research project is offered to illustrate how corroboration of the theoretical contributions was possible. The chapter presents the three phases of the analytical plan of action. The presentation of the plan as three main phases is based on the evolution of the project over four years. The initial exploratory phase was followed by a design phase with a third phase dedicated to theoretical contributions. The phases revealed in a cyclical way where exploration and theoretical elaborations were maturing and gaining coherence over time thanks to the project design.

Chapter four introduces the participants and the context where the research project developed. The complex and cross-cultural environment is documented as well as the stages of selection of the participants. The environmental and social challenges connected with the context are summarised in this section. Due to the sensitive issues related to operating in underserved communities and with potentially vulnerable participants, the research had to deal with a series of ethical concerns. With the primary aim of not harming any person, the ethics of justice and care entailed an involvement of external participants aimed at the transformation.

Chapter five presents the three case studies. The presentation is done in five papers, mostly published during the time of the project activity. In this way, it is possible to see the evolution of the processes through the four years of the project. Paper one elaborates the potential theories for studying the emergent research project based on ethnographic design. Paper two analyses the discourses of the participants at the beginning of the activities, during the exploratory research stage. The ethnographic study was examined further in paper three through the use of a design method, Digital Storytelling, which functioned as a bridge between the exploratory and the design phase of the research. Paper four provides an account of the three co-creation processes that unfolded after the production of the digital storytelling videos by the communities. Paper five is an analysis of the three processes as a multiple case study using frugal social innovation as a theoretical lens.

Chapter six summarises the findings to analyse and evaluate the case studies globally. The discussion ends with the disclosure of theoretical propositions and principles generated by the case studies, which aim and claim to be generalisable. These elements represent the main contribution of this study to theory and practice in ICT4D.

In chapter seven, determinant elements that supported the project are highlighted to present the limitations of this research. After describing the possibilities of the processes to expand and to

be replicated, the study concludes by presenting the potential future theoretical and practical elaborations, which could extend this study.

1.8 In synthesis, Chapter 1

Through the analysis and evaluation of three case studies based in the informal settlements of Cape Town, South Africa, the research addresses the question: How can ICT contribute to the collective empowerment of underserved urban communities? The study is framed by critical social theory and the capability approach drawing on the writings of Sen and later scholars who expanded his work with attention to collective and relational dimensions of agency, capabilities and empowerment.

The problem that this study seeks to address is grounded at the confluence of two research lines in current ICT4D research: the role of ICT in cultivating empowerment, and emancipation of poor, underserved and marginalised groups; current debates on the inclusive, grassroots and egalitarian participation in social design. This research tries to fill the gap related to the problems faced by ICT4D regarding collective approaches and participation in design.

This line of thought is carried further and tested during a four-year research project which produced three co-creation cases. The study, guided by complementary objectives, fostered the understanding of how social relations and group actions determine uses of ICTs and encourage group-specific ways for information access, information production, and networking. It conceptualised the social processes of inclusive participation; it produced considerations and recommendations on the co-creation of socio-technical artefacts owned by the community, beneficial to the community and sustainable in the middle and potentially into the long-term. The long-term aim of the research project is connected with the social theory concept of people's emancipation.

2 RELATED LITERATURE

This chapter recalls principal development theories history, describes the main theories used as backing and summarises findings found in the literature. This chapter begins with the clarification of terminology (2.1), to understand the debate and complexity around ICT4D, in particular, the use of the words development (2.1.1), empowerment (2.1.2) and emancipation (2.1.3) and the universalist versus relativist approach (2.1.4). Due to the extensive use in the literature of the three concepts, often interchangeably, the explanation refers to their use in this research where their meanings represent the points of reference of the evaluation process of the study.

Section 2.2 introduces the relationship between ICTs and development. The connection of the terms with the theoretical frameworks used emerges in the second part of the chapter. In particular, critical social theory and the capability approach represent the theoretical foundation of this study (2.3). Other theories were used in the research to analyse and evaluate the ways that the processes evolved (2.4).

2.1 Terminology Clarification¹

Terminologies are often abused or misused for multiple reasons: simplification (sometimes accompanied by a note to explain the complexity of the term and the space constraints); fashion; or solely for convenience, to synthesise a complex context with unclear boundaries (Castellví, 1998).

In the field of ICT4D, the term ‘development’ has been used without reference to its history or meaning. Gomez (2013), reporting on the results of an analysis of ICT4D from selected publications between 2000 and 2010 says ‘Identification of the notion of development in the ICTD [ICT4D] literature proved to be a very elusive task: very few papers have any explicit mention of what they mean by development, its goals or purpose’ (p.14).

In the lower and middle-income countries (LMICs) like South Africa which represents the setting of the research project, there is a tendency to feel discriminated and judged by terminology, such as underdeveloped or developing countries, which holds a negative

¹ This section together with chapter six on the evaluation discussion is part of an accepted paper for the 10th International Conference on ICT, Society and Human Beings 2017. I was the only author but I could not attend the conference. Therefore the paper had not been published.

connotation. Khokhar and Serajuddin, in the Data Blog of the World Bank, say “the terms ‘developing world’ and ‘developing country’ are tricky: even we use them cautiously, trying to make it clear that we’re not judging the development status of any country” (Khokhar & Serajuddin, 2015). They suggest the dismissal of the use of the concept of ‘developing countries’.

The debate over the terminology is fueled by recent analysis oriented towards showing how specific problems are cross-border and afflict both high-GDP countries and those economically weaker, the LMICs; examples of the shared issues are related to the growth of inequality spread in every country as well as rising unemployment (Cingano, 2014; Castells & Himanen, 2014).

For the sake of better explanations, other terminologies have emerged over time. They are valid in different economic and cultural contexts, and usually, they bear different ideological references. The terms ‘emancipation’ and ‘empowerment’ are among the ones primarily used in specific contexts, such as in the feminist debate (Hafkin & Huyer, 2006). In the context of information systems and technology, however, generic and sometimes interchangeable use of terms is observed. In this way, the specificity and possible contribution of the meaning of the words to phenomenological analysis are compromised. When choosing theoretical frameworks for reference and support, the value and meaning of the terms are often underestimated and the choice of a conceptual approach risks to be accomplished without assessment of the ideology.

The questions that I set for the study are linked to my intentions and to the ideology that drives the research and the activities developed in the underserved communities of an LMIC. The questions, as seen in the introduction, are connected with the understanding from inside; specifically, with the relations between collectivity of people and ICT and with the kind of contribution that ICT4D projects can produce in a particular context, possibly, to support collective empowerment.

In the research field of ICT4D, the expected outcomes are connected with development, which, as stated above, is sometimes referred to as empowerment or emancipation, depending on the framework of reference. We have to consider whether the desired contribution is aimed at economic development, in the classical sense (Ranis & Fei, 1961); or if the research claims to support the integral human development (Alkire, 2010); or if development represents the increased capacities to act and the ability to choose (Sen, 1999); or if it is emancipation from discrimination, constraints and ideological, political and social super-structures (Macdonald, 2015).

The chapter will present the development terminology starting from the historical background, not explicitly related to ICTs. The conclusion of the section (2.1.4) introduces the connection between development, empowerment and emancipation and the research approach they can support. The philosophical framework of reference of the approach can be universalistic or relativistic and more embedded into the context. Due to its relevance for theory development as well as for project implementations, the emphasis on terminology will be maintained along with the research dissertation, above all in relation to every participant's intentions and for the evaluation of the outcomes.

2.1.1 Development

The word *development* came into being after World War II to formalise a series of conditions of countries with the low gross national product (GNP) and limited economic growth with structural changes (Gore, 2000). The issues faced by the countries called underdeveloped during the 1950s and 1960s, were connected with limited governance systems characterised by dictatorships and anticipated coups d'états (Olson, 1993) and with the limited investments in essential infrastructures, such as roads, hospitals and schools (Agénor, 2010). Already in the 1950s, the GNP was considered as an insufficient index, due to the lack of income distribution data (Marrama, 1958). From 1990, the United Nations Development Program introduced the Human Development Index to measure the quality of life and the social well-being in the countries on the basis of life expectancy, education and income (Sagar & Najam, 1998).

While the terminology connected with the division into first, second, third and fourth worlds was questioned in the eighties at the end of the Cold War together with the 'underdeveloped countries' concept (Berger, 1994), a new terminology of developed and developing countries emerged. The developing countries were the ones with low and middle-income groups, compared to the developed countries with high-income groups. The distinction is still used despite disagreement from the LMICs over the term culminating with the World Bank consensus by suggesting discontinuing its use (Khokhar & Serajuddin, 2015).

The concept of development as 'business-as-usual' (Pieterse, 2000, p.175) is still in vogue, and also in the information systems literature, the aim of development is 'to achieve socioeconomic progress for disadvantaged groups' (Lin, Kuo & Myers, 2015, p.710). Many ICT4D projects evaluate the results of their actions based on the economic and social results (Burrell & Toyama, 2009).

2.1.2 Empowerment

While the debate over terminology is still developing, new words have gained acceptance and started to be used more regularly. *Empowerment* is one of those words that in the last two decades gained traction (Wilkinson, 1998). Gomez (2013) recalls the growing trend in studying empowerment in ICT4D in its various interpretations.

While development in the short term was considered too complicated to envisage, empowerment of participants appears more realistic and affordable. Thus, empowerment became a means towards the broader ideal of development (Parpart, 2002).

One solution to the problem of terminology is to avoid defining the word itself but to allow its characteristics to emerge from results of a project. The term, empowerment, reflects a real and tangible improvement in the life of involved persons. The concept does not adopt an integrated approach to change the complexity of the context (Friedman, 1992). While development has become associated with economic, social, cultural and political change, empowerment could focus on limited uplifting of an individual or a group in a particular context (Perkins & Zimmerman, 1995). Within this individualistic interpretation, many researchers in ICT4D are now focusing on empowerment referring to Sen's capabilities approach (1999) and Kleine's choice framework (2013).

2.1.3 Emancipation

A word more limited in its use and impact in the recent development literature is *emancipation*. Nevertheless, it is strongly addressed by critical social theory as the desired outcome of an intervention aimed at transforming the society (Devetak, 1996). It has a historical background and a political flavour that discourage many researchers from adopting it. While development and empowerment appeared more neutral and recognised as socially significant for every person in every country, emancipation appears connected with realities of the past, when in the past centuries slavery was in vogue, included in South Africa (Dooling, 2007). From the 1960s emancipation became connected with the fights of social movements to achieve juridical equality for oppressed (Azmanova, 2009; Dolphyne, 1991).

Emancipation can be encountered in multiple domains and requires a more explicit presentation. In this study, emancipation is interpreted as the capability of a person to freely decide on the basis of her/his values and knowledge and in connection with her/his community. According to Steinberg and Kincheloe, emancipation is an 'attempt to gain the power to control

their own lives in solidarity with a justice-oriented community' (2010, p.143). The transformation of the super-structure is the target of projects where empowering solutions are triggered. The super-structure system with its social, economic and political constructions is conditional to enjoy that power. In this sense, empowerment on specific life aspects can become the leading instruments to emancipation.

As expressed by Karanasios, '...emancipation is largely a notion, which, while it is a pertinent concern in the ICT4D field, is typically neglected or pushed to the background in ICT4D research and not theoretically driven' (2014, p. 9).

2.1.4 'D' for All

Development in general and empowerment - as its more *ad personam* approach - have a universalistic view of the rights and outcomes that need to be achieved. Even if not stated, the aims of development projects and research are geared toward fulfilment of human rights for everybody. The right to shelter, the right to water, the right to education, the right to enjoy political and social freedom, the right to economic security and the right to life are among the principal universal rights.

In this attempt to universalism, Amartya Sen's theory of development as freedom (Sen, 1999) has garnered much attention (Pressman & Summerfield, 2002) and has been operationalised to fit into categories not created by Sen (Charusheela, 2008; Nussbaum, 2000). Sen himself wondered if "the use of the capability perspective for elucidating human rights requires a full articulation of the list of capabilities?" and if "we have anything like a universalist approach to these ideas" (2005, p.152). If freedom is the desired outcome with the possibility for everyone to choose the life she/he values, then every concretisation and connection to universal human rights could only be an exemplification and not a procedural scheme, to achieve something that only the individual can realise and value as desirable (Stern, Dethier & Rogers, 2005). Because of this individualistic approach, Sen's theories had been in time associated with empowerment aims.

Emancipation, as seen, manifests in different ways in time and space. It is embedded in culture and realities. Despite this, its approach implies a universalistic view to include every human being because it requires the liberation of everybody to become effective. Emancipation includes the Kantian notion that nobody can be completely emancipated until everybody is emancipated (Williams & Booth, 1996).

In this dissertation, the three terms, development, empowerment, and emancipation, will be used separately and not interchangeably. Development refers to the general sense of improvement of the quality of life for the community at large. Empowerment refers to the specific increase or strengthening of the capabilities of the groups that is the aim of the co-creation processes developed through the research. It would have been used in the same way to refer to individuals if the research would not have focused on collectivities. Emancipation refers to the liberation of humanity from constraints of repression, the real potential scope that critical social theory has for every activity (Habermas, 1991). If this idealistic aim cannot be prosecuted along a thesis, it should still guide the intentions of the involved people. Such is the case for this research which points to unleash collective empowerment but is guided by critical theory and maintains emancipation as a reference stance.

After an excursus over the increased interrelations between development in its broad sense and ICTs in the literature (2.2), the rest of the chapter will specify the characteristics of the theory of reference, critical social theory and capabilities theory as a potential framework (2.3). Both were valued as significant for the interpretation of the empirical findings at the beginning of the research. The chapter will focus on their compatibility with the study while more details are presented in the published papers included in chapter five (in particular, paper one and two). From a methodological stance, participatory design and its methodologies support the design phase of the research and are compatible with the studies ontology and paradigm (2.3.3).

The abductive strategy allowed for other theories to support the interpretation of the findings. The third and final phase of the research, devoted to theoretical propositions, saw the use of frugal innovation and social capital (2.4) as theories of reference for sensemaking, interpretation and evaluation. While frugal innovation is presented more extensively in Chapter 5, the social capital theory is explained in this chapter, albeit not in specific relation to ICTs. Its relevance relates to the context and the participants that are introduced in Chapter 4.

2.2 Development, Empowerment, Emancipation and ICT

The literature tends to aggregate the studies over development, empowerment and emancipation connected with ICT as ICTD or ICT4D. The debate around terminology and intentions begins with the possibility to choose whether using the expression ICTD (ICTs in developing countries) or the ICT4D (ICTs with development aims) (Kleine & Unwin, 2009). In future, the 'D' in ICT4D may include other conditions that need to be improved or modified. In this way, issues will not be segregated into particular world regions thereby dismissing

judgement of the secondary importance of what comes from the once-called developing countries. An example is given by reverse innovation, whereby new products are created in the developing regions and exported everywhere. The products created are usually referred to as 'good enough' (Govindarajan & Ramamurti, 2011). In the same way, the discussion of the social value of digital technology in recent years started recalling the importance of empathy towards the environment (Gomez, 2013). The '4D' over time became more inclusive of meanings and objectives, not regional related.

Till the 1970s, when the concept of development was still strongly associated to 'modernisation', the connection between ICT and development strictly related to the potential of technology to support the progress, such as technological efficiency and evolution of technical infrastructures in the different regions (Mansell, 2009). In the 1980s the voices of authors underlying the political and social implications of technologies were still reduced (amongst the first authors to introduce those ideas, see Golding & Murdock, 1978). In 1996 Castells discussed those implications in the "Information Age" trilogy. Since then, the image of the information society grew constantly. Castells (1997) highlighted as well how the so-called less-developed countries are part of a global network where ICTs is fundamental. The major international development agencies and donors started investing in ICT as a developmental strategy (Gomez & Pather, 2012).

The impact of technology every day and on everybody's life reached a new peak in 2005 with the use of social media, 'the horizontal networks of communications' which changed the way people interact with others and with ICTs (Castells, 2007). Over time the debate evolved considering technology as something good, bad or neutral for development. Three main approaches to ICTs and development can be summarised as technocratic development, 'counter-hegemony' approach and critical approach.

The technocratic approach to ICT has a deterministic view of the society which can develop only through the assimilation solutions offered by the digital era. It corresponds to the catching-up paradigm presented by Haider and Bawden (2006). In the field of ICT4D this approach has been critiqued due to the failures of several projects in the once so-called developing regions (Heeks, 2002) which highlighted how the technocratic solution might lead to more disadvantages and inequalities (Mansell, 2009; Alampay, 2006) and strengthen an uneven development. A 'counter-hegemony' of technology (Feenberg, 1999) approach considers limiting the exposure, access and use of ICTs. In so doing, the approach of rejecting ICTs might

as well determine further isolation and exclusion of the marginalised or underserved populations.

The critical approach to ICTs for development recognises that ICT is not good, not bad and not even neutral for societies. If the technocratic risk for people and in particular for underserved communities is to be subjected by technology, the critical researchers evaluate the potential of a conscious choice to be part of the information society, avoiding the potential damage associated with a refusal to enter the digital era. Avgerou (2010) talks about an alternative approach which evaluates the effects of ICTs on equity and social justice. A critical approach to ICT4D relates to the clarification of the meaning of development, empowerment and emancipation for all expressed in the previous sections. The critical approach is aware of the potential adverse effects of ICTs in increasing the digital divide. At the same time, the critical use of ICTs can support social justice and inclusion processes, using the power of ICTs to open a debate around the hierarchical structure which can undermine development in a given context. The ontological assumptions, the theoretical frameworks and the methodology selected for the research project support the choice to work with a critical approach to ICT4D.

2.3 Paradigm, Framework and Methodology

The thesis is based on an idealist ontological assumption (Blaikie, 2011), that corresponds to the philosophical worldview defined as advocacy and participatory by Creswell (2009). In this approach, several theoretical perspectives might assimilate. In particular, the research paradigm is critical social theory with a potential framework of reference derived by the capabilities theory. The methodology to approach the social reality is guided by the principles of participatory design. The theories do not direct the study but are used to discuss, understand and analyse the findings. For this reason, the literature is presented along with the processes, when comparison or guidance is required.

2.3.1 Critical Social Theory

In the Frankfurt school where Critical Social Theory was born almost one hundred years ago, theorists were already worrying about the effects of the mass media. At the time, the main issues related to the industrial culture of consumers and conformism (Gurevitch, Bennett, Curran & Woollacott, 1982). Information, knowledge and cultural production were dominated by the media industry. Over time, new processes and new technologies came into being. In this new internet era, technology-mediated societal changes are inevitable.

Critical social theorists remain committed to critique the *status quo* and explain where the problems lie (Leonardo, 2004); maintain the intent to be part of the change knowing that the emancipation scope starts *in primis* from the researcher (Krauss, 2012); try to present possibilities to transform the reality and create an ideal society (Habermas, 1991). These fundamental concepts validate the theory as suitable to analyse and verify how the use and implementation of technologies can lead to opportunities and improvements in people's lives, especially for vulnerable groups.

While specific uses of the theory emerged along the research, the core ideas are highlighted to connect them with the objective of the study and with the espoused theories. Critical social theorists develop their approach to social activities from the standpoint of recognising that they are affecting the reality when they are present. For this reason, critical social theory adopts observant participation. Moreover, it stresses the importance of the context and is sensitive to it (Orlikowski & Baroudi, 1991). In particular, critical social theory is concerned with communication action and discourse analysis, and it pays attention to the meanings given directly by the actors. The participants of the activities are in fact referred to with this more respectful terminology instead of being 'subject' or 'users' (Ngwenyama & Lee, 1997).

2.3.2 Capabilities Approach

Sen's capabilities approach (1999) focuses on what people can do and be, the freedoms or valuable opportunities that allow a person the possibility to choose. Sen refers to capabilities as higher forms of capacities that involve the need to evaluate and make a hierarchy of the possible freedoms. Capabilities approach shares with critical social theory the desire to detach the study of the social actors from their economic and consumer perspective (Robeyns, 2003). In critical social theory, emancipation is the driver that affects society. In capabilities theory, the concept of empowerment emerges for its potential to work with individuals due to the fact that capabilities are not enumerated and depend on what people value. Capabilities approach also connects with the socio-political sphere because the latter can affect the possibility for a person to exercise his or her capabilities.

Several frameworks to operationalise the capabilities approach have been suggested. A popular theory in the ICT4D field is Kleine's choice framework (2013). The choice framework was judged as infeasible for this study due to its individualistic approach, its complexity and its general universalistic view. In particular, working with groups instead of with individuals implies an additional complexity of analysis. The freedom of choice depends on the values, the

most difficult as well as most important elements to evaluate. The conversion of capabilities into functionings depends on personal, social and environmental factors that influence the choice possibility of a person. While the social and environmental factors can be analysed for both individuals and groups, the personal elements cannot be operationalised for groups of people. In the case of the processes followed, the decision to not using the choice framework as the main theoretical structure of reference, allowing for more flexibility during the activities. Without a pre-defined structure, there was less pressure on the participants and the outcomes.

Similar to Kleine's framework (2013), Nussbaum's enumeration of the capabilities (2000), listed much like the universal human rights, draws attention to people's skills and personality aspects making an operationalisation for groups difficult.

Sen's capabilities theory, without any operationalisation, does not endorse a list of priorities. Capabilities might depend on purpose and context. In this study, Sen's approach is used to evaluate the processes on the base of the possible increased collective empowerment. Its assessment relies on the expansion or reduction of the capabilities of the groups that influence the possibility of achieving what they desire. The increased capabilities of people will then create the possibility of a proper evaluation of their values from within, from the empowered people (Sen, 1999). The capabilities approach supported the study through the analysis of the processes in light of the increased capabilities or possibility to express and exhibit existing capabilities of the groups. Working with groups, we can adopt the terminology of associational capabilities, or collective capabilities (Ibrahim, 2006).

Sen's capability approach, used with attention to the collective and relational dimensions of agency and capabilities, supports the analysis of empowerment processes envisaged through critical social theory. While the paradigm of reference of the study, critical social theory, claims an orientation to affect the social world favourably, the approach adopted, capabilities theory, offers a benchmark to evaluate the changes based on the increased or strengthened capabilities. The methodology chosen to transform the reality starting from the increased capabilities and empowerment of the participants is Participatory Design. It shares a critical stance with the selected paradigm and theoretical framework (Ehn, 1988) and recognises the responsibility of designers towards the world they would like to create. Oosterlaken (2009) in her explanation of the connection between capabilities approach and various forms of participation in design, advocates for 'capability sensitive design' (p.96). Participatory methodologies require a theory to support the discussion over ethical, social and political dilemmas that designers will

encounter (Buchanan, 2001). Apsan Frediani and colleagues (Apsan Frediani, Boni & Gasper, 2014) consider the relevance of capabilities approach to complement participatory planning, management and evaluation.

2.3.3 From Participatory Design to Co-creation

The literature on participation has evolved from its origins in the Scandinavia region during the 1970s (Nygaard & Bergo, 1975). A central and unchanged precept is the commitment of participatory design approaches to involve the persons who will use or be affected by ICTs in its design and creation. The core principles of participatory design refer to:

- ‘genuine’ participation (Bødker, Kensing & Simonsen, 2004), meaning that ethical aspects and participants values are essential references to highlight that every participant is willingly engaging and her or his interests are legitimate and acknowledged (Simonsen & Robertson, 2013);
- ‘mutual learning’, where knowledge is developed through active cooperation (Kensing & Blomberg, 1998);
- democratic and emancipatory motivations ensure not only a participatory process but ensure that these methodologies can enable equalisation of power relations (Ehn, 1988).

The methodology was selected due to its match with the research paradigm of critical social theory. However, while the core principles of participation in design above-mentioned remain invariable and resonate with the philosophical backings of the research, formulas, distinctions (such as user and designer), methods, techniques and tools vary. In particular, the case studies analysed in the project aimed to move from co-design to co-creation.

In the co-design literature (Greenbaum & Kyng 1991), the local participants are engaged as informants as well as joint problem-solvers. Nevertheless, they continue to be addressed as users, costumers, consumers while the external participants, usually experts or professionals, are referred to as the designers (Sanders & Stappers 2008; Steen, Manschot & De Koning 2011). The co-creation emerging literature aspires to reach a degree of participation where every involved member is a creator of the outcome (Schumacher & Feurstein, 2007). Sanders and Stappers (2008) underline as well the evolution of the roles of the different stakeholders, where local and external participants are involved in a creative and innovative learning environment. When the community participants become the creators, the changing processes can affect the power relations (Burns, Cottam, Vanstone & Winhall 2006). Due to the changes

occurred along the processes, the case studies presented are still considered as co-design for the role played by the professionals. The evolution of the project from a collaborative to a grassroots approach (Walsham 2017; Heeks 2009) let emerge the co-creative results.

Critical social theory, capabilities approach and co-creation design methodologies share common aims, which are to transform the environment and situation and support the emancipatory quest of participants and communities. To maximise the opportunities related to these theories the study adopted and enriches an alternative approach to ICT4D. This approach was centred on the importance of interpersonal and group relationships, where every actor can decide to become a co-creator of the ICT4D intervention. Aiming for the highest level of participation and creativity development, further attention was given to the type of ICT4D deployed, preferring the use of inclusive, socially focused, frugal and sustainable technologies. In the project, the increased empowerment of the involved groups, through skills and self-consciousness development, enabled the participants to climb the ‘rungs of the ladder’ of participation (Arnstein, 1969).

2.4 Evaluation Theories

A new understanding was reached over time through interpretation of the case studies. In particular, two theories supported the final analysis devoted to a cross-cutting analysis of the findings. The focus on the common elements, such as the collective approach, the developing creativity, and the social engagement highlighted the possible explanation of the cases as frugal innovation processes made possible by the social capital present in the communities. While frugal innovation is extensively presented in the last paper of the fifth chapter, the social capital theory will return at the end of the dissertation (Chapter 7) in the analysis of the determinant factors that enabled the processes to happen.

2.4.1 Frugal Innovation

The final artefacts created during the processes share a number of elements that can be viewed through the lens of frugal innovation theory. In particular:

- the artefacts reflect and answer the needs of the participants and their communities;
- they are new and unexpected;
- they were developed with limited resources;
- they are owned by the creators;

- in the middle-term, they showed sustainability.

As expressed by Hossain (2016a) and other researchers interested in frugal innovation (Brem & Ivens, 2013), these are essential characteristics of products created by people living within constraints. Concerning the processes presented, their innovative stance derives first from the methodology to achieve the results (Garud, Tuertscher & Van de Ven, 2013) and secondly from the fact that the outcomes are novel in the context where they had been created and utilised (Fagerberg, 2004). The use of the theory does not relate to the literature which considers frugal innovation as reverse innovation. The latter is concerned with the creation of ‘good enough’ products for emerging markets (Zeschky, Widenmayer & Gassmann, 2011).

2.4.2 Social Capital Theory

The final essential theory used to understand, analyse and evaluate the case studies is social capital theory. Social capital refers to the internal social and cultural coherence of society, the usually unwritten norms and commonly perceived values that govern interactions among people and between people and the institutions in which collectivities are embedded (Woolcock & Narayan, 2000). Social capital is the corpus of connections that holds individuals, communities and societies together.

While social capital theory was not envisaged from the beginning as a reference theory for this dissertation, the relevance of the community and groups’ ties emerged as central. Social capital was not intended to be included of necessity due to the choice of working with collectivity of people; it is, nonetheless, important to note my previous knowledge concerning the dense patterns of relationships that knit together the communities under study. In the specific context, I had the opportunity to see the African philosophy of Ubuntu in practice. It has its roots in African humanist philosophy, which sees the idea of community as central to society. Ubuntu derives from the aphorism *umuntu ngumuntu ngabantu*, which means that a person is a person through other people, a concept often expressed as ‘I am because we are’ (Gade, 2011; Sulamoyo, 2010).

Working within groups of people, the values related to social capital had been analysed in various context, for instance, to ‘show how social and human capital, embedded in participatory groups within rural communities has been central to equitable and sustainable solutions to local development problems’ (Pretty & Ward, 2001, p. 209). Over time several projects on civic participation, citizen engagements and community networking developed

both in rural and urban contexts, all over the world, with and without the use of ICTs. The commitment of these groups is towards the society to solve problems and not only to strengthen the social capital. While developing local services, the community networks engage potential stakeholders and build new ties. The type and extent of linkages and relationships within a community depend on the role of ‘trust, norms and networks’ (Putnam, 1993, p. 167) and become critical determinants for the possibility to work with collectivities for the collectivities. Social capital theory refers to these determinants as strong and weak ties (Lin, 2017; Granovetter, 1973). The strong ties are usually connected with the family links and the strongest relationship a person can rely on, while the weak ties are usually used in case of need, for specific purposes. Often used temporarily, weak ties prevent people from relying on them completely (Woolcock, 2001). Granovetter (1983) in his review argues that weak ties which are ‘acting as bridges between network segments’ (p.229) support the spread of new ideas and act against the fragmentation and incoherence of society. In his words: ‘social systems lacking in weak ties will be fragmented and incoherent’ (idem, p. 202). The distinction between ‘strong’ and ‘weak’ ties is also referred to as ‘bonding’ and ‘bridging’ social capital (Narayan-Parker, 1999). Both are considered as horizontal linkages, to provide connections beyond a person’s group or community. ‘Linking’ social capital is the vertical dimension that in the case of development projects becomes crucial ‘to gain sustained access to formal institutions’ (Woolcock, 2002, p. 24).

In this research, the references to social capital are embedded in the community-based self-help initiatives such as the groups of women that are part of a social movement or of saving schemes. As in many once so-called developing countries, saving systems and microfinance ensure the management of financial resources in effective ways (Van Rooyen, Stewart & De Wet, 2012), where joint financial capital is strictly connected with social capital (Irving, 2005).

In the cases of the present research, social capital is initially an asset on which to build the processes. Through the focus groups and the activities, the different ties emerged and became explicit. Working with groups and their communities, the concept of social capital has not specifically been connected with individuals and their benefits as it was in the origins of the concept and its theoretical use by Bourdieu, who talks about social capital as a form of exchange (1980) and Coleman (1993; 1988) who, relating social capital to other forms of capital, refers to the concepts of expectations and obligations.

The study does not focus on those connections with the economic concept of utility (Fine, 2002) and the potential benefit people point at while investing in relationships (Woolcott & Narayan, 2000). The final evaluation of the results of the research project relates to the social capital, not to evaluate its increase or other changes but as a determinant factor without which the projects could not have developed. Chapter 4, presenting the context and the participants, highlights the importance of the different ties for the processes.

In Synthesis, Chapter 2

In the research field of ICT4D, often the term 'development' is used without reference to its history or multiple meaning. The expected outcomes of research and practice connected with development are sometimes referred to as empowerment or emancipation, depending on the framework of reference. This research claims the importance to highlight whether the desired contribution of a study is aimed at economic development; to support the integral human development; or if development represents the increased capacities to act and the ability to choose; or if it is emancipation from discrimination, constraints and ideological, political and social super-structures.

After a short historical overview of the terminology in use, the chapter focuses on Sen's capabilities approach, where development corresponds to the freedoms or valuable opportunities that allow a person the possibility to choose. In capabilities theory, the concept of empowerment emerges for its potential to work with individuals due to the fact that capabilities are not enumerated and depend on what people value. Capabilities approach also connects with the socio-political sphere and the emancipatory vision of critical social theory because the public sphere can affect the possibility for a person to exercise his/her capabilities.

Sen's capability approach, used with attention to the collective and relational dimensions of agency and capabilities, supports the analysis of empowerment processes for groups envisaged through critical social theory. Critical social theory is the paradigm of reference of the study and claims an orientation to affect the social world favourably; capabilities theory offers a benchmark to evaluate the changes based on the increased or strengthen capabilities.

The collective approach, the developing creativity, and the social engagement highlighted, at the end of the research project, the possible explanation of the cases as frugal innovation processes made possible by the social capital present in the communities. The final essential

theory used to understand, analyse and evaluate the case studies is social capital theory. Social capital refers to the internal social and cultural coherence of society, the norms and values that govern interactions among people and the institutions in which people and their norms are embedded. Working with groups and their communities, the concept of social capital as always been connected with communities and not specifically with individuals and their benefits as it was in the origins of the concept and its theoretical use by Bourdieu and Coleman.

3 RESEARCH METHODS

Chapter three presents the research design and methodology. In section 3.1 the abductive strategy is described (3.1.1), followed by a synthesis of its use in this research (3.1.2) and an explanation of its validity in this study (3.1.3).

To further support the value of the chosen strategy, section 3.2 deals with the saturation and corroboration issues which are essential conditions for coherent research.

The chapter then presents the three phases of the analytical plan of action: exploratory, design, theoretical, in section 3.3. The presentation of the plan in three main phases is based on the development of the four-year project. An initial exploratory phase (3.3.1) was succeeded by a design phase (3.3.2). The third phase focused on the theoretical contributions (3.3.3). Following the abductive strategy, the phases describe a cyclical process whereby the maturing exploration and theoretical elaborations were gaining coherence over time due to co-creation.

3.1 Research Strategy

3.1.1 An Abductive Strategy

Abductive research strategy is used in this thesis (Blaikie, 2004). Abduction starts from the empirical observations of the phenomena, using an inductive strategy to gather data, and theoretical concepts to support the analysis, and continues unfolding, through cycles of analysis, use of deductive theories, verification through the findings and empirical discoveries. Abduction aims to elaborate theoretical concepts that can be verified in the empirical situations that support their emergence (Salvatore & Valsiner, 2010).

The research did not adopt a unique theoretical framework to analyse the data through a deductive process that develops propositions and tests them through case studies. Nevertheless, the study complemented the analysis through theoretical concepts as part of the abductive strategy. Although not dominant and ‘a non-traditional way’ in Information Systems it is possible to use case research for deductive purposes (Cavaye, 1996, p.235). Yin is a representative and advocate of its use (1989).

Likewise, the research did not use grounded theory based on pure induction strategy (Glaser & Strauss, 1967) with theory systematically generated from data. Nevertheless, an abductive strategy shares more with grounded theory in its quest for the development of theoretical models than with deductive approaches looking for theory confirmation.

Theoretical framework concepts were utilised to analyse the findings and elaborate propositions. Concepts derived from the supporting philosophies were the drivers of the analysis. Timmermans and Tavory (2012) synthesise the aim of abductive strategy and its approach as “Abductive analysis constitutes a qualitative data analysis approach aimed at theory construction. This approach rests on the cultivation of anomalous and surprising empirical findings against a background of multiple existing sociological theories and through systematic methodological analysis” (p. 169). They described this solution as an interesting possibility “[...] to develop a double story: one part empirical observations of a social world, the other part a set of theoretical propositions. In good research, these two parts of the story not only intertwine but amplify each other.” (Tavory & Timmermans, 2014, p.2).

This research allowed potential outcomes for theory and practice developing to emerge through a nonlinear process. The evolution of the study depended on the path that each phase followed from the preceding one. Initial empirical observations resulted in the identification of themes and issues that were analysed and explored with support from theoretical concepts. The results suggested the need to search for more empirical data through other means of collection. The phases were unplanned and intertwined. The processes moved from content analysis to design activities and finally to multiple case study analysis. The understanding of empirical data and theories was supported by the cyclical evolution of observations and theory.

3.1.2 The Abductive Strategy in the Research

The abductive research started with the discovery and subsequent typification of the social world analysed (Figure 3.1). The starting phase of the study indicated the need to describe, analyse and explain the features of the phenomenon of observation. In the starting phase, the phenomenon referred to the meaning and use of ICTs by community groups in underserved areas. The discourse analysis technique was used for scope (Krippendorff, 2012). After an initial evaluation of the focus groups recordings and production of a list of themes, a grouping of the themes was done to proceed with their analysis and comparison with the other interviews.

The subsequent level of content analysis consisted of the abstraction and generation of technical concepts that applied to the phenomenon and were persistent in all the different groups as per their category (Mamas' groups or Youth groups). The initial analysis was discussed with some members of the groups through in-depth interviews. Because of the abstraction level reached through the analysis, in-depth interviews to validate the findings were better suited than focus groups in order to allow for specific questions to be posed. The

discussion with single groups' members about the concepts that emerged allowed for a more in-depth description and analysis from the participants' perspective (Boyce & Neale, 2006). Another focus group would have risked opening the debate about new issues without supporting the search for a broader consensus on the terminology used to explain the phenomena. Furthermore, moving from the premise that the precise outline of the co-design methods to be used is best shaped in context, through people's participation (Winschiers 2006), feedback from some of the social actors was considered essential before entering the second phase of the study, the design one.

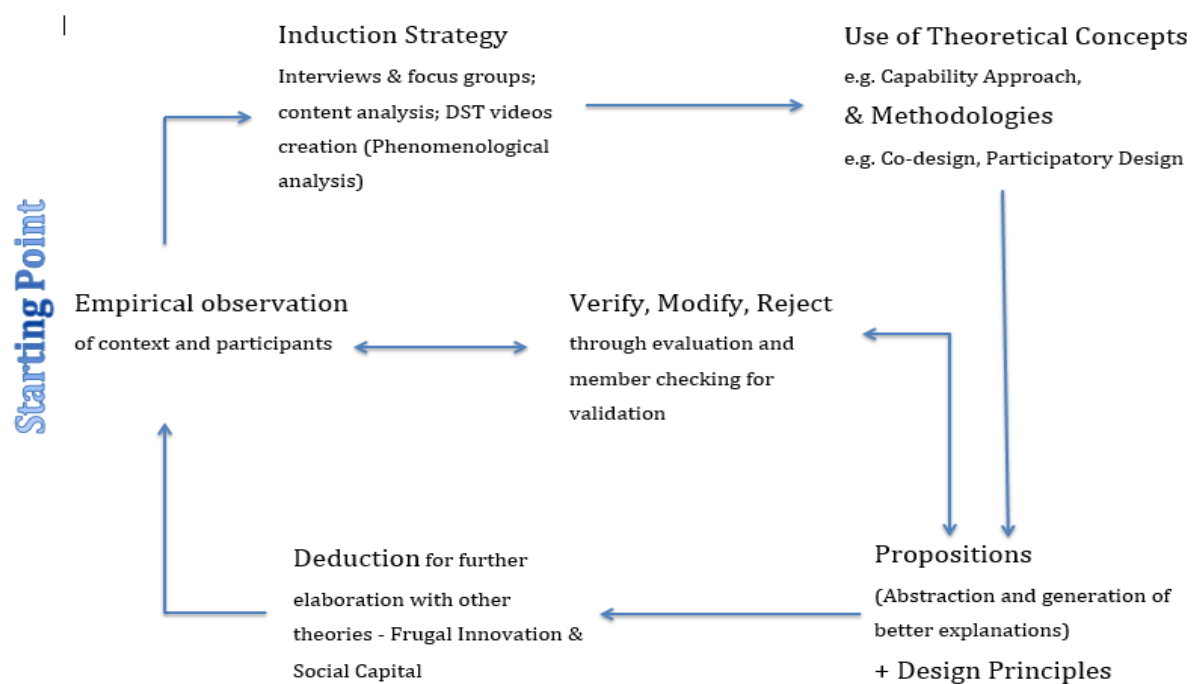


Figure 3.1: Abduction Strategy in the Research

The abstractions and summarised elaborations accepted granted the possibility to validate the initial discovery produced on the base of the empirical observations. This exploratory phase did not produce any propositions but only themes of analysis and a presentation of the discourses around ICTs from the participant's point of view. Instead of developing a second phase of focus groups with the same participants or selecting similar active groups to validate, modify or reject the initial elaboration, a new phase in between the exploratory one and the co-design one was developed. The discussions about ICTs stimulated the interest and creativity of some of the groups who became involved in the creation of Digital Storytelling (DST) videos. The artefacts supported the more in-depth understanding of the participants, their presentations using their voice and their use of frequently used and, for some of them, new ICTs. This ethnographic-design phase was evaluated in comparison with the traditional techniques of DST

(Lambert, 2013). The highlight of the analysis consisted of the elaboration of the flexible approach used and its results. This phase in the abductive strategy represented a connection between the empirical, inductive observation and the subsequent phase when theories are used to interpret and analyse. DST lies as well at the intersection between the exploratory and the design phases.

The subsequent phase of co-creation of ICT artefacts was supported by a series of theoretical frameworks to develop and analyse the processes under scrutiny. In particular, co-design and participatory design theories became the frame of reference during the creation of artefacts. Theoretical concepts and methodologies from these theories contributed to assessing the phenomenon under study and the research problem. The analysis of the three co-creation cases placed focus on their mechanism of evolving and increasing engaged participation. The theoretical frameworks of reference to evaluate the functioning of the processes were critical social theory, collective capabilities approach, co-design and participatory design.

Case studies descriptions were written during the years in which the research project was unfolding. Several papers were published over time, between 2014 and 2017. From their analysis, it is possible to verify which theories were used initially and which theories were selected for the final evaluation. The presentation of the published papers in this dissertation is a representation of this evolution over time. The final paper is an analysis of the three case studies through the lens of frugal innovation, targeting the analysis of the similar outcomes emerged from independent and separate experiences.

The final phase of the abductive strategy requested a further use of other sources of evidence to validate the results. Member checking, interviews, informal encounters, observant participation as well as other researchers' views received through co-authoring papers, reviewers' opinions and feedbacks during conferences supported the deepening of the analysis and interpretation. This triangulation (Denzin, 1978a) allowed for the emergence of a new analysis of the phenomenon using social capital theory. The theory model illuminated the connections between the activities developed, the participant networks, and the creation of artefacts despite limited resources.

The abductive strategy simultaneously combining theoretical frameworks, empirical data and case studies analysis supported the elaboration of final theoretical propositions and design principles connected with the empirical observations, of both the initial exploratory phase as well as the co-creation phase.

3.1.3 Why an Abductive Strategy?

Abductive strategy is well suited for a bottom-up approach that starts from the empirical observation and, with the support of theoretical concepts, develops new propositions. This strategy provides reasons rather than causes; it is suitable to explain situations, connecting conditions with outcomes and helping the way towards a prescriptive phase (Paavola, 2004). It is not suitable to connect findings with the deeper causes of a process. This research was focusing on exploring the capabilities of the participants and potential to expand their possibilities through ICT. The aim was not to discover the reasons behind a limited use of ICTs for the community members. Some elements connected with the causes of the processes might emerge along the research, and a subsequent study could be foreseen to analyse them. Initial conditions and approach to the groups triggered new phases. Their evaluation opened the possibilities to create artefacts and to establish the participatory methodological approach.

Furthermore, abduction strategy incorporates meanings, interpretations, motives and intentions of everyday people's lives (Blaikie, 2007). All these elements are considered essential to develop the new approach which takes into account the meaning, collective sensemaking and externalisation of the intentions of participants.

During the different phases of the research, those elements were enquired through different methodologies, starting with focus groups, interviews and DST. The initial phase of the abductive strategy, connected with exploration and thematisation, tried to answer questions associated with the characteristics of the urban groups and their use of ICTs. The process followed an inductive approach through open coding and abstraction. The inductive approach, in fact, utilises the collection of data on characteristics that show in the empirical situation and try to produce descriptions of these phenomena and to relate these to the research questions in an effort to make some generalisations about the phenomena. A descriptive analysis emerged from the focus groups about meanings and characteristics of the key concepts. In this phase, theoretical concepts initiated a narrowing of the description of the phenomena to the chosen collective approach.

After the focus groups, the subsequent phase shifted the focus of the study from deepening of understanding and description of the groups to the design phase where the participants became active in creating the DST videos. This phase was connected with the generation of technical concepts and remained exploratory, and the activities were analysed to understand how ICTs were used in the process of community engagement. It opened up opportunities for the

participants to become involved and empowered to choose the subsequent activities. From the research perspective, the continuation of the design phase, through the creation of simple artefacts, kept on being exploratory. It answered the question concerning which ICT design processes and enablers can foster collective empowerment. In this phase, the analytical process elaborated the connection between the conditions for situations to occur and their outcomes.

The last phase of the research corresponded to the theoretical elaboration of propositions and principles. The use of an abductive strategy allowed for the phases to be analysed, verified in the empirical setting and then re-evaluated with the support of theories not considered in the initial phase. The analysis of the phenomenon under study, represented by the evolution of the processes described in the case studies, evolved and became more structured over the years. The theoretical elaboration started from the empirical observations analysed with a narrative of the discourses; it then analysed the self-presentation of the groups situated in their context; and used consistent and coherent theories to elaborate over the research findings emerged from the design phase.

The exploratory phase focused on the characteristics and choices of the groups, in particular when interacting with ICTs. The design phase focused on the evolving processes of co-creation and on the way to proceed to disclose the potential of ICTs to support the communities described following their intentions. Several design principles synthesise the lessons learnt. The final propositions represent the theoretical and methodological contribution of the analysis of the phenomenon of unfolding collective empowering processes amongst underserved communities when working with an emergent approach through the use of ICTs.

3.2 Validity

Background conditions need to be discussed and presented to evaluate the research. While the last chapter of the dissertation focuses on the determinant factors and boundaries of the research, it is important to underline how certain conditions influenced the progress of the work. The type of contribution reached developed from the empirical situation, from its conditions and from the criteria used to evaluate the results.

Working with an initial inductive approach exposes the problem of saturation (Elo & Kyngäs, 2008); it is more complicated to reach it compared to studies that choose a deductive approach based on a framework. The induction strategy makes it more difficult to understand when to stop the research and the investigations into the phenomena. New elements can emerge and

trigger new analysis of the findings. In the processes followed with the groups and, in particular, during initial interviews and focus groups, a point was reached where nothing new emerged from the discussions. This was recognised by people starting to repeat themselves or the same things about the topic ('thematic/data saturation', O'reilly & Parker, 2013). Subsequently, the concepts derived from theory were used to draw generalisations to interpret the data².

To support the interpretation and to validate its conclusion, a network relationship between the main topics related to ICT was done. Using a software system to analyse, data gathered from interviews with external stakeholders were added. In particular, in the initial phase, interviews were done with representatives of the municipality concerning new projects to reduce the digital divide in underserved communities and with the responsible persons for their implementation. I attended a press conference where the mayor of the city was presenting the Wi-Fi pilot project, which should have involved one part of the area where I worked; I interviewed two city representatives of a project for a digital centre in a neighbouring community; I interviewed the responsible persons of deployed projects of the city in the area where I operated. The concepts related to costs, infrastructures and security were the ones co-occurring with the primary code done in the interviews and focus groups. Ryan and Bernard explain the use of words-based techniques and semantic network analysis. It 'is based on the idea that a word's meaning is related to the concepts to which it is connected' (2003, p.97).

² The inductive procedure of the initial phase was based on the interviews and focus groups. The recordings were transcribed and entered into a data analysis system firstly to verify the most used terms. From the counter of the words frequency, 'mobile phones', 'costs', 'art' and 'risks' were amongst the most relevant words. Co-occurrence of concept and the code primary document table were drawn in this initial stages of the active coding where themes emerged as well as the characteristics of the themes. The keywords were then searched inside the other interviews in a systematic study of the terms in the different documents.

The focus groups transcripts were divided in two categories corresponding to the categories of the people involved (the women and the youth). Some terms were in fact specifically used only by certain categories and not by every participants. For the women groups, the term 'group' itself was dominant together with the term 'community'. The only social media mentioned, always in an embarrassed way, was Facebook. Concerning the youth groups, the term 'leader' was often recorded while the question of physical 'space' to meet or to perform was constantly present. While searching in the other documents for the terms already emerged, new ones emerged (such as 'age' and 'capacity' for the women, and 'library' and 'computer' for the youth) and entered into the search engine to verify when and how recurrent they were. The categorisation of the themes ('survival', 'modernity', 'performative', and 'unspoken' discourses) was done on the base of the concepts emerged. For the women, the community care and the age questions entered into the survival and modernity discourse; while for the youth art and evident need to access ICTs became part of the modernity and performative discourses. The philosophical backings, like collective approach and social responsiveness, and the literature searched for themes that were less debated (for instance, the gender risks associated with ICTs and the attitude changes towards the social media) supported the systems thinking over the categorisation.

The analysis done through the software moved from words counting to word-word co-occurrence till network relations were word co-occurrence matrices are applied 'to describe the relation of major themes to one another' (Ibidem) (Figure 3.2).

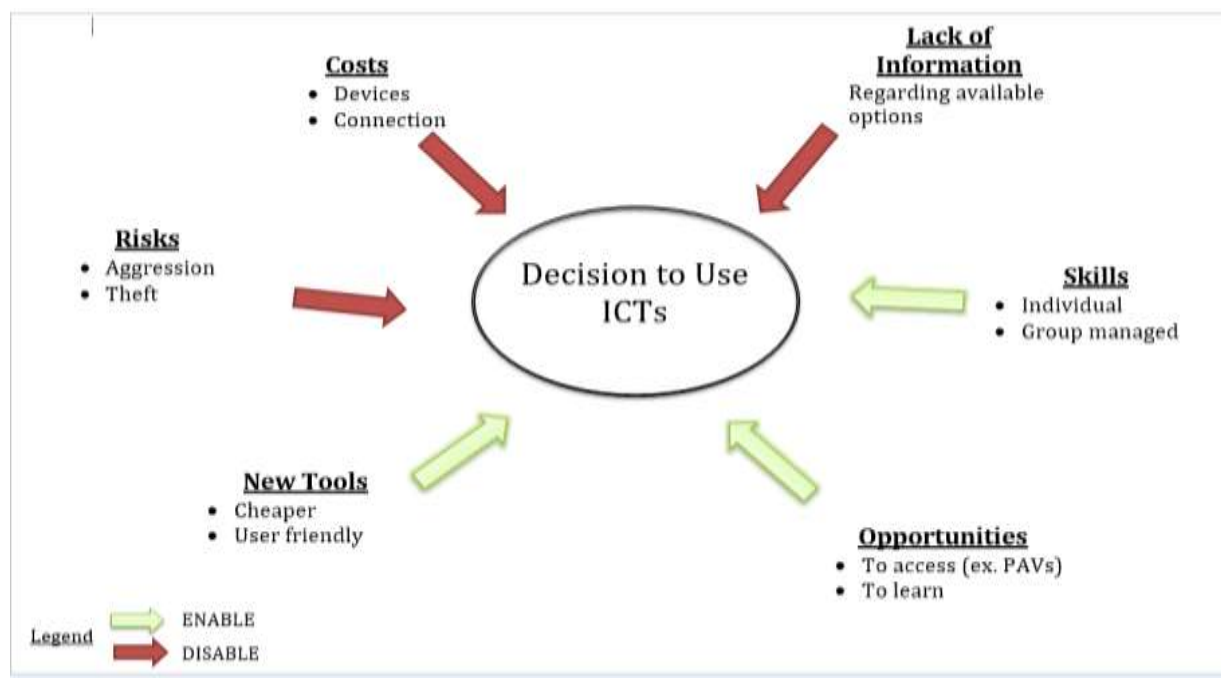


Figure 3.2: Network Relations

To corroborate the overall interpretations related to the groups, some backup material from previous surveys and studies was used. A synergy between the quantitative data of the surveys (Cf. Annex C and E), and the qualitative data of the anthropological methods and visual ethnography (cf. Annex D) was elaborated (Eisenhardt, 1989). The last link to corroborate the presentation of the characteristics and functions of the groups and, later on, of the co-creation activities, came from consistent and pertinent literature.

The analysis done supported a consensus theory of truth, aiming “to ‘represent’ participants’ meaning as faithfully as possible” (Ormston, Spencer, Barnard & Snape, 2014, p.12). It is an ideal status where participants freely speak and listen and where the point of communication is ‘to bring about an agreement that terminates in the intersubjective mutuality of reciprocal understanding, shared knowledge, mutual trust, and accord with one another. Agreement is based on recognition of the corresponding validity claims of comprehensibility, truth, truthfulness, and rightness’ (Habermas, 1979, p. 3).

The main elements emerged from repeated empirical observations and corroborated through validation by ‘member checking’ (‘respondent validation’, Mays & Pope, 2000). The validation was also undertaken with external participants. In-depth interviews with

stakeholders working in the context or similar ones were used to validate information received and themes that emerged from the groups' discourses and participant observation and to triangulate the data. In particular, I interviewed representatives of NGOs active in the same areas as the current research.

The first phase was elaborated in the subsequent phases. During the design phases, discourses emerged and evolved, thereby proving the initial analysis correct and the subsequent necessity to continue discussing and evaluating the processes³. During the processes, particular attention was paid to the dissenting voices inside groups, in particular when one person had an ulterior view. While utilising software to support the analysis, it was essential to listen to the recording of the transcript to be sure about the dissenting voices and to compare it with the field notes. In fact, while observing as well as while interviewing and recording, I always took field notes to remember the main points of the discussion and in particular to note the names of the dissenting voices inside a specific group.

The initial phase of analysis was descriptive with the characteristics of the phenomena emerging during analysis of the recordings. In the explanatory second phase of analysis, connections between concepts became necessary to deepen the analysis and assess the way to proceed. The conditions had to be linked with the outcomes for the three different case studies. For the processes of co-creation, field notes were used to capture the reactions and the feelings of the participants and to support the analysis. The study of the links and network between the concepts that emerged during the analysis was done on the basis of co-occurrence (Fairclough, 2003) and later used to evaluate the same concepts in the three different cases.

The last phase of the research strategy consisted of searching the literature for similar empirical observations and compare the results to derive corroboration and validation points.

3.3 Procedure and Analytic Plan. The Cyclical Phases: to See, to Act, to Reflect

The presentation of the plan in three main phases is based on the development of the four-year project. An initial exploratory phase (3.3.1) was succeeded by a design phase (3.3.2). The third phase focused on the theoretical contributions (3.3.3). Following the abductive strategy, the

³ The same focus groups done after four years of projects revealed a series of new elements that emerged with the new knowledge and capabilities. The groups were eventually talking about smartphones and not mobile phones, about tablets, and about the most used social media and applications that they barely heard about four years earlier. At the same time, certain characteristics of the groups and of the discourses around ICTs were confirmed, such as the risks factors connected with the environment and the main attention to the costs.

phases describe a cyclical process whereby the maturing exploration and theoretical elaborations were gaining coherence over time influencing each other.

The methodologies used were shaped by a design-based research approach, rooted in exploratory ethnography (see Madden, 2010) and emergent design (Lincoln & Guba, 1985). The situated design method recognised the relevance of an embedded context (Svabo, Simonsen, Hertzum, Samson, Hansen & Strandvad, 2013). The research was conducted in two underserved urban settings of Cape Town, South Africa. ICT was explored as a catalyst for participation and empowerment, while other developmental aims were critically unpacked.

The results were achieved by enacting three phases in cycle of action and knowledge production: 1) an exploratory phase, in which inductive ethnographic methods were used to explore the meanings of the interactions with ICT of selected groups of people; 2) a design phase, in which the groups engaged in co-designing ICT services; and 3) an assessment phase, aimed at the formulation of theoretical and design considerations. Table 3.1 highlights the methodologies used during the three phases.

Table 3.1 Project phases and methodologies

Phases/ Methods	PHASE 1 Exploratory -Ethnographic	PHASE 2 Co-design	PHASE 3 Theoretical
Mapping	30 Youth groups and 70 Mamas' group mapped (Appendix B)	Radio frequency mapping (for one of the case study)	
Survey	Survey on socio-economic status and on groups' formation: 161 youth involved (Appendix C)	Survey on economic and collaborative approaches: 330 participants (on collective use of material and money for groups activities) (Appendix E)	
Field Notes	Notes referring to people's attitude and comfort talking about and using ICTs; surroundings; relationships amongst groups' members.	Notes referring to the interactions during the activities (amongst groups' members and with external participants)	Notes on visible changes of people's attitude and interactions
Individual Interviews	3 City Representatives; 2 NGO managers; 3 library users; 4 groups' leaders (1 hour each; recorded). In 2014.	To participants (10 women, 7 youth and 5 radio producers) of the workshops (website creation and radio) and PC training (short interviews of 15/20 minutes to each of them; recorded)	1 interview to NGO manager of computer training for Mamas; 2 to youth leaders of new social businesses (radio and recording studio)

Phases/ Methods	PHASE 1	PHASE 2	PHASE 3
Focus Groups	6 groups of women and 5 groups of youth (1.5-2 hours each; recorded and transcribed). In 2014.	Focus groups over the Digital Story Telling creation and vision	Follow-up encounter (1.5-2 hours) with every group in 2017.
Participant Observation	Every day from 2008 till 2012; twice a week in 2014 during interviews and focus groups (to select groups, identify the locations, attend events, etc.)	Every day during workshops (for youth and radio station case studies) and training preparation and delivery (for Mamas case study) (2015); Twice a week during follow up activities (2016)	Once a week during finding elaborations (for follow up verification of projects continuation) (2017)
Evaluation System	Coding of transcripts (using ATLAS.ti)	3 DST creations (Appendix D) and public presentations	Seminar & Conference presentations; Casual Loop Model
Supporting theories	Capabilities Approach	Participatory Design	Frugal Innovation and Social Capital
Published peer-reviewed papers	Paper 1 and Paper 2	Paper 3	Paper 4 and Paper 5

3.3.1. Exploration

The exploratory phase of the research started in February 2014, but I had already collected ethnographic data about the setting and the participants since 2008. Participant observation took place at several levels, from watching and listening to the groups during their daily life to asking and interacting with them during the design phase and the realisation of the activities (Hammersley & Atkinson, 2007). Field notes and discussion with other researchers accompanied the reflections carried on throughout the research to give meaning (DeWalt & DeWalt, 2010).

After the first series of focus groups, the methodology adapted to the need to deepen the understanding and sense-making. Group and individual interviews were the selected tools to investigate the phenomena (Babbie, 2007; Bernard, 1998). In particular, emergent interviews (Glaser, 2001) were used to understand the relations between the groups and the interaction of the group with ICTs. Through the anthropological methodologies of participant observations, focus groups and individual and group' interviews, I reached a sense of awareness of the cultural values, collective behaviours and important meaning for the groups (McCaslin, 2002).

The structure of the emergent interviews was based on the introduction of the research activity and the brief presentation of the elements of interest connected with the group existence and with the technology use. The questions about ICT represented one of the element to start identifying a common language. Combining an open-ended approach (Glaser, 2001; Patton, 2002) with a systematic method (McCaslin, 2002) allowed more findings to emerge (Krueger, 1988). Without the systematic method, the common language would not have emerged. Without the open-ended approach, the interviews will not have evolved spontaneously into focus groups which allowed for group interaction and a greater insight into the community. The focus groups started with broadly defined topics shaped through interaction with and among focus group participants. The different methodologies used provided an understanding of how the groups operate and cooperate.

The data analysis strived to identify and organise the rich but disaggregated information into a systematic presentation of narrative experience. Following the principles of formal logic (Fereday & Muir-Cochrane, 2006), a rigorous method was applied to establish a high degree of clarity maintaining consistency and adequacy. Consistency requires sensitive planning. Adequacy requires that the outcomes of the research be recognised and validated by the involved social actors. For this reason, the research regularly made use of members checking.

3.3.2 Co-creation of ICT Solutions

The research was structured openly to allow the participants to decide about the subsequent phases. The possibility to develop activity of co-design through a participatory approach was envisaged, but the option was not expressed to the groups to avoid influencing their decisions. The focus groups represented the moment that supported the generation of new ideas in response to open-questions about the possibilities for community networking. The ideas and possible realisations were evaluated through cooperative participation (Winschiers, 2006). The new insights added elements of reflections connected to the needs and the context. Together with the elements derived from the data analysis from the exploratory phase, these considerations allowed to study a design approach for each participating group, evaluating and testing methods and techniques existing in participatory design and considering adaptation. Several sub-activities were envisaged in the subsequent field activities.

A first activity proposed by some groups' members and in one case by myself, and adopted by all the involved groups, was DST creation. It allowed disclosing the history of the group as told by the group (Mattelmäki, 2006). Over time, co-design techniques (for example, workshops

and resource mapping) were employed to allow participants' insights to gain concreteness. While DST was representing a phase between exploration and design, the new activities requested a stronger commitment to design solution creations. The perception of the concretisation of their design ideas reinforced the engagement of the participants. While the technological solutions designed and developed for each group could not be envisaged beforehand, proposals emerged from the different groups in response to their interests and community needs. Over time, and dependent on the available equipment and skills of both local and external participants, further co-creation activities were developed: a series of digital training for the women; an interactive website for the youth; and a website and digital radio for the community radio station.

Assessing the complete co-creation process allowed the formation of a database with the insights collected concerning the usage and interaction with the ICT solutions. The data, in particular the ones connecting empowerment with ICTs, were analysed by using interviews, focus groups, and data gathered from the use of social media by the groups to formulate theoretical and practical considerations.

3.3.3 Formulation of Theoretical and Design Considerations

The research aimed to produce explanatory and prescriptive theoretical propositions and design principles on the results of the analysis of the ethnographic and co-creation phases. The assessment highlighted the relations between the social context of relations and networking, its interaction with ICT (attributed meanings, usage patterns) and their potential to enhance collective empowerment. The explanation refers to the methodology used to achieve similar results. The prescription refers to the guidelines and principles on the design of ICT solutions and enablers instrumental to fostering collective empowerment for underserved communities.

The resulting formulation of a sensible process model for engaging in ICT4D projects was framed by critical social theory that advocated emancipation, cultural specificity and bottom-up encounters of community needs through ICT solutions. The process is built on ICT4D perspectives that encouraged in-depth, culture-specific approaches (Winschiers-Theophilus, Winschiers-Goagosos, Rodil, Blake, Zaman, Kapuire & Kamukuenjandje, 2013). The several interventions, from interviews to co-creations followed a situated approach (Gero, 2003; Harrison, Tatar & Sengers, 2007). Every phase, ethnographic as well as design, is embedded in a context. Discourses, artefacts and activities together with their setting were meaning-making (Winschiers-Theo et al., 2013).

The research formulated theoretical propositions on the potential role of ICT for collective empowerment when an emergent, flexible, sensitive approach is used. To validate the methodology chosen and the outcomes, the usage of the co-created ICT solutions was assessed after their installation. Data analysis was performed in parallel for the formulation of design principles and theoretical propositions. These understandings theorise how the introduction, understanding or creation of new ICT products and services may support the expansion of people's capabilities. These understandings also stand on the basis of the process model suggested for harnessing the potential of ICT in emergent social processes amongst collectivities for cultivating the expansion of group empowerment.

3.4 In Synthesis, Chapter 3

The study utilises abduction strategy. It starts from the empirical observations of the phenomena, using an inductive method to gather data, and continues unfolding, through cycles of analysis of the findings and empirical discoveries and use of theoretical frameworks. In particular, the three processes analysed in the research moved from content analysis of the initial ethnographic phase to co-design activities and finally to the analysis of the processes as a multiple case study.

After an initial evaluation of the focus groups recordings and production of a list of themes, a grouping of the themes was done to proceed with their analysis and comparison with the other interviews. To triangulate the data emerging from the focus groups, I interviewed representatives of NGOs active in the same areas as the current research and representatives of the City involved in the planning of new proposals for underserved communities.

Members checking, interviews, informal encounters, observant participation as well as other researchers' views received through co-authoring papers, reviewers' opinions and feedbacks during conferences supported the deepening of the analysis and interpretation.

The abductive strategy simultaneously combining theoretical frameworks, empirical data and case studies analysis supported the elaboration of final theoretical propositions and design principles connected with the empirical observations, of both the initial exploratory phase as well as the co-creation phase.

The focus of the analysis and evaluation was: 1) interpersonal relations, how people relate inside their group, within their community and with external participants in ways that serve

their needs and help them develop new capabilities; and 2) collective action, how people develop new capabilities and are empowered through joint activities and group action mediated by ICT. The understandings were used to theorise an approach to the co-creation of ICT products and services that may serve more intense or novel ways by which people expand their capabilities and choices drawing on relations and joint actions.

4 AN EMBEDDED RESEARCH

In this chapter, the research setting is described. Section 4.1 introduces the context in which the research project developed and the community groups that are active in the area.

Section 4.2 describes the selection of participants, from the mapping criteria to the purposive sampling and the choice of the case studies.

The subsequent section, 4.3, describes the challenges encountered to work within the specified physical, social and cultural environments. This section on participants and challenges is part of this chapter considering their strict connections with the context.

As the reality of the communities and the potentially vulnerable inhabitants are sensitive and complex, the ethical concerns of the research are presented in section 4.4.

4.1 The Informal Urban Settlements and the Community Groups

The study of the context of the project represents an essential part of the research. Sub-section 4.1.1 provides statistical information about South Africa and Cape Town. It shows how widespread are the problems in the affected areas. Sub-section 4.1.2 presents the community groups of the Cape Town metropole catering to need (women's groups) or to pleasure (youth groups).

4.1.1 The Context: Cape Town's Townships

The focus groups, interviews and activities with the groups took place in the townships of Philippi and Khayelitsha which are part of the metropolitan area of Cape Town in the Western Cape in South Africa.

Accordingly to the United Nations statistics (last updated in 2015), in South Africa, almost 8 million people live in slum conditions. The slums are deteriorated overcrowded area growing at the border and sometimes within the townships of the country. During the apartheid era, the townships represented areas for the non-white population. The largest informal settlements, slums area particularly disadvantaged, neglected and with limited service provision, are still populated mainly by Black Africans, as it was at the apartheid time when these locations were called Black Local Authority Areas.

Some of the townships, such as Khayelitsha, grew significantly reaching an official population of almost 400.000 inhabitants. These areas are the target of new developmental projects sponsored by the City of Cape Town and by international donors. Nevertheless, more than half

of the population of Khayelitsha (54%) still lives in shacks and under the poverty line (49%) (City of Cape Town, 2013a). People living under the poverty line survive with less than 120 euros per month.

Amongst the townships of Cape Town, Philippi has a high number of informal settlements, 23. They are slums area particularly disadvantaged, neglected and with limited service provision. Of the almost 200.000 people living in this township, 56% live in shacks, and the population living under the poverty line is more than half (52%) (City of Cape Town, 2013b).

Another common problem in the townships is the unemployment rate. In Khayelitsha, it is at 38% and in Philippi at 38%. Overall, the unemployment rate in South Africa is 27.7% and 23% for Cape Town. The highest risk categories are youth and women. As of the beginning of 2017, 32.4% of youth aged 15–24 years were neither employed nor in education or training. Black African women are most vulnerable to unemployment due to low-skills and education levels (Statistics South Africa, 2016). The situation is aggravated by the percentage of economically active people affected by HIV. The USAIDS statistics (2013) estimated that 19% of the adult population aged 15–49 years⁴ is HIV positive. Consequently, the economically-inactive households that are child-headed due to AIDS increases.

The murder rate in the Western Cape province is significantly higher than the national rate. Nationally, the murder rate for 2014/2015 was 33/100 000 while in the same statistical year it was 52/100 000 for the Western Cape. The Western Cape accounts for more than a third of national drug-related crime per year for the past ten years (Western Cape Government, 2015), which according to South African Police is related to the high unemployment in the city.

In this context where traditional development issues are striking, and development projects appear to be essential, various networks of people have emerged and succeeded in recreating social ties, to cope with the lack of services and to support each other (Haddad & Maluccio, 2003).

4.1.2 Community Groups

A mapping activity of the groups active in particularly disadvantaged locations was done between 2008 and 2012 in the townships around Cape Town to submit proposals to

⁴ The different organisations and governmental institutions establish their range of adulthood or youth on the base of the intended scope of their research. The groups' formation does not comply with any external direction.

international and local donors. One activity mapped 70 active groups supporting vulnerable women and children in their communities who had created urban gardens and developed informal structures for soup kitchens and crèches (cf. Appendix B). A year after the mapping, during winter 2011, a proposal for the European Union required a survey to be conducted to map youth groups actively engaged in art and culture and sensitive to the upliftment of their areas. The survey involved almost 200 youth, including those actively involved in supporting the mapping activity through distribution and translation services. See Appendix C for a copy of the questionnaire with demographic, economic and art-related questions and its analysis.

The women and youth groups were socially active in their communities through projects sponsored, managed and coordinated by the provincial government of the Western Cape and by non-governmental organisations (NGOs), both local and international.

The groups participating in the university research project started in 2014 are part of the active groups in the communities. Despite the shared interest and practices of groups, involved in activities of support for the most vulnerable people in their neighbourhood, multiple group identities exist and must be recognised to strengthen the potential and capabilities of the groups (Pelling, 2007). The geographic element (Gurstein, 2000) is relevant only to describe the environmental condition of the communities of residence, but it is insufficient to characterise the socio-cultural background.

4.1.2.1 Women's Groups

During my work with non-governmental organisations, I engaged with more than seventy groups of Mamas, the term usually used to refer to the Xhosa mothers from their 20s to old age. The groups of Mamas are mainly dominated by females in the age range of 25 to 55 years of age. These women gather to provide care to vulnerable children, to run food security programs, and to create safe spaces in their homes for abused women, besides re-creating social ties similar to the ones in rural areas of origins (Deumert, Inder & Maitra, 2005). Some women are community leaders who decided to come together and form a group, sometimes connected with others in a network, committed to taking on structural issues in a coordinated effort to change the dynamic of abuse and neglect within their communities. The majority of the groups I collaborated with are based in informal settlements.

Weekly meetings provide an opportunity to discuss what is happening at a street-level, to assess the programs in place, and to coordinate a community response to current crises, such as a

vulnerable, abandoned child, sick people or gender-based violence situations. The type of responses that the better-structured groups adopted to support their communities are connected with the social protection of the most vulnerable and small income generating activities. The soup kitchens and the informal crèches fill a gap of services for those who cannot afford a meal or the fees of a registered structure for children.

Furthermore, over time, some of the women had the opportunity to become part of a mass movement that uses daily savings and loan practices as a tool for social mobilisation. Several groups began saving schemes, sometimes part of a National Social Movement (Robins, 2010). Through the door-to-door collection of small change, communities create flexible, home-grown financial structures that fulfil a critical economic gap and provide a social safety net to ensure the availability of funds for basic survival (Bolnick, 1993). Aside from the obvious economic benefits, the ritual of daily savings fulfils a social need, breaking isolation among women and fostering community trust. The spread and coordination of the movement based on saving schemes are largely based upon community-to-community learning exchanges.

Acknowledging that women learn best from each other, when a savings group improved the savings system they encouraged other groups to visit them to learn from their successes. These horizontal learning initiatives allowed women to see themselves and their peers as experts, thereby breaking isolation, improving confidence, strengthening solidarity and increasing knowledge. These exchanges created an opportunity for marginalised peoples to generate and rely on wisdom and experiences, taking control over the knowledge that has frequently been co-opted by professionals.

Social government grants (Altman, Hart & Jacobs, 2009) and income generated by these social activities were the leading sources of sustainability. Due to limited availability of resources, it was not possible to carry out these activities on a regular basis. The meetings and visits for this research were usually organised to take place in conjunction with other scheduled group activities. This decision allowed me to attend the general activities of the groups while being welcomed by the groups as it did not necessitate special gatherings for study purposes.

4.1.2.2 Youth Groups

In August 2011 I guided a survey concerning the youth of the townships of Cape Town. The scope was to present a project proposal for a sponsor to support youth activities, aspirations and necessities. With the support of 15 youth involved in social activities such as edutainment,

‘education through entertainment’, I prepared a questionnaire and the facilitators interviewed (through a semi-structured survey, Appendix C) 161 youth. The facilitators were part of youth groups themselves. During a previous study in 2009, I mapped 30 groups around the biggest townships of Cape Town (Appendix B). The questions were about individual situations, education, family and economics and belonging to a group and its activities. The youth encountered belonged to 17 groups, and 92% of them ranged between 14 and 35 years old. Half of the participants in the survey were female. Source of income resulted in irregular for the vast majority which expressed the lack of funds to cover for basic human needs. The comparison of the survey results with the national statistics of the communities showed coherence (Appendix C).

Like the women, the youth are trying to organise their activities. In Philippi, as well as in the neighbouring townships, the statistics and the survey show that they face unemployment and limited opportunities in their community. These conditions lead to frustration, lack of income, ‘boredom’ and potential of turning to drug abuse and crime (Wegner, Flisher, Chikobvu, Lombard & King, 2008). The majority of the groups mapped are part of an informal network of youth, called Inyanda Youth Network. It is a growing youth network, interested in organising edutainment activities, in particular through art and sport, associated with positive messaging (for example, messages on HIV-AIDS prevention and anti-stigmatisation are spread through hip-hop music or drama). ‘Inyanda’, in the local Xhosa language, is a bundle of wood that is traditionally carried on the heads of tribal women for making cooking fires. The bundle comprises smaller and larger pieces of wood gathered in several places. Similarly, the Youth Network consists of a multitude of groups from several townships ‘carried’ by the head of the network to start a lively fire and bring warmth to the townships. The image also represents the strength of togetherness: one piece of wood is easy to break but a bundle of wood, Inyanda, is difficult to break.

With support from an international donor, the mapping of the groups continued until the list comprised 30 groups (cf. Appendix B). The groups who participated in the research project are all connected to the Inyanda Youth Network.

4.2 Participants’ Selection

The section will explain the criteria for the selection of the groups (4.2.1) and in particular of the ones who became involved in the research project (4.2.2). Section 4.2 concludes with the explanation of choice to limit the number of involved groups (4.2.3).

4.2.1 Mapped Groups

The selection process for the research project started from a list of 100 groups: 70 groups of Mamas and 30 groups of Youth. At the time of the mapping and survey, the selection criteria were the following:

- The existence of the group over a period of months or, preferably, years;
- At least five members;
- For the women's groups, involvement in social activity for the benefit of the community;
- For the Youth groups, involvement in art or sports activities.

Commonalities emerged amongst the women's groups which related to their association with social movements, in particular, FedUP (Federation of Urban Poor) and PPM (Poor People's Movement) and being active in promoting saving schemes (Bradlow, 2011).

I visited all the groups and produced a photographic report for the donors. The lists were produced within a year in collaboration with a team of facilitators and volunteers who worked on the survey translation and deployment. The selection of groups made use of the snowball sampling technique (Atkinson & Flint, 2001) where every facilitator started introducing some members of groups active in his/her area or residency. The snowball sampling was chosen due to the difficulty in working with a vulnerable population that is partially hidden due to the living conditions (Carr-Hill, 2013).

After mapping all the groups in the specific area, as a project manager, I requested the facilitators to visit other areas. To meet new people and start discovering the existing groups, the facilitators had to promote simple activities like a two-hour workshop on health issues or on saving schemes. The activity regularly attracted people with interest in the theme under discussion and disclosed a new snowball effect of mapping the groups. The 'bias from the convenience sample of initial subjects was progressively attenuated as the sample expanded wave by wave' (Heckathorn, 2011, p.358). Over time, the sample expanded from the area of residency of the facilitators and their direct knowledge.

In the case of the Youth survey, the facilitators started selecting the groups they knew in their area. To map and involve more youth in the Inyanda Youth Network, several art events were

organised to attract new talents to perform. The events became the occasion to introduce the concept of a network and to collect registrations.

4.2.2 Sampling Techniques

A preliminary screening of the data gathered from the Cape Town City Census (City of Cape Town, 2012), plus the data gathered during the questionnaire and mapping activity represented a reliable overall picture of the group's formations, internal structures, and context.

From the 100 groups mapped around the townships of Cape Town in 2011, two criteria were used to select the ones invited to take part in the research processes that started in 2014:

- Active as a group, and demonstrated continuity;
- Based in Philippi or Khayelitsha.

For the recruitment of participants, a purposive sampling method was used to select cases amongst the ones represented by the 100 groups. To limit the bias related to this method of selection, I left the choice of the groups to community facilitators working for a local NGO. The local assistants, who were not part of any group, had limited knowledge of the intentions and scopes of the research to reduce the experimenter expectancy (Mitchell & Jolley, 2007).

For the selection of the groups of Mamas, the community facilitator suggested groups available for me to attend their usual weekly meetings and to ask questions for study purposes. In this way, there was no need to discuss incentives to meet the participants and collaborate with them, such as money for food or transport. The non-compensatory behaviour was maintained for every group to avoid resentment and distortions in the responses. For the exploratory phase of the project, six groups of Mamas were selected.

The same logic was deployed for the Youth, leaving the decision to select some of the active groups in the area to a community facilitator. The person was given limited information about the research aim. She contacted some groups and asked permission to attend their rehearsal sessions and be available for a group talk in the presence of a researcher. Five groups of Youth were initially selected for the focus groups and interviews that represented the initial phase of the research.

Of the five group, one expressed his desire to create a community radio station. The request for my assistance to support their project in gaining visibility transformed this specific group into a separate case study where traditional and new technologies generated innovation.

4.2.3 Case Studies

The sampling decisions evolved with the activities carried on. At the end of the exploratory phase and the discourse analysis phase based on the eleven groups' interviews, focus groups and participant observation, a design phase started. Due to time and resource constraints, it was necessary to reduce sample size (Blaikie, 2010). The second phase of the research became based on case studies. According to Creswell (1994), case studies represent a detailed study of a phenomenon along a particular period using multiple methodologies.

The qualitative approach fitted the exploratory and design phase of the research. It fulfilled the requirement to better understand complex social phenomena such as group functionings and capabilities. In particular, the multiple case study approach allowed for participant observation of relatively little-known practices (daily lives of the groups) and to attend the innovative developments (co-creation processes) (Yin, 2003). The research findings emerging from the cases were compared to theories that could validate or raise questions in the analysis (Eisenhardt, 1989). The choice of a multiple case study based on heterogeneous groups (Mamas, Youth, Community Radio Station) enriched the data collection and allowed for comparisons amongst cases thereby provided improved opportunities for generalizable information (Yin, 2003). During the research project, an economic exercise managed by an external university and coordinated by me took place. The financial data and results of the economic exercise became available in 2016 and improved the validity of the findings (Appendix E; Grieco, Braga & Bripi, 2016).

At the beginning of the research, it was not possible to identify the groups that might become the participants of the design phase of the study. In fact, the design phase was a simple hypothesis for the continuation of the research. The choice to study some evolving processes which were allowed to unfold along the time, contrasted with the selection of a random group. The groups that decided to start a process of discovery of new technologies or to test known technologies for new opportunities are the ones that became the point of reference for the research. The fact that the phenomena under study are the processes and not the groups allowed the groups to continue working as a unit or in collaboration among groups.

Three case studies emerged during 2015 and 2016 when a series of activities took place. The analysis referred to them as separate case studies and as a multiple case study (Crowe, Cresswell, Robertson, Huby, Avery & Sheikh, 2011). The latter is the result of the final analysis of the three separate cases that disclosed through the emergent approach with the theoretical

lenses of frugal innovation and the social capital theory. Initially, it was not possible to foresee the drop-off rate of the groups, the history and events that might modify the processes or the maturation of the single groups (Blaikie, 2010). It would have been even less likely to suggest, as it eventually happened, that the processes had the same determinant factors related to their social ties and that they might move in the same direction of innovation. For this reason, the two theories of social capital and frugal innovation are not part of the first published paper of the study.

4.3 Context related Challenges

Due to the complexity of the context where the research took place, several issues were encountered. Section 4.3.1. presents challenges related to the infrastructure and society system, such as transport and electrical issues. Section 4.3.2 recalls the challenges related to the culture of both the local and external participants. This introduces the importance to know the interactions amongst the participants (4.3.3) which in this context are complicated by the cross-cultural situation of the different stakeholders. Sub-section 4.3.3 highlights the concerns related to gender equality.

4.3.1 Infrastructural and Societal Challenges

The project encountered infrastructure difficulties associated with socio-cultural and economic reality. The infrastructural challenges derived from the apartheid legacies. As stated by Turok (2001), “This produced distorted settlement patterns characterised by social segregation and physical fragmentation” (p. 2350). Bond (2003) added: “Recognising this, several government departments have forthrightly criticised aspects of their post-apartheid policies, including [...] the segregation associated with urban infrastructure provision” (p.2).

One of the infrastructural issues that I had to face in work in the informal settlements of the townships is related to the public transportation system of the city of Cape Town. As recently documented by Thomas (2016), while talking about the legacy of apartheid on the urban transportation system, ‘This often involved transporting Africans from the fringes of urban centres into the cities, based on the racially segregated nature of minority rule’ (p.353).

The fact that the transport system was created to connect the townships where low-income workers live, with the city centre while connections amongst townships are limited, resulted in difficulties organising activities and coordinating collaboration with external organisations and groups in separated townships. To overcome the problem, the external participants, such as

trainers, journalists and web-designer, agreed to develop all the activities in the area of the townships where the majority of the groups' members lived.

The decision resulted in further challenges related to the lack of adequate structures, the high probabilities of strikes and road blockages and the high number of people who die due to physical assault in Philippi, the township selected for the activities. Concerning the possibility to find spaces that could accommodate the organisations of training and workshops with some people often exceeding twenty, I relied on my previous knowledge of the communities and above all of the organisations and public structures available. Several solutions were found and evaluated on the basis of accessibility by car or mini-bus, costs for renting, availability of water and electricity. For the Internet connectivity, a portable 3G router was utilised. For the presentations during the workshop, a portable projector was deployed.

Due to the political rationale behind public transport modifications, proposals by the city of Cape Town for an integrated system resulted in strikes aimed at the dominant paratransit sector (Schalekamp & Behrens, 2010). On the days when strikes occurred, it was not possible to organise activities and meet with local participants. Consequently, some of the organisational meetings with representatives of the groups involved in the design phase took place in the public library of the city centre.

The logistical challenges in the underserved communities implied other unforeseeable events such as a fire disaster, one of the most common environmental hazard in townships (Harte, Childs & Hastings, 2009), as well as unforeseeable incidents such as an electrical problem. In fact, during the activities connected with the setting up of the community radio station, the transmitter of the radio burned out due to an electrical fault in the community centre where the radio station was located. The radio station group, at the beginning of their activities, faced a robbery and lost the only computer they possessed.

4.3.2 Cultural Challenges

All participant groups were active in their community and regularly gathered for meetings, rehearsals and events, including mobilisation and social marches as well as cultural entertainment opportunities. During the exploratory phase of the research, I had to coordinate my participation in the groups' activity with the local facilitator. The number of members of each group was unknown, and consistency of attendance was not questioned if a minimum

number of members was secured. During the design phase, the consistency of attendance emerged as an essential element which impacted the organisation of workshops, training, decision-making and responsibilities.

The groups' leaders who engaged with the organiser and trainers in the preparation of the activities selected the participants. The trainees' presence was constant during the organised training and workshops. The people who registered for activities were always present. The attendances of the computer training for the Mamas as well as of the community radio workshops were recorded in prepared registers.

During preparatory and follow up meetings the community members' attendance was not constant due to the daily necessities and tasks of people. Every participant foresaw the importance to regularly attend the training activities and conclude the cycle of workshops. An individual perspective was connected with the formal course and final result often certified by a certificate. At the same time, the groups' members approached the discussion meetings with a collective spirit. Representatives of the groups were required to attend and present the requests, needs, positions of all the members. The attending representatives judged as positive their rotation during the meetings. The system chosen by the groups was allowing different participants to take the lead and become in turn the voice of the group, during the encounter as well as for reporting to the people who could not attend.

The external participants during the activities engaged in understanding the groups' way of also working relatively to learning. The local participants tend not to take notes in a written way but to rely on memory and oral exchange (as per the oral tradition of the African culture, Nussbaum, 2003). As theorised by Wegner (1986) in terms of Transactive Memory Systems, people who shared experiences can easier retrieve information. During the practical activities, it emerged how the collective learning (also defined 'collaborative learning', Rahman, 2009) was operating and its successful results; compared to individual training, people trained in groups better coordinate their task activities and trust each other's expertise (Liang, Moreland & Argote, 1995). To ensure that the flow of information was correct, the trainers never left alone a trainee to manage a task or explain to others its understanding.

Another typical cultural challenge was the difference in the conception of time. The European habits of some of the external participants encountered the African context where "the use of time (that) does not sacrifice social duties, and human relations on 'the alter' of clock-time punctuality." (Onwubiko, 1991, p. 25). The relaxed style was chosen to avoid the risk to fall

into ‘the social power asymmetries that usually force weaker groups to synchronise their temporal rhythms to the stronger ones’ (Bidwell, Reitmaier, Rey-Moreno, Roro, Siya & Dlutu, 2013, p.95). The grassroots approach implied organisation and decision-making solutions coordinated by the local participants. The external participants showed flexibility and eagerness to adaptability in order to accommodate the needier. External participants valued the engagement of every involved person despite the organisational difficulties due to limited practical solutions such as transport and communication means. Furthermore, if the external participants had organisational expectations, such as punctuality, timing communication flow, detailed reporting over meetings, the local might have suffered from emotional strain or discontent (Sarker & Sahay, 2004).

4.3.3 Cross-cultural and Internal Interactions

Understanding the internal interactions enabled the external participants to be proactive in recognising and minimising negative effects such as the marginalisation of voices in an effort ‘to design ethically, responsibly, and with accountability’ (Dombrowski, Harmon & Fox, 2016, p. 656). The participants’ interactions were studied to maintain the focus on inclusiveness and ‘a social justice approach’ (idem, p. 657). Interactions took place between external and local participants, between external participants and community, as well as within the groups and communities.

Of particular interest is the role played by the leaders of the groups. The internal power dynamics were mainly unknown to external participants who were attentive to avoid interference with the groups’ interactions. The project intention was to support the participants in an equal way without the development of activities dedicated to leaders or ICT champions (Renken & Heeks, 2013). Despite some worries of the professionals related to the possible negative influence that the leaders could have due to power dynamics and decision making, in time the role of the groups and community leaders showed its potential to ‘provide structure, clarity, and support’ (Behrend, Gloss, Howardson, Thompson & McCallum, 2013, p. 11) to the activities and processes.

The several and interconnected interactions and their management are highlighted in table 4.1. Interactions are shown between multiple perspectives. For example, the Mamas recognised the Youth as trainers; and the Youth as facilitators behaved sensibly accordingly to their culture.

Table 4.1. Table of Interactions

Participants	Mamas	Youth	Community Radio	External Participants	Community
Mamas	The leaders of the groups attended or selected the trainees. They spread the new knowledge. They searched for support.	Intergenerational activities emerged. Mamas asked for support to the Youth. They listened to them and recognised their skills and competencies.	Several Mamas listened to the community radio and engaged in the interviews to support the radio	Mamas participated in every encounter with professionalism. The linguistic divide was always mediated by a local translator and facilitator.	Mama's groups are particularly active in the community.
Youth	The Youth helped the Mamas during the training and after in a culturally sensitive way.	There are leaders in every group. They are trusted, and they manage the relations amongst groups.	The Youth presented some of their artwork on the radio and showed gratitude for the support.	Several Youth knew the researcher since years as a project manager and fundraiser. Expectations were not raised knowing each other new roles.	The Youth engages more and more with social issues and relates better to the community.
Community Radio	Few members are Mamas, but their opinions were always sought.	The radio members attend the events organised by the Youth and sponsor them at the radio.	The founders and directors have more responsibilities and tend to assume the decision-makers role. The workshops supported the opening of the processes to more participants.	Due to some equipment donated to the station from the researcher's contact, a sense of gratitude was present. Nevertheless, the external suggestions such as digital radio were always considered amongst the members.	The radio members agreed to involve some community members during their workshop to understand their interests and match them.
External Participants	The NGO trainers appreciated the support of cultural facilitators to manage the relationship.	The web-designer was used to co-design activities and recognised the internal dynamics, and minimal skills support required.	The international journalists were expecting a scholastic workshop approach but adapted to the cooperative solutions suggested by the researcher.	The researcher, more in contact with the local participants, supported the disclosure of the relations and acted as a cultural facilitator for the newcomers.	The researcher interacted with the communities at large during the videos making and interviewing. She knew the local costumes to be accepted and be part of the activities.
Community	The community recognises and values the efforts of the Mamas.	In time, more support is offered to the youth, in particular concerning spaces to gather.	The number of phone calls to the radio station and the visits to the broadcasting studio witness the appreciation of the community members.	The community welcomed the external participants and collaborated during the different phases such as the shootings of the videos.	Different levels of power structure are present.

Behrend and colleagues article, based on the analyses of the ICTD2012 Proceedings, underlines the importance of interpreting the dynamics of teams which ‘are particularly important as many novel ICTD interventions require or are meant to promote, the involvement and collaboration of a team of individuals’ (idem, p.11). During the entire research project, the external participants and I gave particular attention to methodologies that supported the breaking of barriers and the encounters of the different groups. Some examples are represented by the invitation of the Youth to attend the Mamas’ training, the opening of the radio workshops to the listeners of the communities and the invitation of the artists to promote their activities at the radio.

4.3.4 Gender Equality

Gender equality, the third Millennium Development Goal, is becoming an important focus for ICT4D and in particular for the potential of ICT for women empowerment (Webb & Buskens, 2014). The issue was not mainstreamed in the research agenda and the analysis of the internal interactions due to the role played by the Mama’s groups. They brought the gender agenda to every meeting above all when working with the other groups participating in the research, to introduce themselves and their scope. Not only are the Mamas representatives of the women but above all, they focus their activities on gender issues to contribute to gender equality. Likewise, the other groups, Youth and the Radio Station, showed respect and interest in deepening their knowledge and understanding around gender issues.

Several experiences of the case studies resonate with the results reached by Oreglia and Srinivasan (2016): ‘Women renegotiate their gender roles more through the process of mediating ICT access for others than in their personal use’ (p. 502). In particular, when the Mamas engaged in new professionalising training and invited newcomers as well as when the Mamas supported the activity of the radio station granting the use of the space and spreading the news of the existing new media.

A description of the role played by the participants in granting gender equality is derived from the rich data collected through the initial focus groups and interviews (Schultze & Avital, 2011). In fact, the discussions were not focused on information systems issues but developed from the regular gatherings of the groups to afford their contingencies. Amongst their contingencies, they regularly discussed gender-based violence and women empowerment. As in the appreciative interviews, the methodological approach to groups made use of empowering

descriptions. In a capacity enhancement approach, interactions between people have to be affirming and have to acknowledge their inherent capacity (Avital, Boland, Lyytinen, 2009).

The Digital Storytelling (DST) videos created during the design phase testify of the discourses and intentions of the Mamas group in particular but also of the Youth attention to inclusion and equal rights. The stories told in the videos present the context, emotions and social relations that enabled the groups to work as a collectivity. The recent experience of participatory photography (Gomez, Gomez & Vannini, 2017) confirmed the potential of methodologies of self-expression for the participants to offer further interpretations. The participants named their experiences in their own words and in spaces where they felt comfortable (on DST as community-driven methodological strategy, see Cunsolo Willox Harper, Edge, 'My Word' & Rigolet Inuit Community Government, 2013). In chapter five, paper three is dedicated to this experience of DST.

4.4 The Protection of Human Subjects – First: Do No Harm

As the foremost ethical stance of the research has been 'to do no harm' to any person, the ethics of justice (4.4.1) and care (4.4.2) had to be carefully considered with regard to external participants. To minimise the hazards connected with the interference in the local context, I worked through intermediaries as shown in sub-section 4.4.3. The sub-section 4.4.4 synthesises the procedural aspects of conventional guidance for consent and clearance (4.4.4.1) and visual ethics for the use of images of the participants (4.4.4.2).

4.4.1 The Logic and Ideology behind Ethical Concerns – Ethics of Justice

The first rule when working in sensitive context with power unbalance or in an emergency situation is not to harm the possible participants of a project: *primum non nocere*, as in the medical practice (Smith, 2005). In research, as in development projects, interventions must not worsen a situation, cannot increase the possible inequality ratio, cannot create tensions and reasons for discontent. In particular, a noticeable difference between the economic and educational background of external and local participants is accompanied by diverse lifestyles connected with the socio-political and cultural context (Dearden, 2012). Less evident is the difference in the values system and the way people relates. This implies a number of sensitive issues and concerns that operate within ethical discourses, from the ethics of justice (also

known as a non-consequentialist approach) (Beauchamp & Childress, 2001; Israel & Hay, 2006) to ethics of care (Mauthner, Birch, Jessop & Miller, 2002).

A series of sensitive issues connected with knowledge creation, knowledge consumption, knowledge settings and most importantly cultural knowledge and values are present when working in cross-cultural environments. I evaluated and considered these aspects on the base of the critical stance of the philosophical backing and the base of the long-term collaboration with the participants comprising historical background studies, personal relationship building and prolonged exposure to the context (Edwards & Mauthner, 2002).

The ethical question is connected with the critical social theory at the base of the study and in particular its emancipatory aim. The research outcomes are therefore oriented towards some changes in the life of the participants, starting, in the cases presented, from some empowering options. The kind of empowerment evaluated during the initial study phase as a possible research outcome is a situated one that takes into consideration the timing, the modality and approaches, the values, the contexts and cultures where the activities are going to take place (Svensson & Wamala Larsson, 2016). The approach to empowerment and eventually emancipation took into consideration also the role played by knowledge creation and distribution. The principles of useful knowledge and context related knowledge were applied when hypothesising possible activities through a constructive approach to intercultural dialogue on ethics (Evanoff, 2004). Knowledge possession, creation and diffusion formed part of the analysis of the relations between the participants and myself and amongst the participants.

From the perspective of ethics of justice, the study tried to achieve transformational social change connected with the change of the balance of power, typical of critical theory (Klecun & Cornford, 2005). Dearden (2012) would classify it as an 'interventionist ICTD' research (p.46). The methodology utilised for assessing the results from the beginning throughout the processes had been of critical importance to evaluate the practical value of the procedures and approaches selected. The capabilities framework supported the evaluation of the impact of the initiatives (Ansari, Munir & Gregg, 2012). The relevance of what the participants considered significant, helpful and satisfactory was valued more than the suggested outcomes that I assessed from a technical perspective.

The focus of the research and its possible benefits for the involved communities were connected mainly with the possibility of social inclusion in general and specifically with the

potential for collective empowerment through access, adoption, use and appropriation of ICTs. In the same perspective related to the ethics of justice, this research prioritised the outcomes desired by the most vulnerable participants and the shared benefit for the community over other focuses such as sustainability (Dombrowski, Harmon & Fox, 2013).

4.4.2 Why I did it and Why the Participants did it – Ethics of Care

Concerning ethics as care, the project focused on ensuring that communities got the maximum possible benefit from the research. Most ICT4D projects targeted at underserved communities do not succeed to reach the anticipated outcomes due to a limited knowledge of the context, since they are not grounded in the local realities and because the local communities do not participate consistently and constantly. The ICT4D literature on ‘white elephants’, such as the projects which deployed a technology soon abandoned (Winschiers-Theophilus, Zaman & Yeo, 2015), and ‘bungee projects’, referred to research based on short-term visits (Dearden & Tucker, 2015), illustrate diverse failing examples. This research engaged with the local communities to ensure that they participate in every phase of the project. Mutual trust was built during the years towards empowering underserved communities.

An important question evaluated before starting work on the research project was the participants’ reasons behind their choice to participate in the research. Concerning myself, my moral philosophy and commitment are part of the research itself: a commitment towards responsible and ethical behaviour, towards social justice and collaborative social approaches. Concerning the external participants, similar reasons were stated and proved during the years of voluntary collaboration. Concerning the local participants, several of them were active in their communities and were volunteering for local community-based associations. The passion and care for their communities were visible in their eagerness to improve their skills and commitment to better support their groups. These elements emerged during the process while the initial informed consent could not be considered enough to disclose all the possible ethical concerns connected with the reasons why they decide to participate.

The official encounters, the informal ones and the previous personal knowledge of some of the local participants helped me to evaluate case by case the responses and the reactions, included body reactions of comfort and excitement or discomfort and distress. Nevertheless, a ‘legitimate research partnership’ cannot be created without acknowledging, amongst other issues, ‘the racial disparities that exist due to the interrelationship of poverty, political power, racism and segregation’ (Chávez, 2005, p.1). I had to continually evaluate the expectations

connected with the participation in the creation of the artefacts. While the initial phase of interviews and focus groups was simple to explain, the co-creation phase could generate bigger expectations for the groups compared to the limited resources involved and the chosen unfolding methodology. There was not a designed plan to implement. What the research offered were spaces to generate ideas and to concretise them partially. This could have generated dissatisfaction and confusion.

The process aimed to be transformational and to bring about change. The goal was to provide the potential to increase the capabilities of the involved people and their agency. I was aware that the unplanned processes may not develop into the creation of an artefact and might not involve the use of ICTs. I had to be ready to acknowledge the situation and react without forcing the results for adopting solutions that would satisfy the research proposal but not benefit the participants.

In conclusion, concerning the reasons to participate in this specific research, the main risk that I foresaw at the beginning was the level of expectations raised by my previous role in the same communities (Büscher, Shapiro, Hartswood, Procter, Slack, Voß et al., 2002). Participants may have expected that I elaborate a project for international funders to continue the activities and achieve more results. To avoid this and to reduce the risk, I constantly reminded all participants of my new role and the different approach to the research. The participatory process that was followed during the entire research supported the transparency of the roles and offered opportunities to clarify the raising of expectations along the way.

The ethics of care and intentions to participate determined the possibilities of maintaining a relationship and a collaboration, after the closure of a project. In particular, the possibilities created by the co-design activities allowed every participant to meet new stakeholders and start developing new ideas. The participatory design ‘rules of the house’ settled during the project were maintained; respect, peer learning, mutual learning and care.

4.4.3 Cultural Facilitation

Working in a cross-cultural environment, with profound differences in the economic, cultural, educational background, within a country with a problematic historical ethnical legacy, and representing a significant institution like the University, I had to pay particular attention and care to the way I intended to proceed and collaborate with the community participants.

One aspect of the research dealt with the search for a shared language to develop the dialogue and the relation and the necessity to work with the intermediaries when linguistic and cultural barriers could interfere with the possibility to cooperate on a peer-to-peer level. While evaluating whom to work with as counterparts, a series of options were available: international organisations, NGOs, local government, community-based organisations and the community members not affiliated with a specific organisation.

In respect to the idea to be accountable towards the community members who could benefit from a possible developmental intervention, I chose to be aligned with the groups of people active in the communities and often collaborating with NGOs. A series of pros and cons connected with both options were considered. In particular, working with NGOs would give more reliability to time and space available for activities. At the same time, it could have created barriers to the participants who could feel dependent on the NGOs decisions and perspective of what may be needed or may be interesting. To give the community members as much decision power as possible, I decided to work directly with the groups in their areas of residency.

The collaboration with the NGOs was maintained to validate some of the analysis through individual interviews with the project managers and community facilitators used to collaborate with the activists and with the groups on a daily base over several years. Furthermore, the NGOs supported the research while making space in their premises available to meet or organise activities. The community facilitators operated as translators and intermediaries while moving around inside the communities. I was allowed to attend the groups; meeting and eventually intervene with questions. The NGOs and in particular the cultural facilitators supported the evaluation phase at the end of the processes when I visited the groups to verify and discuss the follow-up activities, the roles of the participants and the new collaborations.

Despite knowing the context for several years, I was aware of not being embedded in the place and of being obliged to rely on intermediaries and to trust the people that were translating and facilitating the processes. Validation of the initial results of the discourse analysis was done with other organisations active in the same areas, and the triangulation of the data was supported by interviews with government representatives particularly active in the ICTs deployment in the communities.

The role of the facilitators was crucial in connection with ethnicity and cultural factors as elements of evaluation during the processes and for the ethical discussion. The ethical stance

was connected with the kind of empowerment and possible outcomes that the research was trying to achieve, a situated outcome which starts from a universalistic vision and provides the realities to adapt and develop further. Knowledge and understanding, and sometimes merely acceptance, of ethnocultural differences, necessitated that I had to be observant and only later to initiate dialogue. The cultural factors were essential to establish the modality and approaches to proceed. In time, the cultural facilitators showed their appreciation and supported the activities by devoting extra time to the groups, even when I was not present.

4.4.4 Ethics and Redress – The Procedural Aspects

4.4.4.1. Conventional Guidance

This study lent itself to a number of ethical implications from a procedural point of view. Firstly, the exploratory and flexible methodology in underserved communities implied the possibility of sensitive questions to emerge. For this reason, participants were constantly reminded about their option to remain engaged in the process and to choose the level of their involvement. Participants were also reassured through an agreement of confidentiality and anonymity and an explanation of the use of the data.

I explained the research objectives and conveyed the purpose in terms that were comprehensible to the respondent group. The consent form (Appendix A) was in English, but it was translated into Xhosa at the beginning of every interviews or meeting before being signed. Participants could also accept to be recorded or filmed during the activities or not. Following the ethical guidelines accords with Schutz's postulate of adequacy for maintaining rigour in the methodological process (Schutz, 1967). From the academic perspective, my university required an ethical clearance for working with people in underserved communities to be obtained (Appendix F).

I was aware that this conventional list of arrangements might not have been sufficient considering the context of underserved communities and the chosen tool of evolving technology (Traxler, 2012). Ethical behaviour is more demanding than compliance with regulations. The recognition of the difference of culture between myself and the other professionals I involved in the processes, and the communities together with the commitment of mutual learning postulated in the Participatory Design approach (Béguin, 2003) attuned the risk of unconsciously harming the local participants. I also tried to avoid a discussion of

sensitive topics during the interviews. When such situations arose during the data collection process, they were managed through tact and reason to defuse potentially damaging situations.

4.4.4.2 Visual Ethics

Another factor that showed the limitation of the ethical guidance, related to visual ethics (Gubrium, Hill & Flicker, 2014; Wiles, Prosser, Bagnoli, Clark, Davies, Holland & Renold, 2008), often not addressed in the ethical codes. Ethical issues relating to visual methods concern the consent for the collection and dissemination of visual material such as photographs, film and video images, by the researchers as well as by the involved participants. The issue is complicated by the possible reuse online of the archival material (Vivienne & Burgess, 2013).

This research produced visually identifiable individuals. Consent was requested for every image and video I took also entailing the consent to use images subsequently. For the few cases where images of children were present, these were selected by the parents or responsible persons (Heath, Charles, Crow & Wiles, 2007).

The majority of the images and videos part of the research are created or selected by the participants themselves. The pictures and videos represent the participants and not other community members. The participants agreed to the use of the images for study elicitation purposes as well as for their presentation during conferences or publication, with as much as an explanation as possible of the purposes of their use (Rose, 2007).

Visual data are often disseminated through non-academic options, such as a public exhibition with the internet to target a broader audience (Murthy, 2008). The videos created had been presented at three conferences. In the first case, I received the consent of the participants. In the second case, the participants themselves were present and introduced the work they did. In the third case, I had the consent and requested the participants to be available online to answer the questions of the audience. In this way, not only was the consent made explicit but the possibility to misinterpret the visual data was minimised (Prosser, 2000).

Due to this strong presence of the participants during the dissemination, pixelation or obscuration face was not required. It is quite common to avoid anonymisation of individuals in visual art (Pink, 2007; Sweetman, 2008) because of the desire of the people to be identified and not objectified. For the same reason and because of their desire to sponsor their activities, pseudonyms, which were used in the academic papers, were not used in the videos. It was nevertheless my responsibility to inform the participants of the implications of their choice and

to work collaboratively, which could foster empowerment through the representation of the self.

In Synthesis, Chapter 4

The focus groups, interviews and activities with the groups took place in the townships of Philippi and Khayelitsha which are part of the metropolitan area of Cape Town in the Western Cape in South Africa. The groups participating in the research are part of the active groups in the communities; however, the geographic element is insufficient to describe and connote the selected community, in particular considering the ongoing involvement of the groups for the most vulnerable people in their respective neighbourhood. Despite the shared interest and practices of groups, multiple group identities exist and must be recognised to strengthen the potential and capabilities of the groups.

The selection process for the research project started from a list of 100 groups: 70 groups of Mamas and 30 groups of Youth. At the time of the mapping and survey, the selection criteria were the following: the existence of the group over a period of months or, preferably, years; at least five members; for the women's groups, involvement in social activity for the benefit of the community; for the Youth groups, involvement in art or sports activities. The selection of groups made use of the snowball sampling technique where every facilitator started introducing some members of groups active in his/her area or residency. During the co-design phase, the groups' leaders who engaged with the organisers and trainers in the preparation of the activities selected the participants.

All the phases, from the initial focus groups, took place in the townships where the majority of the groups' members lived to facilitate the participation of the community members and to overcome the problems connected with the limited availability of services. The external participants, such as trainers, journalists and web-designer, elaborated solutions to deal with the limited infrastructures and security in the areas.

The research outcomes are oriented towards some changes in the life of the participants, starting, in the cases presented, from some empowering options. In perspective related to the ethics of care and justice, this research prioritised the outcomes considered significant, helpful and satisfactory by the most vulnerable participants and the shared benefit for the community over the technical perspective oriented towards greater digital innovations. The ethical

standards were kept in mind due to the expressed intention to work towards emancipation for all and due to the risks associated with the cultural, economic and social differences amongst external and local participants and due to the use of visual methods.

5 THE UNFOLDING PROCESSES

5.1 Connection amongst the Papers

This research explores the potential for ICT to expand the capabilities of people, and to improve their lives and their communities. An emergent approach characterised the flow of the processes that unfolded during the four-year project. The main outcomes of the research are synthesised in five separate papers. The synthesis highlights the links, connections and subsequent progress amongst them. The first paper presents the theoretical concepts utilised during the initial phase and evaluated during the exploratory phase. In papers two through five, the flow of action, findings and discussions describe the temporal continuum from the first until the fourth year and presents the evolution of design processes and subsequent analyses.

The **first paper** evaluates the theories supporting the study, which are based firstly, on a strong presence in the literature of ICT4D and the demonstrated capacity to explain similar phenomena due to a philosophical background and familiarity to the author which resonates with her ideology. Secondly, the theories had to support the grassroots emergent collective approach. The selected theories were dependent on the knowledge of the communities and groups and the initial ethnographic phase. I considered the use of theories and studies which could disclose the meanings behind the observations and deepen the analysis of the undergoing activities. Due to the selection of support theories, the study is not grounded theory research despite sharing many common elements with that methodology. Critical social theory supported the processes, while the capabilities approach and participatory design supported the evaluations of the findings. In the first paper, a potential schema of the evolution of the processes suggested by the initial fieldwork and analysis is presented. Over time, as shown in the subsequent papers, some theories played a marginal role while others emerged as relevant in understanding the phenomena which demonstrate the unplanned design of the research.

The **second paper** utilises the theories presented in the first paper. This paper is based on the initial exploratory phase and focuses on the analysis of the first round of focus groups and individual interviews. It utilises critical discourse analysis to evaluate the meanings, positions and conditions of a selected number of active groups in two of the largest underserved townships of Cape Town. The paper presents the selection criteria of the different groups participating in the research. In the initial phase of the project, the groups had limited requirements for inclusion, needing only to be active in their communities and open to novelty

when new ideas emerge. Characteristics of activism and care for their community were required to allow for the findings and conclusions to be generalisable to similar categories of participants. During the subsequent design phase, further elements of the groups emerged which allowed for a deeper analysis of the characteristics and the replicability of the processes. In this paper, open coding and thematic analysis were used to analyse the initial interviews and the focus groups, later summarised with categories of discourses. The majority of the discourses shared commonalities, such as succinct technological knowledge, lack of skills and limited interest of the groups to work with ICTs. Other more circumscribed discourses highlighted specificities, such as the use of ICT for distinct reasons such as for music creation and radio station activities.

The initial idea for the research project was to develop a second round of interviews and focus groups on deepening the analysis of the groups' discourses to understand better the meanings associated with technologies in underserved communities. This initial hypothesis was not realised due to the ideas that emerged during the follow-up meetings with the participants. The technology-aware groups suggested a series of activities to ameliorate their skills, create new collaboration and develop the group's capabilities for the benefit of the community. The groups that demonstrated lesser ICT skills, capabilities and interest were, nevertheless, keen to try and evaluate the use of new technologies.

The **third paper** presents and analyses the processes where the specific interest of some groups and the availability of other groups to engage with ICTs brought about the possibility to create a series of DST videos. Three DST videos were created through a collective approach where members of different groups collaborated. The ethnographic study using discourse analysis represents the basis of this phase situated between the exploratory and design phases. The creation of DST videos was part of the co-design phase where an artefact is produced with the use of technology. At the same time, the main scope of DST is to deepen the knowledge of the groups and to evaluate their use of new technology, representing a visual ethnographic phase.

The DST creations represented an important moment of collective sense-making for the groups and for belonging to the community. The participants had the opportunity to introduce themselves and to showcase their activities and their way of collaborating inside the groups and amongst groups. Furthermore, the creative processes supported by ICTs triggered new ideas and opportunities that were developed afterwards. The co-creation phase evolved directly

from the DST videos. In the three cases, the design activities disclosed diverse modalities, although all of them emerged autonomously with the community has chosen the activities.

The **fourth paper** describes and analyses the three scenarios of co-creation. Diverse degrees of participation were visible and unfolded during the processes which showed changing roles of participants over time, strengthening the characterisation of the co-design procedures as co-creation. My main concern was to allow the processes to develop and for everyone involved to choose their degree of participation thereby supporting an egalitarian and inclusive process of co-creation. Originating from the strengths of each participant and the collectivity, the co-creation processes disclosed new paths of operating to build in collaborative ways, to spur creativity and to allow collective engagement to emerge. The enablers presented at the end of the paper suggest ways of allowing similar egalitarian and inclusive participation to unfold, at different stages for each person involved, transforming the role and position of the community members and the external professionals during the process.

The same processes are analysed in the **fifth paper** using the theoretical lenses of frugality and innovation. By allowing the processes to unfold without focusing on the outcomes of the project showed the potential of this flexible approach to allow creativity to emerge. At the same time, it allowed for the processes to be driven by the participants. This last paper expands the vision of creativity, with the claim that it could be considered innovation while focusing on the benefit of essentiality. The fifth paper analyses the results of the three processes of co-creation in the light of the frugal innovation approach, highlighting the novelty presented in the methodologies as well as the results. The analysis holds potential for future research and projects by showing how community projects created and developed with limited resources by the participants can be sustainable and independent. A frugal social creation responds to needs of the community and, at the same time, is supported by embedded resources.

The intentions of the groups to support their communities, the grassroots approach and the collective approach are essential elements present from the beginning until the end of the four-year project. The main characteristics of those elements persisted through the research from the third paper onwards. In this way, their consistency was evaluated, and their relevance for the results assumed stronger importance due to their reiteration. Consequently, the conclusions of the last three papers provide principles, enabling conditions and guidelines to support similar studies based on grassroots, collective, socially engaged, emergent approach. The theories

presented in the first two papers supported the analysis and, in some cases, expanded to embrace new situations.

5.2 Synthesis of the Papers

In each of the five papers, I was the main author. In particular, in the first paper, “ICT for Community Empowerment amongst Urban Underserved Communities: A Design for Participation Project”, I was the sole author. The paper was published in the *International Journal of Sociotechnology and Knowledge Development (IJSKD)*.

I wrote the second paper, “Digital technology for inclusion: A critical discourse analysis of urban poor groups in South Africa”, with Doctor Izak van Zyl and Professor Wallace Chigona. Doctor van Zyl collaborated on some writing and editing while Professor Chigona edited the final version. The paper was presented at the *IDIA* conference 2014 and published as the first chapter of the book *ICTs for Inclusive Communities in Developing Societies*.

The third paper, “Collective Digital Storytelling in Community-based Co-design Projects. An Emergent Approach”, was written with the collaboration of Doctor Amalia Sabiescu and Doctor Nemanja Memarovic. I was the main author while Doctor Sabiescu contributed to some writing, and Doctor Memarovic edited the paper. The paper was published in *The Community Informatics journal*.

The fourth paper, “Enablers of Egalitarian Participation: Case Studies in Underserved Communities in South Africa. Processes of Creativity ‘Not for the Sake of it.’”, involved the collaboration of Professor Wallace Chigona and Malcolm Garbutt. I was the main author while Professor Chigona and Malcolm Garbutt contributed to the discussion of the main contribution and editing the paper. It has been accepted for the conference *IDIA 2018*.

The fifth paper, “Collective creative processes in underserved contexts. Lessons of grassroots frugal social innovations”, had no co-authorship. I presented it at the *Sig GlobDev pre-ICIS 2016* workshop, and it is published in the proceedings.

The following table, Table 5.1, summarises the research questions, objective and methodologies used in each paper.

Table 5.1. Papers Research Questions and Methodologies

PAPERS	Title	Research Question	Objective	Methodology
Paper 1	ICT for Community Empowerment amongst Urban Underserved Communities: A Design for Participation Project	How can ICT contribute to the collective empowerment of underserved urban communities?	Evaluation of theories that could support the study and disclose a new methodological approach to reach the scope.	Predictive Purpose. The main theory of reference supported by several other philosophical concepts is analysed. Under particular conditions (mainly, a specific approach), creative outcomes can emerge.
Paper 2	Digital technology for inclusion: a critical discourse analysis of urban poor groups in South Africa	What are the discourses associated with ICTs among collective groups in marginalised communities?	Evaluate the meaning and use of ICTs in underserved communities using discourse analysis	Exploratory Purpose. Interviews and focus groups studied through content analysis to describe and understand the phenomena from the participants' perspective.
Paper 3	Collective Digital Storytelling in Community-based Co-design Projects. An Emergent Approach	To what extent and how can DST contribute to stimulating and building capacity for purposeful community participation in co-design initiatives?	Deepen the exploratory research phase, analyse the effects of introducing new ICTs and start the design phase through the use of DST for collectivities.	Exploratory and Prescriptive Purposes. Triggering ICTs activities were conducted to discover the social actors' behaviours and decisions better. The results of the activities suggested design principles for possible replication.
Paper 4	Enablers of Egalitarian Participation: Case Studies in Underserved Communities in South Africa. Processes of Creativity "Not for the Sake of it."	What factors enable egalitarian participation in ICT4D projects in underserved communities?	Identify, probe and assess co-design ICTs solutions (e.g. websites co-creation and training) instrumental in fostering participation and collective empowerment.	Exploratory and Predictive Purposes. Co-design solutions were created, and the enablers, allowing the processes to unfold were analysed. The presented methodology does not offer prescriptive solutions but predicts the possibility of disclosing potential of creative processes.

PAPERS	Title	Research Question	Objective	Methodology
Paper 5	Collective creative processes in underserved contexts. Lessons of grassroots frugal social innovations.	How to spur grassroots, sensible and inclusive frugal innovation in determined contexts?	Formulate design considerations related to an emergent flexible approach. Drawing guidelines for the replication, the paper brings about a methodological contribution.	Prescriptive approach. The description and explanation of the emergent approach show its potential to be used in different situations to allow for practical results.

PAPER 1**ICT for Community Empowerment amongst Urban Underserved Communities: A Design for Participation Project**

Author: Maria Rosa Lorini

Abstract

The paper highlights the methodological framework of ongoing research focused on two issues of actuality in Information and Communication Technology for Development (ICT4D): the role of ICTs in cultivating collective capabilities and the role of the participants in the different phases of a new design project in relation to development. A design-based research approach, rooted in exploratory ethnography and emergent design shows that when the researcher becomes ethnographer and designer and the users become resources for the co-production, a new methodology is born. It is a process of dialogue, never-ending, in which the designer enters with the intention to make an impact, not only to understand. The participatory process is followed throughout the research, from the ethnographic phase of discovery and understanding, through the design phase of co-creation, until the final evaluation phase.

This research is conducted in two marginalised urban settings of Cape Town. An exploratory phase, in which inductive ethnographic methods were used to explore the nuances of ‘agency’, ‘capability’ and ‘collective empowerment’ that occur through technological dealings was followed by a still ongoing design phase, in which the two communities are involved in co-designing new ICT services that support their community activities. The assessment phase, which is directed towards the formulation of theoretical and design considerations, will look towards a participative evaluation process and sustainable patterns.

Keywords: Participatory Design, Ethnographic Design, Sustainable Design, Community Empowerment

Introduction

The hopes tied to the success of the changes that have occurred since 1994 in South Africa continue to gain admiration and pride in this country. Despite that, the legacy of the apartheid system undermines the potential for growth and social transformation. South Africa officially

belongs to the upper-middle income countries, but 45,5% of the population lives behind the poverty line (WorldBank, 2014). Given the inequality of allocations of resources, a series of development issues are present, like scarcity of health and education infrastructures and high unemployment rate and crime (Marais, 2011), in particular in a rural area and the informal settlements of the townships. Information and communication technology' (ICT) studies and projects in the last decades have tried to address the global development priorities connected with inequality (Duncombe, 2007), not only in the specific context of the digital technology. ICTs developed in several ways. Many artefacts have been created to ameliorate the conditions of the underserved population (for example giving the government new means to collect information or improve the delivery of services such as health and education) where the beneficiaries are not formally involved in the process (Andrade and Urquhart, 2010). Concerning the closure of the digital divide, ICTs projects had been oriented towards the increase in the access to specific artefacts (like the web) possibly to everybody. In South Africa, and in particular in the Western Cape Province, ICT projects are recognised as important to address 'responsiveness and inclusiveness' (Western Cape Government, 2014). Access, skills and usage are the main concerns of the Government.

Having this in mind, the researcher considered as a first step to evaluate the meanings and the roles, if any, of ICT in cultivating empowerment for underserved groups in urban areas of Cape Town, South Africa, where the research is conducted. Based on several years of activities within the communities and an ethnographic phase of research that points towards a designing phase, this study seeks to explore the ways to maintain the high level of participation of the groups, from the needs assessment moment till the evaluation of the project. The main contribution concerns the possibility to use participatory design techniques constantly, despite the heterogeneity of the selected groups, the time concerns and despite the designer pressure to bring about changes.

The added value of the study and its contribution to knowledge resides in the approach of the researcher in framing this issue critically. The ethnographic process involved participatory design techniques with a transformative aim. The ethnographer and the designer became the same person (Baskerville, 2014): while studying to understand, the researcher also advocated an empowerment agenda through sustainable designs. The other peculiarity of this study resides in shifting the focus from the individual to the collective, to support the creative communities (Manzini, 2005). The ethnographic phase sought to understand how social relations and group action both determine and are determined by the use of ICT for information

access and production, and if and how ICTs serve to cultivate agency and capabilities at the group level. If and when supported by the participants, some design solutions integrated into the study. A situated empowerment approach, with a critical stance of contextual and socially responsive technologies, lead to this ongoing study. A cycle of action and knowledge production is taking place: 1) an exploratory phase, in which inductive ethnographic methods have been used to explore those nuances of ‘agency’, ‘capability’ and ‘collective empowerment’ that occur through technological dealings; 2) a design phase, in which the two communities are involved in co-designing new ICT services that support the community activities already in place and possibly new ones; and 3) an assessment phase which is directed towards the formulation of theoretical and design considerations to advance current debates on participation in every design phase for serving locally-defined and pursued development goals.

The main research question is: How can ICT, through a participatory design approach, contribute to the collective empowerment of underserved urban communities? The study is framed within the capability approach drawing on the writings of Sen (1999) and later scholars who expanded his work with attention to collective and relational dimensions of agency, capabilities and empowerment (e.g. Foster & Handy, 2008; Stewart, 2005). The methodological framework is shaped by a Participatory Design (Simonsen & Robertson, 2012) approach rooted in ethnography (Madden, 2010) and socially sustainable development (Elliott, 2012).

ICTD expectations and possibilities –problem identification, research gap and objectives

The dominant discourse in the research and practice area of ICT for development (ICT4D) in the past decades was that of the “digital divide” (Moodley, 2005), where a prevailing argument was that the life chances and social exclusion of poor and marginalised people could be resolved through technology access. In particular, the evolution of the field was marked by the promise that ICT could offer: more affordable, more efficient, easier to deploy means of telecommunication. This would be a leapfrog development thanks to the possibility of skipping stages by copying recipes that were successful in other contexts; a socio-economic development via e-commerce and the possibility of acquiring medical, agricultural and industrial information and knowledge; and a transformation of the political climate through e-governance, e-democracy, activism, networking to improve the potential of social capital and the promises to ameliorate the schooling and health system through e-education and e-health (Unwin, 2009).

In South Africa as in other developing countries, such technological determinism often underestimates the context and met with only partial results (Wyatt, 2008). Several issues common to international ICT4D projects were identified as crucial: the lack of a participatory process in the identification of problems and development of the project proposals, the importance of building towards sustainability during the course of implementation, the relevance of local knowledge and the cultural values and norms of the societies involved in the process (Avgerou, 2008).

The gap that this study will try to fill in addressing the problems mentioned above is connected in particular with the collective empowerment possibilities offered by the utilisation of ICT in a project that looks forward designing for participation. The goal of this project is to explore the potential of ICT as a catalyst for collective empowerment in underserved urban communities. As such, this project aims to contribute to the body of research that investigates the role of ICTs in cultivating capacity-building and empowerment for underserved communities using a participatory design approach. While a lot of the literature focuses on the role that ICT can play for development (Oyedemi, 2009; Walsham et al., 2007), a critical paucity of literature exists concerning the limited results achieved by ICT4D projects in the last two decades and the necessary changes in the approaches required (Dodson et al., 2012; Zheng, 2009). Limited literature is even more critical towards these kinds of intervention due to their deterministic technological approaches (Van Dijk, 2006; Wade, 2004). Critical discourse analysis had already been utilised to examine the “imperative of technology” present in the speeches, proposals and official guidelines of some major international organisations (Thompson, 2004).

Building on the concept of development as presented by Amartya Sen (1999) and on the possibilities offered by ICT for empowerment, namely the access to information and the ability to influence decisions that may have an impact upon one’s life (Khwaja, 2005, in Ibrahim and Alkire, 2007: 13), this study contributes to the literature connecting two elements of novelty: the collective approach (Ibrahim, 2006; Stewart, 2005) in opposition to the individual one (Alampay, 2006; Kleine, 2010) and the participation of the beneficiaries in every design phase, without creating a net distinction between bottom-up and top-down approaches (Malhotra and Schuler, 2005; Samman and Santos, 2009).

The study will foster the understanding of how social relations and group action determine particular uses of ICTs and incur group-specific ways to use ICT for information access,

information production, and networking; it will conceptualize the social processes by which members of underserved communities build collective capabilities and advance collective empowerment, and it will produce considerations and recommendations on the design of socio-technical environments to advance capability building and empowerment for collectivities. The notions of “collective capabilities” (Ibrahim, 2006) and “group capabilities” (Stewart, 2005) that refer to capabilities that only emerge and manifest as a result of being involved and acting within a group, are representative of this approach. Some studies investigate the opportunities offered by ICTs for community groups (Stewart, 2002), but mainly the focus is on the empowerment of the individuals (Loader et al., 2000) or the complexity of the groups’ dynamics and ties (Thorp et al., 2005). Siddiquee and Kagan (2006) specifically call for more research in participatory community processes to foster collective empowerment.

Emancipation and empowerment. A collective participative approach

Critical social theory (J. Habermas) and the capabilities framework (A. Sen) serve as the theoretical foundation for this study. Critical social theory addresses ethical and moral questions by seeking emancipation for all the involved participants: the researcher (with her assumptions), the beneficiaries of the design creation, and the involved organisations (public, non-governmental, regional and academic). Improved social conditions should follow as a result (Ngwenyama, 1990). Critical social theory attempts to unpack the meanings behind social activities as rooted in the contexts and life worlds of actors.

Concerning this study, the researcher critically discusses inequitable conditions of underserved communities, starting from ethnographic fieldwork and moving into a design phase-oriented towards the participants’ desired change. Habermas’ theory of communicative action (TCA) (1989a), has been selected as the initial framework to analyse the production of discourses about information technology and its prevailing assumptions. Sen’s capability approach, with attention to the collective and relational dimensions of agency and capabilities, supports the analysis of the emancipation and empowerment process envisages through the participatory design phase. The researcher moves beyond the traditional role of an ethnographer and assumes the role of a designer “who is collaboratively developing structures intended to critique and support the transformation of the communities being studied” (Barab et al. 2004, p.255). Participatory Design, as core methodology, shares a critical stance with the selected framework theories (Ehn 1988) and recognises the responsibility of designers towards the world they create.

Critical Social Theory, capabilities approach and Participatory Design have the same aims: to affect the reality, to bring about changes that start from the emancipation of the researcher and move towards the emancipation of all participants (Krauss, 2012). Concerning the freedom to choose and act, Critical Social Theory points out the importance of contextuality reminding the researchers that “an actor cannot simply exercise complete free will in how she chooses to act” (Ngwenyama and Lee, 1997). Participatory Design invites users to a collective ‘reflection-in-action’ (Schön, 1983) and questions the status quo and is rooted in situation-based action. Genuine participation reflects a political commitment summarised in some principles: equalising power relations, like giving voices to marginalised communities in this specific research; encouraging mutual learning; developing techniques to actively engage the participants (Kensing & Greenbaum, 2013).

Cape Town Townships -Research Setting-

In a participatory approach, it is important to consider the contexts of communities in understanding and exploring their socio-cultural engagements. An ethnographic methodology has some principles that bring about an insider’s perspective – the everyday setting, the holistic view, the descriptive understanding and the members’ perspective (Wolcott, 1975). Ethnographic methods could allow for deep, meaningful engagement with communities before starting the design phase. According to Blomberg, Burrell & Guest (2003), ethnography provides a point of view on associations between humans and the artefacts they design and use. The attempt is to use ethnography not only as an exploratory methodology but also as a process to support the reflections of the implications of a context with different knowledge traditions (Blomberg & Karasti, 2012).

For this study, the researcher worked and is still active in two communities of Cape Town. They are underserved areas chosen on the base of four previous years of work as coordinator of social and health activities. This job background implies a knowledge of the physical space, common activities, problems, and facilities in the areas. During the working years in the selected area, the researcher mapped a series of groups active in some particularly underserved locations to submit some proposals to different international and local donors. One proposal required to conduct a survey and map the community groups already active and engaged in the uplifting of the areas. Some projects are sponsored, managed and supported by the provincial government of the Western Cape, South Africa while some community projects are sponsored by NGOs. These boundaries represent a warranty for the sustainability and reliability of the

connected project under study. The two areas have a similar population but different infrastructure levels.

All the group interviews took place where the community members live and gather, mainly in the informal settlements of the selected townships. For the selection of the groups of Mamas (Xhosa mothers) involved in this research, the researcher collaborated with a community facilitator active in a local NGO to suggest any group available to let the researcher attend the usual weekly meeting and to ask some questions for study purposes. In this way, no incentive was needed to meet the participants and collaborate with them (such as money for food or transport).

The locations where the interviews with the groups took place belongs to the townships of Philippi and Khayelitsha. Philippi is the most neglected area between the townships while Khayelitsha is the one where the majority of pilot projects and new projects supported by the City of Cape Town are developed. Of the 50 million people living in South Africa, more than half live in urban areas of which 23% are living in slum conditions (United Nations, 2015). In Cape Town, there are about 200 informal settlements. The biggest informal settlements are still found in the former Black Local Authority areas such as Philippi (94% of the population is Black Africans), which has a total of 23 informal settlements and an official population of 191.025 people, 56% living in shacks, with an unemployment rate at 38% and poverty rate (population living under the poverty line of 1.600 Rand per month) at 52%. Khayelitsha has 391.749 inhabitants, 54% living in shacks, with unemployment at 38% and 49% of the population living below the poverty line (City of Cape Town, 2013a & 2013b). An estimated 19% of the adult population aged 15–49 years is HIV positive (USAIDS 2013). As such, the economically inactive child-headed (AIDS orphans) households increase, and a large percentage of the economically active population becomes unable to work due to illness. These data explain the main reasons why the groups in these locations started gathering and networking in the past fifteen years.

The Participants' Selection

The groups participating in the research are active in the specific areas of residency. The geographic element (Gurstein, 2000) is not enough to describe and connote the selected community, in particular considering the ongoing involvement of the groups (Lave and Wenger, 1991) for the most vulnerable people in their respective neighbourhood. Despite the

shared interest and practices of some groups, a plurality of identities exists and needs to be recognised to strengthen the connected potentialities and capabilities (Pelling, 2007).

During the previous years (2010 and 2011), the researcher engaged with more than seventy groups of Mamas which used to gather together in order to face everyday community problems such as AIDS orphans, vulnerable children (often due to alcoholism), sick poor people and women victims of abuse, in particular of domestic violence. During this time, the groups evolved and became more structured. From simple gatherings to recreate social ties existing in the rural areas of origins, several groups decided to be socially involved through small community activities to support the most vulnerable people of the communities: women victims of violence and children. Some groups started small activities like gardening, soup kitchens and informal crèches for parents who cannot afford to pay the rate of the official ones. To support their activities, these groups became saving groups, sometimes part of a National Social Movement. Social grants and some income generated by the activities are the main sources of sustainability. Because of this limited availability of resources, the activities are not carried out regularly. The groups of Mamas are mainly dominated by females in the age range of 25 to 55 years old. All of the groups are based in disadvantaged communities, with the majority based in informal settlements.

Concerning the groups of youth, the researcher, between 2009 and 2011, met around thirty groups in the different townships. The average age in the youth groups is 16 to 25 years old. The youth usually gather in groups of interest often connected with art and sport. Often they take part in activities of edutainment -education through entertainment- on sensitive issues for the community like AIDS and alcoholism. A specific survey on group activities and constituency took place in August 2011. Semi-structured interviews and a structured questionnaire involved 161 youth belonging to 17 groups. Demographic and socioeconomic data and an analysis of youth aspirations and ideas for the project were collected. The groups are from Philippi, Du Noon, Nyanga, Mfuleni, Khayelitsha. 92% of the youth are between 14 and 35 years old (around 50% female), belonging to families with an average of 6,5 members with a low level of education and high poverty. 68% of their families are female-headed, 67% of youth economically active do not have a formal job, and sources of income are irregular and in most cases (54%) considered not sufficient to cover their basic needs (food, shelter, health). Their socio-economic conditions are representative of the youth of the targeted communities. 88% of them consider they could earn an income using skills involving arts and sports. To

achieve this goal they think they require proper tools (42%), training (32%) and support to reach out to more people (21%).

To triangulate some data emerging from the focus groups, the researcher interviewed some representatives of NGOs active in the same areas which have missions to support and strengthen the work of informal and formal community groups. One specific aim of these NGOs is to facilitate the networking of the groups and their formal registration at the national level as a possibility to access more resources. The specific intention of the in-depth interviews with NGO representatives was to validate the information given by the groups concerning their activities in the communities, their continuity in time and their affiliation to some network.

Participation Step by Step -Research Approaches and Methods

This paper focus is on the methodology chosen to work in the specific setting and with the specific participants introduced in the previous sections. The research acknowledges the situated design methods: “design is always carried out with partiality and from a specific, embedded position” (Svabo et al., 2013: 7). The study forms part of a research project that is still undergoing and that recognises design as a process that evolves through the different cycles of action and reflection. The research unfolded in three phases: 1) exploration, 2) co-design of ICT solutions, and 3) formulation of theoretical and meta-design considerations.

1. Exploration

The fieldwork for the research started in February 2014, but the ethnographic collection of data about the setting and the participants dates back to 2008. The researcher participated overly in the daily life of the groups, watching, listening, asking and interacting with the activities (Hammersley & Atkinson, 2007). A sense of the cultural values shared patterns of behaviour, meanings, functions and institutional practices emerged. A human ecology-based awareness was gained by the researcher (McCaslin, 2002). This participant observation approach continued all through the research, taking part in the activities, conversing but also consciously observing and taking notes (DeWalt & DeWalt, 2010). In the time, the research became more focused, and the data collection methodology adapted having as main tools group and individual interviews. Together with participant observation, these are the primary constituents of anthropological investigation and are the key methods that inform the project (Babbie, 2007; Bernard, 1998).

Trying to establish the meaning of the phenomenon, the groups' relation and interaction with ICTs, from the views and with the words of the participants, emergent interviews were used at the beginning of the fieldwork (Glaser, 2001). It contributed to creating common ground and a common language among researchers and research participants. The design of the emergent interview in this research took a middle-path between Glaser's (2001) and Patton's (2002) open-ended approach and Carlson and McCaslin's (2003) more systematic take. The design was based on an initial framing question that synthesises the research focus and the main dimensions of analysis explored (empowerment and socio-technical sphere). Interviews were conducted both individually and in groups.

Sometimes when the emergent interviews were conducted with all the members of a group presents, they evolved spontaneously into focus groups. This technique allows for group interaction and a greater insight into a community. It is of particular utility in a marginalised setting being "a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment" (Krueger, 1988: 18). They were used in this study in order to understand how the issues investigated are met by groups, where does consensus lie and what issues trigger divergent opinions. The focus group started from broadly defined topics that will be shaped through interaction with and among focus group participants.

A thematic framework of discourses that arise from the emergent interviews and the focus groups concerning the use or not of ICTs, the priorities of the groups and the context situations was studied through content analysis (Krippendorff, 1980). Content analysis of the discourses highlighted some key issues of relevance for the groups, revealing the role of some informal infomediaries inside the groups and demonstrating some collective capabilities grounded in the community social context. Some in-depth interviews with stakeholders working in the same context were utilised to elaborate on some of the themes that emerged from the groups' discourses and the participant observation. The topics and themes discussed during the grounded empirical research were systematically examined through the thematic content analysis. The themes emerged while the researchers listened to the interviews after a first classification based on the interview category (Mamas, Youth, other stakeholders). The different topics that emerged from the interviews were then aggregated under each theme that formed a discourse theme (Braun & Clarke 2006).

The selected data analysis process is not an attempt at ethnology, nor is it a linguistic inquiry. Rather, it strives to identify and organise rich but disjointed information into a systematic

presentation of narrative experience. For maintaining rigour, this process is based on the phenomenological postulates of logical consistency and adequacy. The former mandates the researcher to establish the highest degree of clarity for the conceptual framework and method applied, following the principles of formal logic (Fereday & Muir-Cochrane, 2006). This involves in-depth planning, careful attention to the phenomenon under study, and productive, useful results (ibid.). The latter postulate of adequacy calls for consistency between the researcher's constructs and those found in common-sense experience. Stated plainly, the research outcomes must be understood and recognisable by the social actors within everyday life (Fereday & Muir-Cochrane, 2006). This is an equally challenging task, which requires a process of member validation and checking, in a constant participatory design approach.

2. Co-design of ICT solutions

The approach to design taken by this project is based on the premise that the precise outline of the co-design methods to be used is best shaped in context, through people's participation (Winschiers 2006). The researcher opted, therefore, for specific tools and methods drawing on her expertise in design informed by the insights and considerations coming from the data analysis conducted in the exploratory phase and people's response in a guided participation work about the possibilities for community networking and empowerment. The design approach was studied for each participating community using tested and established methods and techniques in user-centred design and participatory design. Several sub-activities are envisaged as part of this process in the coming field activities. A first activity involved some groups in a digital storytelling creation in order to disclose the history of the group told by the group, a method that allows research participants to express themselves freely (Mattelmäki, 2006). The analysis of this activity focuses on the research of the possible use of the capabilities approach framework for collectivity. To further the analysis on the community views, others insight tools will be used, referring to techniques by which community members' views on design will be externalized (e.g., conversation cards, context mapping). Co-design techniques (e.g. workshops, scenarios and personas) will be employed to allow participants' insights to gain concreteness. Once design solutions start emerging, the design process will become intertwined with the technical development activities, so that participants can see the concrete representation of their design ideas and be able to inform its course further. While the precise technological solutions to be designed and developed for each group cannot be envisaged beforehand, some proposals already emerged from specific groups in response to community needs, including but not limited to the creation of a website and follow-up and

updates for the presentation of crafts creations; new storytelling creation and upload for presentation to funders; digital radio support to collect stories from the communities; mobile phone applications for saving groups.

The entire co-design process will be assessed. This will allow the creation of a rich database of insights that can inform the formulation of design considerations in the third phase of the study. The usage and interaction with the ICT solution will be measured by using interviews and focus groups. The design will be based on the dimensions of analysis identified in the first project phase, linking dimensions of empowerment with the socio-technical sphere (social relations, group action, social meaning of ICT, and ICT usage patterns), with a focus on how the ICT solution contributes to developing members' agency and capabilities at collective level.

3. Formulation of theoretical and design considerations

Based on the results of the assessment, the researcher aims to produce descriptive and predictive theoretical propositions on relations between the social sphere (relations, networking), the sphere of interaction with ICT (attributed meanings, usage patterns) and dimensions of collective empowerment; and considerations and guidelines on the design of ICT solutions instrumental to fostering collective empowerment for poor urban communities.

Overall, the formulation of the theoretical and design contributions will be framed from a theoretical stance characteristic of postcolonial computing discourses, advocating for diversity, cultural specificity and bottom-up encounter of community needs through ICT solutions. The ICTD community has gradually recognised the significance of design-based approaches in developing contexts (Winschiers-Theophilus et al. 2013). Some perspectives have encouraged in-depth, culture-specific interventions. Beyond the hegemonic ideologies of past interventions, one "reimagined model" is postcolonial computing framework, which conceptualises design regarding engagement, articulation and translation, with an attempt to embrace heterogeneity rather than hegemonic (or common) standardisation (Winschiers-Theophilus et al. 2013). Another reimagined model in ICTD is that of 'situated computing' (Gero 2003; Harrison et al. 2007), appropriated from human-computer interaction studies. Within this paradigm, the design of computational interventions is based on phenomenologically situated interaction. Situated approaches, such as value-sensitive and participatory design, action research, and living labs, treat interactions of all types as a form of meaning-making. In this vein, activities, artefacts, and their contexts are mutually defining and thereby endorse locally meaningful design (Winschiers-Theophilus et al. 2013).

The researcher will formulate theoretical propositions on the role of ICT for community empowerment, with particular attention to the evaluation from the different stakeholders' point of view. The usage of the ICT solution envisaged will be assessed for some few months after it has been deployed. Data will be gathered through ad-hoc interviews conducted with community members and NGO representatives. An analysis of the overall data corpus will be performed with the aim of crafting the expected theoretical contributions. In parallel, data analysis will be performed for the formulation of design considerations. These understandings will be used to theorise how the introduction of new ICT products and services may serve more intense or novel ways by which people expand their capabilities and choices drawing on relations and joint actions with their peers. These understandings will also stand on the basis of recommendations for harnessing the potential of ICT and naturally occurring social processes in collectivities for cultivating the expansion of people's agency and capabilities. The design of new ICT products and services that may "help people help themselves", becoming attuned to and boosting natural ways of interacting and sharing in group settings. The design of integrative socio-technical environments that harness the potential of ICT for improved networking and information access and production.

Ethics, Equity and Expectations

This study lends itself to a number of ethical implications, due to the fact of working in the development field and with underserved communities. The basic ethical concern that the research does not harm is fulfilled following the institution guidelines to give all respondents the option to participate in the research and to decide on the level of their involvement freely. These decisions are also informed through a discussion in which the investigator explains the research objectives, the confidentiality and anonymity of the data collected and the protection of the same ones. The discussion also conveys the purpose of research in terms that are comprehensible to the respondent group. This accords with Schutz' postulate of adequacy for maintaining rigour in the methodological process (1967). The researcher is aware that this conventional list of arrangements may not be enough considering the context, underserved communities, and the tools chosen, evolving technology (Traxler, 2012). The commitment of mutual learning postulated in the Participatory Design approach (Béguin, 2003) and the attention to the risk of unconsciously harming due to the difference of culture between the researcher and the communities is always present. Furthermore, the researcher intended to avoid a discussion of sensitive topics during interviews. However, it can be reasonably

expected that such topics could arise during the data collection process. These instances need to be managed through tact and reason to defuse potentially damaging situations.

Concerning equity, the project focuses on ensuring that communities get the maximum possible benefit from the research. The project postulates that most ICT4D projects targeted at the disadvantaged communities fail or do not yield the anticipated outcomes since the projects are not grounded in the realities of local context and the local communities do not participate in all the phases of the projects, from the initial assessment till the final evaluation. This research engaged with the local communities to ensure that they participate in the design of the project. Mutual trust was built during the years to work towards empowering communities traditionally disadvantaged. The main risk that the researcher foresees is the level of expectations raised by her previous role in the same communities (Büscher et al., 2002). Participants may expect the researcher to elaborate on a bigger project for international funders to continue the activities and achieve more results. The researcher should constantly remind all participants about her new role. The participatory process that was followed during the research supports the transparency of the roles and offers opportunities to clarify the raising of expectations.

The Way Forward. Sustainability, Resilience and Evaluation. Aiming at Transformation.

The evaluation of the research activity is intended to take place in a participatory way in order to disclose new challenges and offer new opportunities. The challenges are due to the multitude of stakeholders involved and to the process chosen. The evaluation should consider the quality of the results, the quantitative benefits, and the created product if any. At the same time, the evaluation should be done in the process itself, with a focus on the value attributed to participation. Academics will evaluate the papers, discussions, and final dissertation. The focus will be on the methodology adopted and its contribution to the body of knowledge. The non-governmental organisations will evaluate the contribution towards a better flow of communication between the activists and between the activists and the NGOs themselves. The governmental stakeholders could analyse the impact of their contribution and any possible improvement required. Both the NGOs and the government stakeholders should be aware of the boundaries of their evaluation that usually occurs when their actions are sponsored or supported by other specific organisations. The structure behind will require an evaluation of the specific criteria and interests. The main actors, the community groups, will evaluate the impact of the process on their daily activities and possibly on the long-term period. Sustainability as the capacity of the interventions to continue over time (Lyons et al., 2001) is

a key issue for every project. Concerning ICTD, sustainability has to face the challenge of the constant innovation and evolution of the technologies from one side (Scheurman, 2004). On the other side, the adaptability and appropriation of technologies offer a unique opportunity to any process to adjust and adapt to the emerging needs (Cherry & Bauer, 2004). If “mega-problems” exist (Heeks, 2008), small solutions for specific situated empowerment could be found. A resilient process can emerge (Manzini, 2013a). All the stakeholders should also consider, in the evaluation process, the effects of the intended and non-intended outcomes. Above all in the long term, ICTs innovation can evolve and bring about unexpected changes (Gomez & Pather, 2012).

The researcher aims to see the sustainable process go beyond the scalability (Tongia & Subrahmanian, 2006), configurability (Orlikowski, 1992; Williams et al., 2005) and incrementality of the process itself. The real transformation that a critical process aims to achieve is connected with the change in the balance of power between the different stakeholders. Ethnographic design, sustainable design, participatory design are all transdisciplinary research approaches that go beyond interdisciplinary research and aim to ‘co-produce’ knowledge (and not only co-design). Design for participation will develop meta-products that can generate potentiality more than solutions. For its implementation, technical effectiveness, interaction qualities (friendly and peer-to-peer relations) and context are essential. With a critical stance, the process assumes the connotation of a critique of the status quo and adds the desire to bring about a change, to transform the reality.

PAPER 2**Digital technology for inclusion: a critical discourse analysis of urban poor groups in South Africa**

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Abstract

This paper will explore the meanings and roles of information and communication technology (ICT) for communities in underserved areas, and how these discourses affect the use of available technology artefacts. Since a certain degree of “technological determinism” is still rife in the field of information and communication technology for development (ICT4D), there is a need to operationalise more inclusive, contextual and socially responsive technologies for societal development. It becomes critical in this regard for academics and practitioners to uncover the discourses and concepts that emerge from grounded research when designing, implementing and evaluating projects. Through an empirical case study in Cape Town, South Africa, the authors will explore and discuss some ‘collective implications’ of ICT for poor urban communities. From this study, a series of meanings around ICT was identified from discussions with community groups as performative, survival, modernity and unspoken discourses. From these, specific collective capabilities, possibilities and risks emerged and revealed the relative knowledge about material and motivational accessibility, as well as the knowledge around usage, costs, and skills.

Keywords: Critical discourse analysis, ICT4D, inclusive communities, empowerment.

Introduction: the problem of exclusion

‘South Africa remains a dual economy with one of the highest inequality rates in the world, perpetuating both inequality and exclusion.’ (World Bank, 2018, South Africa Overview). This is mostly observed in rural areas, townships, and informal settlements. Foremost

development issues here include lacking and inaccessible public services (health, education and infrastructure, among other things), 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. 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 conceptualisation, implementation or ownership (Andrade & 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 recognised 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 marginalised 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 the group level.

Our study is guided by the following research question: “What are the discourses associated with ICTs among collective groups in marginalised 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 have crystallised around creating the conditions under which the livelihoods of poor and marginalised 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 digitisation, 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 utilised (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 & 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 & 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 & Meyer 2009): researchers (with their assumptions), beneficiaries of (development) interventions, as well as organisations (public, private, non-governmental, and academic bodies). Critical social theory attempts to lay bare the meanings behind social activities as rooted in the contexts and life worlds of actors. People in disadvantaged positions are not seen as passive recipients of development campaigns, but active agents, able to pursue their goals and act towards effecting beneficial change in their lives (Sen 1999; Samman & Santos 2009). Regarding the freedom to choose and act, critical social theory underscores the importance of contextual forces, observing that “an actor cannot simply exercise complete free will in how she chooses to act” (Ngwenyama & Lee 1997).

This study engages the views and visions of community members in poor urban areas and will explore the discourses around ICTs, its development prospects, and the collective capabilities that seem to converge around technology adoption. Much of the ICT4D literature approaches the technology-for-development question in its dimensions (see Kleine 2013; Zheng & Stahl 1011). Nonetheless, attention to the collective dimension of the technology-for-development enterprise is warranted. A discussion of development in collective terms may capture the complexity of factors that characterise group action (Ibrahim 2006) or patterns of relatedness among members of a community (Foster & Handy 2008). In *Arguments for a Better World* (2008), Foster and Handy observe the importance of social relationships in the development enterprise. They advance the concept of ‘external capabilities’ that refers to development in its collective dimension. Furthermore, ‘collective capabilities’ (Ibrahim 2006) and ‘group capabilities’ (Stewart 2005) refer to capabilities that emerge as a result of being involved and

acting within a social group, e.g. through participating in a self-help group. In this regard, groups can have more empowering or emancipatory impact than individuals. This is especially when they mobilise as lobbies and pressure groups, therefore as a “society engaged in critical public debate” (Habermas 1989b, p.52). In this article, therefore, we will conduct a critical discourse analysis of social groups in poor urban communities, with a focus on the collective dimensions of discourse.

Methodology

The research design for this study follows from the objective to understand how groups in underserved communities determine particular uses and meanings of ICTs, despite limited access to digital technology. By the nature of the investigation and the approach taken, we argue for the significance of immersive, grounded research by emphasising narrative, personal experience, and meaning. This contributes to what South African scholar Krauss (2012) refers to as the emancipation of ICT4D research, through a deeper engagement with complex local issues. Krauss argues that practitioners should seek mutual respect, engage with local leadership, and establish networks of friendships so to become conversational partners in the development pursuit. These aspects invite the practitioner to reconsider how ICT could address the interests of South African underserved communities according to shared local experiences, assumptions, and needs (Van Zyl 2013).

Fieldwork was conducted between February and September 2014 using an inductive, exploratory approach, and the research team employed three data collection methods throughout:

Emergent interviews

Emergent interviews were conducted at the beginning of the fieldwork, to uncover participants’ perspectives on the research topic. Emergent interviews (Glaser 2001) bear similarities to Patton’s (2002:342-343) informal, conversational interviews or Carlson and McCaslin’s (2003) meta-inquiry. This approach relies on “the spontaneous generation of questions in the natural flow of interaction, often as part of ongoing participant observation fieldwork” (Patton 2002:342). Emergent interviews are particularly appropriate for this research, as they are bound to capture participants’ concerns in their perspectives and terminologies. The design of the emergent interviews was based on some initial framing questions in respect of the constitution of the group, its formation, location and main activities. The second round of questions focused

on the main questions of the overarching analysis and explored the use of ICT tools by each of the groups. Interviews had been conducted both individually, in particular with group leaders, and in groups, where the interview sometimes evolved naturally into a focus group.

Focus groups

Focus groups are a particularly useful technique for involving members of marginalised groups due to the natural flow of conversation stimulated when people of similar backgrounds are brought together (Morgan 1997). Focus groups had developed during the emergent interviews when the entire group was represented and helped us understand how the issues investigated manifested in collective settings. Focus groups followed the design based on Morgan and Scannell's (1998) open-ended approach.

Participant observation

Alongside the aforementioned interview methods, we also employed participant observation throughout the fieldwork process: “[critical social theory] researchers believe that, by their very presence, they influence and are influenced by the social and technological systems they are studying” (Ngwenyama & Lee 1997). Participant observation allows researchers to gain a better understanding of the phenomena from the point of view of the participants, in their social context – the emic perspective. In engaging and interacting with others, the researcher is more than an observer and takes part in the social, routine and daily activities of interlocutors to try to construct and uncover the explicit but also tacit aspects of culture (DeWalt 2010).

Data analysis

A thematic framework of discourses was studied through content analysis (Krippendorff 1980). The interviews and focused group discussions had been transcribed, and a number of common topics had been identified. A comparative analysis of these themes helped identify some collective capabilities grounded in the social community context. In-depth interviews with stakeholders working in the same context were utilised to elaborate on some of the themes that emerged from the group discourses and participant observation. The different topics that emerged in the interviews and observations were assimilated under distinct (yet interrelated) categories that formed discursive themes (Braun & Clarke 2006).

Research setting

Two communities in underserved urban areas of Cape Town – Philippi and Khayelitsha – were selected for this study. Both areas had formed part of new ICT initiatives developed by the City of Cape Town, such as Smart Cape Access (City of Cape Town, 2015), aimed at providing free access to basic information and communication technologies in the broader municipal region by equipping every public library with Internet-linked terminals. Both communities were selected based on four previous years of research and engagement activities in the region, and on a survey conducted for a development project presented to the European Union. During this time, the then lead researcher mapped a series of groups active in particularly underserved locations. All interviews took place where community members lived and gathered. The lead researcher typically joined the groups during their weekly meetings. Only in exceptional cases did the group have to meet solely for the purposes of the interview.

The biggest informal settlements in Cape Town are still found in the former Black Local Authority areas such as Philippi, which has 23 informal settlements and an official population of 191 025 people (City of Cape Town Census, 2013b). 56% of the population here lives in informal dwellings, the unemployment rate is 38% and the poverty rate (population living under the poverty line of R1600 Rand per month) is 52%. In Khayelitsha, of 391 749 inhabitants, 54% inhabit informal dwellings; unemployment is 38%, and 49% of the population live under the poverty line (City of Cape Town, 2013a.).

Concerning ICT access in South Africa, official data from the International Telecommunications Union (2012) reveal a mobile penetration of 130,6%. Individual use of the Internet is 41%, with 23,6% of households having access to a personal computer, and 25,5% of households with access to an Internet connection (World Bank, 2014:191).

Participant groups

Research participants were selected based on their involvement in various community initiatives and on their general residency of the communities in question. In the case of the former, participants are often engaged through local contact points and community facilitators, who are sometimes sponsored by local and international Non-Governmental Organisations (NGOs).

The overall study population relevant to this study consists of more than seventy groups of ‘Mamas’ (Xhosa mothers) and thirty Youth groups, between the ages of 16 and 25. The Mamas

gather to discuss and look for solutions to everyday community problems. These particularly concern gender issues related to the elevated rate of violence against women in the region (Dunkle et al. 2004). Some of these groups also gather to discuss and develop local initiatives like soup kitchens and informal crèches. Other groups are also involved with income-generating activities, like creating and selling traditional crafts and beads. Females between the ages of 25 and 55 typically represent the Mamas groups. The majority of these groups live in informal settlements. The youth who participated in this study come from different townships of Philippi and Khayelitsha. For this study, interviews were only conducted with youth that was a minimum of 18 years old. A specific survey on group activities and the constituency was already conducted in August 2011, involving 161 youth belonging to 17 groups.

As this study is an initial step to uncover critical discourses, the lead researcher interviewed six groups of Mamas (49 members in total) and five groups of Youth (25 members in total). To triangulate data emerging from these discussions, researchers interviewed some representatives of NGOs active around the region. The purpose here was to contextualise the information given by the groups concerning their activities in the communities, their continuity in the time, and their affiliations to social networks.

Findings

In what follows, we present the lead findings as they emerged from the field. These are mostly descriptive (regarding literacy, use, challenges and opportunities); discursive findings (regarding meaning and adoption) will be subsequently discussed. Findings are also tabulated for purposes of a general overview.

Mamas Groups

None of the members of any of the Mamas groups owns a computer although the majority of them have basic mobile phones. These are standard feature phones or, in their terms, ‘hello phones’, which allow telephone calls and text messages. Few of them have smartphones; usually the youngest members of the group. At least one member in every group knows how to operate a computer: typically they would have acquired the skills from previous training on computer literacy. However, the Mamas tend to forget what was taught during the training. Furthermore, the members do not exhibit much experience with the Internet, email and online services like electronic banking, including those who formerly attended training.

"We don't have computers. Only one member knows how to operate a PC, but she may have forgotten as she last used a PC when she was working on a project in 2009 for two weeks. The rest of the members do not know how to operate one." (Masimanyane group, Site C, Khayelitsha)

Smartphones are however used to access social media like Facebook and WhatsApp. In a few cases, Mamas use the Internet for researching a particular topic, or for finding personal information.

The youngest members of the groups (25 to 35 years old), in the minority, have a Facebook profile and use WhatsApp on their smartphones. The main reason for using mobile instant messaging was for its cost efficiency. Elder members of the group are generally unaware of the differences in terms of cost between WhatsApp and standard text messages and think that the former is an application for the younger generation, similar to Facebook. Coupled with this, members exhibit limited knowledge of the costs connected with ICT and the Internet. In general, Mamas are ready to invest some of their income in technology but do not have sufficient information about the possibilities to negate these costs (for example, by freely accessing the internet at Smart Cape libraries in the vicinity).

When needing to do research or to print documents for personal or group purposes, members sometimes visit Internet cafes in the area. Here it is possible to pay someone to do the required task (to type, print, copy, and the like): this option is not available at the library. Group members are aware of the costs associated with using Internet cafes. Interestingly, in each group, an 'infomediary' seems to possess the necessary knowledge and skills to accomplish computer or technological basic tasks. Typically, this role is naturally assumed by a technically literate individual and subsequently exploited by the group members. In each group, there is often one person who completed computer training for a job or related purposes. These persons possess the basic knowledge to accomplish required tasks like creating a new text document or typing a CV. This element is not associated with a particular school level or writing literacy. Usually, the computer literate member can type in a comprehensive way but will not be able to use the available instruments on the computer to correct the grammar or structure of the script.

Typically the infomediary is not the leader of the group. Usually, the group leader is an elder Mama who had supported several activities over the years, who knows the surrounding community, and who had lived in the community for a long time. The infomediaries of these groups are usually the youngest members.

In terms of available services in the region, none of the group members has ever utilised the Smart Cape facilities at the library. This is generally because of a lack of knowledge of the project itself and due to misinformation about the project. It is believed that the computers here are only accessible to school pupils. It is also believed that there is a need to provide proof of residence to obtain a library card. Moreover, it is believed that a person should utilise the library of their district, even if it is not the closest one. This results in confusion:

“They send us to Ward 33, they say to us we must go to Lentegeur and request it. Lentegeur is too far for us; we live in Area 4.” (Cebolethu group, Samora Machel)

"I am getting a little confused because they say that they cannot use the one in 34 that library in Philippi because [of] the one in 33..." (Cebolethu group, Samora Machel)

Overall, ICT is not a tangible reality in the lives of Mamas, and they are generally unable to evaluate its benefits, opportunities, disadvantages or risks. There is a common belief that it is something for the youngsters and there is not a full understanding of what is available, how it can be used, and what its implications are. Regarding the latter, none of the Mamas expressed any concerns related to their children's digital social life. The Mamas know or have heard about Facebook but have never experimented with it and are not aware of its associated risks. None of the Mamas expressed any preoccupation about the risks of online searching for school pupils or their own children.

In these groups, a generation gap in the use of ICTs is still observed (see Van Biljon, Renaud & van Dyk 2013). Furthermore, there is little awareness of the physical and personal risks associated with the possession of expensive ICT tools. Only one library user expressed fear connected with the possession of a laptop as it can attract thieves and create insecurity. For this reason, he avoids going to the library with his laptop, despite the possibility to access the free Wi-Fi there:

"We have [a] fear of...I can be robbed because this is a crime situation. [...] most of the time it is a fear effect that you feel that if I have a good thing or a decent gadget, it can be snatched away from my hands. ... I cannot carry the laptop around... There [are] gangster[s] in our communities." (Library user, Harare, Khayelitsha)

None of the Mamas expressed any concern over the increased risks of crime or aggression that youth may face due to the new smartphones they possess. The Mamas also seem unaware of the costs that being connected entail. Possessing a smartphone and using it for social activities

or school research implies costs that the youth are ready to afford, no matter how. The Mamas are not worried about how their children find money for airtime or what they are ready to do to be online.

Ultimately, when asked about the needs of their group, Mamas do not associate this in any way with technology or technological opportunity.

"They would like to have aftercare because there [are a] lot of children here that come from school and their parents are maybe still at work so they got that fear that children can get raped. [...] To add on that, the aftercare, they would like to have the home-based care because there are community members that are infected by HIV and other diseases and they have no one to take care of them [...], and they would like to have training on the home-based care." (Masakubuswe group, Philippi)

However, if this is questioned directly, for example in connection with the possibility to attend computer literacy training, the Mamas perceive a need for the youth to have more technologies available as an opportunity for their future, in particular, to access employment opportunities and to keep them occupied:

"She would like to have some training for the youth so that they can stay away from the shebeen (a local bar in the townships) and other troubles [...], just to keep them busy." (Cebolethu group, Samora Machel)

While discussing the possibilities that ICTs can offer to them, they reacted positively and suggested a possible use for themselves:

"She is asking now why can't you now install computers at Sizakuyenza [a local NPO] so that they can use it as groups. So that Monday mama Nomthu group go and Tuesday mama Doris group like Sibongile and Manayeko that is what they would like to have the computers in Sizakuyenza maybe." (Sosebenza group, Philippi).

Youth groups

Youth groups gather for different purposes than the Mamas, who generally assemble to discuss community matters. The five groups interviewed have rather been created for artistic or sportive purposes. This includes practising dance routines, writing poems and songs, or playing soccer or netball. Some activities involve the use of specific ICTs. In particular, one group utilises computers to create and digitise Hip-hop songs written by the members; another utilises

digital audio equipment to record their traditional marimba performances on CDs, while another group collects technical equipment to create a community radio station in Samora Machel (a settlement in Philippi). Usually, only one member of each group has specific knowledge and skills necessary to pursue technological tasks, thus assuming an ‘infomediary’ role. In general, the infomediary is a man and tends to assume the role of the group leader.

When group members are asked about their use of mobile phones or personal computers, they do not particularly engage in the conversation. Our impression is that for some members, the need for and use of the Internet are obvious (or axiomatic) regarding staying in contact, communicating, sharing information, and doing research. Youths that have more to say about the subject do not generally possess mobile phones or computers. Despite the penetration of mobile and smartphones here, members rely on group leaders to access information for the group (thus, another type of infomediary is demonstrated).

"...like we have managers, like Phumzile, tell us. [...] he has all the information." (LOF group, The League, Philippi)

The use of the phone is typically for personal purposes. The majority of Youth members use social media, but when the group needs access to the web to inform other groups about an activity or simply to share information, one person is assigned the responsibility. This kind of activity is perceived as complex and skills demand. The more skilled members discuss the ease of learning how to operate a computer:

"I just learnt from my brother [...] he used to sit on the computer and do some stuff. I was watching him each and every time telling myself ‘I will do this’. [...] One day he was not there. I sat on the computer and started from there." (Heads & Raps group, Philippi)

“We are fast learners. Press there, press there...” (Heads & Raps group, Philippi)

Usually, even the infomediary has limited knowledge about the possibilities and risks associated with the use of digital technology. In general, none of the youths expressed any concerns related to the use of ICTs, even among those who expressed their choice not to be constantly connected. In such conversations regarding the use and challenges of ICTs, youth members tend to view the use of technology as a natural, self-evident part of their lives, without questioning the tools utilised, the cost implications or the risks associated with the possible inappropriate use of the web.

The findings above are summarised in Table 5.2.

Table 5.2: Summary of the main findings.

Group	Access and Literacy	Use and Adoption	Challenges and Risks
<i>Mamas</i>	<p>No PC ownership and low computer literacy.</p> <p>High mobile penetration ('hello phones'), low smartphone use.</p> <p>The person with some ICT literacy assumes the role of infomediary naturally and without becoming the group leader.</p>	<p>Phones and smartphones are used for social and personal purposes, not for work purposes.</p> <p>Internet cafes are used for personal and professional purposes (printing, copying, etc.).</p>	<p>Sparse knowledge about costs and opportunities.</p> <p>Limited knowledge and misinformation of available City projects and services.</p> <p>Little or no awareness of risks associated with the cost of being connected, having expensive personal artefacts, and accessing social media and online services.</p>
<i>Youth</i>	<p>Not all members possess the required computer skills (one member typically assumes the role of infomediary).</p> <p>Group members rely on leaders or infomediaries to accomplish technical tasks.</p> <p>The majority of the infomediaries are male, and they tend to assume the role of group leaders.</p>	<p>Utilise ICTs for specific (creative, sportive) purposes. The importance of the internet is deemed self-evident for engaging socially.</p> <p>Smartphones are used for personal purposes and are not regarded as a potential resource for income generating activities, or to support the group.</p>	<p>None of the youths expressed any concerns related to the use of ICTs, even among those who expressed their choice not to be constantly connected.</p> <p>The value of ICT is considered self-evident, without much consideration for its risks.</p>

Discussion

In this study, we employ critical social theory in general and critical discourse analysis in particular to explore the themes and concepts connected to our empirical findings. A single theoretical lens may not be entirely adequate in interpreting and grounding findings that have thus far emerged. Rather, the existing literature in ICT4D and studies from other traditions in critical theory and beyond can help to contextualise the findings and unpack their implications

for ICT4D. Ultimately, in the analysis of our interviews and observations, we identified four sets of discourse as evident in the responses from participants: performative, survival, modernity and unspoken discourse. In what follows, we will discuss each of these as distinct but interrelated discourses.

Performative Discourse

Youth groups mobilise around arts or sport and can seemingly be viewed as types of creative communities with performative purposes. In this regard, it does appear that ICT is used in some instances as a performative tool (e.g. making music or establishing a community radio station). This is different (but interrelated) to using ICT as a purely instrumental tool (e.g. to print, copy, type, gather information) or even as a purely social tool (e.g. to communicate and socialise with friends).

Much of such a performative discourse, especially in its collective sense, relates to the historical concept of ‘community media’ (Berrigan 1979) in which groups utilise combinations of old and new media for political, creative and cultural purposes. In Jankowski et al.’s (2005) examination of community communication and digital community networks, individual characteristics, community structure, communication landscape and digital community networks interrelate to contribute to the development of the communities in which they are based. Within this context (Mudhai 2011), the creative use of analogue community-based radio in an under-served urban context is perceived as being more accessible and as having more value for residents.

“Most people won’t understand online or Internet radio so I think we consider the physical one. [...] we didn’t even consider, we didn’t even go to that option because we know people won’t be able to listen to that radio because the main purpose and the main important part is our listenership than us. We can broadcast, we can present, but if what we deliver to the people is not worth it, we won’t get that listenership we are looking for to get us outside there. So we have to deliver what’s the best for the community and ask the best for our listeners if listeners have to receive concrete and worthy something from the radio station.” (Tsoga group, Samora Machel).

In the same way, the radio-disseminated organisation of weekly events to perform new songs or poems is perceived as the best means to convey creative arts to the community. Radio is regarded as a pervasive and flexible medium.

The groups that gather for musical purposes have similar intentions. They want to convey messages to a broader audience through their art (Burgess, Foth & Klæbe 2006). ICTs can now offer several opportunities to record music and distribute it to a wider audience.

In the analysis of performative discourse, another key element that emerges is the role assumed by local infomediaries, often the leaders of the Youth groups. They are usually responsible for information access and dissemination because of their acquired digital skills. This role of information mediation is generally informal (see Gould & Gomez 2011), not performed by librarians or technical professionals. Infomediary skills are usually specifically connected with the activities of their groups, and they demonstrate limited competencies of other technical domains.

Survival discourse

The Mamas groups do not seem to (want or need to) embrace ICT due to a combination of lacking information, possible fear/misunderstanding, its non-presence, or because of other, more important priorities. The question of whether technology is useful or empowering is irrelevant, or moot, as technology is not a real-life, present phenomenon. There are other, more important tools and resources to worry about that relate more to dealing with poverty and survival. This fact usually surfaced at the beginning of the focus groups, when members introduced themselves and discussed their daily activities, and at the end of discussions, when members express their wishes and desires for the improvement of living conditions both personally and for the group.

It may, therefore, appear as if ICT and its ‘inherent opportunities’ are not axiomatic as in the case of Youth groups: for Mamas, economic and physical survival is deemed more important than social survival, and this is evidenced in their non-use and relative non-interest. From this we can induce a survivalist discourse, framing the issue of technological engagement as irrelevant in the context of instability, economic and otherwise. In the broader ICT4D literature, a number of reasons behind such non-use or non-motivation have been advanced. These do support some of the elements that emerged from our interviews with Mamas: a lack of confidence in the ability of technologies to meet collective needs (Selwyn 2003); limited relevance of new technologies in day-to-day, routine activities (Vannini, Rega & Cantoni 2013); the role played by material resources and economic capacity (high costs and specifications) (Sambasivan et al. 2015); and a range of cognitive and affective factors that determine individuals’ engagement with technology (Sabiescu et al. 2013).

Another theory which can support the reason why Mamas do not diverge from basic technologies (for example the sustained use of ‘hello phones’), is the role played by infomediaries. As in the case of Youth groups, we observe a recognised infomediary (internal expert) who assumes this role inherently because s/he has (or is perceived to have) the necessary skills. S/he is naturally socialised into this role. In the case of the Mamas group, s/he is not usually the leader because the reasons behind the group’s existence are not connected with a particular need to use ICTs. The internal infomediary is ultimately trusted more than an external person: “The poor tend to believe people they trust rather than perhaps more informed contacts with which they do not have close ties” (Gould & Gomez 2011:24). This is the case even when the internal infomediary has extremely basic skills.

In light of these perspectives, and despite useful depictions concerning ‘core’, ‘peripheral’ and ‘excluded’ users (Murdock 2002), the understanding of people or groups who make little or even non-use of digital technologies is relative and situated (Selwyn 2006; Verdegem & Verhoest 2009). Moreover, following Orlikowski (1992:411), “human agency is always needed to use technology, and this implies the possibility of ‘choosing to act otherwise’” (Orlikowski 1992). In light of CDA as an analytical framework, we add to this relative and agentic dimension by shifting focus from the individual to the inclusion of the group, to ground the ‘circumstances of collective non-use’ as evidenced by the Mamas discourses.

Modernity discourse

The Youth is identified by the Mamas as the main user or beneficiary of techno-artifacts and is in a way thought of as ‘the savvy other’. In this way, the Mamas themselves reinforce the generational disconnect between them and the Youth. The Mamas seem to relegate themselves to the ‘digital immigrants’ notion of Prensky (2001) with their use of technology limited to the basic mobile phone. Concerning the youth, they are relegated – not always of their own accord – to the modernist ‘digital native’ category. However, this is in itself a fallacious and idealistic notion and is not representative of the actual and heterogeneous groups of Khayelitsha and Philippi, where youths barely grew up with digital technology. Youth groups are better represented by the idea of ‘digital strangers’ (Brown & Czerniewicz 2010) in which users lack experience in the use and opportunities to access ICTs, but not interest, ability and enthusiasm.

Despite the social disadvantages because of limited access to ICT (Helsper 2008), the majority of Youth groups do access the Internet fervently and for multitudinous social activities, as already observed (Kreutzer 2009). The presence of technology, and the Internet specifically, is

here acknowledged to be self-evident, despite the lack of access and limited computer literacy. Moreover, these specific groups utilise ICTs for creative, performative and community communication purposes. For the majority of the members ultimately, the use of the (mobile) Internet for self-expression becomes of more value than any instrumental purpose (see Donner & Gitau 2009). This ascribes to a discourse in which digital technology “wields more power as a symbol of modernity, progress, and cultural ambition than any utilitarian value” (Van Zyl 2013:8).

Unspoken discourse

Mamas and Youth group members share a general belief around the opportunities offered and created by ICTs. The Mamas wish that local youths should have increased access to technology so to exploit more and better opportunities. For Youth members, ICT is an everyday, routine and self-evident phenomenon, despite not always being accessible.

Government rhetoric (Thompson 2004; Western Cape Government 2014) builds on these perceptions and is quick to promote the ‘remarkable opportunities’ that ICTs will generate for underserved communities (Oyedemi 2009). There is little substantive awareness of the risks and idealistic framings of ICT, including the increased risk of assault and violence, the ‘empty promises’ of technology for development (Van Zyl, 2013), and the more latent challenges of material and sexual favors due to the necessity for youths to obtain smartphones and to be online (in particular, as experienced by females – see Bosch 2008).

These types of discourses are rarely explicitly mentioned by any of the groups. We can therefore only speculate as to their eventual significance in the broader ICT4D discourse, to be unpacked in future analyses. The Mamas might sincerely be unaware of the associated risks of ICT or might also be conscious and rationally decide not to talk about it for fear of being perceived as ignorant or backwards (see Bladergroen et al. 2012). Alternatively, they choose to focus on the benefits that ICTs can bring instead of worrying about the risks. In the case of the Youth, the modernity discourse seems to justify the need to be connected and to be ready to pay the price for it.

Concluding thoughts

Groups in this study have a ‘social technology’ capacity to collect and exchange information, to communicate, to learn, and to lobby and advocate for their rights. For ICT to support the achievement of such aims, the collective meaning-making of technology and its social

engagement become critical considerations for the theory and practice of ICT4D. From the interviews and focus groups, it emerges that ICTs are predominantly used for personal aims and in some cases for collective benefit, as in the performative discourse examples. The limited uses of technology can be partially attributed to the lack of skills and the lack of knowledge about existing opportunities. This is confirmed by the groups' sparse knowledge of city projects (Smart Cape, Wi-Fi), and the limited information about the costs of online services, and the risks connected with digital social activities.

Future projects oriented towards the social inclusion of poor urban communities in the technological landscape should consider the discourses above and in particular, support the role of infomediaries. The particular and critical attention to issues of use, adoption, meaning and social appropriation (Gurstein 2007) might support the thinking about a way forward for development, emancipation and inclusion of communities through ICTs. ICT4D practitioners should not nourish expectations around easy and idealistic solutions and consider the personal and collective relations and values that are expressed in groups.

Ultimately, considering the question of operationalising more inclusive, participatory and collective approaches to ICT4D, it becomes critical to uncovering ways in which people can participate – therefore, designing projects for participation. During the initial phase described in this article, we attempted to uncover some of the foremost (and unspoken) discourses around ICT engagement to allow for the steady emergence of narrative and meaning. The contribution for practice here concerns empirical observations that can deepen our understanding of designing interventions and operationalising approaches that are more inclusive. Our future research will explore the value and role of such narratives in the mutual and inclusive design of technology for development.

Acknowledgements

This paper is a revised version of a paper presented at the IDIA conference 2014: Lorini, M. R., van Zyl, I., & Chigona, W. ICTs for Inclusive Communities: A Critical Discourse Analysis.

This research was supported by a grant from the South Africa National Research Foundation – the Competitive Programme for Rated Researchers (CPRR).

PAPER 3**Collective Digital Storytelling in Community-based Co-design Projects. An Emergent Approach**

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Abstract

This paper contributes a critical examination of the role that digital storytelling (DST) can play in co-design initiatives involving local underserved communities. We argue that DST brings value as a method for bridging initial, exploratory phases and co-design processes. The paper draws on three case studies of collective DST in two townships of Cape Town, South Africa. The research adopted a participatory ethnographic approach to involve groups socially active in their respective communities. DST was employed initially as a means to enable groups to present themselves and their communities and to deepen the ongoing process of data generation. During the creative processes, the activities evolved and crystallised into something more than a short video production: self-contained and community-driven projects, generation of new ideas and the development of new collaboration pathways and new digital networking capabilities. Through the analysis of these case studies, the article advances considerations that can be used by researchers looking to spur grassroots initiative and encourage local participation and engagement in community-based co-design. In particular, we offer a series of design principles, proposed as sensitising concepts that can inspire and guide researchers and designers, or local communities, to engage in DST activities within community co-design projects.

Keywords: Collective digital storytelling; emergent design; community technology design; participatory design

1. Introduction

The participatory design and co-design literature acknowledge the issues posed by community engagement in design, in particular in the case of rural, disadvantaged, or socially and informationally isolated and marginalised communities (Sabiescu et al., 2014; David et al.

2013). Issues include wider knowledge gaps between external teams of researchers and designers and local communities; tensions between different epistemologies and meaning-making systems (Sabiescu & Memarovic, 2013); members' low perceived self-efficacy in their own capacity to make meaningful contributions; difficulty of reaching communal consensus on the role and features of artefacts to be developed; the lack of effectiveness of established co-design methodologies (Winschiers, 2006); and the time required to work through new, community-grounded design methods that can spur participation and meaningful contribution. In this article, we argue that some of these challenges can be met by involving local communities in activities that provide occasions to engage analytically, critically, reflectively and creatively with their environments, livelihoods and knowledge. In particular, we examine the possibilities offered by digital storytelling (DST) as an activity that can bridge initial, exploratory phases, and possible future design activities in community-based co-creative projects. DST presents the potential to engage participants in an exploration of their environment (Sabiescu 2013; Sabiescu et al., 2013) and their personal stories – often disclosed thanks to the sense of protection offered by the distancing mechanism of the digital device (Clarke et al. 2013). It enables participants to elicit meaning from experience and enhance their capacity for interpretation of their life and socio-cultural context (Klaebe and Foth, 2006; Copeland, 2012). For its capacity to be used as a tool for inclusiveness and to accommodate a variety of local voices (Copeland, 2012), DST is particularly rewarding when employed in underserved, disadvantaged and informationally isolated communities. For this type of communities, the benefits of DST are recognised, potentially allowing their members to voice their views and take effect in achieving social change, or wider social and political participation (Tacchi 2009).

In this paper, we propose that these qualities of DST can be exploited to employ it as a tool for facilitating the involvement of local communities in the co-design of digital artefacts and technologies. In particular, we draw attention to the importance of the DST method used for community involvement. The methods used can affect the dynamics generated during story creation activities, the types of stories that are told, and eventually the impacts on participants. Several methods, such as the one developed by the Centre for Digital Storytelling (Lambert, 2012) achieved recognition and were used and adapted in numerous other contexts. In this paper, we take a different approach, characterised by *emergence*, referring to the process by which the design of the creative activities is shaped in the interaction between the field researchers, designers and local participants, guided by events, decisions and participants'

constant inputs. In this perspective, the DST method is not pre-defined but grows organically during the creative process, leading to context-specific ways of engagement, processes and activities. We argue that this emergent approach contributes to opening up local interest, involvement and creative input in the frame of technology design interventions, and thus can lead to more engaged collective participation in subsequent co-design activities.

The paper draws on a more extensive research project run by the University Name in South Africa, which examined the role of digital technologies in supporting collective agency and empowerment in underserved communities. The project included an initial exploratory phase that looked at local mechanisms for empowerment and collective action and patterns in technology use at individual and group level. In the second phase, local stakeholders were involved in the co-design of digital artefacts that could capitalise upon and reinforce already existing mechanisms for collective empowerment and collective action identified during the initial phase. Collective DST was used as a bridge between the two phases: the initial phase focused on an exploration through qualitative and ethnographic methods, and the subsequent co-design activities, which unfolded thanks to the intermediate DST creative activities. Three DST initiatives were run, involving several groups located in two townships of Cape Town, South Africa. In this paper, we examine the collective DST processes in the three cases and their role in the design continuum, in answer to the question:

To what extent and how can DST contribute to stimulating and building capacity for purposeful community participation in co-design initiatives?

Our main interest in investigating the cases in answer to this question is methodological: we intend to shed light on how the approach and method used in DST with communities is conducive to enhanced community participation. Thus, the main contribution this paper brings to scholarship is in outlining an approach to using DST in community-based design, characterised by emergence: an amethodical approach guided by participants' inputs, where events and decisions unfold and drive the process. Despite its unplanned nature, some characteristics of this approach emerge from the cases showing a way of collaborating supportive of engaged participation. In particular, the analysis of three cases in which DST has been used as a co-creative activity, highlight how DST can strengthen collective sensemaking, support the generation of new ideas, foster group networking, and how it stimulates empowered participation and contribution in the design process. Our analysis identified a series of flexible, broad-based elements that can guide researchers, designers and communities seeking to put in

practice DST activities. We propose these as design principles, positioned at a higher level of abstraction than design guidelines, which are meant to orient rather than guide design processes, and draw the attention of the designer to the possibilities opened and the constraints posed by adopting a certain frame or approach (Hornecker et al., 2007; Sharp et al., 2007). These principles can help researchers working with technology in place-based community settings to facilitate bottom-up “grassroots” ideas and design that fosters trust and engagement within the collaborating team.

2. Related work

2.1. Enhancing participation in underserved communities: From design methods and workflows to emergence and co-creation

Community participation in design has received a great deal of scholarship attention, especially when framed by community development agendas. Local participation is seen as an essential condition for successful community-based interventions (Wyche, 2015; Sabiescu et al., 2014; Winschiers-Theophilus et al., 2010; Rodil et al., 2012) and positively associated with a range of other impacts such as greater sense of local ownership (Rey-Moreno et al., 2015a) and acceptability of externally initiated programmes (Rey-Moreno et al., 2015b). The idea of participation, however, hides a multitude of forms, scales and degrees of involvement (see for instance the scales developed by Arnstein, 1969; Kanji and Greenwood, 2001). More recent approaches hold it that rather than striving to improve engagement methods, it is important to create the space and conditions for participation forms and modalities to emerge and be co-created on the field with communities, emulating local ways of thinking and traditional patterns of decision-making and communication (Sabiescu et al., 2014; Winschiers-Theophilus et al., 2010).

This drives attention to the early stages of the design continuum when community priorities and design problems are identified, and potential technology uses are examined or configured. Challenges at this stage are associated with the difficulty in establishing dialogue and rapport with design teams, due to knowledge gaps and different vocabularies (Sabiescu & Memarovic, 2013), the issues posed during the identification of collective matters and priorities, and the challenges associated with reaching collective agreement and community consensus over decisions taken (Sabiescu, 2013). The body of research focused on identifying and overcoming barriers to local participation in design draws on different traditions. Baskerville and Myers (2015) suggest the design ethnography approach: the ethnographer, while working to

understand the local context, acts as well as a designer who gets engaged with the reality and introduces concepts and sometimes artefacts to stimulate interest and foster knowledge exchanges with participants. Reflective design is another critical tradition, which argues that some of the barriers to effective design are to be found in researchers' deeply held assumptions and predetermined ideas and conceptions. By supporting researchers to reflect on their assumptions, observe their actions, and make meaning out of their experiences, some of these assumptions can be revealed and articulated, leading to more transparent and equalitarian processes (Sengers et al., 2005).

An examination of the literature reveals that these approaches are usually applied in creative ways, seeking to maximise relevance for a local context (e.g. Crabtree et al., 2003; Graham et al., 2007). Moreover, as argued earlier in this section, the critical point may not lie in the configuration of the right design tools and methods, but rather in devising ways of engaging communities in the formulation of their methods for informed participation in design (Sabiescu et al., 2014; Winschiers-Theophilus et al., 2010). This approach moves the focus in participatory design from methods and tools to catering for the enabling conditions. This suggests an open, emergent process, which privileges community agency in a way that can not be afforded by pre-defined methods of engagement.

These frameworks and approaches resonate with the amethodical approach described by Truex and colleagues (2000) for information systems design. An amethodical design approach resides on “an open set of attributes” which, though potentially rejecting structure, “does not imply anarchy or chaos” (Truex et al., 2000, p.54). When applied to information systems design, amethodical approaches refer to “management and orchestration of systems development without a predefined sequence, control, rationality, or claims to universality. An amethodical development activity is so unique and unpredictable for each information systems requirement that even the criteria of contingent development methods are irrelevant.” (Ibid.).

In this paper, we carry further this line of thought and examine how the principles of emergence and amethodical approaches to design resonate with DST initiatives that do not employ predefined methods but are configured locally, through the agency of community members. The situated case studies will show how this approach allows creative processes to unfold in directions that are not pre-determined and opens space for different perspectives and understandings to be clarified (Truex et al., 2000). Openness, appropriateness, flexibility and

situatedness will be shown to be central to the stimulation of local participation, while not being in contrast with the important attributes of legitimacy, rationality and efficacy (Ciborra, 1996).

2.2. Digital storytelling as creative practice and data generation methodology

DST is a form of creative practice that makes use of digital media for telling or authoring stories. Recent studies experimented with the use of DST as a research method, leveraging its potential to engage participants in an in-depth exploration of their experiences that can eventually lead to the elicitation of rich data sets (Sabiescu et al., 2013). In this paper, we argue that the potential of DST for community engagement in design draws on its dual status, as both a form of creative practice and a method for data generation, as it will be elicited in session five concerning the ways the groups operate as a collectivity and in particular in the creation phases.

DST as creative practice has been studied in a variety of contexts, ranging from education (Yuksel et al. 2011), gender (Simsek 2012), health (Gubrium et al. 2014), and co-creative media (Spurgeon et al. 2009), to social history (Klaebe et al. 2007) and therapy group work (Clarke et al. 2013). Studies examining the benefits of DST as creative practice indicate that it contributes to generating knowledge framed by local perspectives (Gubrium, 2009), enhances participants' capacity for interpretation of their life and socio-cultural context (Klaebe and Foth, 2006; Copeland, 2012), can serve to develop new perspectives for looking at participants' own environment (Miskelly et al., 2005), and can allow the articulation and representation of local identity and culture especially in the context of marginalised or minority groups (Williams et al., 2003) or by groups with limited or no media literacy (Nutt and Schwartz, 2008).

As different from DST as a creative practice, DST as a research methodology is designed as a primary source of data relevant for research purposes. The core area investigated becomes, therefore, the key subject around which participants will craft their stories. Data can be retrieved from (1) the analysis of the digital stories produced by participants in a study, (2) by analysing the process of producing the stories and the input provided by participants at each stage (Gubrium, 2009), and (3) by using the digital stories as a stimulation for further discussion and reflection when visualised in group. In addition, DST-based data collection can be complemented by other data collection instruments, such as ethnographic observation, in-depth interviews and focus groups.

Recent studies indicate that DST can be used as an effective tool to elicit a holistic understanding of participants' perception of everyday life topics such as health (Gubrium, 2009), allows the articulation of collective concerns and issues by communities (Gubrium & Scott, 2010), and affords an in-depth investigation of participants' lives in sensitive contexts, such as those around immigrant groups (Brushwood Rose & Granger, n.d.), or such as those of groups living in underserved communities where the legacy of the historical background is still at the base of social inequalities, like in the cases presented.

In this paper, we draw upon a joint perspective, which sees DST as both creative practice and data generation method. We focus on collective DST, involving the authoring of one creative story by a group of people who worked together for more than a month to decide what to do, how to collaborate, to establish the main message to deliver, and to revise their work. Collective (also termed collaborative, or cooperative) DST has been used in the past particularly in educational settings, where whole classes of children created digital narratives (e.g. Di Blas et al., 2012). However, collective DST is currently under-explored in the literature, in particular in underrepresented and underserved communities (McWilliam, 2009). Our approach to instantiating collective DST privileges emergence and community agency, in the spirit of the amethodical systems development approach described by Truex and colleagues (2000). It also draws on this double-edged approach, which sees DST as a creative activity, and a means of generating research data. In the cases presented, DST was used as a data generation method in addition to interviews and focus groups. During the phases of DST creations, the research focus was on the process, rather than the product, therefore directing the attention to the structure and flow of activities, ways of engagement and collaboration, use of different tools and techniques and participants' response to these. The field researcher was a participant observant throughout DST activities and took detailed field notes, which were later analysed.

3. Context

This paper drew on a larger study conducted by the University Name and titled Project Name. The project aimed to examine the technological encounters and experiences of people living in underserved urban settlements, and involve them in the co-design of novel technologies that could leverage and strengthen collective capabilities and empowerment.



Figure 5.1 - Overall research context and setting.

The first phase of the project was an exploratory phase where interviews and focus groups were conducted in several communities around Cape Town, mainly in two of the biggest townships of South Africa: Philippi and Khayelitsha (Figure 5.1). Both of them are part of the former Black Local Authority areas, and more than 90% of the population is still Black Africans. The townships are designated areas of the city where a number of informal settlements exist and are growing, and where communities face a shortage of basic amenities and services: sewage, electricity, roads, and clean water (Jaglin, 2008). Half of the population, which is more than half a million people between Philippi and Khayelitsha, lives under the poverty line (City of Cape Town, 2013a & 2013b).

The participants in this research are groups of women, the majority in the range age of 25 to 60, mainly Xhosa mothers - Mamas, as everybody refers to them colloquially, and groups of Youth, between 18 and 25 years old. The study and fieldwork were conducted by a researcher with extensive experience as a project manager coordinating a series of activities for the mobilisation around HIV-AIDS (prevention, treatments and stigma), the protection of women victims of violence, and counselling on alcohol and drugs. Her knowledge and connections allowed the researcher to participate in some of the daily activities of the groups and to verify the possibilities to develop some projects without providing any incentive or remuneration for the participants.

Six groups of Mamas and five groups of Youth took part in the exploratory phase through interviews and focus groups. During this phase, the majority of the groups showed a limited knowledge and scarce skills and interest in Information and Communication Technologies - ICTs (Lorini et al., 2014). Some of the groups, however, expressed a specific interest and

capabilities in the use of technologies required to reach a specific aim. Two Youth groups emphasised the possibilities that technologies could offer them to showcase their artistic products while another group hypothesised the use of modern communication media to find funds to support the ongoing activities. Each of those groups decided to engage in a DST experience and discuss further possibilities to develop community projects. Following these leads, the researcher proposed the creation of a DST also to a group of Mamas in order to support a deeper presentation of their group's activities and as a trial for the use of creative ICTs.

4. Case studies

In this section, we will introduce three DST case studies, involving overall six of the groups previously interviewed in the project exploration phase. The first DST had been created by a community radio station group, the second one by a hip-hop group jointly with a group of poets and a marimba group, and the third one by two groups of Mamas active against gender-based violence. In each case, the DST process was documented by the field researcher, using participant observation, informal talking and taking detailed field notes. For each case study, we will describe the group or groups involved, the overall DST process, and its outcome. A summary of findings will be presented at the end.

4.1. The community radio station – A documentary

One of the Youth groups active in Samora Machel, one neglected and overcrowded area of the township of Philippi, during the years, became stronger and more organised and created a community radio station. Their main concern was to address the local need to have community radio stations, knowing their limited presence in Cape Town (Olorunnisola, 2002). The station is based in the community centre of the area (Figure 5.2). The youth group works on a voluntary base to offer what they consider a needed service in their community: to inform, to educate and to motivate people. The name of the radio station is "Iqhayiya", in Xhosa. It means "Pride and Joy": the radio station has been created to highlight the importance of the local culture and to add an element of positivity in the community.

The majority of the youth involved is unemployed and only active in the community radio station. The journalists use their phones for information search: simple smartphones where they can access the news in English and translate them in Xhosa, the language spoken by 90% of the population of Philippi and the surrounding townships.



Figure 5.2 - Community radio station setting.

At the beginning of 2014, the field researcher met the representatives of this youth group and conducted a focus group. The interaction revealed their desire to create a community radio station for Samora Machel operating from the community centre. In a second step, after the installation of a rudimentary radio station in July 2014, one of the founders contacted the field researcher to discuss opportunities for collaboration, in particular on how to introduce themselves and their project to any possible funder. Having already written some letters and a brief history of their venture, they evaluated the possibility to utilise pictures and an engaging media format to show their early achievements, and plans for expansion, to potential funders and supporters. This marked the beginning of the DST process, elaborated in October 2014.

The DST Process

Once the group decided to create a fundraising video for the radio station project, the researcher acted as a facilitator during a series of meetings and workshops at the community centre to allow the concepts they wanted to express to emerge and start the design of a coherent and meaningful story. Initially, only the aim of the video was clear and shared among the participants. As a first step to draw the storyline, members were requested to express and write their main desires and ideas about the radio station, independently from the role played at the radio station as director, technician, journalist or funder. The second step consisted of evaluation and prioritisation of features and messages to be conveyed, aiming to reach group consensus on a series of key messages to put forth in the digital story. The key features which met consensus included a presentation of the radio station listeners, the community, their area of residence and base of the radio station, and the main reason of existence of the project itself (i.e. the clear perception of the necessity of the service they are offering).

To show the importance of the listeners, not seen as buyers of a product but more like inspiration and motivation, the group decided to interview some elderly members of the community and some younger ones, both representative of their supporters and target audiences of specific programs. The group members asked the researcher to be present during the interviews to show the transparency of the process and to prove the impact of their project after only a few months of being on-air: the community as a whole was supporting the radio station. Further, in the process of gathering content for the video, the youth decided to include a snapshot of the community. The researcher was also asked to participate in a community tour to take pictures and videos.

The following steps of the video composition took place with the main founders of the radio station. One of the members was collecting the interviews to try to elaborate them on her laptop while another member was collecting images on a tablet. While selecting, they requested to compare their videos with the ones taken by the researcher at the same time and expressed a preference for using the material shot by the researcher. To define the flow of the story, the whole group was involved in evaluating the interviews taken. Agreement was reached that rather than narrating their community radio station story and aims in their own words, they would instead feature the interviewees who expressed the role of the community radio station from their points of view.

While watching the videos of the interviews to select the sections to use for the DST, the group felt rewarded by the results and became even more conscious about the impact of the radio station programmes, as they were explained by their listeners. The members decided to use the shoots recorded inside the radio station to showcase their daily activities and introduce the people who work there as opening and closure of the video. The researcher gave to the designated person, a girl working as a technician at the radio and who was studying computer science, all the videos that needed to be edited on the base of the collective decisions taken regarding the flow of the story. Because the group chose to use videos with audio incorporated and not photos, the technician admitted that the editing process resulted in being quite fast.

DST Outcome

The result of the DST activities is a documentary that introduces the community where the radio station is located, the founders and creators of the project, the different categories of listeners, the different meanings the project has for the community and their vision for the future. The group would have liked to utilise the video as a presentation tool for possible

partners and funders of the radio station. The creation of the DST generated further interest in the possibility to develop another co-design project, which could increase the visibility of the radio station and its outreach. The follow-up activities, with the creation of a website for the radio station with the possibility to broadcast live or on streaming and to use a mobile application for outside broadcasting, took place during 2015. The DST final product became of secondary importance; the DST process, on the other hand, fostered the generation of new ideas and allowed the sourcing of useful data on the radio station organisers. The DST process pushed the radio station team to work collectively successfully and to interact directly with the listeners and the community, also using images and videos; this created a keen interest in incorporating different communication media with the work of the analogic radio station.

4.2. Hip Hop, marimba and poetry - More than a music video

Another Youth group who showed a specific interest in the creation of digital stories is Street Revolution. All the members live in Philippi and have been knowing each other for years. In 2014, they were between 16 and 25 years old. The founders of the group are the stable members, but wider, even temporary participation is encouraged. As many youth groups, they gather to develop their passions, in their case, hip-hop music. During the years, this group, together with others present in the area, collaborated with some non-governmental organisations (NGOs) to receive some support for their artistic activities and also to create cohesion and prevention on social issues (HIV-AIDS, violence, drugs) spreading inspiring messages through art. The activities turned around peer-to-peer education with an edutainment (education through entertainment) approach.

At the beginning of 2014, group members participated in the exploratory phase of the research project via interviews and focus-groups, letting emerge potential uses of ICTs for groups passionate about music and concerned with their communities. The researchers kept contact with them developing a discussion about the possibilities for the local artists to develop their potential and eventually to find opportunities in their field of interest. The initial idea was to produce a CD and raise funds through it. Considering the costs of recording and the limited availability of recording studios in the community of residence, the hip-hop group and the main researcher decided to create a video of their performance to showcase their art to some producers as well as to places where they could perform live. The day the researcher went to the community to develop the idea, towards the end of 2014, other youths were present: there was a group of marimba performers (marimba is one of the traditional South African

instruments) which already participated in the exploratory phase of the research, and a representative of a group of poets of the neighbouring community, Nyanga.

The DST Process

The hip-hop group explained that they invited the other groups to perform together and showcase a representation of the collaboration between different groups, in particular, a traditional group of musicians and a modern group of hip-hop artists supported by a poet who could add more value to the message they wanted to deliver. None of the participants, included the leading group, had a clear idea about the story flow. They wanted to perform, possibly all together improvising, and see how the video of the collaboration was looking like as a presentation of their potential. The marimba group prepared their instruments in the backyard of the shacks where they live and practice. As soon as the musicians started playing, the poet began performing followed by one of the hip-hop artists. Another member was recording (Figure 5.3).



Figure 5.3 - The Hip-hop and marimbas jam session.

After listening to the recorded performance, the team decided to record the different parts (sounds and words) separately to obtain a better quality of the audio. The marimba music would have become the base for the future video. The researcher, who until that moment was a participant observer, asked about an explanation of the message that the groups were trying to convey through the video. In fact, the artists were performing in their traditional language, which the researcher could not understand. The request evolved into a suggestion to elaborate further on the message considering that the production was improvised. Every group, separately, was given a block of notes and pens to write what they wanted to see in the final story.

The marimba players and the hip-hop artists prepared a presentation about their respective group. The poet, once she heard that the talks were in English and not in the traditional language as per their previous performance, decided to compose a new poem for the video. She chose not to introduce herself personally but only to let the poem express her feelings. In the coming days, after hearing the new poem, the musicians decided to change their presentations completely to relate to it: a poem about the fight of the youth for their rights, their activisms, and the dangers of empty promises. Once ready with the presentations, they recorded their voices when they were all together for everybody to hear the message of the others. The exercise was repeated several times because each group tried to maintain the structure similar to the other group, to talk for the same time and to use words and expressions that can generate an easy connection between them. Once the two groups were satisfied with their respective presentation, they recorded on a digital device a short explanation of the collaboration.

The title of the video was created during a brainstorming activity on themes that emerged in the poem and the artist's presentations focused on 'change'. Everybody was writing recurring words and terms that could summarise emerging concepts as well as their main initial goal in collaborating with different groups ('chain'). They then asked the support of people in the community to draw the concept and to find a picture representative of their message, to use at the beginning of the video. Every group decided to select pictures from their past exhibitions to be uploaded to the video, and they collectively added pictures of events occasionally performed together. After the storyline was finalised and written on a notebook, the collected images were sent via e-mail and transferred by USB to one of the member of Street Revolution who utilised the computer of a local NGO to compose the video. Specific software was installed on that computer, and the artist participated to a video creation training, to learn how to merge videos with audio or images, to separate audio, to add different lines of sound, for words and music. This knowledge was needed to present the NGO programs well. While the poet and the marimba band players had very limited skills and showed little interest in the technical aspects of the project, on the other hand, while viewing the final product, a number of the hip-hop artists expressed their enthusiasm and their wish to learn this new medium.

The DST Outcome

The title of the story - "Chain for Change" - emerged in group discussions and was accepted through collective consensus. This was an interesting moment of brainstorming, sharing and collaboration which is reflected as well in the final product: a video promoting the collaboration

between different groups of Youth with a common passion for music and their reality. The intention was to share the video on social media to increase the interest in this kind of mixed production and sensible messages. Conscious of the still limited use of social media by the majority of their fellows (due to the costs of smartphones and connection) and looking for platforms for artists, at the beginning of 2015 the groups started developing new ideas on the use of ICTs to share information and opportunities. In particular, they developed the idea of the creation of an interactive website with a map to locate the groups, their area of activities and their collaborations. Even groups dedicated to more traditional types of art got involved, inspired by the artistic collaboration that took place with the DST creation and conscious of the support they will receive by the ICTs experts of the network, as it happened for the editing of the video. Being the maintenance of the website quite demanding in terms of capabilities, in the year they started using Facebook groups pages (e.g., the Youth Network Facebook group page reached 404 members while one of the groups of poets Facebook page reached 1.390 likes). The social media appears to be easier and of immediate use comprehension in particular for updating regularly and for the uploading of materials.

4.3. The Mamas' video – A digital exchange meeting

The groups of Mamas met by the main researcher during the previous years of work in the townships associate themselves to a community network with social aims: the Mamas work as facilitators and mobilise other women and groups around their resources and capabilities to support the most vulnerable people of the area (Figure 5.4).

The groups attend exchange meetings to share information, experiences and skills. They discuss everyday activities as a means of improving visibility and networking with lobby groups and activists that can help advance community goals. Gatherings and exchange meetings stimulate creative innovation and transformation. They fulfil at first a social need: to break isolation in the urban area and to foster community trust.

An evaluation was conducted in April and May 2014 with 49 women concerning their ICTs skills and the presence of some infomediaries. A limited interest was shown by the Mamas to deepen the discourse around modern technologies (Lorini et al., 2014). The researcher suggested setting up a DST experiment with one of the groups to try to elicit more data about their activities and above all their approach to ICTs. Knowing their scarce use of technologies in general, she wanted to try and evaluate the use of some basic tools. In October 2014, she

asked one of the facilitators and social worker of the community to select a group active in the mobilisation and sensibilisation of the community of Philippi around social issues.



Figure 5.4 - The Mamas research setting.

The DST Process

Two groups attended the first meeting, both parts of the same network of active women called OVC - Orphan and Vulnerable Children. The researcher introduced the idea of creating a digital story explaining how it can be done, what it can represent and what they are supposed to do to realise it. After the general agreement, the researcher divided the present members into the two original groups in order to verify the capabilities, desire and motivation of each of them before trying to collaborate in new network activity. Each group had a room allocated and started developing some ideas about what they would like to say about their group.

The researcher acted as a workshop facilitator in each of the groups, helping participants to give form to their ideas. The aim was to represent each group in less than two minutes with the possibility to create a five minutes video descriptive of the collaboration. This activity became quite complex because the Mamas were not aware of the time passing while talking: all of them could talk for a long time, but when requested to write and summarise, the presentation became short: less than 30 seconds of audio recording. At the end of this exercise done by each group, the researcher gathered all the participants together to record the final version in front of everybody.

In the beginning, none of the Mamas was comfortable talking in a microphone but, eventually, it became a fun activity. After recording, the researcher stimulated a short discussion about the link between the groups and what they would like to say about the network to which they belonged. One person spoke on behalf of both groups and on behalf of the network to present the commonalities and the main aim of their existence. Every present person agreed on what was expressed and needed to be part of the second and last part of the video. Once the recording of the audio for the video was completed, the field researcher edited it on her laptop.



Figure 5.5 - During the video making process, the Mamas used their photo-books to showcase community members and their work.

Concerning the images and videos to be added, the researcher verified the possibility to attend some of the everyday activities of the Mamas like the distribution of the soup to vulnerable children, or the support groups for women as well as weekly meetings. Meanwhile, the members of the groups searched for old pictures of their activities (Figure 5.5). Sometimes they found printed pictures and in a couple of cases pictures that had been posted on the local magazines on the occasion of specific manifestations. These are the kind of memories collected and gather as precious to demonstrate the work they do (some printed pictures were attached in their notebook where they collect data concerning their activities) and as motivational support while sensitising new possible members. By the beginning of December 2014, the researcher collected all the material and organised a meeting to show the selection to the participants for approval. Every Mama was feeling overwhelmed in seeing herself, her neighbourhood and her daily activities on a computer screen. So far, they were used to have an extremely limited number of photos and in a small printed format. While visualising the images, they listened to the audio recorded to discuss the positioning of every image along the story flow.

Even if at the beginning the DST process was driven by the researcher, the activities continued mainly because participants felt engaged and having a good time. The recording of the voices, done as a collective activity, the search for old pictures, done at the individual group level, the presentation was done by the researcher of some pictures of their activities which could match their talk; all showed their growing interest and possible further commitment to developing new ideas. In particular, the discussion that emerged at the end of the final presentation of the edited video (audio and photos put together by the researcher) about the way forward and the questioning of the utility of this kind of activity, represented the moment of awareness of the potentiality of some ICTs.

DST Outcome

On the basis of the agreements reached by all the participants in the workshop activity, the researcher composed the presentation of the two groups with their respective pictures of their everyday activities of support to the community and the summary done by one member to describe their collaboration. The images chosen for this last section are the ones taken during the network meetings and mobilisation events. If at the beginning of the activity the intention was only to disclose the group and encourage its interaction with technology, the activity evolved into a collaboration between two groups. Moreover, a possibility emerged to utilise the video for the network itself, to present their work to other groups, activity is usually done during their exchange meetings, which was rare due to the transportation costs involved. In order to reach this objective and become capable of recording their activities and giving them visibilities, like in the video they edited, at the beginning of 2015, the Mamas requested the researcher to support their quest to learn to use the technologies she was using and develop further the possibilities they perceived as useful. A series of training and follow up engaged the groups for the entire year, starting with intense one-week training attended by the representatives of five different groups. In 2016, the youngest and more skilled Mamas engaged in the process to become facilitators for new trainees.

5. The role of collective DST in stimulating community participation

The research project utilised collective DST as a method for data generation for the research and for engaged participation and creative expression for the groups involved. The approach taken was one characterised by emergence, referring, to an open, creative and engaging process, unfolding guided by cues, actions and aims configured collaboratively through the intervention and exchanges with participants. While DST sessions were organised in the frame

of a research and design project; the creative activities were not designed top-down to answer a specific research question or to explore a particular design problem. Rather, DST was framed as creative activities driven bottom-up by participants' interests and aims, as they were discovering creative possibilities along the way. These evolving processes opened up new opportunities for dialogue to maximise people's participation, support the groups' reflection, and allow them to be part of a process of collective engagement that could strengthen their collaboration. The ongoing brainstorming and discussions, the meetings to decide the way forward, the gatherings to select the pictures, the walks in the communities to record images, the interviews done by the researcher and by the participants to the larger community members, all contributed to the strengthening of the capabilities to use ICTs, to the intensification of the sensemaking of the collective approach and to the visualisation of the context.

Community radio station documentary

The participants in the radio station project had a clear aim in mind connected with the needs of the station. During the focus group, they expressed their desire and passion for their work, yet their ambition and their commitment were not the central themes of the video. The key and creative element of the video consisted of the representation of their community and their listeners and included a call to support their project. This change of focus was discussed and agreed collectively during the creation of the video.

This was afforded by the DST activity, firstly because it gave the possibility to come together as a group with the aim of exchanging opinions and creating an artefact that could represent their work and their achievements for the public. It provided an occasion to reflect on their reason to exist as a group and to collaborate. Furthermore, the process of collective creation of a digital story allowed participants to work with new tools, in particular, visual ones, used like critical artefacts: "tools for exploring problems context and generating needs-focussed products ideas" (Bowen, 2007, p.14). They are alternative probes used to stimulate the creativity, sometimes only to provoke the participants to reflect critically on the practices, other times as a strategy to deepen the exploration of possibilities through the exposure to unfamiliar experiences. For the participants, this was a generative process for new ideas, on how to reach out to more and different people, how to involve the listeners and how to reciprocate their demonstrated esteem and support. It showed the potential for a better understanding of the community at large, operating as a catalyst of sensemaking that goes beyond the group itself. It became for all the participants a source of inspiration for an extended project that will reach

out to a larger audience beyond community borders. The request of the radio station funders to the researcher to accompany them during the interviews and walks in the community represented a possibility to verify the information received and to acknowledge and testify the spirit not only of the DST but also of the entire radio station project. The researcher was able to deepen the talks with the participants as well as with the external community members while attending the encounters as an observant.

Youth motivational video

The hip-hop group, the one who suggested the creation of a video and who invited other groups to collaborate, had a specific idea in mind: to create a music video to show the potential of a new type of artistic collaboration. The first day of work on the collective DST ended with an agreement on the music track to use, and the expressed intention for the three sub-groups participating in the activity to elaborate a presentation to be added by each of them. Everybody was actively engaged and participating but, the aim, at this point of the process, was still ‘personal’: connected to the presentation of the individual groups and his or her capabilities as artists. The moment of realisation of the different message and outcome that the video creation could bring, not only for the involved participants but also for the community of youth at large, happened when all the participants gathered to present their contributions. Once everybody heard the new poem written for the video, he or she decided to elaborate on it, to expand its message, actualise it and to make it concrete and visible in the digital story. Further, after the second round of individual work as single groups, they exchanged view to agree on the creation of a title and of an image that can synthesise it. The researcher acted as a facilitator while suggesting how to approach the new challenges, leaving any decision-making to participants. The need for the participants to translate into another language some of the ideas that were emerging acted as a moment of reflection and crystallisation of the intentions. The explanation of the creative ideas to the external person, the only non-artist, the researcher, supported as well the data collection and analysis of the process. In this project, the process started as an artistic collaboration and evolved into the creation of a motivational video for youth. At the same time, it served to configure new possibilities to engage and collaborate. Coming together, expressing individual and groups visions, brainstorming and playing with words and images inspired them to think of starting a concrete project for the youth of the community they belong and beyond. An agreement of intentions for a stronger commitment and a series of needs to be fulfilled became clear while new proposals were brought up for further evaluation.

Mamas' digital exchange video

In the case of the collective DST of the groups of Mamas, the researcher is the one who suggested the activity as a possibility to know better the groups and to expand expressive possibilities, considering that during the focus groups conducted with them, ICTs emerged as a topic of scarce interest. The researcher started with a meeting to evaluate the possibility to create a digital story with one group. The idea was to use some technology probes typically employed to examine participants' interaction with novel technology in real-life contexts (Hutchinson et al., 2003; Sabiescu, 2013). User observation is unguided, and the purpose is to understand how people use technology in their everyday life and interactions (Idem). During the first meeting, when two rather than one group attended, the facilitator suggested working with them separately to evaluate the internal participation and ICTs knowledge in each group and how they express their group-based goals. Every group was keen to present their collaborative work and everyday activities in the community. The occasion for larger collective participation was, afforded by their joint presentations moment. The possibility to share stories and to remember the activities carried on together helped them reflect on the context they live in and try to ameliorate. The presence of a social worker requested by the researcher for the translation supported the ongoing discussions and created a constant dialogue between the Mamas and the researcher herself. Furthermore, her participation in the daily activities and request to take pictures of the video maintained the conversation and reflection about the process open. The subsequent visualisation of the images selected confirmed the common aspects in the work of the groups, strengthen the perspective of common goals, helped see each other as one entity, with similar concerns for the most vulnerable, and garnered interest in possibilities to reach out more people also in modern new ways. The use of ICTs was at first seen as a simple possibility for some members to learn how to use some devices, maybe for the benefit of their group. The participated engagement in the story creation as a collectivity showed the potential of the final outcome of the process for the benefit of the network. The work as a collectivity neutralised the shame and fear to express themselves to a wider audience, starting with the presence of the social worker and the researcher. The visualisation of the outcome, the video, by other members of the network was a moment of evaluation and an endorsement of its value, which further informed debates on how to operate as a group. In particular, due to the presence of the researcher during the collective visualisation, the participants requested to deepen the ICTs knowledge in order to be able to utilise it for their network.

Table 5.3 - Summary of the case studies and their outcomes.

	Radio station group	Artists groups	Mamas groups
People	1 group (8 people)	3 groups (8 people)	2 groups (9 people)
Reason to do it	Fundraising for the radio station	Promotion of the collaboration	ICTs exposure
Goals	Fundraising. Presenting their work	Creating a music video. Collaboration. Sharing on social media	Learn about community members. Express themselves. Interact with ICTs
ICTs available	1 tablet (for photo and video shooting) and 1 laptop (for video creation – using an open source software)	1 tablet (for photo shooting) and 1 recorder (for music and interviews recording). 1 NGO desktop to edit the video using a non-open source software	Few basic smartphones (for photo shooting) plus the smartphone and laptop of the researcher
Info-mediaries	1 volunteer at the radio station studied CS while 2 others operate as technicians. The rest of the team used basic phones.	1 artist knew how to edit videos. Support by friends not part of the groups was requested to take pictures.	None of the Mamas had ICTs skills or equipment.
Outcomes	Working on new tools (visual ones in particular). Collective activities involving the journalists, the funders and the managers of the radio station. New ideas generated to have an online version with images and videos.	A different message becomes central to the video. The video is no more a music video but more a motivational talk to the Youth. Development of new ideas based on the needs (having an interactive digital platform).	Networking activities while doing the DST and while visualising the result. Explicit collective sensemaking. Use of new tools to fulfil their aim. Growing desire to learn more.
Role of the researcher	Supervisor and external monitor	Coordinator (for inter-groups collaboration)	Meetings facilitator and video editor
Final product	Documentary	Music and Motivational Video	Digital exchange meeting
Follow up plans	Website and online radio	Digital platform for artists	ICTs training.

6. Design principles for an emergent approach to collective DST

The three case studies highlight the potential of collective DST as a catalyst for participation, allowing the participants to be more in control of the process and creating more opportunities to engage a larger audience: the process started in all the cases analysed from a specific group and evolved to open up to the community (cf. Table 5.3). DST in this context is a form of cooperative and community design activity. In media studies, it had been utilised similarly for collective creative activities (Klaebe & Foth, 2006), as well as in participatory design studies (Mumtaz, 2015). The process utilised and illustrated herein is more than an adaptation of classic DST methodologies. Despite knowing the importance of having a clear concept to create a digital story, or the idea of a future audience to showcase the outcome, the researcher never pressed the groups to focus on these aspects. The activities evolved following the ideas generated on the spot, all connected to activities that groups cherished: from taking pictures in the community by doing interviews or writing a new poem. At the same time, groups acted as collective units where decisions were taken through discussion, and where no single member tried to take the lead and decide for the group. Even if the members of the group worked at times partially separated, the flow of the story and the main concepts to highlight always emerged when everybody was present.

The value of the emergent approach we propose resides in its flexibility, its capacity to emulate a local context and be shaped in interaction with participants. Every project evolved and matured in different timeframes with different methodologies. The radio station DST was the quickest to be produced due to strong motivation and awareness of its future use (less than one month) and also owing to the technical skills of some members. The youth video required more time due to the unfolding creativity and ideas generation of the artists and their emerging motivations (more than one month). The Mamas video requested the presence and contribution of the researcher on more occasions along with a two months collaboration.

These qualities of flexibility and adaptation to local context make it difficult to elicit rigid guidelines for designing this type of activities. However, the analysis of the case studies shows a series of elements that were common, and which were important in determining the flow of the activities and their successful outcomes. These elements are synthesised below in seven design principles, which are proposed as concepts or drivers to sensitise the designers to different possibilities (Hornecker et al., 2007; Sharp et al., 2007). The principles have been identified by motioning attention to the relatedness among the participants in the DST

(designers and researchers and the local community), the local environment and the unfolding of the creative processes on a timeline.

1. Inspire within the context. Storytelling in community settings is about recovering memory (of the past) as well as renewed awareness and understandings (of the surrounding environment). Its capacity to engage, motivate and inspire owes much to the fact that participants are provided with the frame, tools, and creative purpose that can drive them to actively seek, examine, interact with and model understandings of their past and present realities in a creative way. With this principle, we point to the importance of using DST as a framework and as a driver to encourage local participants to engage with their world in ways that were not afforded by their everyday lives. This can take many forms in practice, and digital technology can be used for activities of exploration, capture, representation, collective visualisation etc. For its capacity to involve participants in the exploration of their environment, this creative activity is close to the use of cultural probes. Initially studied by Gaver and colleagues (1999), cultural probes are used as a means for involving people in the active examination of their environments, and thus elicit their unique viewpoints and integrate their visions in design projects. Cultural probes have been shown to contribute to participants' engagement and encourage them to get involved in cooperative forms of design (Crabtree et al., 2003).

2. Local anchoring of expressive means. This principle is about privileging local means of creation and representation. In communities like those involved in the DST case studies presented, listening and speaking are the main vehicles for communication. For this reason, they were privileged in the collective DST processes: giving space for participants to speak and listen to each other and express themselves through natural ways of communication and interaction before starting writing. Writing, above all as a collectivity, might be perceived as 'demanding' and intimidating. On the other hand, listening to each other can become a creative moment of sharing. These observations draw attention to a quintessential quality of storytelling, which is about human expression taking shape, being externalised in a particular representational form. Representational forms are not neutral, they have a bearing on the process of expression and can alter as well as the meanings that are finally externalised or communicated. Expressing through writing is not quite the same as expressing through painting, singing or performing. They are also culturally embedded and linked to the intangible heritage of communities. In our approach, we propose increased sensitivity to local ways of representation and creation as a means for encouraging participants to be at ease and avoid

ruptures, with deeply embedded forms, structures and flows. This approach encourages creative participation, and furthermore, it can then provide bridges for introducing new means of expression, new tools and new methodologies. By building on participants' capacity to become creative in ways that they are familiar with and they master, space is opened for new ways and means of creativity to be appropriated, as well as the appetite for learning and interest in adopting novelty.

3. Local agency. Participants' sense of control and agency over the DST process can contribute to the initiative, enthusiasm, faster consensus, and a sense of owning the process, rather than receiving it from an outsider. Familiarity and self-confidence are correlatives of this principle. For the radio station and the youth project, the researcher acted as a simple facilitator, while for the Mamas, she also acted as an editor for the technical phases. The participants' agency can increase during a process where new skills are acquired, new elements emerge, or new capabilities are available. If the principle is adopted from the beginning of a process, it does not need to be nourished but only supported during the time. The sense of agency and ownership can be heightened by a collective approach to creative activities. The decisions and choices, in the cases described, were always taken when the groups were gathered. This helped the process to be driven by the participants, who united felt stronger and never intimidated when expressing their needs and desires, and it reduced the interference of the facilitator.

4. Shared purpose. The purpose of an emergent DST initiative is not pre-defined but created, or at times discovered by recognising how pre-existing community needs and goals can be met through DST. We point to the importance of acknowledging the aims of the creative processes, not only in terms of the story or stories to be created but also and quite significantly about the kind of benefit brought, or community target reached through the process and outcomes of storytelling. The shared purpose thus can emerge and be externalised in terms of one or several stories to be created in groups, as well as an aim filled through the creative process that benefits the groups or the entire community. It is important while working as a collectivity, to be aware of the barriers to story evolution that group work implies. In the cases presented, moving further with ideas, dropping concepts that no longer worked, was challenging due to the more demanding process of collective decision-making and action. It was essential to remind each other that the story can evolve and the process can bring novelty, for instance, connected to the reactions of the listeners, to the agreement between members and in response to new ideas that emerged. Ensuring awareness of a shared purpose within a group facilitates channelling efforts and activities towards collectively agreed ends; it acts as an element of convergence.

5. Elements of convergence. By *elements of convergence*, we mean tools, processes, infrastructures or flows that can enable groups of people to work, decide or create in groups as well as ensure coherence and consistency in the final product. This principle is about affording DST as a collective rather than individual activity. To involve groups rather than individuals, it is important to find ways for ensuring harmonic collaboration, communication, and means for reaching consensus at key points during the creative process. This encourages participants to pay attention to the others, leads to more moments of sharing, more listening, and increases sensitivity to how the actions of a person complement and build upon the actions of fellow creators. Convergence can be afforded as well by encouraging alternation of collective and individual activities during stories creation. In the cases described, the process was kept flexible with the possibility to work alternatively with the entire group, with some members of it or with individuals. A cycle of opening and closing the circle of participants was adopted and iterated until the artefact was ready. For instance, the initial phase in which the aims of the activity were discussed was done with the entire group present, to facilitate understanding and collective agreement over the envisaged end product and the process of reaching out to it. Subsequent activities were conducted in smaller groups or at the individual level to allow everyone to express themselves and to report back to the entire group or groups. The re-opening of the process to the entire group was done at key stages, to communicate messages, support meaning sharing, and gather consensus. This cycle can be modified and repeated as required to give everybody the possibility to be both creative and collaborative.

6. Horizontal exchanges. As a counter-point and complement to local anchoring and local agency, we posit that the part played by researchers or designers is not less important. The knowledge, tools, ideas, affordances for expression brought or co-created are fundamental to the evolution of the creative process. It is through horizontal exchanges – building on the principles introduced beforehand, of local anchoring, and local agency – that ideas but also knowledge and skills expand, cross-fertilise and evolve. Whereas it can be thought that skills are needed to participate in creative technology activities, cases such as the ones presented in here point out that creative drives can be used to overcome skills barriers, and bridge skills gaps. This is due to the potential of horizontal exchanges, within local participants and among them and researchers or designers. Group members may already possess skills that can be transferred to other members. Also, with support from the group and working together, participants feel less intimidated by the novelty of ICT tools and processes and may engage in learning driven by a creative impetus rather than a goal to acquire new skills. For example, in

the case of the Mamas where less technical skills were present, they followed the creative flow and worked as “art directors” to edit their work: the facilitator-researcher showed the selected pictures to match their stories, while the group discussed and decided about the composition.

7. Continual evolution. This is about not only expecting but also encouraging the evolution of the DST process, its methods, engagement and participation, its content and message, as well as the capacities and skills of participants. Evolution reflects the emergent nature of the process described, within a framework that encourages *collective participation* and un-designed models of activity. Participation and sensemaking unfold as a process of active questioning, inquiry and exploration, motioning participants to move in cycles of knowledge production, sharing and exchange that enable them to perceive themselves, their peers, and their surroundings or work in a new light. The outcomes of the evolving processes usable in the DST sessions – ideas, concepts, the flow of the story - are only some, and the most tangible results of the participation and co-design process. At the same time, other, intangible outcomes can be attained and can keep unfolding: the exchange processes can enable participants to understand, perceive, and express things that had been beforehand either acknowledged but not shared; known tacitly, but not expressed, or simply unknown. The time can also allow the outcomes to reach out for the communities of belonging, and not only for the group. For the community radio station, collective participation helped members understand the vision of each of them and clarify their common ideals and goals while highlighting the sense of their activities for the larger community. For the hip-hop and marimba artists, the process brought about the agreement of a strong, core message they wanted to convey through the video, but also helped them push further the boundaries of artistic expression and collaboration in ways that could not have been afforded by each artist working alone. Similarly, the Mamas, who used the workshop as a fun way to understand the capabilities of new ICTs, came to realise that the technologies they were exposed to can be appropriated by themselves and used as a way to exchange information within the group and promote it outside of it.

7. Conclusions

This paper engaged with issues around uplifting community participation in design and examined the role of collective DST as a creative activity that can spur engagement, and encourage the articulation of local needs and goals in the early stages of design. We have presented three case studies in which DST was used as part of a larger project, as a bridge between the initial exploratory phase and an engaged and action-oriented design stage. Our

findings show that DST can stimulate collective participation, support the unfolding of data and spur the creativity also for new projects. In particular, we underline the value of an emergent, non-linear, community-driven approach for collaborations with collectivities of people. We illustrated this approach by providing detailed descriptions of activities and outcomes in the three case studies. Furthermore, we elicited seven design principles that can be used as sensitising concepts for affording the set up of community-based DST initiatives framed by an emergent approach.

In the case studies analysed, the emergent and free flow nature of the DST process was a catalyst for engaged participation and sensemaking and resulted in meeting context-specific goals for all three groups. From realising the importance of a sub-community within a larger community ecology, understanding the importance of the message a video can convey, to building awareness of the powers of representational technology to share ideas and values between the inner and outer community members. Furthermore, the DST processes spurred ideas for future works driven by local initiatives and appeared to motivate participants to get involved in pursuing them.

PAPER 4**Enablers of Egalitarian Participation: Case Studies in Underserved Communities in South Africa. Processes of Creativity “Not for the Sake of it.”**

Authors: Maria Rosa Lorini, Wallace Chigona and Malcolm Garbutt

Abstract

Although ICT4D impacts peoples' lives, drivers for change are often from a self-serving perspective and not sustainable due to lack of buy-in in the involved communities. To overcome this ICT4D must move from laboratory approaches and collaboration to grassroots innovation with communities designing their use of ICT. This study presents three cases of ICT4D projects in underserved communities in Cape Town, South Africa with the aim of determining enablers of egalitarian participation to support grassroots innovations. Egalitarian participation encourages acquiring self-confidence and empowerment while remaining motivated to be part of the process. In the processes analysed, an emergent approach characterised by openness, relaxed rules, and flexibility allowed participants to work on their skills, to increase confidence in their capabilities and to evaluate new opportunities. The primary outcome of an approach based on relationships and not on design rules promoted inclusive participation. Collectives engaged in processes and developed self-determined behaviours and cohesion in supporting their communities. The social goal of the activities, where creativity developed 'not for the sake of it', backed the main aim of the egalitarian approach: involving the community and creating ownership. Analysis of the cases highlighted methodological patterns that could potentially be replicated which are presented as enablers for egalitarian participation in underserved communities. In contrast to the approach of purely supplying solutions, a reflexive approach permeated by the principles of mutual learning and solidarity was observed which evolved into grassroots innovations.

Keywords: co-design; community participation; co-creation; inclusive participation; grassroots approach.

Introduction

Information and communications technology (ICT) has been promoted in developing countries for improving the well-being of underserved residents. The acknowledged term is ICT for development (ICT4D) and strives to improve lives through new communication means, access to and sharing of knowledge. Paradoxically, the neediest citizens are unable to afford the technology while having limited information processing and knowledge sharing capabilities (Walsham, 2017). Although numerous organisations, especially from developed nations, propose to assist in ICT4D with the aim of making the world better (Walsham, 2017), Heeks (2009) indicates that their involvement is from self-serving interests rather than concern for the recipients. Nevertheless, Heeks (2010) observes a move from talk to action in the literature. Accordingly, he suggests three impacts of development - economic growth, sustainable livelihoods, and freedom - tempered by costs, limited sustainability, and failure to enhance capabilities. Most concerning is the limited implementation of sustainable ICT4D projects.

To counteract the imposition of technology from outsiders, Walsham (2017) proposes engaging with grassroots people and the creation of communities of practice. Similarly, Heeks (2009) observes three levels of ICT4D involvement from 'laboratory' activities with little involvement from the community increasing in participation to 'collaborative' action and finally 'grassroots' innovation. Laboratory activities are done on behalf of the community and may not provide an appropriate solution for the community. Collaborative activities involve collaboration between ICT4D practitioners and engaged community members. However, the engaged members may not be representative of the community, and the solution may not be suitable for the majority. The grassroots approach is driven from within the community who adapt, apply or create technology suitable to their environment.

In this paper, three projects undertaken with inhabitants of underserved communities are discussed from an egalitarian participative perspective. The co-design methodology verified the potential for an egalitarian participation and succeeded in generating grassroots innovations in cross-cultural environments fraught with inequalities. The aim of reporting on three studies is to illuminate enablers that may be helpful in similar under-served community projects where the roles of experts and non-experts are assumed and where the sustainability of the projects is strictly connected with ownership by the communities (Rey-Moreno et al., 2015a). Once the community participants emerged as designers and creators of the activities, the external participants could move aside in confidence that the positive outcomes of their engagement as

active participant citizens would persist. At the same time, the researchers reached a better understanding of the world with lower harm and improved benefit for the communities (Aluwihare-Samaranayake 2012). The initial collaborative approach ensured that the aims, processes and activities of the projects were not pre-determined but emerged through the interaction between the research support team, the community participants and the technological artefacts.

When working in cross-cultural environments where researchers and specialists belong to a culture different to the context, the reasons for participation and intentions of the local communities in combination with their shared cultural values need to be identified and evaluated before deploying an ICT approach (Kapuire & Blake, 2011). Literature shows the importance of considering differences in skills, technical knowledge, cultures, value-systems and power relations between all the participants (Winschiers-Theophilus et al., 2012). This is particularly relevant when using participatory design approaches where researchers are not ethnographers but actors who want to influence the process due to their intention to transform reality (Manzini & Rizzo, 2011). The capacity of a professional to facilitate encounters, initiate processes and promote activities are examples of a representation of the balance of power. Finlay calls this ‘essentially unequal relationships.’ (Finlay, 2002, p. 220). Nevertheless, the ‘view that participation emerges in the absence of researcher power mutes recognition of the productive uses of such power in PAR [Participatory Action Research]. The failure to acknowledge the positive or negative operations of researcher power in PAR does not mean it disappears, but that such recognition is sent underground’ (Healy, 2001, p. 97). Conscious of the power dynamics and the ethical stance to not harm but benefit the participants (Guillemin & Gillam, 2004), the researchers and the practitioners involved in the project looked for ways to minimise possible adverse connotations linked with authority, positioning themselves as participants, the same as the local actors, with evolving roles. At the same time, they maximised the possibilities for inclusive involvement of the community members, to move towards a grassroots approach characterised by the role of the local actors not only as users or co-designers but as ideators, creators and owners of the projects.

The evolution from collaborative to grassroots resonates with the egalitarian approach informed by Blevins and colleagues (2010) who sought to implement an egalitarian collaboration between stakeholders and to shift the balance of power away from the researchers. The approach does not assume the elimination of differences amongst researcher and researched (Yost & Chmielewski, 2013) but builds on the strengths of each participant.

The enablers presented in this paper suggest ways to facilitate similar egalitarian and inclusive participation to unfold at different stages for the various people involved, at the same time transforming the role and position of the community members and the external professionals.

Through the analysis of the processes, this paper sought to answer the question:

“What factors enable egalitarian participation in ICT4D projects in underserved communities?”

The paper proceeds as follows. In the next section, a background to the egalitarian, participatory approach is provided followed, in section three, by a description of the research setting and then of the methodology (section four). The fifth section provides an overview of the three projects from the initial collaborative approach. The sixth section explores the evolution of the projects from collaborative to grassroots before a discussion of the observed enablers in the seventh section and the conclusion.

Degrees of participation – towards egalitarianism

The literature on participation has evolved over the years and, with it, its terminology. Nevertheless, it remains possible to retrieve the essential differences connected with the degree of participation. Arnstein's ladder of citizen participation (1969) indicates degrees of participation of users as subjects to be observed, informants, evaluators, partners in designing in a participatory approach, or as creators. The levels of involvement of stakeholders in a project are expressions of their ‘...power in determining the plan and program.’ (idem, p. 216).

In the User-Centred Design literature, participants are referred to as users particularly in connection with an innovative methodology for implementing ICT projects (Jokela et al., 2003). The degree of participation resides in the user's initial involvement in disclosing their needs (Maunder et al., 2006). Users are evaluators of design which may be for the end-user, by the end-user, or for second tier users (end-user of the user) (Eason, 1995). Nonetheless, the production and design solution phases rely on ICT professionals.

Participatory Design (PD) originated in the 1970's in the Scandinavian regions from a political agenda connected to the computerisation of the workplaces (Nygaard & Terje Bergo, 1975). In PD, the designer and the users are the foremost participants in the process of mutual learning and ‘reflection-in-action’ (Schön, 1983). Distinct roles with a specific focus on ICT characterise this methodology with participants gaining independence and becoming involved in the decision-making process (Simonsen & Robertson, 2013). The central ideas of PD are

shared with those of co-design and the North American tradition of cooperative design (Greenbaum et al., 1991).

Developed in the 1990s in the United States, the co-design approach sought the engagement of involved actors as joint problem-solvers and not merely as informants. However, as a design discipline, there are distinct differences between ‘designers and people not trained in design’ (Sanders & Stappers, 2008, p. 6). A meta-design process may be followed to bridge the gap between PD and co-design and to empower users as active designers (Fischer et al., 2006). Emergent co-creation literature aspires to reach the highest degree of participation, where every participant is a creator of the outcome (Schumacher & Feurstein, 2007). Despite not being defined as egalitarian the process starts to question the roles and definitions of the participants. Sanders and Stappers (2008) underline an evolution of the role of the users who become co-designers in the creative process where the roles of the stakeholders are reshaped. They illustrate the connection with Transformation Design and Service Design approaches (Burns et al., 2006; Sangiorgi, 2011) in which people are involved in a creative and innovative learning environment, focused on changing processes and power relations (Karnieli-Miller et al., 2009).

The case studies in this paper were informed by co-design methodologies. Although the project started with an exploratory phase of interviews and focus groups, the design phases emerged from the encounters. The commitment of the groups to solve social issues, their openness to experimentation with ICTs, the use of their skills and the desire to strengthen their networks for collective scope let the process evolve into grassroots innovation (GI) (cf. the characteristic of GI highlighted by Hossain, 2016b). As expressed by Hossain, “GIs face difficulties to connect with skilled people, research institutes, and advisers’ (p.977, 2016b). For this reason, the researchers valued and enacted an egalitarian participatory approach, based on mutual learning, learning by doing and peer-to-peer learning.

Context and participants – townships and active groups

The participants in the activities are from Philippi and Khayelitsha, two well-known underserved townships in South Africa. Both are part of the metropolitan Cape Town and are regulated by the housing policy of the city with a shared history of being Former Black Authorities areas. They have more than half a million inhabitants and are growing. Most inhabitants live in the informal settlements with only 44% living in formal dwellings in Philippi and 45% in Khayelitsha (Cape Town City, 2013a & 2013b). As of 2011, half of the population live below the poverty line and depend on government grants (Surender et al., 2010).

The main researcher met and collaborated with people that have been part of some groups, in particular of women and youth. As the townships grow, groups of women form (Bank, 2001) around survival issues such as the need to support the most vulnerable members of the community. Other groups form around traditional costumes which are a significant aspect of culture and predominant in events such as funeral planning (Jimmy, 2000). Over the years some of these groups connected through networks and social movements with lobbying and advocacy agendas (Robins, 2010). As Mosavel and colleagues pointed out, "... many South African communities embody the CBPR principles of collective action and mobilisation" (2005, p. 2578).

Youth groups are also very common but, unlike the women's groups, they are more flexible and less stable in their formation and evolution due to the extreme unemployment and limited mobility. National unemployment for South Africa is officially 26,7% (Statistics South Africa, 2016) but noticeable higher in the more underserved communities. An informal survey in 2011 of the socio-economic characteristics of youth groups aged between 15 and 25 years old, revealed the youth groups formed for diverse purposes, often for entertainment connected with sport, music or other performing arts. Community groups searched for opportunities and resources around them such as governmental community centres, local churches and non-governmental organisations' sites in which to gather.

Over the past decade, the main researcher has worked in the two communities and mapped 100 community groups and collaborated with them in a series of social activities aimed at forming communities of belonging. The relationship of trust established helped her during formal and recreational gathering occasions. The initial research phase based on ethnographic studies minimised the risks associated with assumptions that the researcher may make based on previous experience and expectations of the community (Dearden, 2012).

Methodology

With the support of local facilitators, a limited number of women's and youth groups were selected for the research project. The main researcher attended regular gatherings in the communities, and subsequently, devoted time to analysing the interviews with focus groups (Morgan, 1997) and triangulating the analysis with external stakeholders' views and approaches (Leech & Onwuegbuzie, 2007). The triangulation was based on individual interviews done at the beginning of the project and after the design activities. To maintain clarity of purpose, at each meeting everybody was reminded of the research approach, the

limited facilities available and the choice to work without a predetermined process. In particular, the main researcher had to differentiate the ongoing research from the past development activities guided by the logical framework approach, ‘that is underpinned by ideas of pre-planning, and predetermined what successful outcomes will look like’ (Lennie & Tacchi, 2013, p.2).

During February 2014 and March 2014 in-depth interviews and focus groups took place involving randomly selected active groups. A critical discourse analysis process (Lorini et al., 2014) was followed to evaluate the relationships the groups had with technology, in particular with smartphones, computers and social media. To gain further insight into the groups’ use of ICTs a collective approach using digital storytelling technology (DST) was used (Lorini et al., 2017). This led to new ideas being generated by the community and collaboratively developed during 2015. These include: the founding members of a community pirate radio station expressed their desire to have a website for showcasing their activities in a professional way; young artists engaged in an intensive communication amongst several groups to evaluate the opportunities offered by a network of youth; and representatives of a women’s network, from now on called the Mamas, expressed the desire to deepen their scarce ICT skills.

Co-creation processes

The processes of co-creation initiated in 2015 started producing effects during 2016 and are presented here as case studies. In Section 6 the evolving participation of the community members are explored, and in section 7 the enablers are summarised as a contribution to the theoretical discussion.

Co-design Workshops for Computer Literacy with Mamas

The groups of Mamas belonged to a network of women sensitive to the social issues. The results of the initial exploratory discourse analysis showed similarities between the groups and the limited use of ICT. Rudimentary ICT was used to create a DST video with the active involvement of the main researcher as a method of giving voice to the groups. However, the Mamas were more interested in the opportunity of using the technology themselves and requested the main researcher to organise an ICT training. In particular, they sought training in using e-mail, social media and general use of the Internet as they perceived that their children are exposed to these applications.

For the training, the main researcher contacted an organisation known to her university, namely RLabs (rlabs.org). RLabs is well established in the neighbouring communities and has a curriculum for training, including teaching women who have never used technology. Underlying the training methodology is the idea of an inter-generational exchange between mothers and younger trainers, where the trainers facilitate training the trainees who have to encourage and help each other. The one-week basic computer training started with a hand and nail pampering session to put all the trainees at ease in front of a computer. The format focussed on computer literacy where every participant had access to a personal computer connected to the Internet. The main researcher invited some of the youth from the same community of the Mamas to act as local cultural facilitators. Their role was to assist with the adaptation of the curriculum of the training to meet the requirements of the trainees and to match their way of learning.

At the beginning, the facilitators were considered by the trainers as trainees, interested in learning a replicable methodology. During the days of training, their role of translators, required as the community predominantly speaks an African language which is not spoken by the researchers or most of the RLabs trainers, evolved into that of mediators. The youth found ways to explain to the Mamas concepts that sounded too difficult for them and showed the trainers ways to encourage the Mamas to express themselves publicly. For example, one activity suggested by the trainer that required further explanations requested the participants to create a story starting from a series of pictures. This was a way to introduce the possibility of having a blog. In the end, it led one mother to say, “*now I can be a journalist.*”

From the beginning, it was clear that the younger women were more familiar with working with ICT. Nevertheless, all the Mamas persisted, and when asked to bring a smartphone for training, nine out of the ten Mamas arrived with one, mostly borrowed from other community members. They encountered difficulties with the size of the keyboard and the ability to use the touchscreen of the smartphones. During 2016, the younger Mamas engaged in a series of follow-up training at the RLabs centre after which some of them became facilitators, while the older women actively supported the training by enrolling new participants.

Co-design of the Youth Network Website

The Youth Network project commenced in 2014 with focus groups and interviews, and included groups active in street theatre, performing arts, sport and traditional music, sometimes with educational scopes. Specific interests in ICTs emerged directly related to their current

needs such as the recording of their music. Similar to the Mama's project, the ethnographic study was deepened through the production of a DST video. The idea of a music video to solicit sponsorships for their art evolved into the production of a short documentary on social issues and youth collaborations. The production gave the opportunity to the main researcher to facilitate, at the beginning of 2015, meetings between the leaders of several youth groups. Over time the meetings saw the participation of groups' members and not only leaders. Two main ideas emerged: 1) the organisation of events in the community where members can perform their art and discuss social issues; and 2) the creation of a website to showcase their artistic activities and to promote their events. During discussions, they exhibited a commitment to their community and the desire to continue their activities in their area. As they put it, they wanted to put 'Philippi on the map'.

The process of organising a music event served to evaluate the cohesion of the network. The activity revealed the commitment of the groups to take responsibilities for their dreams and to share resources. For the creation of a website, the participants worked in groups. They created and presented drafts to the other groups and explained their designs. Several commonalities emerged: a desire to have individual group space within the website; the details about the events planned; and the need for directions to the event locations in areas which are not easy to find even on Google maps. A web-designer helped the main researcher to facilitate the design process. The groups evaluated the website paying attention to the meaning and potential use and, over several weeks, some youth were trained in the maintenance and use of the website.

During 2016, the use of social media grew dramatically. The Youth Network Facebook page registered 400 followers while one of the internal groups, 'Poetics not for the sake of it', reached 1 300 'likes'. Some of the leaders, meanwhile, registered for software developer training and started new projects, keeping alive their passions: organising events (registering 'The Bridge Experience' non-profit organisation) and creating music (the 'Philippi Music Project' that through crowdfunding installed a recording studio in a second-hand shipping container in 2017). As the projects' names suggest, the activities sensitised the communities around social issues and inclusive approaches while developing youth's artistic passions.

Co-design of the Community Radio Station Website

In April 2014, one of the youth groups expressed a wish to create a community radio station. Three months later the radio station was on air without a broadcast licence. To raise funds for their project DST video was created involving members of the community and volunteers

supported by the main researcher. To increase visibility and stable support while adding a professional look, the directors of the radio station expressed a desire to create a website. At the beginning of 2015, two professional journalists and a web designer joined the project. The professionals suggested including other members of the community, such as aspiring journalists, listeners and volunteers. The co-design workshops with an extended group began in April 2015. To evaluate what could be included on the website, the professional journalists led a discussion on the types of radio stations (a commercial or service, or community) and around the ethics of journalism. After two months, a picture of a social design experience emerged. The discussions showed a level of consistency and coherence between the needs of the community, the desires of the journalists and the choices of the radio directors.



Subsequent workshops were organized with the aim of co-designing the website. Working in groups, the participants presented their proposals and debated over administrative responsibilities, business opportunities, speed of the website, quality of the material and, most importantly, the possibility of online streaming. Lastly, the participants were split into groups for the website management; news collection and editorial board; and selection of video and images. The workshops provided insight into what the community valued and what the participants hoped to share.

Two options were evaluated for getting the radio station online on the website: either use podcasts or have the radio live. Due to high connectivity costs and usability, this part of the design project evolved slowly, with trials and tests down over a period of months. In October 2015, a smartphone application that enabled broadcasting from outside the radio station via the website was successfully tested. In 2016, the founding members of the radio applied for a broadcasting licence. To maintain a low profile and reduce visibility, they chose to stop the analogue radio production and communicate all the news via the social media. One year later, against the odds due to bandwidth restrictions, the radio station obtained their broadcasting license.

Evolving Roles in the Three Community Social Processes

The roles of the community participants, the external professionals and the main researcher evolved and adapted over time (Table 5.4). Exploring how the participation developed provided insight into an egalitarian approach beneficial for grassroots innovation.

Table 5.4: Co-design activities and roles of the participants

Case-studies  Activities/ Roles 	Mamas' groups	Youth Network	Radio Station
Co-design activities	ICTs training on: Key-board exercises Gmail Search Netiquette Smartphones Blog Facebook.	Co-design workshop on events organisation; Co-design workshop to create an interactive map website and digital platform.	Co-design workshop on journalism, ethics and editorial board; Co-design workshop to create the radio website; Co-design workshop for the online radio and outside broadcasting.
Role of community members	Mamas: initiators of the activities and learners; Youth: translator and facilitators	Leaders of the groups: initiators of the activities and decision-makers; Members of the groups: co-designers of the products	Funders of the radio: initiators and decision-makers; Local journalists: learners and co-designers; Technicians: learners and co-designers.
Role of external professionals	RLabs N.P.O.: trainers	Web-designer: workshop facilitator and trainer	Foreigner journalists: trainers; Web-designer: trainer.
Role of the researcher	Organiser and Participant observant	Facilitator	Coordinator
Follow-up activities	Second training with another organisation to improve; training for co-trainers at RLabs; Training on new ICT skills	Creation of the Philippi Music Project production (social business) and The Bridge Experience N.P.O.	Licence request for the station; Creation of an N.P.O. to keep on supporting the community; collaboration with other radios.
New role of the community members	Networkers (they found other stakeholders); Co-trainers; Developers of online activities; Facilitators and supporters for new members.	Networkers (through crowdfunding and connections amongst more youth groups and with the University); Producers and events' organisers for youth groups.	Professional radio station producers; N.P.O. managers and events' fundraisers.

Training the Mamas

The idea of computer training amongst the Mamas was generated by them after limited exposure to new ICTs. The one-week training was designed by people external to the communities and adapted to the needs of the participants.

Once the training started, the Mamas attended conscientiously. They showed engaged participation, being present on time every day despite lack of transport and staying until late despite their everyday household chores. Even though none of the Mamas possessed a computer, and, in most cases, even a smartphone, on which to exercise and revise their new skills, they followed each step and tried every application and technology taught them. Furthermore, their effort to overcome the linguistic barriers was evidence of their willingness to learn. As the interface programs were not written in their language, they had to memorise much of the content.

Being aware of their still limited skills and exposure to technologies and needing to maintain the level of knowledge, the Mamas requested follow-up training. They kept in contact with R Labs, visiting their laboratories to explore possibilities of further learning for themselves and their children. Some enrolled in a new computer literacy training and became facilitators to support other women in their community. Their role evolved, and participation increased with the growth of their new skills.

The enthusiasm of the Mamas showed their engagement and was commented on by all the non-community participants during the follow-up interviews. Likewise, the organisers of the training were also impressed by the participation of the Mamas, being on average older than their usual trainees, coming from deprived areas and with limited literacy skills. The trainers maintained a flexible schedule and provided more space for the translators to explain and integrate concepts instead of merely translating.

The role of the main researcher was to identify the needs and to find a balance between community requests and resources. For evaluation of the effectiveness of the training, the main researcher attended the meetings with the organisers of the training accompanied by some of the future cultural moderators who was essential to disclose the problems connected with the linguistic and logistic issues. Over time, the role of the researcher decreased with increasing involvement of the community, to the extent that the main researcher did not actively participate in the follow-up activities. Local facilitators supported the Mamas in searching for new opportunities, such as the creation of a WhatsApp group to coordinate their activities and the request for subsequent training. In this way, the Mamas succeed in engaging more women and in developing new ideas to support their community better (e.g. learning selling craft online and studying children security online). These findings are concrete examples of the move from a collaborative approach to a grassroots one.

The Youth Network Website

The grassroots approach was evident in the Youth Network website creation where the process was driven almost entirely by the youth themselves. The involvement of the main researcher started with focus groups and interviews with individual groups. The evolution of their idea to create a music video to the production of a short motivational documentary and presentation of artists' collaborations was the occasion to meet regularly and generated new brainstorming over possible activities, such as events' organisation and the creation of a website where to sponsor their activities.

When a digital interactive mapping idea emerged, the other phases of a website flowed naturally from this. At the same time, the roles of the participants changed. At first, only representatives of each group were present, but during later sessions further members became involved. Roles of organiser, publisher, networker, and fundraiser emerged. Although the participation of additional members created problems in the timeframe of the process, it also showed the general interest of the community and supported the evolution of their ideas.

The web designer acted as a facilitator in the numerous ideas that emerged. Later, he became the trainer for management and maintenance of the website with his role evolving into a specialised trainer. Once again, the main researcher acted as a facilitator for the activities and as the contact person for external professionals.

The roles of the participants evolved with the increased use of social media. Some sponsorship was received from commercial service providers which prompted the youth group to request linking their Facebook page to the website to facilitate the management of the different communication tools. While the website required specialised skills, the Facebook pages enabled easier management and increased interaction with the community. The youth groups developed a process to connect with each other for events while projecting a combined image for more significant proposals as in case of fundraising for the music studio.

Their relaxed style created delays, particularly in updating the website, but showed the persistence of the groups and their desire to maintain the role of leaders, decision-makers and organisers of the youth, both at the group and networking level.

The Radio Station Website

The founding members and the aspiring journalists of the radio station initiated the idea to create an analogue radio station in their community. They contacted the main researcher, who

interviewed them months before, to assist with the creation of a DST video fundraising for the radio station. This led to the idea of developing a website involving more members of the community. The driver for their involvement stemmed from a commitment to provide an excellent service to their community.

After the closure of the pirate activities, the members of the radio station kept the contact with involved stakeholders and utilised their Facebook page to keep their followers updated on the status of the broadcasting licence application while doing live broadcasts through their website. With the high cost of the Internet and limited possibilities for their community to listen to the radio via the web, they chose not to invest in that technology despite being aware of it and enthusiastic to learn about it.

Concerning the external participants' support, the professional journalists prepared their sessions in advance and adapted these to the timing and requests of the local participants. Each workshop took longer than anticipated and were guided by the requests of the radio station members. Working with volunteers, from both the radio station side and the professionals, supported this process of spontaneous evolution where nobody was pressurised by time or remuneration targets. The international journalists and the web designer recognised the commitment of the members of the radio station, the participation of the broader community and perceived the possibilities of these activities to benefit the community. Consequently, they supported the project by dedicating more time than predicted, for instance going over presentations several times as the participants were not accustomed to taking notes but listened and tried to remember and develop a shared knowledge as a group.

The main researcher moderated the workshops organising the schedule and the optimisation of the procedures. She acted as a facilitator when needed, presenting examples connected with the local reality, and introducing the external stakeholders to the issues faced by the underserved community. The experts understood the priorities of the radio station members and supported the decisions of the founding members to dedicate time and resources to obtain the license for an analogue radio station. This decision showed their constant dedication to the broader community which could not afford the connectivity costs. They provided a more inclusive solution, despite the increased complexity. The external participants devoted their support to further the radio station's network and to assist with the analysis of costs. However, the radio founders took upon themselves the research required to verify the necessary documentation for the broadcasting licence application.

Enablers for Egalitarian Participation

The egalitarian participatory approach as a cross-cutting theme emerged as fundamental during all the processes. The three case studies elaborated on the participation of the involved community members and of the external stakeholders and the process of evolving of their roles into a grassroots approach. The evolution from collaborative (during the first phase of the activities) to grassroots (during and after the follow-up activities) is vital as cross-cultural influences and power relations from external resources cannot be neutralised, and processes cannot rely on the same degree of participation (Tritter & McCallum, 2006). The egalitarian participatory approach as a cross-cutting theme emerged as fundamental during all the processes to allow the roles to develop.

The shift in power was possible due to the relaxed style and convivial approach of external participants and it was enabled through supporting the improvement of self-confidence of the community participants in their capabilities. The participants made explicit choices to act in a manner that affected their surroundings and had an impact on the broader society. Shared decisions were then implemented as a collectivity of people in increasing independence from the researcher and awareness of the future options that could support their choices. This represented the climbing of the rungs of Arnstein's ladder of participation that can lead to active and motivated participation where the imbalance of power is taken into account during decision making (Minkler, 2004).

The nine enablers of egalitarian participation, listed below, increased participants' awareness of available choices and reduced their reliance on external stakeholders for decision-making. They can be classified as community enablers, methodological enablers and relational enablers.

I Community enablers

Collective benefit focus appeared as the main enabler which was a distinctive element of the three processes and which allowed the participants to engage in a transformative path. The persistence of the activities, at the time of writing, highlight the creativity 'not for the sake of it' that developed. The French student poster presented by Arnstein (1969), 'I participate; you participate; ... They profit' (p.216), shows how participation might not bring profit for those active and involved. Thus, Arnstein highlights the need to redistribute power to gain real participation. The case studies show the top of the ladder 'citizen control' and evidence of the

grassroots approach (Heeks, 2009). The focus on collective benefits acted like glue to maintain consistency, cohesion and an egalitarian approach on how to act and on sharing the results.

Collective approaches. A multi-agent creation process with power-sharing enabled the community to develop ICT solutions collaboratively. The evolving processes revealed the increasing potential for involvement from the larger community participating as another co-designers.

Grassroots approach and self-determination. Communities need to be involved in projects from the beginning. They must attain and maintain decision-making capacities throughout the project. By building on the strengths of the participants, it is possible to realise the potential of the individuals in the community. The external participant cannot act as ‘the designers’.

II Methodological enablers

Cherishing the process. The focus must remain on the process as reducing focus to the outcome alone may shorten the time for the analysis but allow essential elements or somebody’s position to stay unnoticed and underestimated.

Alternative methodologies and flexibility. Methodologies studied for specific areas or groups require an ethnographic study and cultural sensitivity to address situations and needs. The flexible process presented here requires a longer timeframe but allows participants to follow their priorities, needs and desires. Flexibility implies the possibility to modify the procedures and encourages the development of creativity. The apparent lack of structure and objectives, resulted in positive feedback allowing creativity to transpire and, while requiring more time to develop and evolve naturally, it showed the benefits of this investment and the possibility of sustainability due to the effective interest and ownership of projects by the people involved as creators and as beneficiaries. Such approach may help the level of participation to be maintained and even increase over time.

Minimise the constraints. Participants with greater power must be ready to move out of their comfort zone to familiarise themselves and operate from the venues and in ways appropriate to the situation. In this study, each interview, meeting, training and workshop took place in the communities where the local participants live and were active.

III Relational enablers

Long-term relationship and reciprocity. The establishment of a relationship of reciprocal knowledge and trust allowed the participants to externalise their thoughts, diminishing the embarrassment and shyness connected with the imbalance of technical expertise and professional skills.

Simplicity and affordability. Effectiveness should be preferred over efficiency. Even if an interactive website or a digital radio station might appear easier to deploy, the needs of the participants and their intentions should take precedence.

Time is an essential enabler of the evolution of the processes. Time allows for the appropriation of the process and remains a crucial factor for its concretisation. Each enabler requires time to concretise, to achieve its potential and to evolve and mature. For instance, the case studies developed over a period of four years.

The enablers present guidelines for community-driven participation in situated realities. The lofty aim of an egalitarian, democratic and inclusive participation evolves in distinct phases transforming the role and position of the community members and the external stakeholders throughout the process. The analysis of the case studies shows that processes guided by these enablers could spur initiative and impact on the sense of ownership of emerging creation in ICT4D. This is especially true when the desired outcome is to reinforce community agency and their control over their lives (Arnstein, 1969). This will allow changing focus from laboratory approach to a collaborative approach leading to grassroots initiatives (Heeks, 2009).

Conclusion

Without a doubt, ICT4D can and has affected lives. However, drivers for change have often been from a self-serving perspective and are not sustainable due to lack of buy-in by the beneficiary communities. To overcome this ICT4D must move towards grassroots approaches with communities designing their use of ICT facilitated by ICT4D practitioners. In this study three cases of ICT4D in underserved communities in Cape Town, South Africa are explored to determine enablers that supported their evolving into grassroots innovations. The research intended to empower participants to become independent creators of ICT-enabled processes (Sanders & Stappers, 2008) ‘not for the sake of it’ but beneficial for the communities.

The activities developed (Dearden & Rizvi, 2015) based on the intentions, desires, needs and dreams of the participants. The grassroots approach combined with long-term knowledge of the communities, and egalitarian approach allowed the process to evolve and for the

participants to self-determine their roles. Considering the power imbalance and bias (Dell et al., 2012) of ICT4D, the concept of egalitarian participation resonates with the ideal proposed in co-creation literature of every person being a designer (Sanders & Stappers, 2014, p. 31) and to move ‘...from highly hierarchical power relationships (e.g., researcher and participant) to more egalitarian relationships (e.g., coresearcher)’ (Karnieli-Miller et al., p. 281).

The best example of role improvement together with the social care are the Mamas groups initially not interested in the use of ICTs. The collective and flexible nature of the approach allowed them to evaluate new opportunities and to disseminate this to the broader community taking the lead for their community also in this new field. Similarly, for the youth network, evolution and growth were visible. Their work with professionals expanded their horizons, and they did something more significant for the community. An interactive website complete with social media was created to support the groups individually as well as their collective activities as a network. It allowed sharing of resources and potential of a growing community, despite being underserved. Finally, the community radio station group involved the community by gathering the views of their listeners and discussing their needs. They were thus convinced of the value of their work for the surroundings and engaged in the arduous process of licencing the radio station to enable the community members’ voices to be heard.

In the three cases, the participatory level of the community members evolved based on the skills, knowledge, roles and the desired outcomes of the groups in the community. The approach to creative activities (Alexiou, 2010) and participation in design and creation (Fischer, 2003) is primarily afforded by the free, flexible and unconstrained nature of the evolving processes and by the egalitarian nature of the relationships established. Analysis of the processes indicates that over time the participants gained self-confidence, were able to express and articulate their ideas, felt encouraged to set new goals, to move forward without the support of external participants and to think of possibilities to work together for the benefit of their communities. From an initial stage of involvement in participatory design activities, the groups evolved to influencing their surroundings (Cornwall, 2008) thereby moving from collaborative to grassroots projects.

Acknowledgements

A sincere thank you to: the community groups – Mamas, Youth and Community Radio – and the external professionals – the RLabs, the web designer and the journalists.

PAPER 5

Collective Creative Processes in Underserved Contexts. Lessons of Grassroots Frugal Social Innovations

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Abstract

When limited resources are available, creativity and imagination have better opportunities to develop. Through an emergent approach where the process is left free to unfold, and rules are relaxed, new ideas transpire, and innovation happens. A multiple case study in the townships of Cape Town, South Africa will describe the evolution of three processes that brought innovations, driven by active groups in their underserved communities. In particular, the unguided process approach allows the innovations to unfold in an ecosystem characterised by frugality and by the desire to bring about social changes. The active collective participation and the social aims are the driving forces of the processes, while their undesigned evolving development is the main element of innovation from the bottom, more than any information and communication technology creation.

Keywords: Frugal innovation, social innovation, co-creation.

Introduction

Frugality has been used by many, in different contexts, to define a situation where only limited resources are available, where affordability is the driving force (Hossain, 2016a) and where constraints become triggering elements of creativity (Zeschky et al., 2011). Concrete limitations, due to lack of resources, or skills, or of opportunities, are key factors in driving people to achieve better results with less; it is, however, also true that frugality can be seen through other lenses.

Innovation is usually associated with the creation of a new artefact or modus operandi. It is sometimes considered part of the design cycle, almost the objective of a process that starts with a need and becomes creative (Dorst and Cross, 2001; Kuusisto and Kuusisto, 2010). Stepping aside from this position and association with the design culture (Von Stamm, 2008), the focus returns to the main conceptual feature of innovation, that is, its openness to every possibility.

While the design is created and developed, following a vision of the future (Zimmerman et al., 2007), innovation does not have this characteristic.

Innovation can refer both to the outcome, the product created, and to the process to create something new (Garud et al., 2013). To be innovative does not always mean being completely original (Bhatti, 2012). An innovative process or outcome can be novel in the way it is used or novel to the users (Van de Ven, 1986), or novel in the context where it is utilised (Fagerberg, 2003).

In this paper; the author will present and analyse three case studies of frugal innovation in underserved urban communities in Cape Town, South Africa. The focus has been put on the process. The process used is an emergent one, based on improvisation supported by the innovation creativity (Montuori, 2003), driven by scarce resources and keen attention to the immediate needs of the people involved. The processes followed, as well as the solutions adopted, are frugal: projects were started from what was available and needful, trying to achieve ‘more with less’ to support a sector of the population, as wide as possible, at a limited cost. Due to a limited budget, infrastructure and available skills, the processes used basic forms of Information and Communication Technologies (ICTs). Affordability remains a key element for underserved people, together with being a necessity and needs to be driven (Van der Boor et al., 2014).

In this study, the focus has not been placed on technology use, acceptance, adaptation or creation, as is the case with many case studies connected with frugality and development found in the literature (Rangaswamy and Densmore, 2013). Indeed, the focus has been put on an uncommon procedure, which allowed the case studies and the relative projects to unfold and evolve. Each case was initially selected as representative of a specific category of the communities of belonging (mothers without ICTs skills or interest in them and youth passionate about the possibilities offered by the new media), while the analysis was focused on the approach to novelty and the interest in it. In the first year, the cases demonstrated their potential for frugal innovation, clearly sharing not only the context situation but also commonalities in process development. To enable these processes, ICT, both culturally and contextually relevant, was used. As a precondition for innovation, the participants engaged with technology to make it malleable, to match their needs (Carroll, 2004; Winters et al., 2008).

Facilitation of the frugal innovation process was developed and supported by a relaxed design style (Olin and Wickenberg, 2001). The theoretical findings reveal that relaxed rules allow emergence and creativity through culturally specific knowledge.

This multiple case study (Crowe et al., 2011) is the result of three separate cases that disclosed through this approach, showing the potential of the approach to be used in different situations. While many ICT studies connected with people empowerment demonstrate a limited impact on societies (Dodson et al., 2012) and in research (Harris, 2016), this paper would like to contribute to methodology theories, suggesting an approach that allows practical results in the field.

To support this methodological contribution, the discussion section will draw guidelines for the possible replication of this methodology, answering the question:

How do a researcher and a practitioner encourage grassroots, sensible and inclusive frugal innovation in determined contexts?

Before presenting the multiple case study and the relative findings and lessons learnt, we will briefly outline how frugal innovation is often conceived.

Frugal Innovation in the Literature

Much of the literature on frugal innovation has a business perspective on markets, economy and production, while the users are customers (Tiwari and Herstatt, 2012). Even when talking about “the democratising effects of frugal innovation” (Nari Kahle, 2013), the focus is on markets, more inclusive ones, but still based on products and consumers. The consumers are a target for the market. They are not the innovators.

The Arthur D. Little report (2011) talks about “innovating products”; they are not innovative, they exist and get simplified. Heeks (2012) refers to “IT innovation for the bottom of the pyramid”, while Mukerjee (2012) uses the title “Frugal innovation: the key to penetrating emergent markets”.

The focus is on how “to cater for the poor” (Halme and Laurila, 2009), how innovation or innovative products can support the “bottom of the pyramid” (Kaplinsky and Keynes, 2011), with references to “inclusive innovation” (Chataway et al., 2014), “below-the-radar innovation” (Kaplinsky et al., 2009) and “pro-poor innovation” (Hasan, 2016); not on how the

poor can be innovative. Other common expressions include “selling to the poor” (Hammond and Prahalad, 2004) and “intuiting the latent needs of consumers” (Radjou et al., 2012).

Innovation, above all within this economic perspective, is more visible and usually analysed at a macro level. The process often starts in the richer economic regions of the world, where new technologies are created for areas with a reduced GDP, by multinationals whose interests are to expand their possibilities to sell to new customers in emerging markets (Agarwal and Brem, 2012). The multinationals are creating cheaper products for poorer populations (Ray and Ray, 2011). This kind of innovation is conceived and developed abroad, compared to the areas of utilisation. At a multinational level, the good that might arise for people is a bonus, not the main objective (Hammond and Prahalad, 2004; Knorringa et al., 2016).

The meso level, more focused on specific areas and needs, can be a national level, such as in the case of India, where different entrepreneurs create products that acknowledge and support the needs of their population (Basu et al., 2013). The healthcare system, for instance, is expanding, thanks to the reduced costs and the extensive need for expertise in eye and heart care (Rangan and Thulasiraj, 2007). The same happened with the economically fair transport solutions implemented to support a growing population. The meso level can expand and become a macro level once the new technologies and systems created for a specific region are also required abroad. Some healthcare systems created in India have already been adopted in the United States of America, where not everybody can afford expensive private healthcare (Khanna and Bijlani, 2011). In the literature, this kind of unusual process of innovation, born in poor regions and exported to richer areas, is classified as “reverse innovation” (Govindarajan and Trimble, 2012; Crisp, 2014). The focus is again on the possibilities for the markets to expand their growth.

The micro level of frugal innovation is the one looking at specific localised cases in the underserved regions of the world. In particular, it studies grassroots solutions adopted by non-governmental organisations, small entrepreneurs, single groups or individuals who decide to adopt and adapt ICTs to serve their needs (Radjou et al., 2012; Soni and Krishnan, 2014). Sometimes, it is about the creation of new solutions and not only the adaptation of those that already exist (Zeschky et al., 2014).

In the field of ICT, several initiatives emerged and spread in the last decade, from the One Laptop Per Child project (Warschauer and Ames, 2010), until the recent diffusion of inexpensive smartphones which reached out to remote regions and populations with reduced

income (Lee and Lee, 2014). These low-cost ICTs are often business oriented and usually developed far from the end users. The participants of this study belong to the category of consumers that, only in the last two years, had access to affordable communication technologies.

Context and Participants

The three case studies presented in this paper introduce groups of women and youth active in Cape Town's townships. The majority of the activities presented took place in Philippi, an area with an official population of 191,000 inhabitants (Cape Town City, 2013b). Half of this population lives below the poverty line and in self-built houses of wood and laminated sheets, often without a concrete floor. The City of Cape Town is working on house building and infrastructure improvements in these areas. Meanwhile, many groups of citizens have come together during the last twenty years to help each other, to sensitise the broader community about the necessities of the underserved areas, and to support activities of lobbying and advocacy towards the government (Ismail, 2009).

The researcher worked with some of the groups that participated in events, manifestations and workshops organised by these social movements. The three cases presented in this paper introduce and analyse the evolution of ICT-based projects, developed by some of these active groups, used to collaborate and engage with social issues. The first case analyses a project developed by a community radio station. The second case involves groups of Mamas, as Xhosa mothers are usually called. The third case describes the creative processes a network of youth engaged with when deciding to work together.

The radio group started its activities by setting up a community analogue radio, the main communication tool in the area. During that time, the funders and directors realised the potential of digital radio: more visibility to possible sponsors and networking outside of their borders, more professionalism in introducing themselves and more possibilities to reach a bigger audience. The ties that unite this group depend on the potential offered by the radio station itself: to get a job or at least to learn a profession. There is continuity, constancy, willingness and engagement to ensure the growth and success of the radio station, for the benefit of the underserved community, of belonging and for the possibilities for the individuals involved.

In the case of the groups of Mamas, their ties are strong and connected with their help to the community: support groups for women victims of domestic violence, afterschool care for abandoned children, mobilisation events of sensitisation on health and social issues. As the discourse analysis conducted at the beginning of the research showed, those are their priorities (Lorini et al., 2014). Many groups have existed for several years, and some of them are affiliated with networks which operate as social movements at the national level.

The groups of youth usually gather for recreational activities, such as music and sport. They often support social activities organised by community-based organisations, non-governmental organisations and social development agencies, as a possible platform for their art, for entertainment and educational scopes. To gather recognition and trust from the external stakeholders, several members of the groups attended workshops and accredited training on peer-to-peer education.

Despite the different history of the groups, their reasons for existence and their formation, all the projects were based within an historically-based community tissue of social transformation and existing social ties, some stronger than others, some carrying stronger internal power relations than others. The commonalities reside in the creativity and innovation, developed during processes, and based on a bottom-up, emergent approach.

The Three Case Studies. A Multiple Case Study Approach

Community radio station group

Iqhaya FM is a community radio station based in a township affected, like the others, by poverty, criminality and unemployment. To try to alleviate some of this negativity, in 2014, a few young members of the community created a radio station. The name, 'Iqhaya', is derived from the Xhosa language and means 'Pride and Joy'. It was created to give strength and hope to the community through information, education and encouragement.

In 2015, while engaging in the process of growth and professionalisation, the activists of the pirate radio station recorded some interviews on a tablet during an event. The impressions collected were the first recorded voices, transmitted by the radio station, not produced at the same place, during a live transmission, but through a device. The second step taken by the volunteer journalists into digitalisation was the recording of some interviews through a digital recorder to improve the quality of their information transmission. Those two basic activities, common for every radio station, were a novelty for this community radio station, which started

its activity using second-hand equipment donated by established radio stations and without having the frequency licence. The following step was the creation of a website through a co-design process with external experts, to acquire a professional image and to introduce the staff to possible interlocutors and interviewees outside the coverage range of the analogue radio. Finally, the use of a smartphone, with an application for outside broadcasting, connected to their new website, made the integration between the analogue and digital radio a reality.

This simple process developed and evolved in the space of almost one year from when the journalists added to the spectrum of their possibilities: the use of a tablet, a recorder and of an application for a smartphone. Unfortunately, the smartphone option for outside broadcasts turned out not to be a realistic possibility for the time being, due to the costs of the internet connection and to the quality of the smartphones used by the participants in the project. The journalists and technicians possessed basic smartphones and could not download the application due to their limited size. For the reason of connection costs, the website use is also limited, not only for online transmission but also for recording and streaming of programmes.

Nevertheless, the different phases helped the team to learn a lot about the possibilities of developing a better quality radio production and discovering opportunities available for broadcasting and serving a larger community. The participants possess the skills and knowledge to develop the project further. At present (2016), the founders of the radio station have applied for the frequency licence to the competent governmental agency, conscious that, for their community, the analogue radio is still the main means of communication.

Youth network

The process that developed into the co-creation of an interactive map to support the youth network began with a digital storytelling collaboration between artists and grew into a co-design workshop activity. It started without a specific idea in mind because the network was in a phase of reshaping and reflection about their future. At the beginning of the activities attended by the researcher, the participating youth seemed oriented towards re-launching the network to organise an event – a collaboration between groups. During the co-design workshops, initially based on brainstorming and mapping of groups, activities and resources, new ideas evolved. A map of the groups with their regular activities and locations positioned on a physical image of Philippi emerged as essential. Checking on Google map, it became evident that what they perceived as an inadequate representation and a need for the community

was something necessary and missing; the area where they operate looked like a grey zone on Google map.

Not once did these groups express the desire to leave Philippi and develop their activities elsewhere. They constantly emphasised the potential of their locations, the resources available and the need to upgrade their communities. They realised they wanted to become part of the bigger map, to be on it and to be acknowledged from outside their communities of belonging as well. It is also a need for their communities and the larger community of the society, of the researchers, of the municipality, to be interested in mapping the areas and knowing the realities. It is a unique innovation, at least in this context, the way in, which something like an update and an upgrade of Google map can start from grassroots level, not from some individuals or champions of the community, or from external organisations or researchers, but from a local group or, as in this case, a network of groups. The perception of the need became a possibility to be developed and transformed into a concrete project: an interactive website. Even if, in other areas of the world, this is a common process to involve residents, this is not the case for the context and area where this process took place. In Philippi, there is still limited use of modern technologies due to their costs, above all of the connectivity, and ICTs are not yet considered essential or a priority for many residents (Lorini et al., 2014).

The final product, the website, can be considered as a limited innovation, focused on the acknowledgement of certain needs, lacks and on the improvement of the system. The bigger innovation resides in the process and on the way the result was reached; how the groups participated, expressed themselves and came to a common conclusion about what they wanted.

Mamas' group

In the case of the Mamas, the process has also been the most innovative element. The visible outcomes (after several focus groups, a collective digital storytelling production and a specific request to become computer literate), have been the decisions to manage a blog, to keep on learning and to become computer trainers for other Mamas. The approach to teaching people basic computer literacy and new possibilities of use of ICT for empowerment has been experienced in different scenarios, including with underserved communities, an indigenous population, children or the elderly. In particular, the curriculum selected for the case study existed already and had been tested on adult women in neighbouring areas.

The elements of innovation emerged at the time of the testing and were from the different participants involved: Mamas, trainers, facilitators and the researcher. The Mamas asked for computer literacy training after realising they needed to learn more about the digital world, for themselves, for their children and their community. The organisation offering the training created an innovative entry-level workshop for people who have never used a computer and who came from underserved communities. The researcher invited some facilitators from the community to overcome the linguistic problem: the trainers had never worked in the indigenous languages. The role of the facilitators themselves evolved from translators of the training to cultural facilitators, able to explain concepts, ideas and to support the development of skills in the most appropriate way, helping the Mamas and the trainers to establish a connection and work on a fruitful path.

In the months that followed, the Mamas requested a series of follow-up activities and more training. The fact that they did not possess any devices, laptops, smartphones or tablets was creating a problem in their learning process of remembering all the lessons. However, they kept on asking people in the community to support them, to allow them to use their computers to strengthen their knowledge through constant follow-ups and repetition. This necessity helped to improve some community bonds as well, in particular with the younger generations. Some of the Mamas decided to go a step further and deepen their knowledge by accessing higher-level training. The elderly ones decided instead to use their knowledge to encourage younger people to develop ICT skills and were supportive of the connection between learners and trainers.

The training was innovative in its format and its development through the support of local cultural facilitators. Even more innovative was the process through which the elderly members of an underserved community acted: they asked for training, then moved on to look for more opportunities, not only for themselves but also for young people. The Mamas, never before exposed to technology, searching for new possibilities of digital learning and growing for the new generations.

Findings

The Mamas are innovative in the way they engage, share the information and knowledge and thus bring about innovation in their communities. Despite their limited digital skills and limited interest (their priorities are connected with everyday basic needs and survival discourses), they asked for training and persevered in looking for support to maintain their knowledge, improve

on it and spread it. They moved out of their comfortable, regular and traditional area of activities and positions as community leaders or mobilisers, to learn more and, innovatively as well, they suggested training and opportunities in ICT for younger generations. Usually, the youth are the ones who teach the basics of ICT to the elderly (Bailey and Ngwenyama, 2010). These Mamas showed that the opposite could also happen for different reasons: to maintain the contact, to avoid feeling left behind, to bring opportunities and to keep on being the engine of the community.

For the same reasons, the radio station founders focused their energy and resources on the analogue radio station and not on a digital one. The needs of the community and the service they want to offer are their fundamental aims. Obtaining the frequency licence for a community radio station that could be heard by the majority of the surrounding areas counts more than any alternative professionalisation. Visibility over an information system is not inclusive enough in their context.

The youth showed their commitment to social change as a priority throughout the entire process. The idea they tried to develop with the interactive website aimed at supporting the community at large. While the technological aspects of the project were moving slower than expected, their initiatives continued with collaborations with the other groups (they supported the Mamas during the training, and for their follow-up, they leased the radio station during some public events). They also created new activities in the area, the main one being fundraising for a recording studio in a container.

The innovations created in these case studies are information systems solutions, connected with how people can communicate and share information between groups and with the immediate community and beyond (the radio station, the Mamas' blog and the youth network website). This kind of information systems originates at the grassroots level. The processes started from what already existed, the active and connected groups, and what was already used, such as the analogue community radio station, a WhatsApp group for the youth network and the regular group meetings of the Mamas.

The innovations through specific ICTs have been limited, compared to the social ones, because of some external factors, such as the living conditions in the informal settlements of the communities.

In particular, the radio station members have not developed the possibility of using the website as much as they could, because of the costs of connection. The same applies to the possible

utilisation of the application for the smartphone to do outside broadcasting. Some options are still too expensive for the participants and their communities, for example, their actual audience will not be able to follow them online. A second reason for maintaining a low visibility profile and a limited number of activities is due to the members' desire to obtain the frequency licence for the station. The founders do not want to compromise their future with the legal system; being visible, while still not officially recognised, can produce a side-effect compromising their application and their future goals and opportunities.

Concerning the Mamas, the usage and appropriation of the skills learnt are still limited due to the lack of equipment. One group of the mothers received a laptop as a donation. It is a shared device that needs to be kept at the centre where they usually do voluntary activities. None of the mothers has access to it on a daily basis, and the possibilities to improve, learn more, or remember what they have learned are reduced. The access to airtime and internet data bundles is also a problem for them because of the high costs of connectivity. The possibilities offered by using the blog as a form of community journalism, or any other technological solutions, are not seen as having a direct and immediate impact in their lives or the lives of others. The main results have been the effort to learn more, to keep asking for follow-up, and to support and stimulate others to learn. The use of ICTs for the group collectively might develop further from the individuals who will take the lead and support the evolution of the process (Ramirez et al., 2014).

Concerning the youth, they are more interested in keeping the website alive and in using the technological possibilities and, above all, the social media for maintaining the contacts and creating and promoting new events, connections and networks. Despite the limited utilisation of their design creation and the interactive website, the process demonstrated its potential for innovation, bringing about new ideas, exposing participants to different uses of technologies and developing creative collaborations. This was due to the necessary investment in money and time. The simplicity of the use of social media, in particular, Facebook, and some of the local offers made by the telecommunication vendors support their extensive use (Dini, 2016). The website can become a framework and container for the main elements distributed and shared on social media. The registration of some members of the network to training on software development, the utilisation of the online-based, crowd-funding system for a music recording studio based in a container, the development of ideas of smartphones applications for musicians, are some of the subsidiary results of this evolving process.

Innovation from the Bottom

The types of innovation presented in this multiple case study are innovation from the bottom, not simply meant as the ‘bottom of the pyramid’, but from the poorest sectors of the population. The majority of the members of the groups involved live in the informal settlements of the townships of their origins. In this paper, the bottom is meant as the level of the consumers, the customers and the users often involved only at a later stage in the design process (Robertson and Simonsen, 2012) to validate a product or to cooperate when the designers have an idea in mind. In these cases, the idea and innovation lie at a grassroots level of participation and approach, from the bottom of the process, it's beginning, and then continue during its course in order to improve the possibilities of democratisation, ownership from everyone involved, eventually reaching sustainability, in order to achieve a social impact.

In the case studies, the ICT outcomes are not particularly original or innovative. What is more innovative is the process that developed and succeeded in maintaining a high level of participation – a collective collaboration and a constant focus on the social transformation. To reach these results, several elements seem essential for the processes to unfold and develop. Some of these enabling conditions are quite specific of these case studies; they are summarised here to highlight a way of proceeding. A synthesis of the lessons learnt, expressed as guidelines, will follow, to suggest a possibility to operate when trying to reach similar results in other grassroots unfolding innovation.

Enabling conditions

In all three scenarios, a climate of knowledge sharing and collective learning was present among all the participants. For instance, the majority of them never took notes during the workshops but counted on the memories of each other. A collective rationale based on the social ties and the trust is structural for their group formation, while knowledge transfer is embedded by these social structures.

An ecosystem of media is utilised without any value or stigma associated with the use of the different devices, old ones (such as the analogue radio) and new ones (like the smartphones). In some cases, new options are utilised to grant continuity to the old information systems more at risk of forced closure (such as the radio website, a support mechanism for the stabilisation

and growth of the radio station). In the same way, easy-to-use social media such as Facebook are connected with the more complex system of the websites.

Because many people do not possess sufficient technological devices and ICT skills, collective use of the social media is common, and a non-individualistic attitude is widely present. People share the groups' pages and their instruments such as smartphones and even emails.

The digital media ecology of the 'yard' supported the creativity and collective development of the processes. In the cases presented, the context is that of the informal settlements, of the backyards and often of the shacks, where everything comes together in proximity that brings about familiarity together with necessity.

Above all, for the groups of youth, the 'digital hub' is considered essential for the possibilities of exposure, connection and consultation. Even when moving from the 'yard hub' where they grew up and live, to the digital one where they feel that they can expand further, the groups maintain their cohesion and collective approach to doing things.

Despite the fact that the Mamas have not yet developed a digital hub, they succeeded, as the other groups did, to support, with their choices a system of 'info-powerment', where information gathered and processed got transformed into interventions (such as becoming trainers, spreading information connected to training and workshops, having a constant focus on learning and being updated).

Guidelines

The conditions of active and collective participation, strong ties and trust between the members, social transformation as the main objective, cannot be taken for granted. Their observation and analysis help to generalise an approach to research that aspires to valorise the uniquenesses of the situations and the capacity of all the stakeholders to capitalise on the local passions, expertise and capabilities. Other suggestions to replicate fruitful collaborations are derived from the analysis of the processes.

The processes showed the creativity that emerged while working in groups. The discussions, workshops and decisions never took an individualistic approach. This attitude can also help to maintain a constant level of interest and focus towards the collectivity.

The creativity emerged because there was a limited organisation of the process itself. From the focus groups, through to the digital storytelling creation, until the co-design workshops, all the phases were semi-structured and flexible to any evolution.

During these processes, creativity develops from what existed already. It is embedded in the context and not nourished from the outside.

The rules are 'relaxed' allowing the participants to have more normality, to interact in their way. The design process use of 'deviations' from the rules and routines of designing allows for cultural-specific ways of being to support the participants.

Working at a grassroots level, from the beginning of the process, in a constant dialogue with all the stakeholders, but letting the community participants remain the main decision-makers, avoids the risk of creating a distance between the needs and the results, and between the researchers and the participants. The projects will not need to be appropriated or transferred to the participants. The ownership belongs to them.

A process owned by the interested people opens the door to its sustainability, considered from the beginning and throughout the development of the project. Sustainability can never be taken for granted, despite the frugal resources involved and accessible costs. A grassroots, flexible approach can create the bases for sustainability, allowing the process to evolve how, when and where necessary. The innovation process will be constant and continuously evolve, supported by the key factors of essentiality and creativity.

These suggestions support researchers and practitioners who aim to transform scarcity into an opportunity (Radjou et al., 2012). This capability requires an open mind, a sense of flexibility and an ability to adapt. To improvise, to follow the flow of an evolving process, to maintain the ownership of an idea and to let it develop into a sustainable one, involves more than embracing the concept of simplicity and essentiality. Frugality expands its roots, moving its borders from the locally simply made and contextually embedded (Douglas 2013) to the generalisability of the creative process, that through improvisation and gradualness of the steps, reaches out for broader objectives than the simple affordability.

The serendipity (Kingdon, 2013) and spontaneity (Svensson et al., 2010) of the process of innovation are the key elements that support its evolution. The openness of the process is what supports the possibility for the imagination to develop (as it happens in the divergent thinking of Guilford [1967]). In this space where technical and procedural knowledge is absent

(Kristensson et al., 2004), and fewer barriers to evolve exist, it is possible to reduce the blinders towards innovation and operate in an ecosystem where participation, inclusion and growth can also develop.

Conclusions

The activities carried out in the communities have brought about some innovation. The processes developed at the time and without a specific framework of action and designed outcomes are still evolving and bringing about changes. The limited resources employed are another key element in these processes. For these reasons of improvisation, emergence, flexibility and frugality, the kind of empowerment produced by these processes of social innovation can be defined as sensible. It is tangible for the participants, thanks to the learning processes and outcomes, and it is reasonably visible for the other stakeholders involved. Furthermore, it is sensitive to the culture and daily activities of the participants; it is sensible because it is not imposed, not overwhelming, not aiming at changing the lifestyle, the views and the attitudes of the people completely.

The processes are in development. The activities are moving forward and developing new ideas and projects. A project assessment was done for each of the different groups. An assessment at an individual level could show more changes in the approaches of the people towards ICTs. An evaluation could be foreseen in the coming months. At the same time, another evaluation could deepen the analysis of the results of the processes for the communities at large and the continuation of the processes in the same direction of social improvement, empowerment and uplifting. Considering that the main idea was to work at grassroots level, with limited resources, leaving the participants free to decide every step, including the option to abandon at any moment the process itself, the results have been substantial.

6 DISCUSSION

The chapter presents an overview of the three case studies (6.1) followed by the summarisation of the principal findings of each case study (6.2). For each case, the findings are analysed in connection with the concepts of empowerment, development and emancipation. The principal outcomes related to these concepts are highlighted in table 6.1. Section 6.3 presents the emancipatory philosophy that guides the activities and defines the intentions of the participants.

An evaluation of the cases is exposed in section 6.4 underlying its participated development, the role of the local and external stakeholders and the potential long-term development.

The last section, 6.5, presents structural propositions of the emergent approach and founding principles which guided the research project.

6.1 Overview of the Case Studies

A short synthesis of the three case studies, Mamas' Groups (6.1.1), Youth Groups (6.1.2), and Community Radio Station Group (6.1.3) is presented before highlighting the main findings. The overview focuses on the temporal successions of the events as they develop along the three years of activities, from 2014 till 2016. 2017 was mainly dedicated to the analysis of the findings and the study of the follow-up activities.

6.1.1 Mamas' Groups

At the beginning of 2014, six groups of women took part in the first section of the research, the exploratory phase, through interviews and focus groups. The groups have been engaged for several years in charitable activities in the informal settlements. At the end of 2014, two groups of Mamas, as they are known in their communities, participated in the composition and production of a DST video to introduce themselves and represent their daily lives. The activity presented a novel opportunity for them to use digital technologies that in future could support their groups.

The emergent approach in which processes unfolded without a prearranged path supported the possibility of co-designing projects that evolve and allow the participants through reflection to decide on their roles and intentions. As a result of the DST videos, the groups' leaders requested training in computer literacy. Much preparation was needed for the training to determine the best way to introduce digital novelty and to establish the ways of interacting amongst culturally

diverse participants; between the trainers and myself on the one hand and the participating groups on the other hand.

The training was delivered by a local non-governmental organisation during June 2015 involving ten women from five different groups. In November of the same year, the leaders requested follow-up from an international organisation to strengthen their knowledge and to improve their technological skills. At the beginning of 2016, some of the trained women became co-trainers and volunteered to support the organisation and deliver training on basic computer skills to other women of their community.

During a seminar organised by myself and Professor Chigona at the University of Cape Town in May 2016, the women presented results of their experiences with ICTs. They explained their approach to the process in their own words, showing their consciousness and understanding of the process and presenting their newly acquired technological skills. The public presentation proved the strength and self-esteem gained during the process which provided them with the courage to stand up in front of an academic audience.

6.1.2 Youth Groups

In 2014, I met with five groups of youth who agreed to contribute to the research's exploratory phase through focus groups and interviews. At the end of the year, three of the groups participated in the creation of a DST video. During the process, the production that was to culminate with a music video, evolved into a motivational video for youth, promoting art and artistic collaborations. Motivated by the enthusiasm generated by the collaborative video, a series of workshops took place in 2015 involving several youth groups and professionals, including web designers and event organisers. The external participants evaluated and supported the improvement of the youths' skills.

The aim of the initial meetings, which were part of the overall workshop activities, was to organise a public open event. Skills, resources and tools of the different groups were analysed to verify the strength of the network which they had tried to develop and to evaluate the commitment of the groups' members to continue working together to offer a service to their community. A second part of the workshops was devoted to the creation of a website for the youth network with space to sponsor collaborative actions and space for additional information concerning every group. Representatives of each group were called to attend the workshops to acquire new skills.

Several results and outcomes emerged a year or more after the workshops and development activities of 2014 and 2015. In particular, groups strengthened their connections and capacities to collaborate. This was verified by the number of events organised in the community and the increasing number of followers on Facebook. The main projects developed were the Philippi Music Project, The Bridge Experience, Poetics Not for the Sake of it, and the re-launch of the initial network that gathered the different subgroups, the Inyanda Youth Network.

In 2016, some of the leaders of these groups participated in a seminar organised at the University of Cape Town. They had the opportunity to elaborate and discuss what they had learnt and specifically some of the ICT knowledge they had gained thanks to the series of workshops they attended. Some of these workshops received my logistic support while further training was undertaken by the youth in their own time towards improving their skills, such as the creation of smartphone applications.

6.1.3 Community Radio Station Group

Of the five youth groups I interviewed at the beginning of 2014, one group was particularly interested in ICT. The group members expressed their desire and dream to create a radio station for the community. They started the radio station in July without a licence, and by the end of the year, they had developed an idea of using videos to provide funding for the radio station. The project was described and presented through a digital storytelling video which illustrated the process from the moment the idea was conceptualised to the creation and opening of the new community radio station.

Conscious of their limited skills and knowledge, in 2015 the radio station founders requested my support for the development and organisation of a series of professional workshops to support the potential of officially registering the radio station. A number of people from the community including listeners of the radio, technicians and professionals attended the workshops. They aimed to help the team to improve their capabilities and possibilities to affect the society positively. Three external experts participated in the workshops, two professional journalists and a web designer. The workshops focused on ethics in journalism, community representation and editorial board build up. On the technical side, the workshops taught website creation and maintenance, use of written news, videos and photos. The workshop also set up live broadcasting on the Internet by uploading streaming of the main productions to their website.

The activities resulted in greater participants' interest which increased their potential to use technology to reach more people. The radio members used the opportunity to expand their visibility amongst their community and increase their professionalism. Furthermore, the community journalists started using an application on their smartphones to broadcast directly from the community and not only from the radio station. The project continued to evolve during 2016 when the founders of the community radio station decided to request a broadcasting licence from the government. At the same time, the founders decided to register as a local non-profit organisation to continue working with the community and not to lose the momentum through lack of funds. That same year, the radio station team presented the results of their activities during a seminar at the University of Cape Town and used the opportunity to develop new contacts and expand their network.

6.2 Summary of the Findings

6.2.1 Mamas' Groups

From the beginning, the Mamas embraced the new activities and after a brief exposure to ICT, they were determined to improve their skills. Their persistence, commitment and enthusiasm testified to their desire to continue along a path where dedication and an *empowering* agenda are essential. Their activities showed their support of their communities and resulted in succeeding in their social agenda. To increase their abilities, they met on a regular basis and challenged each other.

Their social engagement further emerged when they decided to learn about the opportunities offered through the use of ICTs. Like the networking workshops for community welfare, the computer training was empowering. It focused on strengthening the capacities of the women, making them feel secure and convincing them of their ability to develop new skills, to learn new knowledge and how to apply them. The trainers did not put pressure on the participants but worked with them, following their pace and giving them the attention needed, including one-on-one support.

Working for organisations with developmental aims, the trainers and the facilitators' approaches showed that the main objective of the training was to make the women feel comfortable in the position they were now engaging in. The follow-up training supported and reinforced the process initiated by the women and was scheduled according to their needs. The

capacity to express their needs and search for new organisations to support their learning growth is a further element representing the empowering process. They did not wait for external suggestions or propositions but became pro-active even in the new context of digital learning.

The inclusive approach the Mamas had followed in inviting others to participate in follow up phases, attests to a process of *development*. Revealing the learning opportunities to the community made it possible to share the benefits of their new knowledge. The development continued to evolve and produced results thanks to the elements of empowerment and to the Mamas' goals to make a difference for their community. In this regard, the women evaluated options that positively affected their society and not limiting their focus to the individual or group benefit. This reasoning matured over time to include potential social business involvement.

Regarding the potential *emancipation* of the women, increased empowerment through new skills and capabilities led to an enhanced self-perception and understanding of opportunities. This, in turn, led to a stronger commitment to interacting with their surroundings, using the technology, while considering new opportunities. The Mamas were able to continue their process of empowerment without external experts' support. They discussed and agreed on what could be useful, and they felt confident enough to decide for themselves what the follow-up steps should be. However, a complete emancipation process might require further steps in skills acquisition and beyond recognition of what they need.

6.2.2 Youth Network

The type of workshops in which the youth engaged, enabled them to discover new opportunities. They were empowered to deepen knowledge in some areas and to develop further ideas that they were already working on. The discussions during the meetings and their continued use of digital technologies enabled them to put concrete ideas on papers while defining ties between the individual groups. The subsequent steps enacted by the groups involved the analysis of the groups' available resources listed to work more efficiently together. This phase strengthened the relationship between groups and consolidated the feeling of shared social responsibility. With the support of tables of synthesis and presentation of drafts of the website with maps and images, the groups could visualise their ideas and take further decisions. The activities developed during the workshops strengthened the network and highlighted the understanding of its reason for existence and its capacities to act and involve other groups. The

strengthening and expansion of the network represented the *empowerment* phase that supported the entire process in the long term.

From a *development* point of view, the interactive website project has long-term scalable prospects for the communities. This also applies to the external participants. The built-in capabilities of the network allowed it to reach more youths and other existing or potential groups, using the same approach based on interconnections, artistic collaborations and capitalisation of youth qualities. In the case study, all the activities of DST, event organisations and website co-design, were developed with a series of specific groups. Nevertheless, the outcomes, the motivational video, the community events and the website, targeted the community at large and had an immediate impact beyond the groups themselves.

The impact was partially measurable through the estimated numbers of participants in the public events and the analysis of the data collected from the social media, in particular, from WhatsApp and Facebook. From the same data, it was possible to visualise the continuation of the process of development and its evolution and growth over time, through the aggregation of more and more youth in the network experience. Registration to the network, photos of the events, meetings organisation and schedule are all available on the social media.

The examination of the *emancipatory* process was done for the network as well as for the single groups. As per the Mamas, further analysis is required over time to evaluate the increased critical sense, the ameliorated strategic planning and anticipation capacity of the network. During the four-year project it had been possible to count the number of groups participating in the activities (already increased from the DST creation to the computer literacy training) and being involved in their organisation (empowering skills). The youth capabilities for reaching out to community members was verified through the lists of attendance to meetings, registers for trainings and participation during the events (developmental aims). The workshops, events and social media testify to the empowerment of these groups. This improved their sense-making, their reason to be and to come together, and ameliorated their decision-making system as a network.

Nonetheless, the aims of the different groups remained separate from each other and connected with the individual passions and desires of what they wanted to achieve. In an emancipatory way, some of the groups succeeded in planning strategically to move forward with their plans. One group opted for a crowdfunding process to develop a social business (Philippi Music Project) while another group created a partnership with a more organised group of musicians

(The Bridge Experience) and others chose to operate mainly through the social media with the creation of what they called ‘the WhatsApp radio’. Their capabilities to categorise and evaluate their skills represented critical reasoning in the direction of their emancipation from boundaries and balance of powers. Despite distinctive decisions as groups, it was possible for all of them to analyse and see the increased consciousness and determination to reach out to specific community goals.

6.2.3 Community Radio Station

From the beginning, the radio station group appeared to be the strongest; better organised and goal-oriented. Their venture began with fundraising within their community to collect second-hand material and to buy the necessary equipment to install a community radio station. The empowering phase of the process was represented by the professionalising workshops on the ethics of journalism and the distinction between the different radio station options (state-owned, community, commercial and pirate). Furthermore, that phase was displayed by the co-design activities to create a website and a digital radio station. The potential of existing community pirate radio station was also considered. In fact, the main elements of strength of the group participating in this case study were already present in their initial configuration. The participants were active, present and eager to learn and improve. Compared to the Youth and the Mamas who developed a process along the activities, the Radio Station group knew for what they were aiming.

The *development* process gradually grew, starting from the ideal concept of a community radio station, run by the people, for the people of the neighbourhood. During the workshops, the radio station funders, technicians and journalists opened the doors of the station to more community members, in particular, community leaders and listeners, to discuss the deployment possibilities of the radio station through a website or smartphone applications. While the digital option was not reaching the community due to the costs of connection, the journalists proposed an alternative option to involve the listeners and give them a voice, for instance with the possibility to phone in and talk live and to send WhatsApp messages to be read on air.

The main contribution of a community radio station lies in its potential to disclose local matters hidden from the main media and eventually access those channels as a contributor of news and as a source of information. The limited resources and capabilities of its staff were preventing the local radio station from developing its full potential. Regardless, the community members

now listen to the news in their language and participate in development plans supported by the radio station members.

The recognition of the limitations that are affecting their desire to improve and reach more people represents a self-evaluation element. Their strategic planning and anticipation capacities allow them to further their *emancipatory* direction. The founding members decided to put their radio production on hold and engage in the official registration process to obtain a licence and became a professional community radio station. This opportunity required an initial effort to subsidise the procedure and produce the necessary documentation. The members were eager to devote their resources to the project and to suspend the pirate transmission in order not to compromise the outcome of the procedure.

The vision was to create a sustainable radio station, which would benefit all participants involved, founders, technicians, journalists and activists. A direct income should be derived from the sponsors and the community as long as the radio station remains focused on its broadcasting aims. While waiting for the licence, the members recognised the importance of maintaining and reinforcing the ties with the community in order not to lose the momentum created by the pirate radio station. To achieve this objective, they registered their organisation as a non-profit through the Social Development Department to keep running activities within the community and to open up new possibilities.

The results reached by local and external participants in relation to the three categories of empowerment, development and emancipation are summarised in Table 6.1.

Table 6.1 Summary of the Results

Participants →	Mamas	Youth	Radio	Researcher	Community
Results ↓					
Empowerment Activities	Computer training; Follow-up activities to become co-trainers.	Events organisation; Website creation; Social media management.	Website creation; Registration of the radio station; Registration of the non-profit organisation	Deepening the knowledge of the communities; Interaction with cultural facilitators and external professionals.	Participation in the activities and possibility to engage in a different culture, to start a dialogue and a collaboration

Participants →	Mamas	Youth	Radio	Researcher	Community
Results ↓					
Development Processes	Activities focused and oriented towards their community (e.g. spreading of information about training).	Reach out to more groups; Increased number of events; Network creation.	Activities focused on a service that was missing and needed in the community; Involvement of more participants.	Testing of approaches developed; Evaluation of methodologies to support sensitive and participated processes.	Support obtained from community and external professionals (e.g. making resources available and attending when requested).
Emancipation Path	Increased self-esteem; Strengthening of the decision-making process amongst the groups.	Strengthening of the network relations; Recognition of inner resources and capabilities.	Desire to be recognised; Understanding the necessity to be registered and be more independent.	The improved consciousness of the intentions behind the project; The realisation that encounters count more than technology.	The realisation by stakeholders of the importance of alternative approaches, The realisation of the importance of activities carried out and of the principles behind the processes.

6.3 An Emancipatory Path

6.3.1 Philosophical Backings for the Findings

The findings show several elements of empowerment, development and emancipation that emerged through the processes. The analysis based on the selected theories presented above highlights the foundation for these elements to become fruitful. As presented in the methodological Chapter 3, the inductive phase of data analysis was guided by several theoretical concepts and was followed by a deductive phase of verification and corroboration. In particular, critical social theory combined with other theoretical concepts supported the overall analysis of the case studies. The theories were adopted to evaluate the findings due to their recurrent co-appearance in the literature (Zheng & Stahl, 2011). Choosing the critical

social theory as framework highlights my main intention of the emancipation of every person, starting with the involved participants.

The emancipatory process (McCabe & Holmes, 2009) became stronger and clearer as the project evolved through the chosen grassroots emergent approach. The structured, logical framework (Baccarini, 1999) was not pre-elaborated. The flexible framework enabled the development of several phases of the processes, activities and deviances. I moved away from the cooperation rules of development and allowed the initiatives to unfold over time.

The aim to support the community was maintained while the methodologies were adapted to the context (Lang, Wiek, Bergmann, Stauffacher, Martens, Moll, 2012). My approach to processes remained flexible and receptive to suggestions. The language itself evolved during the project. Initially, I came up with an idea which later was conceptualised. The local participants became project managers and the innovation incubators, while the external participants became facilitators, supporters and analysts. Continuous reflection on action allowed my role to change. As expounded by Berger (2015), I moved from the position of an outsider to that of an insider by modifying the activities where necessary and consenting to the various changes in overall activity. By evaluating and analysing the case studies, I was able to connect to the process through a comparative study with previous experiences, with colleagues' perceptions and feedbacks and with the outcomes, both in terms of realisations and relationships.

My position evolved during the processes while the participants became more and more empowered. At different stages in time, the groups developed new skills, increased their knowledge and took important decisions and responsibilities for their future. At the same time, a sense of emancipation emerged and became visible at different stages with regards to personal values, beliefs and perspectives of the people involved. Considering that the intentions of the participants were more difficult to obtain and articulate, the grassroots approach valorises the values, ideals and strengths of everybody all along the processes in an emergent and flexible way.

The background of the communities with their collective approach represents the groundwork for where the development processes started. The 'valorisation of diversity and the exposure and critique of inequality and domination', as expressed by Knauff (2011, p. 6) within his approach to culture, and the strengthening of the achievements based on mutual respect and

mutual learning (Bratteteig, Bødker, Dittrich, Mogensen & Simonsen, 2012), determined the possibility to move from an empowerment towards an emancipatory discourse.

Empowerment processes sometimes disregard the background experiences and the cultural heritage to produce what is considered enlightenment and improvement. As Hughes describes the contradictions of the rationalists, he explains how ‘most transhumanists argue the Enlightenment case for Reason without awareness of its self-undermining nature’ (Hughes, 2010, p.624). This vision of progress is criticised by the Frankfurt School, where the critical social theory developed, because of the rejection of the autonomy and consciousness of the persons (idem).

At the base of the reflection on the type of empowerment and development foreseen as suitable there is the focus on the local capabilities. Together with the attention to strengthening the local mechanisms of empowerment, the research focused as well on the evaluation and definition of the intentions of the participants, researcher, external professionals and community members (Buskens, 2014), their ideology and integrity. What the involved people want to achieve, why and in which way, depends on their values and ideologies, and in the case of this research, the emergent and flexible approach supported the possibility to take those elements into considerations when expressed by the participants.

6.3.2 Terminology and Intentions

The terminology is the reflection of choice to move in a specific direction, using a suitable approach. Without philosophical backings and questioning of meanings, it is difficult to analyse any possible results, considering how partial and discretionary an evaluation system could be, in particular when we are dealing with the emergent process; as underlined by Tacchi and Lennie (2014). The case studies which we carried out were analysed through the lens of critical social theory. During the four years of activities with and within the communities, a series of results emerged and were evaluated on the basis of that paradigm. The results were evaluated by focusing on my expressed intentions and of some external participants. The attitude and ethical care of the latter changed over time showing more sensibility to the cultural backgrounds of the local participants.

Despite the tendency to equate empowerment and emancipation as suggested by several authors, the emancipatory process aims to go beyond empowerment. In addition, emancipation processes embrace the life changes after following a path of recognition, analysis and

validation of the new knowledge and learning (Jönsson, 2010). Through this reflective process, the risk of ‘cultural imperialism’ is reduced and ‘the conclusion should thus be that the critical researcher will not prescribe certain features that the researcher believes to be emancipatory but gives the research subjects the chance to define their version of emancipation.’ (Stahl, 2006, p. 105).

Despite the recognition of the differences between the terminologies, there is still a potential risk of disruptive and controversial results during empowerment projects (Sahay, 2016; Martinez & Iacono, 2013). Amongst those risks, there is the possibility of a disconnection between the participants who may not recognise themselves not in the new culture, not in their previous one (Piccolo & Pereira, 2017). In operationalising Sen’s capability approach for ICT projects, Gigler (2004) recognises the positive and negative impact of ICTs and suggests conditions under which empowerment can be reached. To support a path of emancipation, focused on self-consciousness and determination, the project used empowering training and workshops specific and embedded in the context and culture. The identification of the main characteristics of the *local mechanisms of empowerment* supported the scope of disclosing the potentiality of emancipation, from the self to the others.

Initially, the emergent approach was used to verify where the people involved required specific interventions of support. Secondly, the emergent approach helped to identify potential risk factors associated with the development of counterproductive solutions (Lin, Kuo & Myers, 2015). Ultimately, an analysis of how the groups operate and cooperate and a schematisation of what exists and what is valued, supported the evaluation of the possibilities to move forward (Esteves, Franks & Vanclay, 2012). In particular, visualising those elements, the local participants understood their options and chose. Over time, the process allowed the participants to lead the change, to create further opportunities, to strengthen these local mechanisms and make them more productive resulting in further empowerment, community development and eventual emancipation.

As stated in the introduction, often the terms empowerment, emancipation and development are used interchangeably. Different words could, in fact, fit into the discussion and could support its analysis. The main concept and contribution connected with this overall reflection of the case studies rely on the importance for the researcher to disclose the intentions behind a choice on how to study, analyse, operationalise and evaluate an intervention of ICT4D. Avgerou refers to it as “discourse” that ‘indicates more specifically the research language of

concepts, theories, and methods through which researchers form the object of a research study and construct arguments about it.' (Avgerou, 2010, p.2). The use of specific words, such as emancipation, and the explicit referral to an ideology or a theoretical framework, such as critical social theory, can diminish the possible deviations and misrepresentation of a phenomenon and support the dialogue with similar or alternative positions.

An evaluation of the outcomes of the three case studies involved interviews, participant observation of the context and the participants themselves, external observations by people involved indirectly in the processes, interviews by third parties, and social media use analysis. The validity testing was constantly pursued, along with the entire research project and after several months, to verify whether the first evaluations were consistent and still valid. An elaborated explanation will follow.

6.4 Evaluation of the Processes

This section discusses multiple layers of evaluations which took into account local and outsiders positions. The outcomes are also evaluated together with the sustainability of the project.

6.4.1 A Participated Evaluation

The evaluation of the research activities took place in a participatory way to validate the results and to provide opportunities to deepen the analysis. Empowerment, development and emancipation are some of the recurrent themes of the research valued as possible outcomes of the different activities and processes followed. The evaluation of those results involved the participants during the four years through discussions and analysis of the activities in stimulating the externalisation of their perspective. Furthermore, the possibilities offered to every participant during the different phases to voice her or his opinion gave the person expressing the idea a way to structure it. In fact, stating a feeling or a perception, formulating an opinion to explain to others, sharing the understanding of a project supported its transformation into constructive ideas.

The process of expressing impressions, perspective and ideas happened above all at group level encouraging everybody to express her/himself and supporting the collective generation of new proposals. The process involved the groups and, as a consequence, their communities. This method represents a further reason to do the general evaluation with the groups and not with the individuals or the larger community. Some individual feedbacks, from community

participants as well as from the external stakeholders, were necessary for the validation of the results. At the same time, the individual interviews and informal talks allowed specific details to be mentioned including expectations and possible discomfort.

The participated evaluation subsumed some challenges. The challenges were due to the multitude of stakeholders involved, local and external, and to the approach chosen, emergent and flexible. The external participants had the opportunity to express their evaluation both in the presence of the local communities and during separate occasions. In particular, the representative of the NGO who runs the computer training, the two directors of the radio station, the creator of the crowdfunding for a music studio container, the professional journalists and the professional web-designer were interviewed separately.

In the same way, only the representatives of the community groups attended the university seminar and received the feedback given by academic representatives at the official presentation of the three case studies. A presentation organised in the community would have seen the participation of the entire groups and will have offered them a more comfortable scenario to introduce, explain and answer any questions. The academic participants would also have had a better understanding of the environment, processes followed, and internal mechanisms in place.

6.4.2 Stakeholders' Evaluation

Field-notes, interviews and comments of the different stakeholders were essential for analysing the emerging and growing degree of participation. The individual groups expressed their opinions connected with the methodological approach and their feelings during and after the activities carried on. Their opinion and feedback were constantly verified together with the impressions and opinions of the responsible persons of the supporting NGO as well as with the interviews done with the external professionals involved in the activities. Both the NGO and the external professionals, particularly, the organisation that deployed the first computer training and the international web designer and journalists, were aware of the limits of an intervention designed to accommodate as much as possible the intentions of the local communities.

The NGO, which deployed the computer training, had a separate internal evaluation form for the expected outcomes and the average results obtained in similar situations. At the end of the training, they expressed their positive feedback to the group and opened up the possibility for

further collaboration. Those collaborations grew during the following year as a confirmation of the initial evaluation; new Mamas registered for training while some of the Mamas trained in 2015 became co-trainers. Some moved a step further and registered with the NGO for specific training. In 2016 the NGO opened a branch office in the township where the Mamas are active. The positive experience and the recognised need for their services in Philippi stimulated the organisation to expand their activities and operate in new communities. The support received from the cultural facilitators during the training and the interest of the Mamas to deepen their knowledge and involve new people played a pivotal role. The NGO expressed its gratitude to the participants for opening up this opportunity to reach more beneficiaries.

The international experts cooperated with enthusiasm. They sponsored their displacements and operational costs. Their motivations were merely humanitarian. Some of the collaborations were maintained due to the common visions shared by the groups and the professionals, in particular, the development of the radio station and strengthening of the organisational capacities of the newly registered non-profit organisations. The community groups were constantly present and could evaluate the processes on a daily basis for both single activities and over a longer term. The verification of the evolution of the processes that kept on revealing opportunities supports the choice of methodology.

6.4.3 Evaluation of the Outcomes

The evaluation of the project started by the considerations of the processes developed, focusing on the value attributed to participation and on the evolving roles of the participants. In particular, one of the main outcomes is represented by the community members who became over time, the managers of the project.

At the same time, the evaluation was done on the quality of the activities, the quantitative benefits and the products created. The activities evaluated were training, workshops, discussions and presentations. The overall evaluation was done through qualitative instruments, such as interviews and discussions, with the support of some quantitative measurements of the participation in the activities, follow up projects and social media responses. Several registers were used to monitor the activities:

- attendance lists during the activities and during the follow-up activities;
- registration of community members external to the groups in the events organised by the groups; and their

- subsequent registration and affiliation to the inviting network.

The products created were:

- three videos (DST link available in Appendix D);
- two websites (Inyanda Youth Network and IQ FM);
- several Facebook pages regularly updated (mainly pages created by the youth groups);
- public events held every month and sponsored via Facebook and WhatsApp;
- registration of three non-profit organisations (The Bridge Experience, Philippi Music Project and UbuntuBethu);
- registration of the radio station and obtaining the licences.

The fact that the focus of the research was on the processes and not on the outcomes also represented an important element for the evaluation. While the results, such as the creation of the artefacts, could be evaluated at the end of the research project, the processes themselves and their development required continued evaluation, following the evolution of the phases and in particular the critical moments when new ideas triggered new phases. Those moments represented decisional steps and opportunities for the communities' participants to take the lead and mark a milestone in the process.

For the participants, producing an artefact or artefacts during the time was important. It helped the groups to maintain the focus, to keep on gathering and developing propositions and keeping on moving forward, to reach their objectives. For the research, it represented the possibility to analyse the creative phase, the production phase and the use of the artefacts. The analysis of the use of ICTs was done and managed at the group level, but in future, further study might evaluate the impact that the new communication means and the acquired knowledge of the groups are having on the network.

6.4.4 Sustainability

In the long term, the evaluation was done looking at the concept of sustainability. *Sustainability*, as the capacity of the interventions to continue over time (Lyons, Smuts & Stephens, 2001), is a key issue for any project. When analysed in this way, the case studies can claim to have attained it. Each process developed by this project continues to operate, and the community groups are actively exercising their new capabilities. Pertaining to processes,

sustainability faced the challenge of the constant innovation and evolution of the technologies (Scheuerman, 2009). On the other hand, adaptability and appropriation of technologies offered a unique opportunity for the processes to adjust and adapt to emerging needs (Cherry & Bauer, 2004).

At the commencement of the project few of the Mamas operated a smartphone, while after four years, the majority of them were able to operate one. In 2014 youth relied on their leaders for opportunities to study, to perform and to participate in events, but by 2016 the majority of the youth groups' members were active on social media. While in 2014 the radio station seemed only a dream, by 2017 a group of volunteers guided by the founders collaborated to obtain the government licence to broadcast.

The communities where the project developed presented severe conditions of inequality, mostly connected with unequal access to essential services, health, education and information, limited participation in knowledge creation and fruition and social marginalisation. Where what Heeks (2008) calls “mega-problems” were found, specifically with a research setting in the underserved environment of the informal settlements of the townships of Cape Town, small solutions for specific *situated empowerment* were observed (Manzini, 2013b).

Each case study represented a process that is still evolving, and considering sustainability only from the temporal perspective, the project achieved the desired result. However, from an economic and politically sustainable perspective, as is sometimes considered in the ICT4D literature (Heeks, 2010), the case studies did not reach a sustainable status. Nevertheless, some Mamas registered for business training to learn how to commercialise their craft productions and encouraged digital training for unemployed younger members of their communities. Several youth groups started supporting their activities through digital crowdfunding and increased collaboration with established music producers and events' organisers. The radio station moved from the illegality of their initial broadcasting to official registration that is opening up opportunities for sponsorship, both for equipment and for the potential of doing commercials. Economic sustainability will require future evaluation.

Considering the long-term evaluation, configurability (Orlikowski, 1992; Williams, Stewart & Slack, 2005) and incrementality of the three processes are still options.

A sign of the *configurability* potential of the cases is present in the different unforeseen directions the project took, the unexpected outcomes. The engagement of the local participants in deciding which activities to continue, in modifying the suggested training and workshops,

in involving further internal and external participants, configured the evolution of the processes. From the perspective of the artefacts created, the websites and radio station configurations followed a transparent and accountable process showing how customisation was part of collaborative work. Customising the workshops and adapting them and the systems to the local context supported the process of appropriation work, where, as stated by Balka and Wagner (2006), adaptation relates to technology as well as to ‘reconfiguring organisational relations, work materials, as well as aspects of the physical environment’ (p.230).

The *incrementality* for the three cases is proven by the interest of people in attending and being part of the activities and by the desire of the participants to include more members of the community. Groups which did not participate in the activities from the beginning of the research project became involved over time. An evaluation index of the possible *scalability* of similar processes is obtained by the analysis of the increased number of Mamas groups interested in digital training, the number of groups of youth joining the Youth Network, the increasing connections of the radio station with the community groups and other organisations. The possible replication of the processes of collective empowerment through ICT is analysed in the final chapter, before considering future potential theory and further practice development.

From an academic evaluation perspective, sustainability, configurability, incrementality and scalability showed that the methodology adopted could contribute to the body of knowledge of the existing theories of collective capabilities, empowerment, social capital and participatory design. The emergent approach, tested and evaluated during the four years of the research project, is synthesised in structural propositions and founding principles.

6.5 Final Discussion – Propositions and Principles

The final discussion presents four theoretical propositions (6.5.1) of the emergent approach used to unleash collective empowerment in cross-cultural environments. The founding principles (6.5.2) summarises the building stones to disclose the potentiality of ICT4D projects.

6.5.1 Theoretical Propositions

The research employed critical social theory as the theoretical framework. Several philosophical concepts drawn from other theories were utilised to support the analysis of the findings. The application of the theories in a different context and in a flexible way led to the development of propositions which disclosed the potential of collective empowerment through

ICTs. The research phases followed an abductive strategy which started with empirical observations and moved towards the formation of new propositions, through cycles of verification and confirmation. The result is an emergent approach for both research and practice.

The last phase of the research studied the theoretical and methodological contributions developed during the four years of activities. The synthesis of the flexible methodology used during the entire research project from the ethnographic phase to the design phase is presented in the form of four propositions. They form a process model for engaging in ICT4D projects locally embedded, owned by the community and sustainable. The model was developed by analysing the results and through the contribution by the experts and members of the community. The initial intention to support the disclosure of the potential of collective empowerment for social goals using ICTs in the specific context remained unchanged. Responsive approaches, which were sensitive to cultures and values and oriented towards the conscious participation of the people involved, allowed the main intention to find ways to be reached.

The propositions presented here are the synthesis of the flexible and semi-structured methodology used in the study. They take into consideration all essential and innovative elements. They are on the one hand the flexibility of the approach and on the other hand, the extreme care devoted to unleash and uplift the local strengths and collective capabilities. The formulation of propositions of an emergent process model delineates its capability to be replicated to spur results in contexts where similar conditions are present. In the final chapter, the limits and determinant factors of this possibility will be further evaluated.

The propositions that built a theory for a sensible emergent approach for ICT4D projects are:

Proposition 1: When the approach is emergent and sensible, and the process is allowed to unfold flexibly, more sensibility, serendipity and cultural cognisance can reveal from the actors.

Proposition 2: When the approach is emergent and sensible, and the process is allowed to unfold flexibly, more creativity, grassroots possibilities and ownership can emerge from the participants.

Proposition 3: When the approach is emergent and sensible, and the process is allowed to unfold flexibly, local mechanisms of empowerment and development, such as resilience and collective capabilities, can be strengthened.

Proposition 4: When the approach is emergent and sensible, and the process is allowed to unfold flexibly, more possibilities for sustainability, adaptability, and incrementality can develop.

The analysis, following the abduction strategy, after the formulation of the propositions, proceeded with the participants checking and validating of the derived theory. During the fourth year of the project and beyond, a new series of individual interviews were done. In addition, participation in the group's meetings, evaluation of follow up activities carried on by the groups, maintenance of a regular relationship and presentation of the findings to external professionals by both the community participants and the researcher were carried out.

The research cycle concluded with the analysis of the three processes and of the propositions in the light of two theories used in the information systems studies over ICT4D: frugal innovation theory and social capital theory. The final paper focused on the analysis of the processes using frugal innovation theory as a reference, and in particular, it elaborated the concepts of frugality as essentiality and methodological innovation. The analysis of the processes using frugal innovation theory helped testing proposition 1 and 2 connected with the cultural sensibility and creativity.

Proposition 3 relates directly to social capital and collective capabilities. Implications related to the social capital theory had been essential during the evaluation of the limits of the research and the testing of Proposition 4 (see Chapter 7). In fact, many of the unfolding and unplanned events happened thanks to the social relations built over time by the community members amongst groups, with the researcher and later with the professional figures that supported the empowering activities during the four years.

6.5.2 A Process Model for engaging in ICT4D



The propositions represent a process model to guide future engagement in ICT4D. The premises are the characteristics of the type of approach chosen. Table 6.2 highlights the characteristics used in the research project.


Table 6.2 Characteristics of the Emergent Approach

PREMISE	IN THE CASE STUDIES	IN THE LITERATURE
Emergent	The process is not pre-defined; the possible activities are unplanned. The path follows the flow of the events.	Truex et al., 2000; Alexiou, 2010
Flexible	There is no timeframe and schedule of activities. Participants are ready to organise and re-organise an activity as well as to move or relocate to attend.	Ciborra, 1996; Olin and Wickenberg, 2001
Sensitive	Attention is given to vulnerability, diversity and cultural specificities.	Guillemin & Gillam, 2004; Winschiers-Theophilus et al., 2012

The envisaged consequences are expressed in the above-mentioned propositions and highlighted in Table 6.3. The series of consequences can easier develop in a consequential way, from the first to the fourth proposition as represented in the table by the arrows.

Table 6.3 Consequences of the Approach

CONSEQUENCE	IN THE CASE STUDIES	IN THE LITERATURE
More sensibility	External participants are not pushing for activities and/or suggesting solutions; more egalitarian relationships are supported;	Karnieli-Miller et al., 2009;
Serendipity	Unanticipated activities (e.g. DST videos and subsequent activities) allow for strategic data to be observed and to develop the process further;	Dearden & Rizvi, 2015; Kingdon, 2013;
Cultural Cognisance 	Over time, the knowledge and understanding of the people and of the processes are growing (e.g. realising the importance of the analytical radio station).	Gaver et al., 1999; Aluwihare-Samaranayake, 2012
Creativity	Open brainstorming and self-expression of every participant increase the creative mood (e.g. a music recording studio in a container);	Sanders & Stappers, 2008; Johri & Pal, 2012; Montuori, 2003;
Grassroots potentials	Local participants' ideas are encouraged, and locals take the lead and decide the follow-up activities (e.g. the Mamas involved other women and contacted other NGO to support);	Walsham, 2017; Heeks, 2009; Cornwall, 2008;
Ownership 	The decisions are taken locally, and the projects are managed by local participants (e.g. the community radio station choose to become legal and obtain the licence).	Rey-Moreno et al., 2015a

CONSEQUENCE	IN THE CASE STUDIES	IN THE LITERATURE
Local mechanisms of development and empowerment (such as Resilience and Collective capabilities) 	Community members strengthen their knowledge and understanding of their capabilities and further develop local enablers and solutions (e.g. the three processes developed thanks to the collaborations – collective approach- and openness to new opportunities –resilience-).	Winschiers-Theophilus et al., 2010; Fischer, 2003; Greene, 2000; (Manzini, 2013a; Thapa et al., 2012)
Sustainability Adaptability Incrementality	Continuation over time with the possibility to become also economically independent (e.g. the 3 processes evolved during the time; the radio station and the recording studio became economically independent); The capacity of the community members to use the new possibilities and capabilities of the participants to modify the solutions when and as needed (e.g. the Mamas involved the Youth; the radio station choose to operate both online and not); Potential of the process to involve other participants, to replicate itself or to use the process model to develop a new process (e.g. the Mamas replicated the process they engaged in; the Youth and the radio station strengthen their networks and created new opportunities for their future).	Lyons et al., 2001; Ali & Bailur, 2007; Carroll, 2004; Winters et al., 2008; Cherry & Bauer, 2004; Soni & Krishnan, 2014; Burrell & Toyama, 2009.

6.5.3 Principles

The validation and participants' checking process of the approach with the different participants through the four propositions and the theories mentioned above had been summarised in three principles that could be considered as the building stones for all the ICT4D projects to bring to light their potentiality.

Principle 1: 'It is the talk, not the tech'. The first principle is a suggestion for every researcher and practitioner involved in ICT4D projects to adopt a cultural anthropological account of

values and capabilities in every community research activity. The relationship-based “It is the talk, not the tech” approach should guide the developmental studies and projects that aim to achieve a better quality of life for all through ICTs.

Principle 2: ‘Serving the needs’. This principle ensures that research and practice in ICT4D are indeed serving the needs of every person. In particular serving those who suffer unequal access to essential services, such as health, education and information as well as limited participation in knowledge creation and social marginalisation. ‘Best practices’ in ICT4D should question such *status quo* and offer a way to change the unjust systems working towards social transformation. Existing conditions and intentions are decisive for the adaptation to new situations, avoidance of direct conflict, sensibility towards others, openness towards potential opportunities such as the ones offered by ICTs, raising consciousness and improving social justice.

Principle 3: ‘The stone soup’. This principle recalls the folk story of a soup made by community people who shared what they had and transformed an inedible meal into a nutritious and tasty soup. The soup which started only with stones became good thanks to all the different ingredients added (carrots, potatoes, onions), all of which were valued pretty much the same, including the inedible stones. As it happens in the story of ‘the stone soup’, the principle invites researchers and practitioners to share and to support processes where everybody brings what he or she has. Achieving a ‘tasty’ result is made possible when all the participants are investing and pooling their social capital, connections and resources. The other ingredient suggested by this principle is represented by the equal value attributed to every contribution.

While the analysis of the phenomena ended with the elaboration of the four propositions and the three founding principles, the processes continued to develop. As per the semantic meaning of the word development, the community projects kept evolving and moving forward. Before the presentation of the potential further studies connected with this research, limitations for replication are presented in the final chapter.

6.6 In Synthesis, Chapter 6

At the beginning of 2014, six groups of women and five groups of youth took part in the first section of the research, the exploratory phase, through interviews and focus groups. Of the five youth groups interviewed, one group wanted to build a radio station for the community.

Three DST videos were created by some collaborations amongst groups. This phase of research represented the connection between the exploratory and the design phase. The consequences were the deployment of a computer literacy training for Mamas, the development of a series of workshops for events creation and journalism options and the co-creation of two websites. Over time, the different groups choose to continue to develop their ICT skills and reach out to more community members through crowdfunding, use of social media and creation of a new partnership with more organised groups.

The outcomes, the motivational videos, the community events, the websites and the radio station targeted the community at large and had an immediate impact beyond the groups themselves. Despite their distinctive decisions as groups, it was possible for all of them to analyse and see the increased consciousness and determination to reach out to specific community goals. The grassroots emergent approach to processes remained flexible and receptive to suggestions. The researcher's position evolved during the processes while the participants became more and more empowered.

The analysis connected with the increased number of Mamas interested in digital training, the number of groups of youth joining the Youth Network, the increasing connections of the radio station with the community groups and other organisations, represented an evaluation index of the possible scalability of similar processes.

The focus on the local capabilities, together with the more complex focus on the evaluation and definition of the intentions of the participants, researcher, external professionals and community members, their ideology and integrity, is at the base of the reflection over the type of empowerment and development foreseen as suitable.

In addition, the evaluation, through registers, interviews and social media usage data, considered: participation in the groups' meetings and activities; evaluation of follow up activities carried on by the groups independently by the external participants; maintenance and strengthening of existing relationships and creation of new networks; presentation of the findings to external professionals by both the community participants and the researcher.

In fact, many of the unfolding and unplanned events happened thanks to the social relations built over time by the community members amongst groups, with the researcher and later with the professional figures that supported the empowering activities during the four years.

The research phases followed an abductive strategy which started with empirical observations and used critical social theory, collective capabilities approach and participatory design in an embedded context to move towards the formation of new propositions, through cycles of verification and confirmation. The synthesis of the flexible methodology used during the entire research project from the ethnographic phase to the design phase is presented in the form of four propositions represented in a process model to engage in creative, grassroots, owned, sustainable ICT4D projects.

The cycle of the research ended with the analysis of the three processes and of the four propositions in the light of two theories used in the information systems studies over ICT4D: frugal innovation theory and social capital theory. Implications related to the social capital theory had been essential during the evaluation of the limits of the research and the testing of the process model.

The validation and participants' checking process of the approach with the different participants through the four propositions and the theories mentioned above had been summarised in three principles that could be considered as the building stones for all the ICT4D projects to bring to light their potentiality.

7 SUMMARY AND VISION FOR FURTHER STUDY AND PRACTICE

The summary of the primary goal and outcomes of the research recalls the initial chapter (7.1). The summary of the methodology recalls the way the procedure was carried on and the main contributions it generated (7.2). The synthesis of main contributions to research and practice closes this summary of the research project (7.3). The continuation of the chapter will present the determining factors that allowed the research to reach the objectives and the limitations of the same (7.4) followed by a presentation of the potential for the project to expand and reach out to more participants in the communities or to be replicated in other communities (7.5). The conclusions (7.6) present the possibility to develop further the theories applied and to research further the collective approaches.

7.1 The Research Project Objectives and Outcomes

Forged by the open debate between technocratic imperialism and recognition of the potential of ICT, as well as the inevitability of ICT, this thesis attempts to answer the questions connected with the way ICT can contribute to improving people's lives in underserved communities, thus avoiding the risks of modern colonialism. Frugal social innovations created and rooted in the needs and desires of the community groups developed thanks to an emergent, sensitive and flexible approach. Participants were not pushed to adopt an ICT solution to solve their problems but were triggered to participate in activities that could expand the possible horizons and augment the array of choice for everyday problems. This research is framed by a holistic vision of the meaning of development and the concepts of empowerment and emancipation. A four-year project in underserved urban settlements of Cape Town was presented and analysed based on several theoretical concepts.

The research objective to positively affect the situation was based on the grounded understanding and conceptualisation of social processes, testing and evaluation of an emergent methodological approach and formulation of recommendations to answer the research question: How can ICT contribute to collective empowerment in underserved urban communities? The sub-questions that emerged along the research focused on the deepening of the evaluation of the approach used in the different cases to develop collective creative activities and strengthen local mechanism of empowerment. The answers highlighted a series of enablers to support research and practice in ICT4D (Table 7.1).

Table 7.1 Research Question and Sub-questions

QUESTION	IN THE STUDY	IN THE LITERATURE
How can ICT contribute to collective empowerment in underserved urban communities?	Strengthening of social capital; developing frugal social innovation; supporting inclusive, equitable, grassroots processes	Migheli 2017; Thapa et al. 2012 Hossain, 2016a; Zeschky et al., 2011 Chataway et al., 2014
How do people develop new capabilities and how can people be empowered through joint activities and group actions mediated by ICT?	Developing critical artefacts and cultural probes to raise awareness; collective storytelling to discuss, test and structure new opportunities; through networking, mutual learning and capacity building content and knowledge creation	Bowen, 2007; Crabtree et al., 2003 Mumtaz, 2015; Klæbe & Foth, 2006; Copeland, 2012 Simonsen & Robertson, 2012; Wenger et al., 2002 Johri & Pal, 2012
What approach can encourage the co-creation of ICT products and services by which people expand their capabilities and choices?	An emergent, flexible and sensitive approach allows for: innovation and creativity to emerge; relationships (based on trust and respect) to develop and become stronger; the potential for corroboration, replication of similar processes and of ripple effects to happen (Cf. the 4 structural propositions)	Montuori, 2003; Ali & Bailur, 2007; Guilford, 1967 Bratteteig et al., 2012; Edwards & Mauthner, 2002 Webb & Buskens, 2014
How can ICT4D researchers and practitioners operate to attune and boost local mechanisms of empowerment, interaction and sharing in group settings?	With an approach based on relationships building, with a socially relevant focus and an egalitarian attitude (Cf. the 3 funding principles)	Krauss, 2012 Brereton et al., 2014 Wong et al., 2010

QUESTION	IN THE STUDY	IN THE LITERATURE
Which methods can support a grassroots, sensible and inclusive approach to ICT4D?	<p>Collective approach for inclusiveness;</p> <p>simplicity and affordability of the process to be grassroots;</p> <p>familiarisation with context and participants to be sensible;</p> <p>peer-to-peer and mutual learning methodologies for inclusive, grassroots and sensible approach</p>	<p>Foster & Handy 2008</p> <p>Van der Boor et al., 2014;</p> <p>Kapuire & Blake, 2011</p> <p>Suchman, 2002</p>
Which approach and enablers can unleash the potential of every participant to contribute to ICT4D projects?	<p>An egalitarian approach based on the ethics of justice and care.</p> <p>The enablers are reciprocity, flexibility and relaxed rules (to give time to strengthen the capabilities, such as decision-making, and acknowledge one's own potential/self-consciousness).</p>	<p>Beauchamp & Childress, 2001; Israel & Hay, 2006; Mauthner et al., 2002</p> <p>Olin & Wickenberg, 2001; Winschiers-Theophilus et al., 2010</p>

The question and the sub-questions emerged during the processes. In fact, the initial objective was to approach the community groups without assumptions and pre-defined hypothesis. Based on the mapping work done, the purposive sampling allowed to start the collaboration through focus groups initially characterised by the lack of a specific theme, and interviews where space was given to the participants to express themselves. The consequent discourse analysis supported the possibility to quote the participants and to start the elaboration of the description of the meanings and of the context, as described by the participants and as observed during the collaborations. The phenomenological analysis, as described by Creswell (2013), continued with the corroboration granted by the agreement between coders (Padilla-Díaz, 2015) and co-authors and subsequently by participants during the production of the DST videos which represented a further possibility for local participants to express their experiences and to elicit their stories (Starks & Brown Trinidad, 2007).

Concerning the conceptualisation of the lived experiences of the participants, the study conceptualised the processes by which the groups expanded their capabilities by two-way information flows mediated by ICT and interpersonal relations. This became another objective

of the research. The focus of the analysis and evaluation was on: 1) *interpersonal relations*, how people relate inside their group, within their community and with external participants in ways that serve their needs and help them develop new capabilities; and 2) *collective action*, how people develop new capabilities and are empowered through joint activities and group action mediated by ICT.

The understandings were used to theorise an approach to the co-creation of ICT products and services that may serve more feasible and appropriate or novel ways by which people expand their capabilities and choices drawing on relations and joint actions. Theorisation objective moved together with the *testing and evaluation of the emergent approach*, conducive to the elaboration of the theoretical propositions and of the founding principles to harness the potential of ICT amongst groups for cultivating the expansion of people's capabilities and collective empowerment. The study intended and produced as well *design recommendations* and guidelines for the co-creation of new or more sustainable ICT products and services that may attune and boost local natural ways of interacting and sharing in group settings.

7.2 The Methodology

An emergent approach is at the base of the research that developed in cyclical phases: several design exercises followed an exploratory ethnographic phase. The initial design phase of DST videos creation was instrumental in deepening the exploration and understanding of the social processes that continued throughout the entire project. While design innovations were still unfolding, the monitoring and evaluation of the activities supported further exploration phases. These phases of exploration and design influenced the theoretical reflection and showed the cyclical abductive strategy at work (Blaikie, 2004; Tavory & Timmermans, 2014).

The abductive research strategy is in accordance with the emergent disclosure of the findings. The initial inductive method was supported by different theoretical concepts utilised to reflect on and analyse the discourses and meanings used in the literature as well as in the field (Blaikie, 2007). The design phase of the case studies was analysed through methodologies that proved adequate in contexts where the researcher comes from a different cultural, social and economic background. The abductive strategy including cycles of empirical and theoretical analysis supported as well the emergence of a prescriptive phase (Paavola, 2004). The methodological choices based on an emergent approach and an abductive strategy are fundamental for reaching contributions to knowledge and practice.

Contributions to knowledge come from analysis, evaluations and elaborations over the philosophy and methodologies that support a flexible, value-sensitive approach in ICT4D studies. The conclusive four propositions represents the process model. An emergent sensible approach and a flexible process support the potential to reveal more sensitivity, serendipity and cultural cognisance from the people involved; more creativity, grassroots possibilities and ownership to emerge from the participants; local mechanisms of empowerment and development, such as resilience and collective capabilities, to be strengthened; more possibilities for sustainability, adaptability, and incrementality to develop.

Complimentary to the propositions are three founding principles for ICT4D studies. They underline: 1 - the essence of the involvement of and collaboration amongst local and external participants; this building stone is represented by the relationships built ('it's the talk, not the tech'); 2 - the second principle brings attention to the intentions of the participants to be part of a developmental project; this principle relies on the ethics of justice ('serving the needs'); 3 - the third principle emphasises the spirit of participation in its mutual and egalitarian perspective ('the stone soup').

Contributions to practice come from the design and testing of those propositions and principles, guidelines and suggestions for research and practice in ICT4D to support similar projects based on a grassroots, collective, socially engaged, and emergent approach.

The primary outcomes generated thanks to the methodological choices are presented through five papers. The first two papers contribute to the grounded understanding and use of theories in the context. Papers numbered three, four and five expand the understandings while testing and evaluating design methodologies. The abductive strategy final phase of creation of the propositions (cf. Figure 3.1, p.33) is not presented in the papers which represent specific moments of the research and not its final synthesis (Figure 7.1 shows the papers production corresponding to the project phase).

The grassroots perspective, chosen from the beginning, and based on the collective approach and the social focus and intentions of the selected groups, was maintained all along the processes, in order to allow every participant to fulfil their quest for emancipation.

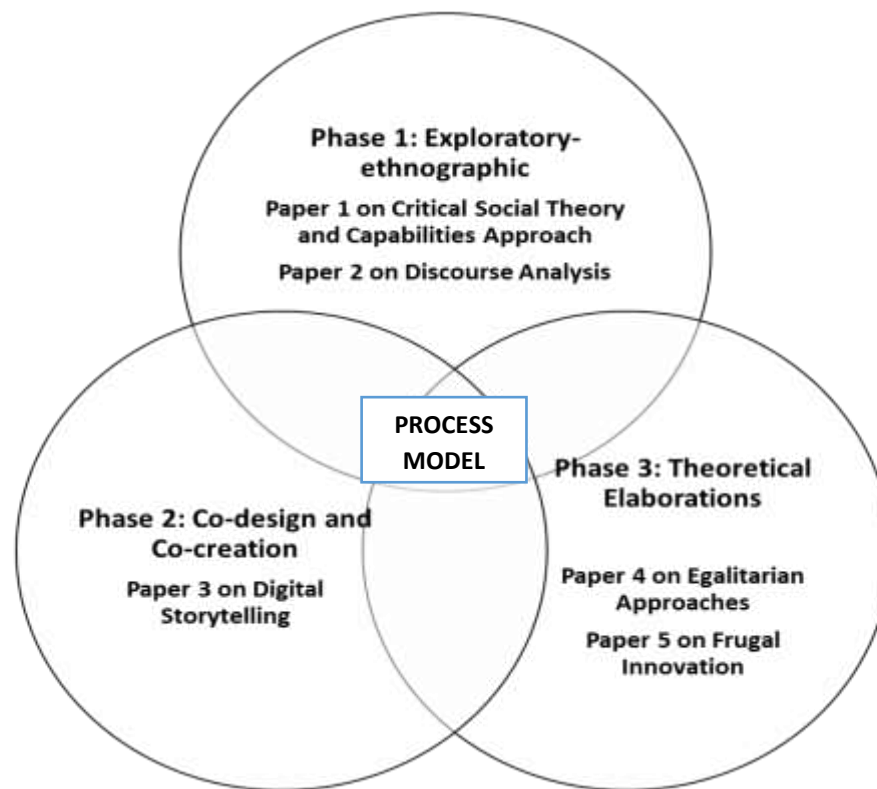


Figure 7.1 Diagram of the 3 phases and relating papers.

7.3 Main Contributions to Research and Practice

The big picture of the entire work and what the research project advocates are presented below (7.3.1). The implications of the research project, how the findings affected the research in this field follows (7.3.2). The main theoretical, methodological and design and practical contributions of the study for research and practice are summarised (7.3.3).

7.3.1 A Resilient Approach to Change the Status Quo

Social interactions taking place in complex underserved communities are the structural bases for the multiple case study developed and presented in this research. Each community presented conditions of inequality due to forms of oppression similar to those described by feminist and race theories (Medina, 2013). Oppression in the South African townships presents itself mostly as unequal access to essential services - health, education and information, limited participation in knowledge creation and fruition and social marginalisation. Resistance to the status quo offered a way to cope with the unjust system and developed into mobilisation actions and protests run by social movements. These started in the 90s and are still growing; tackling several social issues such as housing (Miraftab & Wills, 2005), health and more recently

education (the campaign ‘Fees Must Fall’ is an example of the recent activism, Bosch, 2017). The process of resistance was nevertheless smoothed by people’s resilient attitude (Sonn & Fisher, 1998; Berkes & Ross, 2013), which allowed for positive management of traumatic events, adaptation to new situations, avoidance of direct fighting, sensibility towards others and openness towards potential opportunities, such as the ones offered by ICTs.

In a final presentation of the research, the Causal Loop Model (CLM) had been used as a process of inquiry which, through open debate with other researchers, highlights interconnected causal loops (Lagnado, Waldmann, Hagmayer & Sloman, 2007). The CLM is a systems thinking that supports the analysis and synthesis of a process (Kapsali, 2011). In particular, it was used at the end of the research to connect all the phases, -explanatory, design and evaluation-, and it was developed in an emergent way, same as for the research project. The map is built over the understandings of causes and effects and of reinforcing and balancing feedbacks within the system. The final model comprises several loops but the systems thinking started with a single idea, related to the initial phase of the project and the decision to work with groups (Annex G informs over the evolution of the CLM, showing how initially the systems thinking was more linear and captured the complexity and interrelations present in the study only after several attempts).

The socio-political situation with its economic repercussions, studied during the years through the surveys (Appendices C and E) and participant observation, and the consequent formation of groups (discussed during the focus groups analysed for Paper 2) is the starting point of the critical ethnography and phenomenology. The second loop created referred to the approach which claims to be innovative. The conditions required a sensible, flexible and emergent approach which discloses the potential of the process model. The local mechanisms of empowerment strengthened by the adopted enablers and design principles allow for the creativity to evolve into grassroots innovations. At the same time, the reinforced capabilities succeed in achieving the social aim of collective empowerment, answering the research question. The CLM was finalised connecting the main contributions, represented by the internal loops, to the overall philosophical approach. Over time, the results are positively affecting the community development, negatively balanced by the socio-economic segregation. In line with the social critical theory, the final scope of emancipation is to influence the socio-political situation (see Figure 7.2).

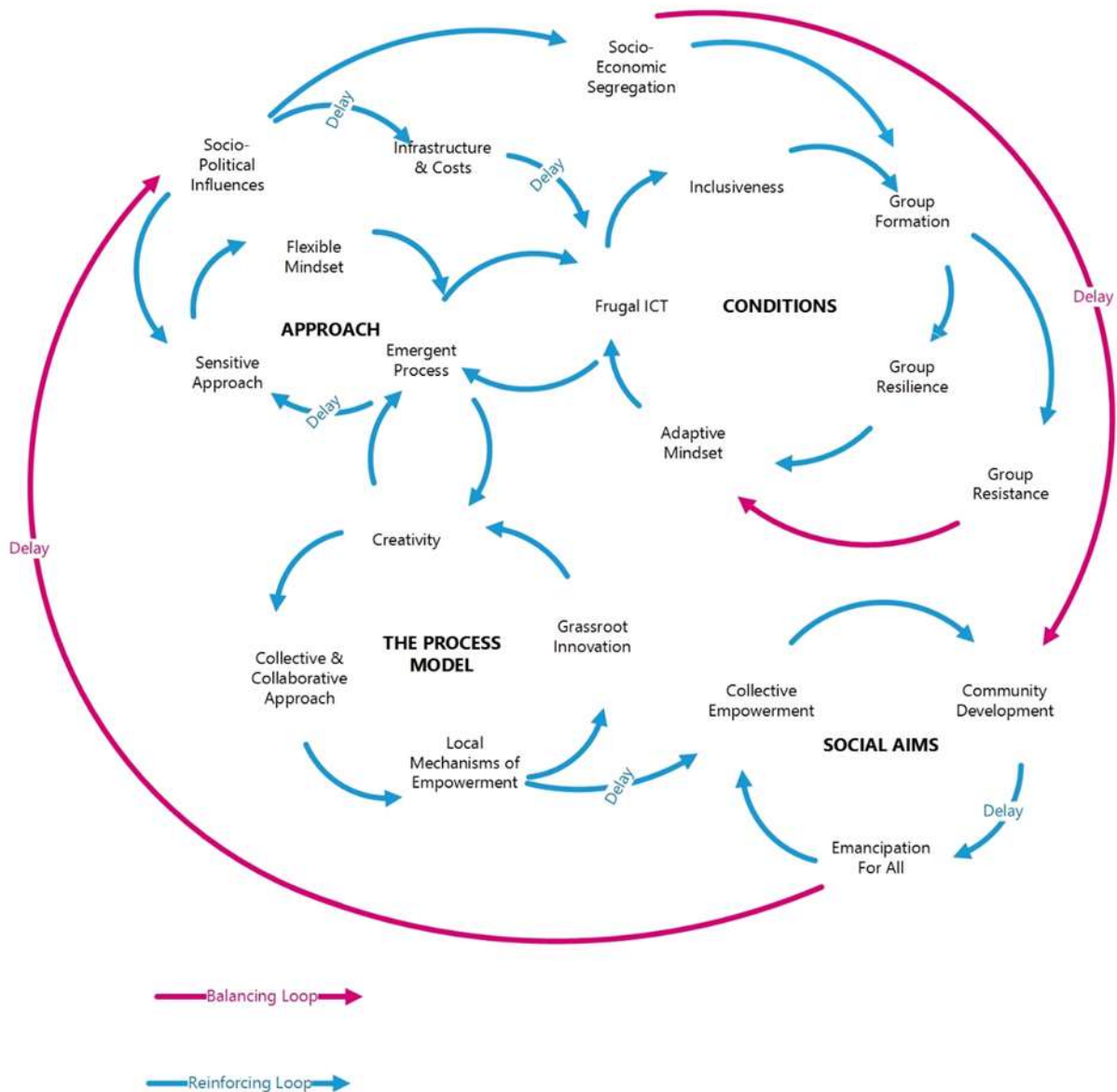


Figure 7.2. Causal Loop Model

Groups of people, connected by trust and necessity ties, were the participants in the three processes of co-creation presented that developed between 2014 and 2017. While discussing, discovering, learning, accepting, using, adapting and creating ICT artefacts, the groups were able to elaborate, reflect and give meaning to the new ICT devices and to further both their internal and external relationships. The risk of depersonalisation of the personal relationships once the technology is introduced (Hirvonen, 2018) and in case of cross-cultural encounters associated with cultural hegemony effects (Remenyi & Singh, 2015; Young, 2017) were the main concerns presented in the introduction of this research in connection with ICTs. The resilient attitude of the participants and flexible approach diminished the side-effects of introducing technological communication means. All along the three processes, the face-to-

face relationships were maintained and nourished through constant gatherings. At the same time, the external participants paid attention to vulnerable and sensitive topics as well as to local ways to operate and interact.

The evolution of the processes was still ongoing after the conclusion of the phases presented, that are ethnographic, design and evaluation ones. Lately, during the third and fourth year of the research project, we noticed the emergence of a number of grassroots innovations. The Ubuntu philosophy (Mabovula, 2011), a support system of the communities based on relationships, allowed the groups to interact and to cope with the underserved conditions of their township, adapting to it resiliently without surrendering passively to it. Thanks to the possibilities offered by modern communication systems to integrate the existing relationships structure, the incorporation of ICT solutions supported and strengthened processes based on pre-existing local capabilities and skills. The three case studies evolved and matured along a path aimed at improving the local capacity to build a network of solidarity, based on interconnectedness, social contextuality and sensibility.

Resilience can define some of the traits of these processes of change started and matured at the grassroots level and characterised by smoothness. As underlined at the beginning of the study, one of the concepts and contributions that I wished to focus on along the research was connected with the importance for researchers and practitioners to reflect on and state their intentions behind a choice on how to study, analyse, operationalise and evaluate an intervention of ICT4D. The terminology is the reflection of the choice and intention to move in a specific direction, using a suitable approach. Without philosophical backings and questioning of the meaning, it would be difficult to analyse any possible results, considering how partial and discretionary an evaluation system could be.

In particular, my evaluation is affected by my ideology, that is a representation of critical social theory encountering an Ubuntu philosophy. The encounter generated, in the long term, a series of processes, evaluated on the base of those paradigms and the expressed or perceived intentions of the different stakeholders. The processes are moving forward producing new results during the finalisation of this study; this evolving situation represents part of the development plan for the community that passed and is still passing through the empowerment of its members and groups. Within this vision, the possibility to achieve equity, dignity, social inclusion and sustainability are only steps in a journey that would lead to consciousness, independence, freedom and emancipation of every human being in a resilient nonviolent way.

7.3.2 Implications for Research and Practice

The outcomes created, such as the digital storytelling, the websites and the social media groups, represented the practical creations particularly relevant for the communities involved in the processes. From the research perspective, the chosen methodology and the analysis of the processes are the phenomena of interest and the point of reference for verifying the contributions to theory. I intended to support existing social engagements and disclose new social development activities for the benefit of every individual involved. The emancipation that the critical social theory presents as its main objective becomes the point of reference during the research projects that evolved around empowering activities during developmental never-ended processes.

The theoretical contribution of the reflection laid over a reading of some of the developmental theories supported by ICTs (Chib & Harris, 2012) adapted to an emergent methodology. The ICT focus moved from the inevitability of the technocratic system or its panacea solution orientation and sustainability search (Cherlet, 2014), to a resilient approach, more suited to evolving contexts. The contribution is a suggestion to adopt a cultural anthropological reading of values and capabilities in every community-based research project, allowing the same to guide the processes and to support the relationship-based “It is the talk, not the tech” approach to development through ICTs.

From a theoretical perspective, the study utilised three main theories as an initial point of reference for the exploratory phase: critical social theory, capabilities approach theory and participatory design theory. During the design phase, the analysis and evaluation of the activities and processes pointed to differences and highlighted a series of elements considered essential for the use of those theories in the contextual environment. In particular, the capabilities approach and the choice framework derived from it (Kleine, 2013), showed some limitations when applied to collectivities. Even though a collective capability approach would be envisaged, this research did not aim to build a new framework but to suggest adjustments and improvements connected with the embedded circumstances.

The second important framework of reference was participatory design (Simonsen & Robertson, 2012). In an essay to disclose its potential for innovation from the bottom, I pushed its limits to work towards a more egalitarian and creative approach, where the distinction between designers and non-designers is of no relevance, where the process counts more than the outcome.

The social capital theory regularly emerged during the different phases as a key to the interpretation of the evolving processes. Networking and common goals were important leading elements representing different groups and projects. At the same time, this interpretation was binding for the evaluation and explanations of the activities. An essential role, in fact, was played by the desire of the participants to affect their society positively. While social capital theory can apply to many experiences where people connect for temporary and sometimes selfish scopes (Ostrom & Ahn, 2008), the experiences presented in the three case studies, picture a deeper relational aspect. The Ubuntu philosophy is the social relationship theory that can explain the reasons for groups to work collectively, to build on trustful relationships and to aim for community benefits. While Migheli expresses the close relationship between the social capital theory and the Ubuntu philosophy saying that ‘the *Ubuntu* philosophy translates from theory to practice thanks to interpersonal networks, which constitute the social capital of a community’ (2017, p.1225), he also recognises the more individualistic approach of social capital. The terminology and origins of social capital theory connected with economic theories (Fine, 2002) are as well an expression of the main difference between the intentions and choices made by the groups.

The three main theories of reference for analysis and interpretation had been used along the way. In the end, as conclusion and contribution, the research brought about four propositions and three principles that delineate a methodology to approach cross-cultural research in an ethical, sensitive and creative way.

7.3.3 The Main Contributions to Research and Practice

Due to the fundamental importance given to the methodological approach, the main contributions to theory, expressed in the propositions and principles presented in the discussion chapter, reflects directly into the contributions to practice. In particular, the theoretical contributions are:

- Ethnography is seen as an essential starting point. A prolonged field work that might start with few months and continue over the years of research will be crucial above all when working in cross-cultural environments where the values of the stakeholders involved might highly differ. A deep study of anthropologists and ethnographers in the same context of reference where a new research study is developing might supply a researcher personal knowledge deficit. Grunfeld (2007), in discussing the evaluation of ICT4D projects that aim to achieve empowerment, stresses the importance of a long-term perspective.

- A philosophical framework of reference serves to understand or clarify the intentions of every participant and to evaluate the decisions along a process. The recognition of the ideologies that are backing research can help the researcher to recognise and disconnect from her or his assumptions and to avoid planning and to decide *a priori*. As expressed by Krauss (2013), to avoid a collision of intents amongst stakeholders, work on self-emancipation of the researcher and implement an ICT4D project, the recognition of the ideologies and assumptions is crucial.

The methodology and design contributions are:

- A collective approach for community-based projects in a context where the Ubuntu philosophy of life is dominant is considered essential to work with participants in the way they are used to. It will support the participation and inclusiveness while at the same time encourage the communities to take the lead in the research activities. Furthermore, a non-individualistic approach demonstrates to be of stimulus for creativity and solidarity. The collective approach facilitates the networking capabilities both locally and beyond. This openness can facilitate the development of the processes in time also after the conclusion of a project. Thapa and colleagues (Thapa, Sein & Sæbø, 2012) argue as well about how ICT initiatives can increase the social capital and show how the collective approach can expand Sen's capability approach.

- A grassroots approach let emerge chances for participation to unfold; it shows the engagement of the involved stakeholders; it allows the projects to be owned by the community, and it discloses better opportunities for sustainability. The risk of dependency on external stakeholders and funds will decrease further if also the resources are organised or discovered in the community. As Pretty and Ward (2001) explained, the level of maturity of the groups can increase with proper external support but depends highly on the local social capital.

- An open process guided by an emergent methodology carries a series of risks connected with both theory and practice development. The flexible method might not support the disclosure of commonalities and propositions to derive any learning while the processes might be interrupted at any time without producing results for the communities. The emergent approach, when based on existing structures such as the contextual strengths, will reduce those risks and allow for cultural sensitivity and frugality as essentiality. Finally, it will disclose the possibility for every participant to become a creator or a co-creator of the project. Concerning community-based development, Greene (2000) highlights the importance to recognise the assets and strengths of the community to affect the reality positively.

The practical contributions are:

- Peer-to-peer and mutual learning can represent the new way not only to improve knowledge but also to diversify it, for instance supporting traditional knowledge. The meaning of learning will be better explained as a life experience, which could move in the emancipatory direction. Analysing and clarifying the ways of learning of different participants and focusing on the creative hub that generates around those collective moments is a step in the knowledge creation and not only knowledge fruition. As in the communities of practice presented by Wenger and colleagues (Wenger, McDermott & Snyder, 2002), people engaging in collective learning tend toward improving what they do and their knowledge.

- Several design techniques, elaborated in the participatory design theory and ameliorated across the different design disciplines, can trigger and spur ideas in new contexts as well as support the evaluation of the outcomes. At the same time, relaxed rules, which imply the possibility to vary from the lessons learnt and from the methodological procedures suggested by the theory, allow further development of imagination, creativity and innovation. Discussing human development and the practical contribution of design to achieve it, Johri and Pal (2012) introduce concepts and outcomes related to “human self-expression” and “creativity”.

7.4 Determining Factors and Limitations

The outcomes described and the contribution to knowledge achieved have been possible due to a series of determining choices and factors. On the one hand, they allowed the processes to unfold, and for the results to be obtained, on the other hand, they represent limitations for the research itself and future replication. These factors are the flexible and *ad hoc* approach (7.3.1), a group-based approach (7.3.2) and the impact of external resources (7.3.3).

7.4.1 A flexible, ad hoc Approach

The emergent, flexible and grassroots approach has as the main counterbalance to its openness to creativity and inclusion the possibility of not achieving any community improvement, due to the lack of a specific design desired outcome (such as an artefact). From a research point of view, the risk was limited due to the possibility to analyse the processes of rejection of ICT or of failure to reach an outcome. Even though the groups were allowed freedom to decide and the projects could have taken any direction, including the refusal to deepen the study via interviews and through design tools, a failure connected with the choice to not use ICTs, could have laid the foundation for a different procedure.

The risk of the technological determinism was nevertheless present, as expressed by Kleine while presenting the ‘determinism continuum’ (2011, p.120). Because of the personal beliefs and the establishment of certain goals that other external stakeholders or I might have had in mind, some triggering factors or ideas could have influenced the decisions of the community members. Furthermore, complete neutrality is not coherent with a design approach particularly considering the transformative aim of the research due to the responsibility factor associated with service design (Sangiorgi, 2011).

The mitigation of the deterministic risk was based on the long exploratory phase of observation of the groups and participate in their daily lives. It required seeing and recognising the capabilities and the potential of the members, and only engaging when the moment seemed appropriate to take a different direction and to trigger new ideas. The creative engagement also mitigated the deterministic risk.

Another risk connected with the emergent approach relates to time. The ethnographic and participatory design approaches require more time and resources compared to studies mainly based on literature or testing and verification of existing theoretical frameworks. Despite that, the findings and the outcomes of the followed procedure showed that the extra investments in time and schedule flexibility paid off in several ways. The risk of withdrawal of the participants and unethical participation in community settings (Byrne & Alexander, 2006) are minimised by the participants’ interest in being or becoming the decision-makers and directors of the creative processes and later the owners of the projects. In the case studies, none of the groups and none of the members stepped back or complained about the methodologies. I was prepared to receive possible negative feedbacks from third parties and through the personal, friendly relationships built over the years. The risk was assessed, and in case of limited results, I will have continued supporting the groups in ways considered appropriate by them, for instance writing a funding proposal for their everyday activities.

The evolving roles of the participants as developers and decision makers reduced the time required during the follow-up activities and organisation of events and collaborations. From the frugal innovation perspective, time played a significant role; likewise, fewer resources had been used because the initial phases of the study took into account the available resources and their possible collective use. Finally, and importantly, the positive effect of the time invested in the initial phase is represented by choosing to focus on the strengths of the groups that are

the major asset already available in the community; the search for the opportunities available for skills building supported this community-based participatory research.

As mentioned earlier, the risk of disappointing the community members or interrupting the activities before entering a design phase, was present. From the ethical point of view, the closure of the research project could generate further issues and concerns to myself and to the University connected to the way forward and the implications of what had been started. As in Ali and Bailur (2007), this research shows how sustainability in ICT4D cases is often related to ‘improvisation and unintended consequences of technology’ (p.2). The fact that the main idea and phenomena of the research are the processes and not the artefacts underlines how nothing came to an end, but everything continued evolving and including new participants and activities. This perspective and approach allowed me to connect the groups involved with other researchers and other organisations that can support further the evolution of the processes.

The analysis of the processes through several methods, such as discourse analysis, participatory design and innovation theories, was a means to disclose the boundaries and limitations, but it also implied time consumption and convergence issues amongst the results. The use of ‘within-methods triangulation’ (Denzin, 1978b), which in this research refers to the use of multiple qualitative approaches, reduced that kind of risk. Moreover, the methodological and theory triangulations were utilised sequentially; the analysis and results of one approach have been continuously informing the creation of the following phase and methodology (Morse, 1991).

7.4.2 A Group-Based Approach

The choice to work with groups and not individuals carried some implications related to the places where to develop the activities and the management. I initiated, followed up and analysed three projects that targeted an underserved urban area, the township of Philippi, with participants from within and from neighbouring communities. The groups that participated in the projects were located in the informal settlements of the township. The interviews and focus groups took place in their communities while the activities, such as the training and workshops were organised in the formal sections of the same township, where electricity, water and gravel roads are available. Due to the necessity to deploy and use specific technologies for the activities and involving external people, bigger, better-structured and safer community centres were selected amongst the possible ones in the area concerned.

The research focused on collective capabilities and approaches. For this reason, the activities and new services designed were not oriented towards the development of the participants as individuals but as collaborative groups. This boundary created some challenges connected with the group work and its analysis. In particular, the organisation and management of every activity were more complicated and more time was required to gather collectivities of people than individuals. The attempt to support inclusive participation, of unemployed as well as working or studying participants who do not share a common schedule or flexibility, made the task more difficult. Furthermore, the collective approach gave rise to ethical issues connected with the balance of power in the groups, related to the recognition of the roles and hierarchical positions (Purdue, 2001; Tacchi & Lennie, 2014). Other challenges were represented by the difficulty to reach an agreement and to move forward in the processes without discriminating any position trying to giving voice to every participant.

Time represented an essential factor to deal with these boundaries, connected with the group activities and the community structures, as well as with the flexible and evolving approach chosen for the project. The choice to work in an emergent way, following an un-designed path, adopting solutions which were as inclusive and innovative as possible solutions, requested the flexibility of the participants concerning their availability at different times and places. For instance, instability in the community connected with riots would imply to reschedule a workshop. A more common issue was the necessity to organise and attend events on the weekends to allow the community members to be present. Another solution to this kind of boundary was represented by the repetition of a workshop to support inclusive participation.

7.4.3 Impact of External Resources

The projects were sponsored and supported by the University of Cape Town, South Africa, through the National Research Fund. These elements are boundaries that represented a warranty for the sustainability and reliability of the project under study. The resources made available by the University, such as computers, tablet, voice recorder and camera, as well as the flexibility of the skilled persons involved, allowed the processes to unfold at the required time for the community. Without the University support regarding equipment and contact with RLabs, the organisation that deployed the computer literacy training, the project might have developed similarly; but I would have required more time to find connections and specific contacts. The possibility to develop the processes along a continuum of time, without interruptions due to the lack of resources or expertise, made the research flow naturally. In

particular, the experts that took part in the project made themselves available when necessary: their flexibility regarding mobility, schedule modifications and time requirements, had been key elements to accompany the processes following the community timing.

Concerning the limitations and boundaries, it is interesting to note that the total expenses of the research project were limited due to the choice to develop frugal innovation and to work with volunteers. The involved organisations and people decided to devolve their time and their resources to support the social projects and not to ask for compensation. Specifically, Rlabs, the web designer and the journalists availed of their time, own transport and own equipment to participate and develop the activities in the communities.

We can wonder what would have happened without these resources, in particular, the availability of the specialists such as the web designer and the professional journalists. This same question let us wonder if these projects could be recreated to facilitate the disclosure of similar processes and the opening up of more opportunities for underserved communities. The resources offered by the university, the connection with the experts and the previous knowledge of several organisations available to support the processes with information, infrastructure and organisational management have been essential in the deployment of the activities and their evaluation.

7.5 Potential for Project Growth and Replication

The determining factors and limitations represented the frame within which the research project developed. In the following sections, the potential for the project to expand and reach out to more participants in the communities or to be replicated in other communities is analysed. The potential for generalisation of the cases (7.5.1) is followed by the presentation of the main element of strength in all the scenarios, social capital (7.5.2) and by the developing potential to build further on the illustrated premises (7.5.3).

7.5.1 Generalisation

The research could be read as a multiple case-study (Tellis, 1997). While a single case study is often at risk of lack of reliability and generalisability (Kennedy, 1979), the replication of a case can offer confirmation of the findings and ‘the development of consistent findings, over multiple cases, can be considered a very robust finding’ (Noor, 2008, p. 1604). The three cases developed concurrently and during their analysis, the phenomenon under study, their processes, emerged as consistent. The cross-case findings and their analysis are the basis of the discussion

and research conclusion over design principles based on the groups' peculiarities, the contextual conditions and the supporting enablers. The derived propositions became the basis for analytical generalisation (Yin, 2013).

The selection criteria of the participants and in particular the decision to work with active groups are the elements that allow possible replication and foreseeing corroboration of the findings (Eisenhardt, 1989). Similar results of frugal social innovation in similar underserved contexts and communities lacking skills and information are expected to happen on the base of the initial mapping. The generalisability will rely on the connection of the sample used, that is the groups part of the activities, to a similar population (Cornfield & Tukey, 1956). In fact, the mapping of 100 active groups in the areas of reference, the Cape Town's townships, demonstrated how common and spread is the grouping system (cf. Appendix B). The socio-economic questionnaire was done with more than 150 youth (cf. Appendix C) detailed the representation done of the communities where the majority of the people live in similar conditions, with similar economic, social and cultural backgrounds. The economic research carried on with 300 adults divided by their group of belonging confirmed the solidarity structure that supports the existing long-term groups (cf. Appendix E; Grieco et al., 2016). At the same time, the presentations of the daily activities carried on by each group operating in the illustrated underserved conditions (cf. Appendix D, DST links), show that the groups are used to come together to collaborate to strengthen their potential. The Ubuntu philosophy let its strong presence emerge inside the community, and the quantitative data demonstrate that grouping is the rule and not the exception amongst these communities.

The recognition that the main reason for the groups to come together and collaborate is for social benefits is paramount. The community engagement is a further element that supports the idea that similar processes could be replicated obtaining similar results, some forms of frugal social innovation. This represents what Kennedy defined as the 'relevance of attributes' (Kennedy, 1979, p.667) that supports the generalisation also for cases not supported by statistics. The random choice of other active groups in the same or similar communities will not have brought about the co-creation of a website or a community radio station. However, considering the demonstrated engaged attitude of the groups in support of their communities, it can be argued that other ICT based activities will have developed in any active collectivity if triggered and followed up, as it happened in the case studies presented.

The decision to select and work with active groups represents a limitation connected with the category of people that can participate in the research activities. At the same time, that choice represents a necessary boundary for the development of social processes and for the possibility to replicate it within similar circumstances. Moreover, without any boundary and delimitations, it will be impossible to generalise enablers and suggest some guidelines. Furthermore, the limitation of working with already active groups is one of the reasons why we could assume that even without the resources put forward by the University and without the support of the external professionals, frugal social activities will have continued to happen. These preconditions of social engagement allow as well to hypothesise that creative outcomes will have disclosed in time, also without the research project facilitation, but simply through the introduction of new artefacts and the learning or improvement of ICTs skills.

7.5.2 Capitalising on Existing Social Capital

The outcomes of the research project depend mainly on the existing social capital and on participants' capabilities to extend it through the personal and professional ties of both external and local participants. In fact, I could increase the number of connections between the groups and their social capital introducing to them some university experts and external professionals available to support the projects. These people, their organisations and contacts became part of the increased social capital of the groups. At the same time, I could work with the groups and trigger new possibilities because of their existing social capital, because people in these communities are used to work as collectivities and, specifically, because the groups participating were already connected to social networks and activists' movements.

The stated reasons were essential elements used to develop the processes further and spread the possibilities created by the empowering activities, such as the computer literacy training and workshops. Mamas belonging to different groups attended the training workshops, and consequently, they encouraged other members of their groups, as well as external women, to do the same. The youth network strengthened its ties and moved in the same direction of inclusion using the web as a way to sponsor each other's activities and reciprocally participating in events. The radio station team, from its side, worked on establishing professional relations, to develop further the social activities carried on in the community centre from where they operate, and to legalise the status of the radio station.

In the analysis of the limitations of the processes as well as in the description of the selection of participants, it was stated that the groups involved were already active. I purposefully sought

to work within a system, to build on its strengths, and expand them, despite this choice represented a delimitation of the scope of the study. Furthermore, the introduction of the groups showed that they were already undergoing a process of empowerment. The ethnographic phase as well as the digital design creations, the DST, illustrate that the groups were already aware of the strength and social power derived from the possibility to act together as members of a group, to collaborate amongst groups and to look for external support to reach out for better solutions.

The community participants had already specific local abilities and strengths. A number of characteristics were required to be part of the initial mapping of the groups. The research project did not start from the selection of random individuals to verify their belonging to some groups, and it did not start from the selection of any group. The most important requirement was to be socially active. The external participants had as well a strong sense of commitment towards social engagement (Brereton, Roe, Schroeter & Lee Hong, 2014). These factors are in fact the ones evaluated and selected to build up new processes. The idea was to support and reinforce the existing system, trying to valorise and expand the links and potential of the local mechanisms of empowerment. The research did not try to verify cases where a developmental process supported by ICT would have started from a different situation, such as the random selection of a generic group of people.

7.5.3 The added Values of Social Capital: Reciprocity and Frugality

The project consolidated the existing social capital while expanding it: the groups and the individual participants have availed the possibility to access new resources during the processes as well as after their termination also without the intermediation of the professionals. In the process of genuine co-creation, reciprocity emerged as a key factor where the groups brought about their social capital resources, their commitment and their connections and the external professionals did the same. Suchman (2002) expresses these factors as network relations and mutual learning.

What emerged from the cases is a long-term development process where empowerment activities could take place on different domains at different times and could build on the existing structure. ICT in the case studies presented supported the ongoing empowerment and emancipation processes that the groups already started. The research could evaluate the development of the processes moving forward as well as the ripple effects of empowerment, as seen in many other ICTD projects, such as the ones presented by Webb and Buskens (2014).

The ripple effects could reach out to other people who were not part of the process from the beginning or who were not part of the groups selected. The trickle-down effect became increasingly visible over the four years of the project, in particular when new people who did not participate in the initial phase of interviews and focus groups joined the process along the way when invited by the participants. One example of an external audience was represented by the case of one of the women who presented the Mamas' project at the seminar organised by the University. This Mama was not part of the exploratory phase, she did not take part in the design phase, and she did not attend the computer literacy training. She was one of the community's women invited to participate in the subsequent training when the Mamas collaborated as facilitators. She was invited to the follow-up activities with the other participants where, during the presentation to the academic public, it was not possible to distinguish between her and the Mamas who were part of the process from the beginning.

Another element portraying the possibility to expand what existed relates to the costs of running the projects with the existing resources, *in primis* the social capital. The research exemplified work with available resources, in particular, the study received considerable support from the known professionals and organisations already focused and prepared on the thematic and training of the community members. The frugal approach reflects, on one side, the ethical concerns of essentiality, necessity-driven and sustainability in time. On the other side, the frugality perspective allows the communities to sustain their activities and build on the outcomes with the same approach.

Working with groups that are already active and prepared to make a difference in their social reality, keen to reciprocate what they received and to involve other people in the processes and to extend the possibilities they had discovered with others, combined with the frugal approach represents the setting of the study. The reason behind this choice is connected with the possibility offered by community mobilisation 'to increase the "reach" and sustainability of programmes' (Campbell & Cornish, 2010, p. 1569). As for other social agendas, empowerment can be reproduced amongst the participants through a peer-to-peer approach, where people are invited to participate in social activities and become naturalised in existing or forming groups; where voices are encouraged and heard; and where through an egalitarian approach all participants are involved in decision-making (Wong, Zimmerman & Parker, 2010). Community mobilisation, peer education, leadership in design creation and implementation are at the base of the vision for further expanding the research and achieve more results for the communities.

7.6 Conclusions

In the final sections, the conclusions presents the potential to deepen the analysis using other theories or, eventually, developing a theory and the potential to continue the development of the projects in the context. In particular, the first part focus on the theories used, how the work challenges them and how the analysis could be deepened (7.6.1). The potential future for practice focus on the possible development of the processes in the communities starting from the acquired knowledge of the existing social processes (7.6.2).

7.6.1 Potential Future Theoretical Developments

The main theory that guided the study is the critical social theory. The research evaluation focused on its idealistic outcome, that is the emancipation of every person and the connected potential of empowerment for the participants and development of the communities. The analysis of the processes highlighted the elements that could contribute to emancipation, a goal that requires constant pursuit. Firstly, because in the short term it is not possible to modify the structure of society; and secondly because a research project, even if oriented towards transformation, can only plant the seeds of it. The conclusion of the research represents the outcomes reached so-far, but it does not represent the end of a process of evolution. Future research could evaluate elements that are required to move further in the direction of a transformation of the society. In particular, essential elements are represented by the changes in the structure of the society, connected with the political, economic and social systems, which influence and determine the life of the people, despite their collective sensitive and resilient approach.

Several theoretical frameworks frequently used in ICT4D studies were taken into consideration during the research, in the exploratory, design and evaluation phases. The main ones used had been capabilities approach, participatory design and social capital theory. None of them was used as the main framework to be adapted or modified for the context. They were used as references and backings to understand and explain the processes while they unfolded along a flexible time frame and using available resources. Critical social theory alone maintained its role of philosophical reference to support the intentions and aim of the research.

From a theoretical perspective, the collective capabilities approach helped the research to maintain a focus related to the choice framework and the local strengths. Nevertheless, the research did not attempt to develop it further in connection with the group's approach. A

possible choice framework for collective decisions and evaluations might become the object of further studies. The complexity of future research lies in the initial exploratory phase of the values and cultures of the subjects being studied. The framework must support the analysis of the findings and disclose essential elements to deepen the knowledge of the participants. During a conversation with Doctor Kleine, who operationalised Sen's capabilities approach (Kleine, 2013), she expressed her doubts about the feasibility to operationalise a collective capabilities approach framework.

Ethnographic, social, sustainable and participatory design are all transdisciplinary research approaches that went beyond interdisciplinary connectivity and co-design. They are evolving and aiming to 'co-produce' knowledge. The production of meta-products, and not only of solutions, would signify the further development of the approach to design for participation, as the research had partially been. To implement this additional analysis, technical effectiveness, interaction qualities such as friendly and peer-to-peer relations and context will continue to be essential. With a critical stance and further options to support the projects in the direction of design for democracy, the processes could assume the connotation of a critique to the *status quo* where participants will be 'making commons, appropriating public space, and reinventing democratic things' (Ehn, 2014, p.193).

This 'utopia', as Ehn defined it (ibid.), perfectly interacts with the other theories that could be evaluated deeper to continue the discourse and analysis around the collective capabilities and the potential of ICTs to improve the quality of life of underserved communities. These two theories are the resilience and the emancipation theories. The main questions that an examination of the existing literature and the analysis of emerging cases could answer are related to the participants' approaches in time and the results of a resilient attitude. While resilience is emerging as a comprehensive theory to explain several social phenomena of complex realities, there is still limited literature about its functioning in the long-term for which Redman (2014) wonders if it could be associated with sustainability.

Furthermore, there is limited knowledge connected with the confirmation of a stable and meaningful change of the structure or situation under study after the disclosure of a resilient process. Wilson (2012) analyses its interconnectedness with globalisation showing how the results can move towards an increase of the vulnerability of the communities. An in-depth analysis of the cases might suggest important elements for the practice as well as for the development of resilient theory.

7.6.2 Potential Future Developments in Design and Practice

Within the transformative paradigm and maintaining the critical social theory framework, the real transformation that a critical process aims to achieve relates to change in the balance of power between the different stakeholders and in the society (Stahl, Tremblay & LeRouge, 2011). Personally, I would like to deepen the research in the direction connected with the required changes in the structure of society to increase the possibility for every citizen to attain emancipation. If emancipation represents the final goal of the theory, the present research opened up possibilities for researchers, designers and practitioners to develop further the potentiality of existing engaged communities. As expressed by Loader and colleagues (Loader, Vromen & Xenos, 2014), a participated democracy supported by civic engagement could be the answer to bring about a substantial change of the social, political and economic structure with differentiated types of political participation. It will develop from the bottom and will affect the entire society to the top.

To disclose opportunities to achieve creative processes in the democracy field, some of the results reached could become initial milestones for further projects. This study focused on urban groups and used minimal resources. Further activities could develop in rural areas where more resources may be required. Further research related to other contexts and groups will support the generalisability of the results. The emergent approach chosen required flexibility and time availability and it was possible to operationalise it only over a limited sample of three case studies. A larger sample with more groups will provide further understanding of the way the groups interact and about their long-term consistency.

Maintaining a collective focus and working within a community-based participatory approach, a follow-up project could acknowledge and focus on networking communities of practice (Lave & Wenger, 1991; Wenger-Trayner & Wenger-Trayner, 2015) and community hubs (Abbott, 2013; Karvonen & Van Heur, 2014; Calvaresi, 2016). The present research, through the mapping, analysis and work with active groups, revealed the existence of these realities. In particular, the groups are often connected to community hubs, community centres or arenas where several non-profit organisations come together to collaborate and integrate their plans of action. In the last decade, community hubs have developed in Europe and North America and are seen as engines of inclusive local development processes where the relationships among people-community-space are focal (Morris & Gilchrist, 2011).

Further research could advance the present study while tackling the role of ICTs in supporting networking possibilities for collective empowerment, sustainable development and emancipation. It will move forward the analysis of the role of communities of practice, peer learning and networking to shape participation and direct democracy. The study would be framed within development and design theories. The aim will be to create platforms for mutual support, peer learning (Bond, Glover, Godfrey, Butler & Patton, 2001; O' Donnell & King, 2014:3; Keppell Au, Ma & Chan, 2006), creativity and social innovation and change that can benefit the personal and collective growth of the communities. ICTs would support the reflection on practice, drawing on the work of Schön (1991) but also some forms of action research and participatory action research (e.g. Reason & Bradbury, 2001).

7.7 In Synthesis, Chapter 7

The research objective was the grounded understanding and conceptualisation of social processes, testing and evaluation of an emergent methodological approach and formulation of propositions and design principles to answer the research question: How can ICT contribute to collective empowerment in underserved urban communities? The sub-questions that emerged along the research focused on the deepening of the evaluation of the approach used in the different cases to develop collective creative activities and strengthen local mechanism of empowerment.

In particular, due to the context and the participants' intentions, critical social theory was presented as the philosophical basis for the research project aiming to question the emancipatory path of the researcher and the other participants.

The artefact outcomes, such as the digital storytelling, the websites and the social media groups, represented the practical creations particularly relevant for the communities involved in the processes. In the end, as conclusion and contribution, the research brought about four propositions and three principles that delineate an emergent and flexible methodology to approach cross-cultural research in an ethical, sensitive and creative way.

The final analysis and evaluation of the three case studies highlighted the determining factors that allowed the processes to develop and that create an expectation for the future potential of replication. The mapping of 100 active groups in the areas of reference, Cape Town's townships, demonstrated how commonplace and widespread the grouping system is. The

phenomenological analysis of the daily activities carried on by each group operating in the illustrated underserved conditions, show that the groups are accustomed to coming together to collaborate to strengthen their potential. Finally, the economic research carried on with 300 adults divided by their group of belonging confirmed the solidarity links that support the existing long-term groups.

Because people in these communities are used to working as collectivities and, specifically, because the groups participating were already connected to social networks and activists' movements, I could work with the groups and trigger new possibilities through their existing social capital.

Several theoretical frameworks frequently used in ICT4D studies had been taken into consideration during the research, during the exploratory, design and evaluation phases. Capabilities approach theory helped to maintain the focus on the relevance of people's choices and meanings of terms such as development. The research did not attempt to develop it further in connection with the group's approach.

Ethnographic design, sustainable design, participatory design, social design are all transdisciplinary research approaches that can keep evolving beyond interdisciplinary research and 'co-produce' knowledge. If emancipation represents the final goal of critical theory, the present research opened up possibilities for researchers, designers and practitioners to develop further the potentiality of existing engaged communities.

Future research could advance the present study while tackling the role of ICTs in supporting mutual and peer-to-peer learning, networking possibilities for collective empowerment, sustainable development and emancipation.

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APPENDIX A



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CONSENT FORM – INTERVIEW WITH AUDIOTAPING

Consent to Participate in Research

The impact of mobile technology and public access on collective empowerment among the urban poor

Introduction and Purpose

My name is Maria Rosa Lorini. I am a PhD student at the University of Cape Town, working with my faculty supervisor, Professor Wallace Chigona, in the Department of Information Systems. I would like to invite you to take part in my research study, which concerns the analysis of the possibilities of Information and Communication Technologies, and in particular the use of mobile services (smart phones) and public access venues (PAVs, like Internet café or libraries) to support the empowerment of people and groups in underserved urban communities.

Procedures

If you agree to participate in my research, I will conduct an interview with you at a time and location of your choice. The interview will involve questions about the use of mobile phones, smart phones and internet (at home or in public venues). It should last about one hour. With your permission, I will audiotape and take notes during the interview. The recording is to accurately record the

information you provide, and will be used for transcription purposes only. If you choose not to be audiotaped, I will take notes instead. If you agree to being audiotaped but feel uncomfortable at any time during the interview, I can turn off the recorder at your request. Or if you don't wish to continue, you can stop the interview at any time.

I expect to conduct only one interview; however, follow-ups may be needed for added clarification and for possible activities that the research would like to support in the communities. If so, I will contact you by e-mail or phone to request this.

Benefits

There is no direct benefit to you from taking part in this study in this first phase of the research. It is hoped that the research will foster the understanding on how social relations and group action determine the use of technologies. In a second phase, and on the base of what will emerge from these interviews, the researchers will try to identify, probe and assess ICT design solutions to support collective empowerment (for example, trainings on e-Governance).

Risks/Discomforts

Some of the research questions may make you uncomfortable or upset. You are free to decline to answer any questions you don't wish to, or to stop the interview at any time. As with all research, there is a chance that confidentiality could be compromised; however, we are taking precautions to minimize this risk.

Confidentiality

Your study data will be handled as confidentially as possible. If results of this study are published or presented, individual names and other personally identifiable information will not be used unless you give explicit permission for this below.

To minimize the risks to confidentiality, all interviews and observational data is stored on a password-protected computer hard disk, which is periodically backed up to a secure online server. No unauthorised (non-project) persons have access to such data.

When the research is completed, I may save the tapes and notes for use in future research done by myself or others. I will retain these records for up to 3 years after the study is over. The same measures described above will be taken to protect confidentiality of this study data.

Compensation

You will not be paid for taking part in this study.

Rights

Participation in research is completely voluntary. You are free to decline to take part in the project. You can decline to answer any questions and are free to stop taking part in the project at any time. Whether or not you choose to participate in the research and whether or not you choose to answer a question or continue participating in the project, there will be no penalty to you or loss of benefits to which you are otherwise entitled.

Questions

If you have any questions about this research, please feel free to contact me. I can be reached at 079-2561032 or mariaosalorini@gmail.com.

CONSENT

You will be given a copy of this consent form to keep for your own records.

If you wish to participate in this study, please sign and date below.

Participant's Name

Participant's Signature

Date

If you agree to allow your name or other identifying information to be included in all final reports, publications, and/or presentations resulting from this research, please sign and date below.

Participant's Signature

Date

APPENDIX B

Mamas' Groups

	GROUP NAME	TRANSLATION	AREA	Activity
1	Siyazama	We are getting there	Stellenbosch	Gardening, savings
2	Siyema	We stand	Mbekweni (Paarl)	Garden, savings
3	Masomelele	Getting strong	Stellenbosch	Gardening, savings
4	Siyazondla	We are feeding	Mbekweni (Paarl)	Urban garden, crèche
5	Masonwabe	We must enjoy	Franshoek	Gardening, saving
6	Masiphatisane	Let's help one another	Fishoek	Garden, savings
7	Masizame	Let us try	Kraaifontein	Garden, savings
8	Mzamo	Our effort	Franshoek	Garden, savings
9	Siyazama	We are trying	Mbekweni (Paarl)	Garden, soup-kitchen
10	Walacedene	(Name of the neighbourhood)	Kraaifontein	Urban garden, soup kitchen
11	Masakhane	We are building one another	Mbekweni (Paarl)	Soup kitchen, garden
12	Masikhule	We are developing	Stellenbosch	Crèche, savings, garden
13	Siyazondla	We are feeding	Mbekweni (Paarl)	Garden, crèche
14	Siyamthanda	We love each other	Mbekwen (Paarl)	Crèche, savings
15	Nomzamo	An effort	Mbekweni (Paarl)	Crèche, savings, support group
16	Siyahlumas	We are developing	Stellenbosch	Crèche, savings
17	Bambilanga	Hold the sun	Kraaifontein	Crèche
18	Siyazama	We are trying	Kraaifontein	Crèche, support group
19	Siyazama	We are trying	Franshoek	Crèche, support savings
20	Nceduluntu	Help people	Franshoek	Crèche, support group
21	Siyakha Group	We are building each other	Mbekweni	Crèche, savings
22	Masiphakame	We stand up	Philippi	Crèche
23	Masimanyane2	Unite	Site C, Khayelitsha	Crèche
24	Lukhanyo	The light	Mfuleni,	Crèche
25	Qhamani	Bear fruit	Lower Cross Road	Crèche
26	Sophumelela	We will succeed	DT site C, Khayelitsha	Crèche
27	Nceduluntu	Help everyone	Langa	Crèche
28	Laphumilanga	The sun rise	DT site C, Khayelitsha	Crèche
29	Zama	Try	Gugulethu	Crèche
30	Masimanyane	Let's unite	Fishhoek	Savings, crèche
31	Zama	We are trying	Kraaifontein	Soup kitchen, crèche, support group.
32	Siyahluma	We are developing	Mbekweni (Paarl)	Crech,soup kitchen,savings
33	Masincedane	Help one another	Mbekweni (Paarl)	Soup kitchen, support group, savings
34	Masakhane 2	Building each other	Franshoek	Soup kitchen, support group
35	Masizakhe	Let's build each other	Fishoek	Soup kitchen, savings
36	Masikhule	Let's grow	Kraaifontein	Soup kitchen, savings

37	Khululekani	Let's be free	Stellenbosch	Soup kitchen, support group
38	Linomtha	Ray of light	Franshoek	Soup kitchen, savings
39	Masihambisane	Let's join hands	Stellenbosch	Soup Kitchen
40	Noncedo	Helper	Mbekweni	Savings, soup kitchen
41	Masiphathisane	We are working together	Sweet Home, Philippi	Soup kitchen
42	Masakhane	Building one another	Europa, Nyanga	Soup kitchen
43	Ntsebenziswano	Working together	Site C, Khayelitsha	Soup kitchen
44	Cebolethu	Our plan	Samora, Philippi	Soup kitchen
45	Kwezilomso	Stars of tomorrow	Kosovo, Philippi	Soup kitchen
45	Sosebenza	We will work	Kosovo, Philippi	Soup kitchen
47	Sinethemba	We have hope	Samora, Philippi	Soup kitchen
48	Iqalile	We have started	Lower Cross Road	Soup kitchen
49	Masihlume	We are growing	Barcelona, Nyanga	Soup kitchen
50	Masizakhe	Building one another	Philippi	Soup kitchen
51	Masincedisane	We must help one another	Thabo-Mbeki	Soup kitchen
52	Nompumelelo health group	Success	Philippi	CHBC, soup kitchen
53	Masizakhe	Let's empower ourselves	Philippi	Soup kitchen
54	Masakhubuzwe	Let's build the nation	Philippi	Soup kitchen
55	Khanyisa	Light centre	Philippi	Soup kitchen
56	Sifundile	We learn	Small Business, Philippi	Soup kitchen
57	Masincedisane	Let's assist each other	Philippi	Soup kitchen
58	Nceduluntu	Helping people	Lower	Soup kitchen
59	Laphumikhwezi	Stars come out	Khayelitsha	Soup kitchen
60	Vukani	Wake up	Stellenbosch	Sewing, savings
61	Masakhane	We are building one another	Franshoek	Sewing, support group, savings
62	Ntsebenzo	We are working	Franshoek	Sewing, savings, support group
63	Libhongo	Our pride	Franshoek	Sewing, savings, support group
64	Laphumilanga	Sun rise	Franshoek	Sewing, support group
65	Siyakhula	We are developing	Stellenbosch	Beading, savings
66	Khanyisa	Make it shine	Franshoek	Beads, savings
67	Masincedane	Help one another	Stellenbosch	Beads, savings
68	Yomelelani	Be strong	Philippi	Day care for disabled children
69	Siyamthanda	We love	Philippi	Sewing
70	Siyakhula	We are growing	Lower Cross Road	Sewing

Youth Groups

GROUP NAME	TRANSLATION	Location	Activity
1. Street Revolution		Philippi	Poetry, singing, radio drama hip- hop, drama, savings
2. Ubomi Bethu	Our life	Lower Cross Road	Dance (different kinds), singing, drama, savings
3. Rock Stars		Samora, Philippi	Savings, Kwaito Dance, different types of dance
4. Sydo	Special youth development org.	Lower Cross Road	Drama, beauty contest, singing, dance
5. Elevation of Art		Philippi	Drama, savings, dance
6. Simunye	We are one	Philippi	Dance, drama, singing
7. L.O.F.	League of friends	Leads, Heinz Park, Philippi	Drama, dance
8. Siyaphambili	We are going forward	Philippi	Drama, dance
9. Stars of today		Kosovo	Dance, drama
10. Ubuntu bethu	Our humanity	Macasgave, Philippi	Dance, drama
11. Indakeni	From the roots	Kosovo	African dance
12. Khanya	Shine where you are	Samora	African dance
13. Albert Luthuli	(name of a Politician)	Philippi	Dance, music
14. Secrete powers		Samora	Dance, music
15. Youth Angels		Kosovo	Dance, music, drama
16. Noxolo youth group	Peace youth group	Philippi	Drama, dance, poetry
17. Inkanyezi zangomso	Star	Khayelitsha	Traditional ,kwaito dance, drama
18. New rising stars		Khayelitsha	Poetry, art, traditional drama
19. Siyatshisa Art	We are burning	Langa	Poetry, art, traditional dance

20. Nantsi nqayi	Here is the calabash	Langa	Dance, drama, poetry, singing
21. Ilizwi lenuquko	The repent voice	Langa	Dance, poetry, drama, poetry
22. Sophumelela	We are going to win	Du Noon	Audio drama, drama, dance, poetry
23. Sibambene	We are holding one another	Du Noon	Poetry, singing, radio, drama, traditional dance
24. Black ink art movement		Du-Noon	Poetry, audio drama, dance
25. Youth of hope		Mfuleni	Poetry, drama, dance
26. Youth against crime		Mfuleni	Poetry, drama, dance
27. Masiland'en dulo	We are stating from the beginning	Khayelitsha	Dance, drama, poetry, singing
28. DCYM	Delicate Children Youth Movement	Makhaza, Khayelitsha	Dance, drama, singing
29. Nkqubela	Keep on doing it	Mbekweni	Poetry, drama, dance
30. Sinako	We can do	Mbekweni	Poetry, drama, dance

APPENDIX C

20	1	20V1.0	Philippi	Street Revolution	Vusani Oiwethu	14 to 20	Female						Primary	Yes	
21	1	21V1.0	Philippi	Street Revolution	Akhona Matshoba	14 to 20	Male	5		4		2	Secondary	Yes	
22	1	22V1.0	Philippi	Street Revolution	Zukisani Mtyumeka	14 to 20	Male	8		5	2	3	Secondary	Yes	afford
23	1	23V2.0	Philippi	Street Revolution	Bongisioho Booi	14 to 20	Male		Male			4	786929184	Secondary	Yes
24	1	24V1.0	Philippi	Street Revolution	Thobela Ngamalana	14 to 20	Male	3		2		2	Secondary	Yes	
25	1	25V1.0	Philippi	Street Revolution	Momela Siyongwana	14 to 20	Female	5		4	1		Primary	Yes	
26	1	26V2.0	Philippi	Street Revolution	Tumelo Mlaelaka	14 to 20	Male	9	Male	5	2	3	213714681	Secondary	Yes
27	1	27V2.0	Philippi	Street Revolution	Phinda Mgqweto	14 to 20	Female	9		5	2	3	213714681		Yes
28	1	28V2.0	Philippi	Street Revolution	Babi Anelisiwe	14 to 20	Female	6	Female	4	1	3	724365323	Secondary	Yes
29	1	29V1.0	The Leagues	League of Friends	Nheo Fumba	14 to 20	Female	4		6	3	1	Primary	Yes	
30	1	30V1.0	The Leagues	League of Friends	Linda Tsetsana	14 to 20	Female	15		7	5	8	Primary	Yes	
31	1	31V1.0	The Leagues	League of Friends	Zikona Mabumbulu	14 to 20	Female	11		5	4	9	Primary	Yes	
32	1	32V1.0	The Leagues	League of Friends	Lindelani Mabumbulu	14 to 20	Female	11		5	4	9	Primary	Yes	
33	1	33V1.0	The Leagues	League of Friends	Phumza Tstsana	26 to 35	Female	13		5	6	8	Secondary	No	afford
34	1	34V1.0	The Leagues	League of Friends	Xoiswa Tsetsana	14 to 20	Female	15		7	4	9	Secondary	No	Personal choice
35	1	35V1.0	The Leagues	League of Friends	Busiswa Fumba	14 to 20	Female	4				3	Secondary	Yes	
36	1	36V1.0	The Leagues	League of Friends	Phila Mabumbulu	14 to 20	Female	11		9	1	11	University or higher	No	afford
37	1	37V1.0	The Leagues	League of Friends	Siyamthabda Makosa	0 to 13	Female	15		7	5	8	Secondary	Yes	Other
38	1	38V1.0	The Leagues	League of Friends	Zondile Tsztana	14 to 20	Female	15		7	5	8	Secondary	Yes	
39	1	39V1.0	Dunoon	Zusakhe Youth	Nontobeko Fekema	older	Female	4		2		3	Secondary	No	
40	1	40V1.0	Dunoon	Zusakhe Youth	Mfihlakalo Mazwembe	14 to 20	Male	5		2	3	3	Secondary	Yes	
41	1	41V1.0	Dunoon	Zusakhe Youth	Thunysiswo Samntu	14 to 20	Female	5			1	5			
42	1	42V1.0	Dunoon	Zusakhe Youth	Nomvume Sandi	14 to 20	Female	5		2	3	4	Secondary	Yes	
43	1	43V1.0	Dunoon	Zusakhe Youth	Khanyiswa Matwele	14 to 20	Female	4		3	1	3	Primary	Yes	Personal choice
44	1	44V1.0	Dunoon	Zusakhe Youth	Xolani Maseyimani	14 to 20	Male	5		2		2	Secondary	Yes	
45	1	45V1.0	Dunoon	Zusakhe Youth	Thandinkosi Ntantiso	14 to 20	Male	5		2		3	Secondary	Yes	
46	1	46V1.0	Dunoon	Zusakhe Youth	Khule Myataza	14 to 20	Female	19			3	1		Yes	Personal choice

47	1	47V1.0	Dunoon	Zusakhe Youth	Gila Long	14 to 20	Female				5	2	3		Secondary	Yes		
48	1	48V1.0	Dunoon	Zusakhe Youth	Zuko Mbana		Male				3	2	2		Secondary	Yes	Personal choice	
49	1	49V1.0	Dunoon	Zusakhe Youth	Nceba Mlanjeni	14 to 20	Male		4		2				Secondary	Yes		
50	1	50V2.0	Lusaka	SYDO	Bulelani Mbinda	26 to 35	Male		1		1			787279997	University or higher	No	Other	
51	1	51V2.0	Nyanga	SYDO	Sicelo Ndabanganye	14 to 20	Male		8	Female		1	7	786698140	Primary	Yes		
52	1	52V2.0	Nyanga	SYDO	Siseko Nipha	21 to 25	Male		6	Female		11	12	720936098	Primary		Found a job	
53	1	53V2.0	Lusaka	SYDO	Wanga Hlahleni	14 to 20	Male		3	Female		2	6	731948700	Primary	Yes		
54	1	54V2.0	Nyanga	SYDO	Masibulele Damoyi	0 to 13	Male		7	Male		4	3	8	832404423	Primary	Yes	Personal choice
55	1	55V2.0	Lusaka	SYDO	Sibulele Sirunu	0 to 13	Female		4	Female		3	1	4	834804473	Primary	Yes	
56	1	56V2.0	Nyanga	SYDO	Bathebele Makubalo	14 to 20	Male		2	Female		2		2	0732484494/0782149395	Primary	Yes	
57	1	57V2.0	Nyanga	SYDO	Asive Dyntyi	14 to 20	Female		2	Female		2	1	3	0735225097/03785788163	Primary	Yes	
58	1	58V2.0		SYDO	Abongile Vena	0 to 13	Female		3	Male		4	3	10	799915093	Primary	Yes	Found a job
59	1	59V2.0	Lusaka	SYDO	Masibulele Ntiko	21 to 25	Male			Female				2	736226535	University or higher	Yes	
60	1	60V2.0	Nyanga	SYDO	Onwabisile Maqhina	14 to 20	Male		2	Female		1	1	7	727735142	Primary	Yes	Found a job
61	1	61V2.0	Nyanga	SYDO	Lwando Magwa	14 to 20	Male		5	Male		3	1	5	724726869	Primary	Yes	
62	1	62V2.0		SYDO	Anithi May	14 to 20	Male		3	Female		1	3	2	0213863189/0712769558	Secondary	Yes	
63	1	63V2.0	Lusaka	SYDO	Ndumiso Smousi	14 to 20	Male		7	Female		4	3	2	832439637	Primary	Yes	
64	1	64V2.0	Nyanga-Lusaka	SYDO	Sihle Sitayi		Female		4	Female		12	1	3	0760365520/0719098913		Yes	
65	1	65V2.0		SYDO	Nwabisa Sikade		Female			Female		4	1	6	788892072	Secondary	Yes	afford
66	1	66V2.0	Nyanga-Lusaka	SYDO	Sirunu Siwikiwe		Female		4	Female		3	1	4	834804473	Secondary	Yes	
67	1	67V2.0	Nyanga-Lusaka	SYDO	Zezethu Leve	14 to 20	Female		8	Male		1	4	6	0718161405/0213860176		Yes	
68	1	68V2.0	Nyanga	SYDO	Bongiwe Idaas	14 to 20	Female			Female					719821777	University or higher	Yes	
69	1	69V2.0	Lusaka	SYDO	Siyanela Yonga	21 to 25	Female		8	Male		6	2	6	783432756	Secondary	No	afford
70	1	70V2.0	Nyanga	SYDO	Vuyolwethu Makeleni	21 to 25	Male		8	Female		6	1	3	736212378	Secondary	No	afford
71	1	71V2.0	Lusaka	SYDO	Luvo Mkwambi	21 to 25	Male		9	Male		4	4	4	789675402	Secondary	No	afford
72	1	72V2.0	Nyanga	SYDO	Avuyisile Nteta	14 to 20	Female		6	Female		3	3	4	0735508329/0720644312		Yes	
73	1	73V2.0	Lusaka	SYDO	Akhona Williams	14 to 20	Female			Male		3	2	1	736592155	Primary	Yes	Personal choice

74	1	74	V2.0	Nyanga	SYDO	Nandipha Kula		Female		9	Female		4		2	213822732	University or higher	Yes	
75	1	75	V2.0	Samora Machell	Rock Divas	Ncedile Ntloko	26 to 35	Male		2	Male		2		2	730319610		No	Found a job
76	1	76	V2.0	Samora Machell	Rock Divas	Portia Mapasa	14 to 20	Female			Female		4	2	1	71032440	Primary	Yes	Found a job
77	1	77	V2.0	Samora Machell	Rock Divas	Sesethu Mfusa	14 to 20	Female		5	Female		1	1	3	717222102	Secondary	Yes	Found a job
78	1	78	V2.0	Samora Machell	Rock Divas	Nalatha Danjana	0 to 13	Male		5	Male		2	1	2	780177725	Primary	Yes	
79	1	79	V2.0	Samora Machell	Rock Divas	Azola Mhlekw	14 to 20	Male		5	Male		3	3	2	734604945	University or higher	Yes	Other
80	1	80	V2.0	Samora Machell	Rock Divas	Azola Vinindwa	14 to 20			9	Male		4	4	6	734604945	Secondary	Yes	
81	1	81	V2.0	Samora Machell	Rock Divas	Zanele Mboma	14 to 20	Female		3	Female		1	1	2	795520739	Primary	Yes	
82	1	82	V2.0	Samora Machell	Rock Divas	Nosiphelele Goli	14 to 20	Female		5	Female		3	1	4	710132440	Primary	Yes	
83	1	83	V2.0	Philippi	Siaphambile	Natasha Mathole	14 to 20	Female		6	Female		4			724038842	Secondary		
84	1	84	V2.0	Philippi	Siaphambile	Olwethu April	14 to 20	Female		4	Female		1	1	2	711739001	Secondary	Yes	
85	1	85	V2.0	Philippi	Siaphambile	Lubabalo Lucas Mazondwa	21 to 25	Male		5	Female		3		2	734490223	Secondary	Yes	
86	1	86	V2.0	Philippi	Siaphambile	Simamkele Gxogxa	21 to 25	Male		7	Male		7	5	5	719136065	Secondary	Yes	
87	1	87	V2.0	Philippi	Siaphambile	Venu Kwanelisiwe	14 to 20	Female		5	Male		3		3	783595072	Secondary	Yes	
88	1	88	V2.0	Philippi	Siaphambile	Zintle Ngeshe	14 to 20	Female		7	Female		5	2	3	827995325	Primary	Yes	
89	1	89	V2.0	Philippi	Siaphambile	Yandiswa Maseti	14 to 20	Male		4	Male		3	1	1	72414584	Secondary	Yes	
90	1	90	V2.0	Philippi	Siaphambile	Mpumelelo Phanginxiwa	14 to 20	Male		6	Female		4	1	3	828309214	Secondary	Yes	
91	1	91	V2.0	Philippi	Siaphambile	Imthi Sipoke	14 to 20	Female		3	Male		1		2	784298093	Secondary	Yes	
92	1	92	V2.0	Philippi	Siaphambile	Luthu Sharon Apleni	14 to 20	Female		4	Male		4		3	839557696	Secondary	Yes	
93	1	93	V2.0	Philippi	Khakamani	Natasha Gaji	14 to 20	Female		6	Female		5		5	782728954	Secondary	Yes	
94	1	94	V2.0	Philippi	Khakamani	Patrick Jali	14 to 20	Male		5	Male		1	1	1	784013117	Secondary	Yes	
95	1	95	V2.0	Philippi	Khakamani	Bulelwa Mceki	14 to 20	Female		7	Male		5	2	4	838965797	Secondary	Yes	
96	1	96	V2.0	Philippi	Khakamani	Loyiso Phalaza	14 to 20	Male		5	Female		4		1	710814102	Secondary	No	afford
97	1	97	V2.0	Philippi	Khakamani	Unam Kani	14 to 20	Female		4	Female			3	6	719288511	Secondary	Yes	
98	1	98	V2.0	Philippi	Khakamani	Zintle Siwentu	14 to 20	Female		11	Female		8	4	4	829343761	Secondary	Yes	afford
99	1	99	V2.0	Philippi	Khakamani	Nosiphiwo Mlomo	14 to 20	Female		8	Female		5	3		839343761	Secondary	Yes	afford
100	1	100	V2.0	Philippi	Khakamani	Ngono Noluvuyo	21 to 25	Female		7	Male		5	2	5	782326173	Secondary	No	Other

101	1	101	V2.0	Philippi	Khakamani	Sondinga Mandilakhe	14 to 20	Female	5	Female			4	732895512	Secondary	Yes	
102	1	102	V2.0	Philippi	Khakamani	Xola Zweibanzi	14 to 20	Male	2	Female		1	1	0782184989/0 3738707017	Secondary	Yes	
103	1	103	V2.0	Philippi	Khakamani	Ziyanda Mbenyana	21 to 25	Female	9	Female		8	1	736789423	Secondary	No	afford
104	1	104	V2.0	Philippi	Khakamani	Sithembile phalanga		Male	4	Female		2	1		Secondary	Yes	
105	1	105	V2.0	Philippi	Phakamani		26 to 35	Male						785624252	Secondary	No	Found a job
106	1	106	V2.0	Philippi	WAYI	Feni Ziyanda	14 to 20	Female	8	Female		5	1	781851326	Secondary	Yes	
107	1	107	V2.0	Philippi	WAYI	Mpolweni Khanyiswa	14 to 20	Female	3	Female		2		784919583	Secondary	No	afford
108	1	108	V2.0	Philippi	WAYI	Samkelo Skepe	14 to 20	Male	5	Female		4	1		Primary	Yes	
109	1	109	V2.0	Philippi	WAYI	Theliswa Keswa	21 to 25	Female	6	Female		5	2	834041068	Secondary	Yes	
110	1	110	V2.0	Philippi	WAYI	Feni Khululiwa	0 to 13	Female	8	Female				781851326	Primary	Yes	
111	1	111	V2.0	Philippi	WAYI	Mbekela Nokhanyo	0 to 13	Female	4	Female			1	738854267	Secondary	Yes	
112	1	112	V2.0	Philippi	WAYI	Sipelele Mbombela	14 to 20	Male		Male					Secondary	No	afford
113	1	113	V2.0	Philippi	WAYI	Akhona Mzobe	14 to 20	Female	6	Female		5	1	782311806	Secondary	Yes	
114	1	114	V2.0	Philippi	WAYI	Mokwanda Velebhayi	0 to 13	Female	3	Female			2	788899593	Primary	Yes	
115	1	115	V2.0	Philippi	WAYI	Masibulele Kula	14 to 20	Male	3	Female		3		781270744	Secondary	Yes	
116	1	116	V2.0	Philippi	WAYI	Lindisipho Cybil Didza	14 to 20	Female	6	Female		2	1	846398523	Secondary	Yes	
117	1	117	V2.0	Philippi	WAYI	Asanda Marhasi	14 to 20	Female	8	Male				739401551	Secondary	Yes	Found a job
118	1	118	V1.0	Mfuleni	Roses of Talent	Mthandazi Tshambu	14 to 20	Male	13			4	6	840172581	Secondary	Yes	
119	1	119	V1.0	Mfuleni	Roses of Talent	Penina Nyumbeka	14 to 20	Female	4			3		835815503	Primary	Yes	
120	1	120	V1.0	Mfuleni	Roses of Talent	Manethu Nkonya		Male	6			2	2	835988358	Primary	Yes	
121	1	121	V1.0	Mfuleni	Roses of Talent	Luvo Khedama	21 to 25	Male	7			4		744582166	Secondary	Yes	
122	1	122	V1.0	Mfuleni	Roses of Talent	Luthando Nkohla	21 to 25	Male	8			6	2	782047716	Secondary	No	
123	1	123	V1.0	Mfuleni	Roses of Talent	Sakhikhaya Tom	14 to 20	Male				1	1	793378932	Secondary	No	
124	1	124	V1.0	Mfuleni	Roses of Talent	Zokahnyisa Mtyhali	0 to 13	Female							Primary	Yes	
125	1	125	V1.0	Mfuleni	Roses of Talent	Simthembile Namelca	14 to 20	Male	6				2	0835637125/0 4835637125	Primary	Yes	afford
126	1	126	V1.0	Mfuleni	Roses of Talent	Pikolt Nkosiphendule	14 to 20	Male	10				1	796137790	Secondary	Yes	Personal choice
127	1	127	V1.0	Mfuleni	Roses of Talent	Abongile		Male						738839221	Secondary	No	

128	1	128	V1.0	Mfuleni	Roses of Talent	Sinesipho Foswe	14 to 20		2		2		2	835639344	Secondary	Yes	Personal choice
129	1	129	V1.0	Mfuleni	Roses of Talent	Nomaza Ngqamakwe	14 to 20	Female	6		2	3	4	793192605	Secondary	Yes	
130	1	130	V1.0	Mfuleni	Roses of Talent	Asavela Mntuyenwa	14 to 20	Female	7		2	4	3	785154115	Secondary	Yes	
131	1	131	V1.0	Site C	Khayelitsha Stars	Nlokuthula Mkwe	14 to 20	Female	12		7	7	6	735119016	Primary	No	afford
132	1	132	V1.0	Site C	Khayelitsha Stars	Fundiswa Mlawe	21 to 25		12		7	4	6	735119018	Primary	No	afford
133	1	133	V1.0	Site C	Khayelitsha Stars	Busiswa Mkhwe	21 to 25	Female	12		7	7	6	834164326	Primary	No	
134	1	134	V1.0	Site C	Khayelitsha Stars	Nonophela Mashalaba	14 to 20	Female	4		3		2	720881887	Primary	Yes	
135	1	135	V1.0	Site C	Khayelitsha Stars	Sihle Mbobosi	21 to 25	Female	8		6	2	1	785593968	Primary	No	afford
136	1	136	V1.0	Site C	Khayelitsha Stars	Anelisiwe Mkhwe	14 to 20	Female	12		7	7	6	735119018	Primary	Yes	
137	1	137	V1.0	Site C	Khayelitsha Stars	Nomaphelo Dmgalibala	14 to 20	Female	6		3	3	4	786048782	Primary	Yes	
138	1	138	V1.0	Site C	Khayelitsha Stars	Asanda Johannes	21 to 25	Female	9		3	6	7	738955233	Primary	No	Other
139	1	139	V1.0	Site C	Khayelitsha Stars	Sisanda Mbamo		Female	4		4		2	786758936	Primary	Yes	
140	1	140	V1.0	Philippi	S'phithanyongo	Mabhuti Bobo	21 to 25	Male	5		6	4	2		Secondary	No	
141	1	141	V1.0	Philippi	S'phithanyongo/Abazala	Sicelo Desi	14 to 20	Male	4		3	1	3		Secondary	Yes	afford
142	1	142	V1.0	Philippi	S'phithanyongo/Abazala Marimba	Sinethemba Tsele		Male	9		4	5	6		Secondary	No	Personal choice
143	1	143	V1.0	Philippi	S'phithanyongo	Simphiwe Mancoba	14 to 20	Male	5		1	1			Secondary	No	afford
144	1	144	V2.0	Philippi	S'phithanyongo	Siphithra Nyongo	21 to 25	Male	8	Female	5	3	4	848541407	Secondary	Yes	
145	1	145	V1.0	Philippi	S'phithanyongo	Luvo Ndlovu	14 to 20	Male	4		6	2	2		Secondary	No	Other
146	1	146	V1.0	Philippi	S'phithanyongo/Abazala	Thobelani Witbrooi	21 to 25	Male	8		6	2	2		Secondary	No	afford
147	1	147	V1.0	Philippi	S'phithanyongo	Abongile Nyica	21 to 25	Male	7		6	1	2		Secondary	No	afford
148	1	148	V1.0	Khayelitsha	United & Talented	Mazamisa Asiphe		Female	5		2	2	4	719218705	Primary	Yes	
149	1	149	V1.0	Khayelitsha	United & Talented	Siphosethu Layiti	14 to 20	Female	3		2		1	749333119	Primary	Yes	
150	1	150	V1.0	Khayelitsha	United & Talented	Zizipho Mngyeleza	14 to 20	Female	4			1	2	729730234		Yes	Personal choice
151	1	151	V1.0	Khayelitsha	United & Talented	Wonga Nduduba	14 to 20	Male	8		4		4	78587346	Primary	Yes	Personal choice
152	1	152	V1.0	Khayelitsha	United & Talented	Sinazo Wudaka	0 to 13	Female	9		3	2	3	715693747	Primary	Yes	
153	1	153	V1.0	Khayelitsha	United & Talented	Lilitha Ludaka	14 to 20	Female	9		3	2	3	715693747	Primary	Yes	
154	1	154	V1.0	Khayelitsha	United & Talented	Avela Meke		Male	5		3	1	3	833157866	Primary	Yes	

2. SOCIO ECONOMIC CONDITIONS

LIVELIHOOD & EXPENDITURE

2.4) Did you receive any formal education in the field of art and culture?	2.9) What is your main source of income?	2.10) Do you have your own source of income?	2.11) Is your own income coming from a formal job? (if no, go directly to question 2.18)	2.12) Is your own income related to sport, art or culture?	2.13) Is your own income regular in frequency?	2.14) Is your own income regular in quantity?	2.15) What is the frequency of your own income?	2.16) What is the yearly amount of your own income (Rand)	2.17) Is your own income enough to cover your basic needs (food, shelter, health)?	2.18) What is the yearly amount of your household income (Rand)	2.19) Is your main family income coming from a formal job?	2.20) What is the frequency of your family income?	2.21) How much do you estimate is the cost of your basic needs (food, shelter, health) per	2.22) How much do you spend in sport, art, culture per month? (Rand)	3.1) How many people form your group?	3.2) In the last six months, the number of your group members has:3.2) In the last six	3.3) Can any person become a member of your youth group?
2.4	2.9	2.10	2.11	2.12	2.13	2.14	2.15	2.16	2.17	2.18	2.19	2.20	2.21	2.22	3.1	3.2	-
No	Self employment	No	No	No	No	No	Daily		No		No				25	Increased	Yes
No	Social Grants	No	No	No	No	No	Monthly	3000	No		No				25	Increased	Yes
No	Other	No	No	No		No	Seasonal/Other periodicity		No		No	Seasonal/Other periodicity			25	Decreased	Yes
	Relatives / partners	No	No	No	No	No			No		No	Monthly	1000		25	Decreased	
	Relatives / partners	Yes		No	No	No							1000			Decreased	
No	Relatives / partners	No	No	No	No	No			No		No				25	Decreased	
Yes	employment	No	No	No		No					No	Seasonal/Other periodicity			25	Decreased	
No	Relatives / partners	No	No	No							No	Monthly			25	Decreased	
No	Social Grants	No	No	No	No	No	Seasonal/Other periodicity		No		No	Seasonal/Other periodicity	2000		25	Increased	
	Relatives / partners	No	No	No	No	No			No		Yes	Monthly		100	25	Decreased	
Yes	Social Grants	No	No	No	No		Monthly	50000	No	R 5,000	Yes	Monthly	R 4,000	R 2,000	25	I do not know	
No	Other	No	No	No	No	No	Seasonal/Other periodicity	0	No	0	No	Monthly	3000	0	I do not know	Decreased	
No	Relatives / partners	No	No	No							Yes		2500	250	20	Decreased	
	Self employment								No	20000	No	Monthly	3500	500		Decreased	
No	Other	Yes	Yes	No	Yes	No	Monthly	12000	No		No		1000	780	20	Decreased	
No	Social Grants	No	No	No	No	No			No	750	No			500		Decreased	
Yes	Relatives / partners	No	No	No	No	No	Seasonal/Other periodicity	50	No	350	Yes	Weekly	1200	100	20	Decreased	
No	Relatives / partners	No								7000	No	Daily	2500	150	20	Decreased	Yes
No	Other	No										Monthly			I do not know	Increased	

No		No	No	No	No	No			No		No				50	Decreased	
Yes		No	No	No	No	No		0							50	Increased	
Yes	Relatives / partners	No	No	No	No	No		600	No		No	Monthly			40	Increased	
No	Self employment	No	No	Yes		No	Seasonal/Other periodicity		No		No	Seasonal/Other periodicity			32	Increased	Yes
Yes	Social Grants	No	No							R3000	No	Monthly			32	I do not know	Yes
Yes	Relatives / partners	Yes	Yes	Yes		Yes	Seasonal/Other periodicity		No	11	No	Monthly			31	Decreased	know
Yes	Relatives / partners	No									No	Monthly	R1,500		32	I do not know	Yes
Yes	Relatives / partners	No	No	No	No	No	Daily				Yes	Monthly			32	Decreased	Yes
No	Social Grants	Yes		No	Yes	No	Monthly	R250.00	No		No	Monthly			31	Increased	Yes
No	Relatives / partners	No								R3000	Yes	Monthly			31	Increased	
Yes	Relatives / partners	Yes		Yes	Yes	Yes	Monthly	R5000. 000	Yes	R1.500	Yes	Monthly			32	Increased	Yes
Yes		Yes		No	No	Yes	Monthly		Yes		Yes	Weekly			32		Yes
No	Other	No	No	No	No	No			No		No	Daily			32	Increased	Yes
Yes	Relatives / partners	No	No	Yes	Yes	Yes	Seasonal/Other periodicity		No		Yes	Monthly			32	I do not know	know
Yes	Relatives / partners	No	No	Yes		No	Seasonal/Other periodicity	R500	No	R500	No	Seasonal/Other periodicity	R4000	R200	30	Increased	No
No	Self employment	No	Yes	Yes		No	Monthly		Yes		Yes	Monthly			32	Increased	No
Yes	Social Grants	No									No	Monthly			32	Increased	Yes
	Social Grants	No			Yes		Monthly		No		No	Monthly			31	Increased	know
Yes	Social Grants	No		No		No				R150	Yes	Monthly	R1000		32	I do not know	Yes
No	Social Grants	No		Yes			Monthly	R500	No		No	Monthly			31	Increased	No
Yes		No	No	No	No	No				R1500	No	Monthly			32	Increased	know
Yes	Relatives / partners	No			No		Seasonal/Other periodicity		Yes					7	31	Increased	No
No	employment	Yes	Yes		Yes	No	Monthly	R1200	No		Yes	Monthly	R5000		32	Stable	No
No	Relatives / partners	No								R20800	Yes	Monthly	R700		32	Increased	Yes
No	Relatives / partners	No	No	No	No	No			No		No	Monthly	R2500		31	Increased	
No	Social Grants	Yes		No	Yes	Yes	Monthly	R3120.00			No	Monthly			32	Increased	Yes
Yes	Relatives / partners	No	No	No	No	No			No		Yes	Monthly			32	I do not know	Yes

No	Other	No	No	No	No	No			No	Yes	Seasonal/Other periodicity			31	I do not know	Yes		
Yes	employment	Yes	Yes	No	Yes	Yes	Monthly			R31,200	Yes	Monthly	R2000	R50	7	Decreased	Yes	
Yes	Relatives / partners	No	Yes	No	No	Yes	Monthly		No		Yes	Monthly			7	Increased	Yes	
Yes	Relatives / partners	No									No	Daily		R30	7	Stable	Yes	
Yes	Relatives / partners	Yes	Yes	Yes	Yes	Yes	Weekly		Yes		Yes	Weekly			7	Increased	know	
Yes	Relatives / partners	No	No	No	No	No	Weekly		Yes		No	Weekly			7	I do not know	No	
Yes	Relatives / partners	No	No	No	No	No	Seasonal/Other periodicity		No		No	Weekly			7	Increased	No	
Yes	Relatives / partners	No									No	Daily			7	I do not know	Yes	
No	Relatives / partners	Yes	No	Yes	Yes	Yes	Monthly	R 24,000			No	Seasonal/Other periodicity			7	Stable	No	
	Relatives / partners	No					Monthly		No			Monthly			20	Decreased	Yes	
Yes	Social Grants	No					Monthly		No			Monthly				I do not know	Increased	Yes
No	Self employment	No	No	No	No	No					No				11	Increased	Yes	
No	Relatives / partners	Yes	Yes	No	No	Yes	Weekly				Yes	Monthly			20	Increased	Yes	
No	Relatives / partners	No								R65200,00	Yes	Weekly				I do not know	Decreased	Yes
	Relatives / partners	No										Monthly				I do not know	I do not know	Yes
Yes	Relatives / partners		No	Yes	No		Weekly					Weekly			20	I do not know	know	
	Relatives / partners	No	No	Yes	No	Yes	Weekly	R 600	No			Weekly			20	Increased	Yes	
Yes	Relatives / partners	No									Yes	Monthly			20	Decreased	Yes	
Yes	Relatives / partners	No										Daily			21	Increased	Yes	
No	Social Grants	No	No	No	No	No	Monthly		No	R 3,000	No	Monthly		R100,00	34	Increased	Yes	
No	Relatives / partners									R 14,400	Yes			R100,00	34	Increased	Yes	
No		No	No	No	No	No	Monthly			R 3,000	No	Monthly			34	Increased	Yes	
Yes	Relatives / partners		Yes	No	No	No	Seasonal/Other periodicity			R 4,000	No	Weekly			30	Increased	Yes	
Yes		Yes	No	Yes	Yes	Yes	Monthly	R 250.00	No	R 9,000	Yes	Monthly	R 1,000	R 50	34	Increased	Yes	
Yes	Social Grants	No	No	No	No				No	R 13,680	No	Monthly			34	Increased	Yes	
Yes	Social Grants	No	No	No					Yes	R 3,000	No	Monthly			34	Increased	Yes	
No	Social Grants	No								R 6,000	No	Monthly			34	I do not know	Yes	

No		No	No	No	Yes	No			No	R 600	No	Monthly	R 250	R 50	36	Increased	Yes
Yes	Relatives / partners	No	Yes	Yes				R 15,000	Yes	R 5,000	Yes	Monthly				Decreased	Yes
No	Relatives / partners	No								R 700	No	Daily				Decreased	No
Yes	Relatives / partners	No	No	No	No	No									I do not know	Increased	Yes
Yes	employment	Yes	No	Yes	Yes	Yes	Weekly		No		No	Monthly			30	Stable	Yes
No	Social Grants	No								R 3,000	No	Monthly	Don't know	Don't know	35	Increased	Yes
No		No											R 6,000	R 400	35	Increased	Yes
	Relatives / partners	No										Weekly		Don't know	3	Decreased	Yes
Yes		No											Don't know		35	Increased	Yes
No	Relatives / partners	No														Increased	Yes
No	Relatives / partners	No													35	Increased	Yes
No		No										Weekly	Don't know	Don't know	3	I do not know	know
No	Relatives / partners	No													35	Increased	Yes
No	Social Grants	No								R 6,240	No	Monthly	Don't know	R 155	16	Increased	Yes
No	Other											Seasonal/Other periodicity	Don't know	Don't know	35	Decreased	Yes
Yes	Relatives / partners	Yes	No	No	No	No	Monthly		No		No	Monthly			I do not know	Increased	Yes
No	Relatives / partners	Yes	No	No	No	No	Monthly		No		No	Monthly			I do not know	Increased	Yes
No	Social Grants	Yes	No	No		Yes	Monthly	250	Yes		Yes	Monthly	250	0	22	Decreased	
No	Social Grants	No											500		I do not know	Decreased	
No	employment	No									Yes				I do not know		
No		No	No	No	No	No					No			964.80	I do not know	Increased	
No	Relatives / partners	No													18	Increased	
	Relatives / partners	No		No							No	Monthly			I do not know	Increased	
		Yes													I do not know	I do not know	
Yes	Social Grants	Yes	Yes	Yes		Yes	Monthly		Yes		Yes		700	400	I do not know	I do not know	
Yes	Relatives / partners	Yes	No	Yes	Yes	No	Daily		Yes	200	Yes	Daily			I do not know	I do not know	
No	Other	Yes	No	No	Yes		Seasonal/Other periodicity		No		No	Seasonal/Other periodicity			1	Decreased	

	Relatives / partners	No	No	Yes	No	No	Monthly	1500	Yes	3000	Yes	Monthly	2200	20	1	Increased	
Yes	Relatives / partners	No	No	No	Yes	Yes	Monthly			1800		Weekly	2800	22	1	Increased	
No	Relatives / partners	No													I do not know	I do not know	
No	Relatives / partners	No									Yes		2000	800	I do not know	Decreased	
No	Relatives / partners	No									Yes	Monthly		2000	I do not know	Decreased	
No	Relatives / partners	No									Yes	Monthly	2000	800	14	Stable	
No	Relatives / partners	No									Yes	Daily	1500	800	I do not know	Decreased	
No	Relatives / partners	No									No	Monthly	1150	800	I do not know	Decreased	
No	Relatives / partners											Monthly	2000	800	14	Stable	
No	Relatives / partners											Weekly			I do not know	Decreased	
No	Relatives / partners	No									No	Seasonal/Other periodicity			I do not know	Decreased	
No	Relatives / partners	No	No	No	No	No					Yes	Monthly			I do not know	Decreased	
No	Relatives / partners	No	No	Yes	No	Yes	Monthly	1500	No	18000	Yes	Monthly	3000	300	12	Stable	
No	Relatives / partners	Yes	No	No	No	No	Weekly	1500	No	4000	No	Monthly	1000	600	9	Stable	
Yes	Other	Yes	No	Yes	No	No	Seasonal/Other periodicity	3000	No	8000	No	Monthly	1000	500	1	Stable	
Yes	Relatives / partners	No	No	No	No	No									12	Stable	
Yes	Social Grants									13200	No	Monthly	4000		10	Stable	Yes
Yes	Relatives / partners	No	No	No	No	No			No		Yes				12	Stable	
No	Self employment	Yes	No	Yes	No	Yes	Seasonal/Other periodicity	3000	Yes	7000	Yes	Monthly	500	200	9	Stable	
No	employment	No	No	No	No	No	Monthly			42000	Yes		2500		12	Stable	
No	Relatives / partners										No	Monthly		100	13	Increased	
	Relatives / partners										No	Weekly		150	13	I do not know	
No	Relatives / partners										No	Daily	2000	100	13	Decreased	
No	Relatives / partners										No	Monthly	100	60	13	Decreased	
Yes	Relatives / partners	No	No	No	No	Yes	Monthly		No		No			100	13	Increased	
Yes	Relatives / partners	No	No	No	No	Yes	Monthly				No	Monthly		100	13	Increased	
No	Relatives / partners	No	No	No	No	Yes	Monthly				No	Monthly		20	13	Increased	

3. KNOWLEDGE & INVOLVEMENT ON YOUR YOUTH GROUP

KNOWLEDGE													INVOLVEMENT				
3.3.1) If no, are there rules / criteria written down to select new members?	3.4) Which one of the following reflects more the main objective of your group?	3.4 A if multiple answers.	3.4 B if multiple answers.	3.5) Which one of the following reflects more the main activities of your group?	3.5 A if multiple answers.	3.5 B if multiple answers.	3.5 C if multiple answers.	3.6) How many times in 1 month does your group meet?	3.7) How many times in 1 month does your group perform activities outside the	3.8) Where do you normally meet?	3.9) Is there a clear leadership within your youth group?	3.10) Who decides which activities take place?	3.12) Which one of the following reflects more your present role within the youth group?	3.12 A if multiple answers.	3.12 B if multiple answers.	3.15) Would you like your group to be more active in performing activities outside your	3.16) Is it important for you to be part of the youth group?
-	3.4	A	B	3.5	A	B	C	3.6	3.7	3.8	3.9	#	3.12	A	B	3.15	3.17
Yes	messages to others			Culture	Awareness campaigns			0-10		somebody's house	Yes	the group	Leader			Yes	Very important
	messages to others			vulnerable people	Awareness campaigns	vulnerable people	activities to have fun	0-10		somebody's house	Yes	the group	Leader			Yes	Very important
								0-10		somebody's house	Yes	the group				Yes	Very important
	messages to others			Culture				0-10	I do not know								Very important
	messages to others			Culture				0-10		somebody's house	Yes		Coordinator			Yes	Important
								0-10		somebody's house	Yes					Yes	
										somebody's house	Yes					Yes	Very important
								0-10		somebody's house	Yes					Yes	Very important
	messages to others			Culture				0-10		somebody's house	Yes		Performer			Yes	Important
	messages to others			Culture				0-10		somebody's house	Yes		Coordinator			Yes	Important
	street life for its members			Culture				know	I do not know	somebody's house	Yes		Leader			Yes	Very important
	nt among young people			activities to have fun				20		somebody's house	Yes		Leader			Yes	Very important
	nt among young people	messages to others	street life for its members	Culture				20		In public closed space	No		Coordinator			Yes	Very important
	messages to others			Culture												Yes	Very important
	nt among young people	messages to others		Culture	Awareness campaigns	activities to have fun		20		In public closed space			Leader			Yes	Very important
	messages to others			Culture				0-10		In public open space						Yes	
	messages to others			vulnerable people				0-10	1-4	In public closed space	know	the group	Performer			Yes	Very important
	messages to others			Awareness campaigns				11-20	1-4				Performer			Yes	Very important
								know	I do not know	In public closed space	Yes					Yes	Very important

	messages to others			know				know		In public open space	Yes						
	messages to others			Culture						In public closed space	Yes		Leader			Yes	Very important
No	messages to others			Awareness campaigns				20	I do not know	In public closed space	No	the group	Performer			Yes	Very important
	nt among young people			Culture				0-10		In public closed space	Yes		Other			Yes	Very important
	messages to others			Culture				20		In public closed space	Yes		Coordinator			Yes	Very important
	nt among young people	messages to others		Culture	Awareness campaigns	activities to have fun		20	1-4	somebody's house			Leader			Yes	Important
	messages to others			Awareness campaigns				20	1-4	In public closed space	Yes	the group	I do not know			Yes	Very important
	messages to others			Culture				know	1-4	In public open space	Yes	the group	Leader			Yes	Very important
	nt among young people			activities to have fun				0-10		somebody's house	Yes		Other			Yes	Important
				Culture				0-10	I do not know	somebody's house	Yes		Leader			Yes	Very important
	nt among young people	messages to others		Culture				0-10	I do not know	somebody's house	Yes		Leader			Yes	Important
	nt among young people	messages to others		Culture				0-10	more than 5	somebody's house	Yes		Leader			Yes	Very important
	nt among young people			Culture				0-10	1-4	somebody's house	Yes		Leader			Yes	Very important
	nt among young people	messages to others	street life for its members	Culture				0-10		somebody's house	Yes		Leader			Yes	Important
	nt among young people	messages to others	street life for its members	Culture				0-10		somebody's house	Yes		Coordinator			Yes	Important
	nt among young people	Other		activities to have fun				know	I do not know	somebody's house	know		Leader			Yes	Important
	nt among young people	messages to others		Culture	activities to have fun			0-10	1-4	somebody's house	Yes		Leader			Yes	Very important
	nt among young people	messages to others		Culture	activities to have fun			know	1-4	somebody's house	Yes					Yes	Very important
	nt among young people	street life for its members		Culture	vulnerable people	activities to have fun		20		In public open space	Yes		Performer			Yes	Very important
	nt among young people	nt among young people	street life for its members	Culture	vulnerable people	activities to have fun		20		In public closed space	Yes					Yes	Very important
				Culture					I do not know		Yes		Performer			Yes	Important
	nt among young people	messages to others		Culture				20	1-4	In public open space	Yes		Performer			Yes	Very important
	messages to others			Culture				0-10		In public open space	Yes		Coordinator			Yes	Very important
	nt among young people	messages to others	street life for its members	Culture	vulnerable people	activities to have fun		20		In public closed space	Yes		Other			Yes	Very important
	nt among young people	messages to others	street life for its members	Culture				20		In public open space	Yes		Other			Yes	Important
	messages to others			Culture							Yes		Performer			Yes	Important

	nt among young people			Culture				20	more than 5	In public open space	Yes		Performer			Yes	Important
	nt among young people							0-10	1-4		Yes		Leader			Yes	
	nt among young people	messages to others	street life for its members	Culture	vulnerable people	activities to have fun				In public closed space	Yes		Other			Yes	Very important
	messages to others			Culture				20	more than 5	somebody's house	Yes	the group	Leader			Yes	Very important
	nt among young people			Culture				20	1-4	In public open space	Yes	the group	Performer			Yes	Very important
Yes	nt among young people			vulnerable people				20	more than 5	In public open space	Yes	know	Leader			Yes	Very important
	messages to others			Awareness campaigns				know	I do not know	In public open space	Yes	the group	Leader			Yes	Important
Yes	nt among young people			Culture				20	more than 5	In public open space	Yes	the group	Performer			Yes	Very important
Yes	messages to others			Awareness campaigns				20	1-4	In public open space	Yes	the group	Performer			Yes	Very important
Yes	nt among young people			Culture				20	1-4	In public open space	Yes	the group	Performer			Yes	Very important
Yes	nt among young people			Culture				20	more than 5	In public open space		know	Performer			Yes	Very important
know	messages to others			Culture				20	more than 5	somebody's house	Yes	the group	Performer			Yes	Very important
	messages to others			Awareness campaigns				20	1-4	In public closed space		the group	Leader			Yes	Very important
No	nt among young people			activities to have fun				20	more than 5	somebody's house	Yes	the group	Leader			Yes	Very important
Yes	nt among young people	messages to others	street life for its members	Culture				20	more than 5	In public closed space	Yes	committee	Leader			Yes	Very important
know	messages to others			activities to have fun				20	more than 5	somebody's house	know	the group	Performer			Yes	Very important
Yes	messages to others			Awareness campaigns				20	more than 5	In public open space	Yes	the group	Performer			Yes	Important
	messages to others							20	1-4	somebody's house	Yes	the group	Performer			Yes	Very important
know	messages to others			activities to have fun				0-10	1-4	In public open space	Yes	the group	Performer			Yes	Very important
Yes	messages to others			Culture				20	1-4	somebody's house	Yes	the group				Yes	Very important
know	Other			Awareness campaigns				0-10	1-4	In public open space	Yes	the group	Performer			Yes	Very important
know	street life for its members			Culture				20	more than 5	In public open space	Yes	the group	Leader			Yes	Very important
Yes	messages to others			Culture				20	I do not know	In public closed space	Yes	the group	Leader			Yes	Very important
	nt among young people	messages to others		Culture				20	1-4	In public closed space	Yes	the group	Leader			Yes	Very important
	messages to others			Culture				20	more than 5	somebody's house	Yes	committee	Coordinator			Yes	Very important
	nt among young people			Culture				20	more than 5	In public open space	Yes	the group	Coordinator			Yes	Very important
Yes				activities to have fun				20	I do not know	In public open space	Yes	the group				Yes	Very important

Yes							20	more than 5	In public closed space	know					Yes	Very important
Yes	nt among young people			activities to have fun			0-10	1-4	somebody's house	Yes	committee	Leader			Yes	Very important
No	street life for its members			vulnerable people			0-10		somebody's house	Yes	the group	Performer			Yes	Very important
	messages to others			vulnerable people			20	1-4	In public open space	Yes	the group	Performer			Yes	Very important
	messages to others			know			0-10	more than 5	somebody's house	Yes	the group	I do not know			Yes	I do not know
No	street life for its members			Awareness campaigns			0-10	more than 5	somebody's house	Yes	the group	Other			Yes	I do not know
No	messages to others			Culture			0-10	more than 5	somebody's house	Yes	the group	Performer			Yes	Very important
know		I do not know		know			0-10	I do not know	know	know	committee	Leader			Yes	Important
Yes	messages to others			Culture			11-20	more than 5	somebody's house	Yes	the group	Performer			Yes	Very important
Yes	nt among young people	nt among young people		activities to have fun			20	1-4	In public closed space	Yes	committee	Coordinator			Yes	
know	messages to others			Culture			20	more than 5	In public open space	Yes	committee	Performer			Yes	Very important
	messages to others			Awareness campaigns			know	1-4	In public open space	Yes	the group	Leader			Yes	Very important
Yes				Culture			0-10	more than 5	In public closed space	Yes	the group	I do not know			Yes	Very important
know	nt among young people			Culture			20	I do not know	In public closed space	Yes	the group	Other			Yes	Very important
	street life for its members			Culture			11-20	1-4	In public closed space	Yes	the group	Performer			Yes	Very important
know		I do not know		Culture			20	I do not know	In public closed space	know	the group	Performer			Yes	Very important
know	nt among young people			Culture			know	I do not know	know	Yes	the group	Performer			Yes	Very important
	messages to others															
No	nt among young people			vulnerable people			11-20	1-4		Yes	the group	Performer			Yes	Very important
	Other			Awareness campaigns			20	more than 5	In public closed space	Yes	the group	Performer			Yes	Very important
	Other			Awareness campaigns			20	1-4	somebody's house	Yes	the group	Coordinator			Yes	Very important
Yes				Culture			20	more than 5	In public closed space	Yes	the group	Performer			Yes	Very important
No	messages to others			Culture			20	1-4	In public closed space	Yes	the group	Performer			Yes	Very important
	nt among young people			Culture			20	1-4	In public closed space	Yes	the group	Performer			Yes	Important
Yes	messages to others			Culture			20	more than 5	In public closed space	Yes	the group	Leader			Yes	Very important
Yes	messages to others			Culture			20	more than 5	In public closed space	Yes	the group	Leader			Yes	Very important
	messages to others			Awareness campaigns			20	more than 5	In public closed space	Yes	the group	Coordinator			Yes	Very important

No	nt among young people	messages to others		Culture				20	1-4	In public closed space	Yes	the group	I do not know			Yes	Important
Yes	messages to others			Culture				20	1-4	somebody's house	Yes	the group	Performer			Yes	Very important
Yes	messages to others			Culture				20	1-4	somebody's house	Yes	the group	Performer			Yes	Very important
				Culture				20	1-4	somebody's house		the group	Performer			Yes	Very important
	messages to others			Awareness campaigns				20	1-4	In public closed space	Yes	the group	Performer			Yes	Very important
	nt among young people	messages to others	street life for its members	Culture	Awareness campaigns	vulnerable people	activities to have fun	11-20	1-4	somebody's house	Yes	the group	Leader	Coordinator		Yes	Very important
	nt among young people	messages to others	street life for its members	Culture	Awareness campaigns	vulnerable people	activities to have fun	11-20	1-4	somebody's house	Yes	the group	Leader	Coordinator		Yes	Very important
	nt among young people			Culture				20	I do not know	In public open space	Yes	the group	I do not know			Yes	Very important
	nt among young people			Culture	Awareness campaigns	know		11-20	1-4	somebody's house	Yes	the group	Leader	Coordinator		Yes	Very important
				Culture				20		somebody's house	Yes	the group	Leader			Yes	Very important
Yes				Culture				20	1-4	somebody's house	Yes	the group	Leader			Yes	Very important
know		I do not know						know	I do not know	In public open space	know	the group	I do not know			No	Important
Yes		I do not know		Culture				20	1-4	somebody's house	Yes	the group	Leader			Yes	Important
	nt among young people	messages to others		Culture				20	I do not know	somebody's house	Yes	the group	Performer			Yes	Important
				Culture				0-10	1-4	somebody's house	Yes	the group	Leader			Yes	Very important
know	nt among young people			Culture				know	I do not know	somebody's house	Yes	know	Performer			Yes	Important
know	nt among young people			Culture				know	I do not know	somebody's house	Yes	know	Performer			Yes	Important
	nt among young people			Culture						In public open space	Yes		Performer			Yes	Very important
	nt among young people			Culture				20								Yes	Very important
				Culture				know	I do not know	In public closed space	Yes		Leader			Yes	
	nt among young people			activities to have fun					I do not know	In public closed space	Yes		Coordinator			Yes	Important
	messages to others			Culture				know		In public closed space	Yes		Performer			Yes	Very important
								know		In public closed space	Yes		Leader			Yes	Very important
								know	I do not know		know		Other			Yes	important
	messages to others			activities to have fun				know		somebody's house	know		Leader			Yes	Very important
	nt among young people			Culture				know	I do not know	In public closed space			Leader			Yes	
	nt among young people	messages to others	street life for its members	Culture				0-10	1-4	somebody's house	Yes		Leader			Yes	Very important

	nt among young people			Culture				know		In public open space	know			I do not know			Yes	Very important
	nt among young people			Culture				20						Coordinator			Yes	Very important
				activities to have fun				know		In public closed space	know			I do not know			Yes	Very important
	nt among young people			Culture				know	I do not know	know							Yes	Important
	nt among young people			Culture				know	I do not know	somebody's house				Leader			Yes	Important
	nt among young people			Culture					1-4	somebody's house				Other			Yes	Important
	street life for its members			Culture				0-10	I do not know	somebody's house				Performer			Yes	Important
	nt among young people			Culture				know	I do not know	somebody's house				Coordinator			Yes	Very important
	nt among young people			Culture				0-10	1-4	somebody's house				Leader			Yes	Important
	nt among young people			Culture				know	I do not know	somebody's house	know			Coordinator			Yes	Very important
	nt among young people			Culture				know		somebody's house				Leader			Yes	Very important
	nt among young people			Culture				know	I do not know	somebody's house				Leader			Yes	Very important
	messages to others			Culture				0-10		somebody's house				Coordinator			Yes	Very important
	nt among young people	messages to others		Culture	activities to have fun			20	1-4	somebody's house				Coordinator			Yes	Very important
	nt among young people	messages to others		Culture	Awareness campaigns	vulnerable people	activities to have fun	20	1-4	somebody's house				Coordinator			Yes	Very important
	Other			know				know		somebody's house							Yes	Very important
No	messages to others			Culture				11-20	1-4	somebody's house			the group	Performer			Yes	Very important
	messages to others			know				know		somebody's house				Other			Yes	Very important
	nt among young people	messages to others		Culture	vulnerable people			20	1-4	somebody's house				Performer			Yes	Very important
	nt among young people			activities to have fun				know	I do not know	somebody's house				Other			Yes	Important
	messages to others			Culture				20		In public closed space				Other			Yes	Very important
	messages to others			Culture				20						Leader			Yes	Very important
	messages to others			Culture				20		In public closed space							Yes	Very important
	messages to others	street life for its members		Culture				20		In public closed space							Yes	Very important
	I do not know			Culture				20	more than 5	In public closed space				Leader			Yes	Very important
	messages to others			Culture				20		In public closed space							Yes	Very important
	I do not know			Culture						In public closed space				Leader			Yes	Very important

I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Very important	social behaviours		
															social behaviours		
															social behaviours		
I don't know	nt among young people	messages to others			Culture				know	know	Inyanda	Yes	Yes	Very important	social behaviours		
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Important	social behaviours		
	messages to others				Culture				know	know	Coordinator	Yes	Yes	Very important	social behaviours		
I don't know	messages to others				Culture				know	know	Performer				mental growth		
20	nt among young people				other youth groups				1-4	1-4	Performer	Yes	Yes	Very important	social behaviours		
															social behaviours		
120	messages to others				other youth groups				know	know	I do not know	know	I do not know	Important	social behaviours		
I don't know	nt among young people	messages to others			Culture				1-4	1-4	Inyanda	Yes	Yes	Very important	social behaviours		
I don't know	nt among young people	messages to others			Culture				1-4	1-4	Inyanda	Yes	Yes	Important	social behaviours		
I don't know	nt among young people	messages to others			Culture				1-4	1-4	Inyanda	Yes	Yes	Very important	social behaviours		
30	nt among young people				Culture				1-4	1-4	I do not know	Yes	Yes	Very important	important		
30	nt among young people	messages to others			Culture				1-4	know	Inyanda	Yes	Yes	Important	social behaviours		
30	nt among young people	messages to others			Culture				1-4	know	Inyanda	Yes	Yes	Important	social behaviours		
I don't know	nt among young people				other youth groups				know	know	I do not know	Yes	Yes	Very important	have a job		
I don't know	nt among young people	messages to others			Culture				1-4	1-4	Performer	Yes	Yes	Very important			
I don't know	nt among young people				Culture				know	1-4	Performer	Yes	Yes	Very important	generate income		
I don't know	I do not know				know				know	know		know	I do not know	Very important	social behaviours		
38	nt among young people	messages to others			Culture				1-4	1-4	I do not know	Yes	Yes	Very important	mental growth	social behaviours	
	nt among young people	messages to others	street life for its members	Other	Culture				1-4	1-4	Performer	Yes	Yes	Important			
38	nt among young people	messages to others			Culture				1-4	know	Performer	Yes	Yes	Very important			
I don't know	I do not know								1-4	1-4	I do not know	Yes	Yes	Very important	mental growth		
38	nt among young people	messages to others							1-4		I do not know	Yes	Yes	Very important			
38	nt among young people	messages to others							1-4		I do not know	Yes	Yes	important	mental growth		
38	nt among young people	messages to others	street life for its members	Other	Culture				1-4	1-4	Performer	Yes	Yes	Important	have a job		

I don't know	I do not know			other youth groups				know	know	Performer	Yes	Yes	Important	social behaviours		
	nt among young people			Culture				1-4	1-4	Coordinator	Yes	Yes	Very important			
38	nt among young people	messages to others		Culture				1-4		Performer	Yes	Yes	Important	have a job		
I don't know	messages to others	Other		Culture				1-4	know	Performer	Yes	Yes	Very important	social behaviours		
4	nt among young people			Culture					1-4	Inyanda	Yes	Yes	Important	social behaviours		
I don't know	I do not know			know					know	I do not know	Yes	Yes	Very important	have a job		
I don't know	I do not know			know				know	know	I do not know	Yes	Yes	I do not know	and get together.		
4	nt among young people			Culture				know	more than 5	I do not know	Yes	Yes	Very important	generate income		
I don't know	messages to others			Awareness campaigns				know	1-4	Inyanda	Yes	Yes	Important	mental growth		
4	nt among young people			Culture					1-4	I do not know	Yes	Yes	Very important	mental growth		
I don't know	I do not know			Culture					more than 5	I do not know	Yes	Yes	Important	mental growth		
2	nt among young people			Awareness campaigns					more than 5	Performer	Yes	Yes	Important	important		
42	messages to others			Awareness campaigns				1-4	1-4	Inyanda	Yes	Yes	Very important	social behaviours		
I don't know	I do not know			Culture				know	know	I do not know		Yes	Important	mental growth		
I don't know	nt among young people			Culture				1-4	know	Performer	Yes	Yes	Very important	mental growth		
2	I do not know			other youth groups				1-4	more than 5	Performer	Yes	Yes	Very important	have a job		
18	street life for its members			Awareness campaigns					0	Performer	Yes	Yes	Important	social behaviours		
1	messages to others			Culture				1-4	1-4		Yes	Yes	Very important			
2	nt among young people			Culture				1-4	1-4	Performer	Yes	Yes	Very important	mental growth		
1	messages to others			Culture	Awareness campaigns			1-4	more than 5	Performer	Yes	Yes	Very important	mental growth	social behaviours	
I don't know	messages to others			other youth groups					1-4	Performer	Yes	Yes	Very important	generate income		
I don't know	nt among young people			Culture				know	know	I do not know	Yes	Yes	important	mental growth		
I don't know	messages to others			Culture				know	know	Inyanda	Yes	Yes	Very important	mental growth	social behaviours	
I don't know	messages to others			Awareness campaigns				know	know	Inyanda	Yes	Yes	Very important	social behaviours		
15	messages to others			Culture				know	know	Inyanda	Yes	Yes	Very important	mental growth		
I don't know	nt among young people			other youth groups					1-4	Performer	Yes	Yes	Very important	social behaviours		
I don't know	I do not know			know					know	I do not know	Yes	Yes	Very important			

6	I do not know				know				know	1-4	I do not know	Yes	Yes	Very important	important		
I don't know	messages to others				Awareness campaigns				1-4	1-4	Inyanda	Yes	Yes	Very important	social behaviours		
I don't know	I do not know				other youth groups				know	more than 5	Performer	Yes	Yes	Important	social behaviours		
50	messages to others				other youth groups					1-4	Performer	Yes	Yes	Very important	social behaviours		
20	nt among young people				Culture				know	know	Performer	Yes	Yes	I do not know	and get together.		
4	messages to others				other youth groups					more than 5	Performer	Yes	Yes	I do not know	social behaviours		
4	nt among young people				Culture					1-4	Inyanda	Yes	Yes		social behaviours		
I don't know	I do not know				Culture				1-4	1-4	I do not know	Yes	Yes	Important	have a job		
I don't know	messages to others				Culture				1-4	1-4	Performer	Yes	Yes	Very important	social behaviours		
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Important	social behaviours		
I don't know	messages to others				Culture				know	know	Inyanda	Yes	Yes	Very important	social behaviours		
I don't know	I do not know				know				know	1-4	Performer	Yes	Yes	Important			
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Important	and get together.		
I don't know	messages to others				Culture				know	know	Inyanda	Yes	Yes	Very important	mental growth		
I don't know	messages to others				vulnerable people				know	know	Performer	Yes	Yes	Important	social behaviours		
I don't know	I do not know				Culture				know	know	Inyanda	Yes	Yes	I do not know	important		
I don't know	I do not know				know				know		I do not know	Yes	Yes	Very important	mental growth		
I don't know	messages to others	I do not know			know				know	know	I do not know	Yes	Yes	I do not know	social behaviours		
I don't know	I do not know				know					0	Inyanda	Yes	Yes	Important	social behaviours		
I don't know	I do not know				know					know	I do not know	Yes	Yes	Very important	generate income		
56	messages to others				Culture				1-4	1-4	Inyanda	Yes	Yes	Very important	generate income		
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Very important	generate income		
I don't know	messages to others				other youth groups					1-4	Inyanda	Yes	Yes	Very important	social behaviours		
56	nt among young people	messages to others			know				1-4	1-4	I do not know	Yes	Yes	Very important	mental growth		
	messages to others				Culture				know	know	Performer	Yes	Yes	Very important	social behaviours		
7	nt among young people				Culture				know	know	Performer	Yes	Yes	Very important	social behaviours		
I don't know	messages to others				know				1-4	know	I do not know	Yes		Important	social behaviours		

50	nt among young people	messages to others			Culture				1-4	1-4	Inyanda	Yes	Yes	Very important	have a job		
I don't know	I do not know	I do not know			know				know	know	I do not know	Yes	I do not know	I do not know	social behaviours		
I don't know	I do not know	I do not know			know				know	know	I do not know	Yes	Yes	Very important	social behaviours		
I don't know	nt among young people				Culture				1-4	know		Yes	Yes	Very important	social behaviours		
30	messages to others				other youth groups				1-4	1-4	Coordinator	Yes	Yes	Very important	mental growth		
I don't know	messages to others	Other			Culture	Awareness campaigns	vulnerable people		1-4	know	Inyanda	Yes	Yes	Important	mental growth	social behaviours	
I don't know	messages to others	Other			Culture	Awareness campaigns	vulnerable people		1-4	know	Inyanda	Yes	Yes	Important	mental growth	social behaviours	
I don't know	nt among young people	I do not know			know				know	know	I do not know	Yes	Yes	Very important	mental growth		
I don't know	messages to others				Culture	Awareness campaigns	vulnerable people		1-4	know	Inyanda		Yes	Very important	mental growth	social behaviours	
I don't know	nt among young people				Culture				know	know	Inyanda	Yes	Yes	Important	mental growth		
I don't know	I do not know				know				know	know	Performer	Yes	Yes	Important	important		
I don't know	nt among young people				Culture				know	know	I do not know	Yes	Yes	Important	mental growth		
I don't know	I do not know				Culture				know	know	Performer	Yes	Yes	Very important	generate income		
5	I do not know									know	I do not know	Yes	Yes	Very important	generate income		
I don't know	I do not know				know				know	know	I do not know	know	I do not know	I do not know	social behaviours		
I don't know	I do not know				know				know	know	I do not know	know		I do not know	social behaviours		
	Other				other youth groups				know	know	Inyanda	Yes	Yes	Very important	social behaviours		
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Important			
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	I do not know	mental growth		
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Important	generate income		
I don't know	messages to others				Culture				know	know	Other		Yes	Very important	social behaviours		
I don't know	nt among young people				know				know	know	I do not know	Yes	Yes	Very important	social behaviours		
I don't know	Other				know				know	more than 5	I do not know	Yes	Yes	Very important			
I don't know	messages to others				Culture				know	know	I do not know	Yes		Very important	mental growth		
I don't know	I do not know				Culture				know	know	Inyanda	Yes	Yes	I do not know	social behaviours		
I don't know	I do not know				Culture				know	know	Inyanda	Yes	Yes	Very important	generate income		

I don't know	nt among young people				Culture				know	know	Performer	Yes	Yes	Very important	social behaviours		
I don't know	nt among young people				Culture				know	know	Coordinator	Yes	Yes	Very important	social behaviours		
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Very important	social behaviours		
I don't know	Other				Culture					know	I do not know	know	Yes	I do not know	have a job		
I don't know	nt among young people				Culture				know	know		know	Yes	Important	social behaviours		
	nt among young people				Culture				1-4		Inyanda	Yes	Yes	Important	have a job		
I don't know	I do not know				Culture				know	know	Other	Yes	Yes	Very important	social behaviours		
I don't know	nt among young people				know						Inyanda	Yes	Yes	I do not know	social behaviours		
	nt among young people				vulnerable people				1-4	0	Inyanda	Yes	Yes	Important	have a job		
I don't know	nt among young people				Culture				know	know	Inyanda	Yes	Yes	Very important	have a job		
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Important	have a job		
I don't know	nt among young people				Culture				know	know	Inyanda	Yes	Yes	Important	have a job		
30	messages to others				other youth groups				1-4	1-4	Inyanda	Yes	Yes	Very important	generate income		
	I do not know				know				0	1-4	Coordinator	Yes	Yes	Very important	mental growth	social behaviours	generate income
I don't know	I do not know				know				0	1-4	Coordinator	Yes	Yes	Important	have a job	mental growth	social behaviours
25	messages to others				Culture				1-4	1-4	Coordinator	Yes	Yes	Very important	social behaviours		
10	nt among young people	messages to others			Culture	Awareness campaigns			1-4	1-4	Performer	Yes	Yes	Very important	mental growth		
25	messages to others				Culture				1-4	1-4	Coordinator	Yes	Yes	Very important	social behaviours		
I don't know	I do not know				know				know	know	I do not know	know	Yes	Very important	social behaviours		
35	messages to others				Culture				know	1-4	Inyanda	Yes	Yes	Very important	important		
I don't know	messages to others				other youth groups				know	know	Other	Yes	Yes	Very important	social behaviours		
I don't know	I do not know				know				know	know	I do not know	Yes	Yes	Very important	social behaviours		
I don't know	messages to others				Culture					know	Coordinator	Yes	Yes	Very important	social behaviours		
I don't know	messages to others				Culture					know	Coordinator	Yes	Yes	Very important	social behaviours		
I don't know	messages to others				Culture					know	I do not know	Yes	Yes		generate income		
I don't know	messages to others				Culture					know	I do not know	Yes	Yes	Very important	mental growth		
I don't know	messages to others				Culture					know	I do not know	Yes	Yes	Very important	generate income		

5. CONCEPTIONS & ASPIRATIONS

SPORT, ART, CULTURE

5.1 C if multiple answers.	5.2) Your own skills in sport, art or cultural activities are:	5.3) You consider yourself best skilled in:	5.4) Do you think you could use your skills in sport, art or cultural activities to earn money?	5.4.1) If yes, what do you think you need more to earn money out of your sport, art or cultural	5.4.1 A if multiple answers.	5.4.1 B if multiple answers.	5.4.1 B if multiple answers.	5.5) The access to sport, art, cultural activities for the youth of your area is:	5.6.1) If insufficient, what is the main reason?	5.6.1 A if multiple answers.	5.6.1 B if multiple answers.	5.7) Do you think your youth group should include new members?	5.8) In which one of the following objectives you think your group should focus more?	5.8 A if multiple answers	5.8 B if multiple answers	5.8 C if multiple answers
C	5.3	5.4	5.6	5.6.1	A	B	C	5.7	5.8	A	B	5.9	5.11	A	B	C
	Above average	Culture	Yes	formal training	More tools			Insufficient	interest from young people			Yes	t among young people	messages to others		
	Above average	Sport	Yes	More tools	formal training			Sufficient				Yes	messages to others	t among young people		
	Average	Culture	Yes	formal training				Insufficient	on events			Yes	messages to others	t among young people		
	Above average	Culture	No					know				Yes	messages to others			
	Above average	Art	No					Sufficient				Yes	messages to others			
	Average	Culture	Yes	formal training				Insufficient	on events			Yes	t among young people	messages to others		
			Yes					Insufficient	on events			Yes	t among young people	messages to others		
	Average	Art	Yes	formal training				Insufficient	on events			Yes	messages to others			
	Average	Sport	Yes					Sufficient				Yes	messages to others			
	Above average	Art	Yes	formal training				Sufficient				Yes	t among young people	messages to others		
	average	Sport	No	find clients/a market				Sufficient	expensive to participate			Yes	street life for its members			
	Average	Art	No	Nothing				Sufficient				Yes	messages to others			
		Art	Yes	formal training	More tools	practicing		Insufficient				No	t among young people	messages to others	street life for its members	
	Above average	Art	No					Sufficient	interest from young people			Yes	messages to others			
generate income	Above average		Yes	formal training	More tools	find clients/a market	practicing	Insufficient	undertake activities			Yes	t among young people	messages to others	street life for its members	Other
	Above average	Art	No					Sufficient	interest from young people			Yes	messages to others			
	Average	Art	Yes	find clients/a market				know				No	messages to others			
generate income	Average			formal training	More tools			Insufficient	undertake activities	not enough events		No	street life for its members			
	Average	Art	Yes					Sufficient	interest from young people			No	messages to others			

	Average	Art	Yes	formal training				know				Yes	messages to others			
	Average	Art	Yes	find clients/a market				Sufficient				Yes	messages to others			
	Average	Art	No	Nothing				know	know			Yes	messages to others			
	Above average		Yes	formal training				know				No	messages to others			
	Average	Other	Yes	More tools				know	know			No	messages to others			
	Average	Art	Yes	find clients/a market				Insufficient	on events			Yes	messages to others			
	Average		Yes	find clients/a market				Sufficient				Yes	messages to others			
	Average	Other	Yes	More tools				Sufficient				No	messages to others			
	Average	Art		practicing				know				Yes	messages to others			
	Average	Other	Yes	formal training				Insufficient	on events			Yes	street life for its members			
	Above average	Art	Yes	practicing				Insufficient				Yes	t among young people	messages to others		
	Above average	Art	Yes	practicing				Insufficient				Yes	t among young people	messages to others		
	Average	Sport	Yes	practicing				Insufficient				Yes	t among young people	messages to others		
	Average	Sport	Yes	formal training				Insufficient	undertake activities			Yes	t among young people			
	Average	Culture	Yes	formal training				Insufficient	undertake activities	interest from young people		Yes	messages to others			
	Average	Art	Yes					Insufficient	undertake activities	interest from young people		Yes	messages to others			
	Average	Other	No	practicing				Sufficient				No	t among young people			
			Yes	practicing				know	know			Yes	t among young people	messages to others		
	Above average	Sport	Yes	More tools				know	know			Yes	t among young people	messages to others		
	Average	Culture	No					Insufficient	on events			Yes	street life for its members			
	Above average	Culture	No	formal training	More tools			Sufficient	interest from young people			Yes	t among young people			
		Art	Yes					Sufficient				Yes	t among young people			
	Above average	Art	Yes					Sufficient				Yes	t among young people			
	Above average		Yes	More tools				Sufficient	know			Yes	t among young people			
	Above average	Art	Yes					Sufficient				Yes	t among young people			
	Above average		Yes	More tools				Sufficient	know			Yes	t among young people			
		Art	Yes					Sufficient				Yes	t among young people			

			Yes									Yes	t among young people			
	Above average	Sport	Yes	find clients/a market				Sufficient	interest from young people			Yes	street life for its members			
		Art	Yes									Yes	messages to others			
			Yes	formal training					not enough events			Yes	messages to others			
	Above average	Sport	Yes	practicing				know				Yes	t among young people			
	Above average		Yes	find clients/a market				know	not enough events			Yes	t among young people			
	Average	Other	Yes	practicing				Insufficient	on events			Yes	messages to others			
	Above average	Sport	Yes	formal training				Sufficient	undertake activities			Yes	t among young people			
	Average	Art	Yes	formal training				Sufficient				No	messages to others			
	average	Art	Yes	formal training				Sufficient				Yes	messages to others			
	Average	Art	Yes	formal training				Sufficient				No	t among young people			
	Above average	Culture	Yes	practicing				Sufficient	not enough events			Yes	t among young people			
	Average	Art	Yes	More tools				Insufficient	not enough events			No	messages to others			
	Average	Culture	Yes	formal training				know				Yes	t among young people			
	Above average	Art	Yes	formal training				Sufficient				Yes	t among young people			
	average	Art		formal training				Sufficient	undertake activities			Yes	I do not know			
	Above average	Art	Yes	formal training				Sufficient				Yes	messages to others			
	Above average	Art	Yes	More tools				Sufficient				Yes	t among young people	messages to others		
	Average	Culture	Yes	find clients/a market				Sufficient	interest from young people			Yes	street life for its members			
		Culture	Yes	formal training	More tools			Sufficient	not enough events			No	messages to others			
	average	Other	Yes	formal training				Sufficient				Yes	messages to others			
	average	Art	No	formal training				Sufficient	know			No	t among young people			
	Average	Sport	Yes	formal training				Insufficient	undertake activities			No	messages to others			
	Average	Art	Yes	formal training				Insufficient	on events			Yes	messages to others			
	Average	Sport	Yes	find clients/a market				Sufficient				Yes	messages to others			
	Average	Art	Yes	formal training				Sufficient				Yes	messages to others			
	average	Sport	Yes	formal training				know	interest from young people			Yes	messages to others			

	average	Other	Yes	practicing				know	know			No	t among young people			
	Average	Sport	No	formal training				Insufficient	not enough events			Yes	messages to others			
	average	Art	No	More tools				Insufficient	interest from young people			Yes	street life for its members			
	Above average	Art		practicing				Sufficient				Yes	messages to others			
	Above average	Art	Yes	formal training				Sufficient				Yes				
	Above average	Other	Yes	formal training				Sufficient	interest from young people			No	t among young people			
	Above average	Art	Yes	formal training				Sufficient				No	messages to others			
		Culture	Yes	formal training				know	know			Yes	t among young people			
	Average	Art	Yes	formal training				Insufficient	undertake activities			No	messages to others			
	Average	Other	Yes	find clients/a market				know	interest from young people			Yes	messages to others			
		Art	Yes	practicing				know				Yes	messages to others			
		Sport	Yes	Nothing								Yes	messages to others			
	Average	Art	Yes	formal training				know	know			Yes	t among young people			
	average	Art		formal training				Sufficient	expensive to participate			Yes	t among young people			
	Average	Art	Yes	practicing				Sufficient				Yes	messages to others			
	Above average		Yes	Nothing				Sufficient	interest from young people			Yes	t among young people	street life for its members		
	Above average	Art	Yes	formal training				know	know			Yes				
	Average	Art	Yes	formal training				know	know			Yes	t among young people	messages to others		
	Above average	Art	Yes	More tools				Insufficient	expensive to participate			Yes	messages to others			
	Average	Culture	Yes	More tools				Sufficient				Yes	messages to others			
	Above average	Art	Yes	find clients/a market				Sufficient				Yes	t among young people	messages to others		
	Average	Art	Yes	More tools				Sufficient				Yes	messages to others	messages to others		
	Above average	Art	Yes	formal training				Insufficient	undertake activities			Yes	t among young people	messages to others	street life for its members	
	Above average	Art		practicing				Sufficient	expensive to participate			Yes	t among young people	messages to others		
	Above average	Art	Yes	find clients/a market				know	know			No	messages to others			
	Above average	Sport	Yes	formal training				know	know			No	t among young people			
	Average	Art	Yes	find clients/a market				Sufficient				Yes	t among young people			

	Above average	Art	Yes	formal training				Sufficient	expensive to participate			Yes				
	Average		Yes	formal training				know	know			Yes				
	Average	Art	Yes	formal training				Insufficient	undertake activities			Yes	messages to others			
	average	Art	Yes	find clients/a market				Sufficient				Yes	messages to others			
	Above average	Art	Yes	find clients/a market				Sufficient				Yes	messages to others			
	Above average	Art	Yes	formal training	More tools	find clients/a market		Insufficient	undertake activities	not enough events	on events	Yes	t among young people	messages to others	street life for its members	
	Above average	Art	Yes	formal training	More tools	find clients/a market		Insufficient	undertake activities	not enough events	on events	Yes	t among young people	messages to others	street life for its members	
	Above average	Art	Yes	formal training				know				Yes	t among young people			
	Above average	Sport	Yes	formal training	More tools	find clients/a market		Insufficient	undertake activities	expensive to participate	interest from young people	Yes	t among young people	messages to others	street life for its members	
	Above average	Art	Yes					Sufficient				Yes	t among young people			
	Above average	Culture	Yes	practicing				know	know			Yes	t among young people			
	Above average	Culture	No					Sufficient	interest from young people			Yes	t among young people			
	Average	Sport	Yes	find clients/a market				Sufficient				Yes	t among young people	messages to others		
	Above average	Art	Yes	formal training				Sufficient				Yes				
	average	Sport	No	Nothing				know	interest from young people			Yes	messages to others			
	average	Art	No	Nothing				know	interest from young people			Yes	messages to others			
	average	Culture	Yes	formal training				Sufficient				Yes	t among young people			
			Yes	More tools								Yes				
		Art	Yes	formal training				know				Yes	Other			
	Average	Art	No					Sufficient	undertake activities			Yes	messages to others			
	Above average	Culture	Yes	find clients/a market				Sufficient				Yes	messages to others			
	average	Art	Yes	More tools				know	know			Yes	t among young people			
		Other	Yes									Yes	messages to others			
	average	Art	Yes	formal training				Sufficient				Yes	Other			
	Average	Culture	Yes	formal training				Sufficient				Yes	t among young people			
	Above average	Art	Yes	More tools				Insufficient	undertake activities	on events		No	t among young people			

		Sport	Yes	practicing				know	know			Yes	t among young people			
	Average	Art	Yes	More tools				Sufficient				No	t among young people			
	Above average	Sport	No	Nothing				know	know			No	I do not know			
	Average	Other							know			No	I do not know			
	Above average	Culture	Yes	formal training				Insufficient	expensive to participate			Yes	t among young people			
	Above average		Yes	practicing				Sufficient	undertake activities			Yes	t among young people			
	Average	Other	Yes	find clients/a market				Sufficient	expensive to participate	interest from young people		Yes	messages to others			
	Average		No					Sufficient	undertake activities			Yes	messages to others			
	Above average		Yes	practicing				Sufficient	undertake activities			Yes	t among young people			
	Average		Yes					Insufficient	undertake activities	not enough events		Yes	t among young people	messages to others		
	Average		Yes	formal training				Insufficient	undertake activities			Yes	t among young people			
	Average	Culture	Yes									Yes	t among young people			
	Average	Art	Yes	formal training				Sufficient	on events			Yes	messages to others			
		Art	Yes	formal training	More tools	find clients/a market		Insufficient	undertake activities	on events		Yes	t among young people	messages to others	street life for its members	
generate income	Average	Art	Yes	formal training				Insufficient	undertake activities	on events		No	t among young people	messages to others	street life for its members	
	Average	Art	Yes	More tools				Insufficient	undertake activities			Yes	messages to others			
	Average	Art	Yes	More tools					undertake activities			Yes	messages to others			
	Above average	Art	Yes	More tools				Insufficient	undertake activities			Yes	messages to others			
	Average	Art	Yes	formal training	More tools	find clients/a market	practicing	Insufficient	undertake activities	interest from young people	on events	Yes	t among young people	messages to others		
	Above average	Art		Nothing				Insufficient	expensive to participate			Yes	t among young people			
	Average	Other	Yes	formal training				know				No	messages to others			
	Average	Art	Yes	formal training				know				Yes	messages to others			
			Yes	More tools					undertake activities			No	messages to others			
		Sport	Yes	find clients/a market				Sufficient	undertake activities			Yes	street life for its members			
	Above average	Art	Yes	formal training				Sufficient	undertake activities			Yes	t among young people			
	Above average	Art	Yes	formal training				Sufficient	undertake activities			Yes	t among young people			
	Above average	Sport	Yes	formal training				Sufficient	undertake activities			Yes	t among young people			

YOUR YOUTH GROUP AND KHANYISA YOUTH NETWORK									COMPONENT 1							
5.9) In which one of the following activities you think your group should focus more?	5.9 A if multiple answers	5.9 B if multiple answers	5.9 C if multiple answers	5.10) Is currently your youth group using its resources to earn money with sport, art cultural	5.10.1) If yes, is such money enough to cover at least the cost of activities?	5.11) Do you think your group should use its resources to earn money promoting sport art	5.10) Would you like that the connections between your group and the Inyanda Youth Network are strengthened?	5.11) How many times in 1 month would you like to meet with the Inyanda Youth Network?	6.1) Do you think your group should become/be part of a formal organization?	6.2) Do you know what practical steps your group should take to become a formal organization?	6.3) How many people should be part of the management/ke y staff of such organization?	6.4) Would you accept to be active part of such management/ke y staff without a payment?	6.5) Would you like to participate in trainings to become part of such staff?	6.5.1) If yes, what type of training do you think is more needed?	6.5.1 A if multiple answers	6.5.1 B if multiple answers
5.12	A	B	C	-	-	-	5.19	5.20	6.1	6.2	6.3	6.4	6.5	6.5.1	A	B
Culture	Awareness campaigns			No		Yes	Yes	more than 5	Yes	No	6-10	Yes	Yes	leadership	administratio n	and fundraising
to vulnerable people	Awareness campaigns	Culture		No		Yes	Yes	more than 5	Yes	No	6-10	Yes	Yes	administratio n	leadership	and fundraising
Culture							Yes	1-4	Yes	No	6-10	Yes	Yes	leadership	administratio n	and fundraising
Culture							Yes	1-4	Yes	No	10		Yes	leadership		
Culture								1-4	Yes	No	6-10	Yes	Yes	leadership		
Culture							Yes	1-4	Yes	No	6-10	Yes	Yes	leadership	and fundraising	
Culture							Yes	I do not know	Yes	No	6-10	Yes	Yes	leadership	and fundraising	
Culture							Yes	1-4	Yes	No	6-10	Yes	Yes	leadership	administratio n	and fundraising
Culture	to vulnerable people						Yes		Yes	No	6-10	No	Yes	leadership	and fundraising	
Culture							Yes	1-4	Yes	No	6-10	Yes	Yes	leadership	and fundraising	
Culture							I do not know	I do not know	know	No	less than 5	No	No	administratio n		
Culture								more than 5	Yes	Yes	I do not know	Yes	Yes	and fundraising		
Culture							Yes	1-4	Yes	No	less than 5	Yes	Yes	leadership	and fundraising	
Culture							Yes	1-4	Yes	Yes	10	Yes	Yes	and fundraising		
Culture	Awareness campaigns	to vulnerable people	activities to have fun				Yes	1-4	Yes		6-10		Yes	leadership	and fundraising	Other
Culture							Yes			Yes	10	Yes	Yes	and fundraising		
to vulnerable people				No		Yes	Yes	I do not know	Yes	Yes	I do not know	No	Yes	and fundraising		
Culture				No		Yes	Yes	1-4	Yes	No	less than 5	Yes	Yes	leadership	administratio n	and fundraising
activities to have fun							No	I do not know	Yes							

Culture							Yes	I do not know	Yes	No	I do not know	Yes	Yes	leadership		
Culture							Yes	more than 5	Yes	No	I do not know	Yes	Yes	leadership		
Culture							I do not know	1-4	Yes	No	6-10	No	Yes	and fundraising		
Culture				No		Yes	Yes	1-4	Yes	No	I do not know	Yes	Yes	leadership		
Culture							Yes	1-4	Yes	No	6-10	No	Yes	and fundraising		
Culture							Yes	more than 5	Yes	Yes	6-10	Yes	Yes	leadership		
Culture	Awareness campaigns			I do not know	I do not know	Yes	Yes	more than 5	Yes	No			Yes	leadership		
Culture				Yes	No	Yes	Yes	more than 5	Yes	Yes	less than 5	Yes	Yes	administration		
Culture				Yes	Yes	No	I do not know	I do not know	know	No	I do not know	No	Yes	leadership		
to vulnerable people							Yes	1-4	Yes	Yes	6-10	Yes	Yes	and fundraising		
to vulnerable people	activities to have fun						Yes	1-4	Yes	Yes	less than 5	Yes	Yes	leadership		
to vulnerable people	activities to have fun						Yes	1-4	Yes	Yes	6-10	Yes	Yes	and fundraising		
to vulnerable people	activities to have fun						Yes	1-4	Yes	Yes	less than 5	Yes	Yes	leadership		
Culture							Yes	1-4	Yes	Yes	6-10	No	Yes	leadership		
to vulnerable people	activities to have fun						Yes		Yes	Yes		Yes	Yes	leadership		
to vulnerable people	activities to have fun						Yes	more than 5	Yes	Yes	6-10	Yes	Yes	administration		
activities to have fun							Yes	1-4	Yes	Yes	less than 5	Yes	Yes	leadership		
Culture	activities to have fun						Yes	I do not know	Yes	Yes	10	Yes	Yes	leadership		
know							I do not know	I do not know	Yes	Yes	I do not know	Yes	Yes	and fundraising		
Culture							Yes	I do not know	Yes	No	I do not know	Yes	Yes	and fundraising		
Culture							Yes	1-4	Yes		less than 5	Yes	Yes	administration and fundraising		
Culture							Yes	1-4			less than 5	Yes	Yes			
Culture							Yes	1-4	Yes	No	less than 5	Yes	Yes	leadership		
Culture							Yes	1-4	Yes	No	less than 5	Yes	Yes	leadership		
Culture							Yes	1-4	Yes	No	less than 5	Yes	Yes	leadership		
Culture							Yes	1-4		No	less than 5	Yes	Yes	leadership		
Culture							Yes	1-4	Yes	No	less than 5	Yes	Yes	leadership		

Culture							Yes	1-4	Yes		less than 5	Yes	Yes	leadership		
Culture							Yes	1-4	Yes	Yes	6-10	No	Yes	administratio n		
Culture	Awareness campaigns	activities to have fun					Yes	1-4	Yes	No	6-10	Yes	Yes	leadership		
Awareness campaigns	activities to have fun			Yes	No	Yes	Yes	more than 5	Yes	Yes	10	Yes	Yes	and fundraising		
Culture				Yes		No	Yes	more than 5	Yes	No	I do not know	No	Yes	leadership		
Culture				Yes	No	No	Yes		know	Yes			No	leadership		
Awareness campaigns				Yes	Yes	Yes	Yes	I do not know	Yes	Yes	I do not know	Yes	Yes			
Culture				Yes	No	Yes	Yes	more than 5	Yes	Yes	I do not know	Yes	Yes	administratio n		
Awareness campaigns				Yes	No	Yes	Yes	1-4	Yes	Yes	6-10	Yes	Yes	and fundraising		
Culture				No		Yes	Yes	I do not know	Yes	Yes	I do not know	No	Yes	leadership		
Culture				Yes	No	Yes	Yes	more than 5	Yes	Yes	6-10	No	Yes	leadership		
Awareness campaigns				I do not know	No	Yes	I do not know	more than 5	Yes	Yes	less than 5	No	No	leadership		
Awareness campaigns				No		No	Yes	1-4	Yes	No	less than 5	Yes	Yes	leadership		
Culture				I do not know	Yes	Yes	I do not know	more than 5	Yes	No	I do not know	Yes	Yes	leadership		
Awareness campaigns				No	I do not know	Yes	Yes	1-4	Yes	Yes	6-10	Yes	Yes	leadership		
Awareness campaigns				I do not know	No	No	I do not know	I do not know	Yes	No	I do not know	No	Yes			
Awareness campaigns				Yes	No	Yes	Yes	more than 5	Yes	Yes	less than 5	Yes	Yes	leadership		
Culture	Awareness campaigns			Yes	No	No	Yes	more than 5	Yes	No	less than 5	No	Yes	and fundraising		
Awareness campaigns				No	No	No	Yes	1-4	Yes	Yes	less than 5	Yes	Yes	leadership		
Culture				Yes	No	No	Yes	1-4	Yes	Yes	6-10	Yes	Yes	and fundraising		
				I do not know	I do not know	Yes	Yes	more than 5	Yes	No	I do not know	Yes	Yes	and fundraising		
Culture				I do not know	No	Yes	No	I do not know	No	No	6-10	No	Yes	Other		
Culture				Yes	No	No	Yes	more than 5	Yes	No	6-10	Yes	Yes	leadership and fundraising		
Awareness campaigns				No		Yes	Yes	1-4	know	No	less than 5	Yes	Yes	leadership		
Culture				Yes	No	Yes	Yes	more than 5	Yes	Yes	less than 5	Yes	Yes	administratio n		
activities to have fun				No		No	Yes	more than 5	Yes	No	less than 5	No	Yes	leadership		
activities to have fun				I do not know	Yes	No	Yes	more than 5	Yes	No	less than 5	Yes		Other		

to vulnerable people				Yes		No	No	0	Yes	Yes	less than 5	Yes	Yes	and fundraising		
Culture				No	No	Yes	Yes	1-4	Yes	No	6-10	Yes	Yes	leadership		
activities to have fun				Yes	No	Yes	Yes	1-4	Yes	Yes	6-10	Yes	Yes	leadership		
to vulnerable people				No		Yes	Yes	more than 5	Yes	Yes	6-10	Yes	Yes	and fundraising		
to vulnerable people				I do not know	No	Yes	Yes	more than 5	Yes	Yes	less than 5	Yes		and fundraising		
activities to have fun				I do not know	I do not know	I do not know	Yes	more than 5	Yes	Yes	less than 5	Yes	Yes	Other		
Awareness campaigns				Yes	Yes	Yes	Yes	more than 5	Yes	Yes	less than 5	Yes	Yes	leadership		
Culture				Yes	Yes	Yes	Yes	1-4	Yes	Yes	I do not know	Yes	Yes	leadership		
Culture				Yes	Yes	Yes	Yes	more than 5	Yes	Yes	less than 5	Yes	Yes	leadership		
activities to have fun				No		Yes	Yes	1-4	Yes	Yes	less than 5	Yes	Yes	Other		
Culture				I do not know		Yes	Yes	more than 5	know	No	6-10	No	Yes	administratio		
Awareness campaigns				I do not know	I do not know	I do not know	I do not know	1-4	Yes	No	less than 5	No	No			
Culture				Yes	Yes	Yes	Yes	I do not know	Yes	Yes	I do not know	Yes	Yes	leadership		
Culture				Yes	Yes	I do not know	I do not know	I do not know	Yes	Yes	I do not know	Yes	Yes	Other		
to vulnerable people				No		No	Yes	1-4	Yes	Yes	6-10	Yes	Yes	administratio		
activities to have fun				No	No	I do not know	No	0	know	Yes	I do not know	No	Yes	and fundraising		
Culture				Yes	Yes	Yes	I do not know	I do not know	Yes	Yes	I do not know	Yes	Yes	leadership		
to vulnerable people				I do not know		Yes	I do not know	more than 5	Yes	No	I do not know	No	Yes	leadership		
to vulnerable people				No	No	Yes	Yes	1-4	Yes	No	6-10	Yes	Yes	leadership		
Culture				No		No	Yes	1-4	Yes	No	less than 5	Yes	Yes	and fundraising		
Culture	Awareness campaigns			Yes	No	Yes	Yes	more than 5	Yes	No	6-10	Yes	Yes	leadership		
Awareness campaigns				Yes	Yes	Yes	Yes	1-4	Yes	Yes	less than 5	Yes	Yes	Other		
Culture	Awareness campaigns	to vulnerable people	activities to have fun	No		Yes	Yes	more than 5	Yes	Yes	6-10	Yes	Yes	leadership	administratio	and fundraising
Culture				No	Yes	I do not know	Yes	1-4	Yes	Yes	10	Yes	Yes	administratio		
Culture				I do not know	I do not know	No	Yes	more than 5	Yes	No	10	No	Yes	and fundraising		
Culture				I do not know	I do not know	No	I do not know	1-4	Yes		less than 5	Yes	Yes	leadership		
Awareness campaigns				Yes	No	No	Yes	more than 5	Yes	No	I do not know	Yes	Yes	leadership		

Culture				No		Yes	Yes	1-4	Yes	Yes	10	Yes	Yes	administration		
to vulnerable people				Yes	No	I do not know	I do not know	1-4	Yes	Yes	I do not know	No	Yes	leadership		
Culture				Yes	No	No	I do not know	1-4	Yes	Yes	6-10	Yes	Yes			
Culture				No		No	Yes	1-4	Yes	No	I do not know	Yes	Yes	and fundraising		
Awareness campaigns				No		Yes	Yes	1-4	Yes	Yes	6-10	Yes		leadership		
Culture	Awareness campaigns	to vulnerable people	activities to have fun	No		Yes	Yes	more than 5	Yes	Yes	less than 5	Yes	Yes	leadership		
Culture	Awareness campaigns	to vulnerable people		No		Yes	Yes	more than 5	Yes	No	less than 5	Yes	Yes	leadership		
Culture				No		Yes	Yes	more than 5	Yes	Yes	I do not know	No	Yes	leadership		
Culture	Awareness campaigns	to vulnerable people	to vulnerable people	No	I do not know	Yes	Yes	more than 5	Yes	Yes	less than 5		Yes	leadership	administration	
Culture				Yes	No	Yes	Yes	1-4	Yes	No	I do not know	No	Yes	leadership		
Awareness campaigns				I do not know	Yes	I do not know	Yes	I do not know	No	No	10	No	Yes			
Culture				Yes	No	Yes	Yes	1-4	Yes	No	I do not know	No	Yes	leadership		
Culture	Awareness campaigns			Yes	Yes	Yes	Yes	I do not know	No	No	6-10	Yes	Yes	leadership		
				Yes	No	No	Yes	1-4	Yes	Yes	6-10	No	Yes			
Culture				I do not know	I do not know	I do not know	I do not know	I do not know	Yes	No	I do not know	Yes	Yes	and fundraising		
Culture				I do not know	I do not know	I do not know	No	I do not know	Yes	No	I do not know	Yes	Yes	and fundraising		
Culture							Yes	1-4	Yes	Yes	less than 5	Yes	Yes	and fundraising		
							Yes		know	No	less than 5	Yes	No	leadership		
Culture							Yes	I do not know	know	No	10	Yes	Yes	and fundraising		
Culture							No	I do not know	Yes	No	I do not know			I do not know		
Culture	activities to have fun						Yes	I do not know	Yes	Yes	10	Yes	Yes	leadership		
know							Yes	I do not know	Yes	No	I do not know	Yes	Yes	and fundraising		
know							Yes	I do not know	Yes	No						
Culture							Yes	I do not know	Yes	Yes	10	Yes	Yes	administration		
Culture							Yes	I do not know	Yes	Yes	I do not know	No	Yes	leadership		
Culture							Yes	1-4		No	less than 5	Yes	Yes	leadership		

activities to have fun							Yes	I do not know	Yes	No	I do not know	No	Yes	leadership		
Culture							Yes		Yes	No	less than 5	Yes	Yes	leadership		
activities to have fun							Yes	I do not know	Yes	No	I do not know	No	No	Other		
know								I do not know			10			I do not know		
to vulnerable people							Yes	I do not know	Yes	No	I do not know	Yes	Yes	and fundraising		
Culture							Yes	1-4	Yes	No	10	No	Yes	leadership		
to vulnerable people							I do not know	I do not know	Yes	Yes	less than 5	Yes	Yes	Other		
activities to have fun							Yes	1-4	Yes	No	less than 5	No	Yes	administratio		
Culture							Yes	1-4	Yes	No	10	Yes	Yes	and fundraising		
Culture	to vulnerable people						Yes	I do not know	Yes							
Culture							Yes	I do not know	Yes	No	I do not know	Yes	Yes	leadership		
Culture							Yes	I do not know	Yes	No	10		No	leadership		
activities to have fun							No	1-4	Yes	Yes	less than 5	No	Yes	leadership		
Culture	activities to have fun						Yes	1-4	Yes	No	I do not know	Yes	Yes	leadership	administratio	and fundraising
Culture	Awareness campaigns	to vulnerable people	activities to have fun				Yes	1-4		No	6-10	Yes	Yes	leadership	and fundraising	
Culture							Yes	1-4	Yes	Yes	10	No	Yes	and fundraising		
Culture	Awareness campaigns			No		Yes			Yes	No	I do not know	No	Yes	leadership		
Culture							Yes	1-4	Yes	Yes	6-10	Yes	Yes	leadership		
Culture							Yes	1-4	Yes							
Culture							Yes	1-4	Yes	Yes	6-10					
Culture							Yes	I do not know	Yes	Yes	I do not know	Yes	Yes	administratio		
activities to have fun							I do not know	I do not know	know	No	I do not know	No	Yes	I do not know		
Culture							Yes	I do not know	Yes	Yes		Yes		leadership		
Culture							Yes	I do not know		Yes	less than 5	Yes	Yes	leadership		
Culture							Yes		know	No	I do not know	No	Yes	I do not know		
Culture							I do not know	I do not know	Yes	Yes	I do not know	No	Yes	I do not know		
Culture							Yes	more than 5	Yes	Yes	less than 5		Yes	Other		

know			Visual Art Activities				Yes			art activities				human rights			
people participation			Sport activities				Yes			art activities				substance abuse			
Training	Tools and equipment		activities	Sport activities	art activities		Yes			on activities	Sport activities	Visual Art Activities	art activities	HIV / AIDS	substance abuse	human rights	substance abuse
people participation			art activities				Yes			on activities				substance abuse			
Tools and equipment			Sport activities				Yes			Visual Art Activities				substance abuse			
people participation			art activities				Yes			art activities				substance abuse			
Tools and equipment			art activities				Yes			art activities				HIV / AIDS	substance abuse	Fight against racism	human rights
Training			art activities				Yes			art activities				substance abuse			
people participation			art activities				Yes			on activities				human rights			
people participation			art activities				Yes			art activities				women rights			
Tools and equipment			art activities				Yes			art activities				HIV / AIDS	substance abuse	Fight against racism	human rights
Tools and equipment			art activities				Yes			art activities				HIV / AIDS	substance abuse	Fight against racism	human rights
Tools and equipment			art activities				Yes			art activities				HIV / AIDS	substance abuse	Fight against racism	human rights
Training			Sport activities				Yes			on activities				HIV / AIDS			
people participation			Visual Art Activities				Yes			Visual Art Activities				HIV / AIDS			
Tools and equipment			art activities				Yes			on activities				human rights			
Training			activities				Yes			on activities				substance abuse			
people participation			Sport activities				Yes			art activities				women rights			
Training	Tools and equipment	people participation	art activities				Yes			art activities				HIV / AIDS	substance abuse	women rights	
know			art activities				Yes			on activities				HIV / AIDS	substance abuse		
Tools and equipment			Sport activities	Visual Art Activities	art activities		Yes			on activities	Sport activities	Visual Art Activities		HIV / AIDS	substance abuse	Fight against racism	human rights
Tools and equipment							Yes			on activities				HIV / AIDS	substance abuse	Fight against racism	human rights
Tools and equipment			Sport activities	art activities			Yes			art activities				HIV / AIDS	substance abuse	Fight against racism	human rights
Tools and equipment			art activities				Yes			on activities				Fight against racism			
Tools and equipment			Visual Art Activities				Yes			Sport activities				HIV / AIDS	Fight against racism	substance abuse	human rights
Tools and equipment			art activities				Yes			on activities				Fight against racism			
Tools and equipment			Visual Art Activities				Yes			on activities				HIV / AIDS	substance abuse	Fight against racism	human rights

Training			Sport activities				Yes			on activities				HIV / AIDS			
Tools and equipment			Sport activities				Yes			art activities				HIV / AIDS	substance abuse	Fight against racism	human rights
Tools and equipment			art activities				Yes			on activities				Fight against racism			
Tools and equipment			art activities				Yes			art activities				HIV / AIDS			
Training			art activities				Yes			Visual Art Activities				substance abuse			
Tools and equipment			Visual Art Activities				Yes			art activities				substance abuse			
			art activities				Yes			Sport activities				HIV / AIDS	substance abuse		
Training			Sport activities				Yes			art activities				HIV / AIDS			
Tools and equipment	people participation		art activities				Yes			art activities				substance abuse			
Training			Sport activities				Yes			art activities				substance abuse			
Training			Sport activities				Yes			art activities				substance abuse			
Training			Visual Art Activities				Yes			art activities				HIV / AIDS			
Tools and equipment			art activities				Yes			art activities				substance abuse			
people participation			art activities				Yes			art activities				substance abuse			
know			art activities				No			art activities				human rights			
Training			art activities				Yes			art activities				substance abuse			
Training	Tools and equipment		Visual Art Activities	art activities			Yes			Sport activities				substance abuse			
Training			art activities				Yes			Sport activities				HIV / AIDS			
Tools and equipment			art activities				Yes			art activities				substance abuse			
Tools and equipment			art activities				Yes			Visual Art Activities				HIV / AIDS			
people participation			Visual Art Activities				Yes			Visual Art Activities				substance abuse			
Tools and equipment			art activities				Yes			art activities				substance abuse			
Tools and equipment			art activities				Yes			art activities				substance abuse			
Training			art activities				Yes			art activities				substance abuse			
Training			art activities				Yes			art activities				substance abuse			
people participation			art activities				Yes			art activities				substance abuse			

Tools and equipment			art activities				Yes			art activities				HIV / AIDS			
Tools and equipment			art activities				Yes			art activities				substance abuse			
people participation			art activities				Yes			art activities				HIV / AIDS			
Tools and equipment			art activities				Yes			art activities				HIV / AIDS			
people participation			art activities				Yes			art activities				women rights			
people participation			Sport activities				Yes			Sport activities				HIV / AIDS			
people participation			art activities				Yes			art activities				Fight against racism			
Tools and equipment			art activities				Yes			Visual Art Activities				HIV / AIDS			
Training			art activities				Yes			art activities				HIV / AIDS			
people participation			art activities				Yes			art activities				Fight against racism			
people participation			art activities				Yes			art activities				human rights			
Training			art activities				Yes			on activities				HIV / AIDS			
Training			art activities				Yes			art activities				HIV / AIDS			
Training			art activities				Yes			art activities				human rights			
Tools and equipment			art activities				Yes			art activities				human rights			
Training			Visual Art Activities				Yes			Sport activities				Fight against racism			
Training			Visual Art Activities				Yes			Visual Art Activities				HIV / AIDS			
people participation			Visual Art Activities				Yes			art activities				Fight against racism			
Tools and equipment			art activities				Yes			on activities				human rights			
Tools and equipment			art activities				Yes			Sport activities				Other			
Tools and equipment							Yes			Sport activities	art activities			Other			
Tools and equipment			art activities				Yes			art activities				Other			
Training	Tools and equipment	people participation	activities	Sport activities	Visual Art Activities	art activities	Yes			on activities	Sport activities	Visual Art Activities		HIV / AIDS	substance abuse	Fight against racism	human rights
people participation			art activities				Yes			art activities				human rights			
people participation			Visual Art Activities				Yes			Visual Art Activities				human rights			
Training			activities	Visual Art Activities			Yes			on activities				substance abuse			
Tools and equipment			art activities				Yes			on activities	art activities			Other			

Training			art activities				Yes			Visual Art Activities				human rights			
Training			Visual Art Activities				Yes			on activities				human rights			
Training			art activities				Yes			art activities				Fight against racism			
Tools and equipment			art activities				Yes			art activities				HIV / AIDS			
Tools and equipment			Visual Art Activities				Yes			Visual Art Activities				HIV / AIDS			
Training			art activities				Yes			art activities				women rights			
Training			art activities				Yes			art activities				women rights			
know			art activities				Yes			art activities				human rights			
Tools and equipment	people participation		Visual Art Activities				Yes			Visual Art Activities	art activities			human rights			
Tools and equipment			Visual Art Activities				Yes			Visual Art Activities				substance abuse			
people participation			activities				Yes			on activities				HIV / AIDS			
Tools and equipment			Visual Art Activities				Yes			Visual Art Activities				substance abuse			
Tools and equipment	people participation		art activities				Yes			art activities				HIV / AIDS			
Tools and equipment			art activities				Yes			on activities				HIV / AIDS			
Training	Tools and equipment		art activities				Yes			art activities				substance abuse			
Training	Tools and equipment		art activities							art activities				substance abuse			
Training			art activities				Yes			art activities				human rights			
people participation			Sport activities				Yes			Other				Other			
Training			art activities				Yes			art activities				women rights			
Tools and equipment			art activities				Yes			Visual Art Activities				substance abuse			
Tools and equipment			Visual Art Activities	art activities			Yes			Visual Art Activities	art activities			substance abuse	Fight against racism		
Tools and equipment			Visual Art Activities				Yes			Visual Art Activities				HIV / AIDS	substance abuse	Fight against racism	
Tools and equipment										art activities				Other			
Tools and equipment			Visual Art Activities				Yes			art activities				Fight against racism			
know			activities				Yes			on activities				HIV / AIDS			
Tools and equipment			activities	art activities			Yes			Visual Art Activities	art activities			human rights			

Tools and equipment			art activities				Yes			art activities				substance abuse			
people participation			art activities				Yes			Visual Art Activities				substance abuse			
people participation know			art activities				Yes			Other				Other			
			Other				No							HIV / AIDS			
Training			Sport activities				Yes			on activities				HIV / AIDS	human rights		
people participation			art activities				Yes			on activities				HIV / AIDS	substance abuse	women rights	
Tools and equipment	people participation		art activities				Yes			art activities				Other			
Tools and equipment	people participation		art activities				Yes			on activities				HIV / AIDS			
people participation			art activities				Yes			on activities				HIV / AIDS	substance abuse	women rights	
Training			activities	Sport activities	Visual Art Activities	art activities	Yes			on activities	Sport activities			HIV / AIDS	substance abuse	Fight against racism	human rights
people participation			art activities				Yes			art activities				HIV / AIDS	substance abuse	women rights	
Training	Tools and equipment	people participation	activities	art activities			Yes			on activities	Visual Art Activities	art activities		HIV / AIDS	substance abuse	Fight against racism	human rights
Tools and equipment			art activities				Yes			Sport activities				Fight against racism			
Tools and equipment	people participation		art activities				Yes			Sport activities				women rights			
Training			art activities				Yes			art activities				substance abuse			
Tools and equipment			Visual Art Activities				Yes			Visual Art Activities				HIV / AIDS			
Tools and equipment			art activities				Yes			art activities				HIV / AIDS			
Tools and equipment			Visual Art Activities				Yes			art activities				substance abuse			
Training			art activities				Yes			art activities				substance abuse			
Other			art activities				Yes			Other				Fight against racism			
Tools and equipment	people participation		activities	art activities			Yes			on activities				HIV / AIDS	substance abuse	Fight against racism	human rights
Tools and equipment			art activities				Yes			art activities				HIV / AIDS			
Training			art activities				Yes			art activities	Other			women rights			
people participation			art activities				Yes			art activities				women rights			
Training			Visual Art Activities				Yes			on activities				HIV / AIDS			

APPENDIX D

Digital Cities Projects within Underserved Communities in Informal Settlements. Unfolding Creativity.

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Abstract

The presentation explores the concept of co-creation of information technology-supported projects with groups in underserved communities. The main contributions reside in an illustration of an approach to developing grassroots co-creation processes through ethnographic design in community-based groups; and an analysis of three cases of co-creative activities where the participants acted collectively showing how the processes can give a voice to the communities, spur new ideas, ameliorate the networking possibilities, and unfold creative solutions. Co-design techniques (in particular, collective digital storytelling and co-design workshops) had been employed to allow participants' insights to gain concreteness following a 'Nothing about us without us' approach with a transformative social aim.

Author Keywords

Co-creation; Community-based Participatory Design; Digital Storytelling; Participation.

ACM Classification Keywords

H.5.1 Multimedia Information Systems;
H.1.2 User/Machine Systems.



Figure 1. Context: Informal settlements

Three case studies of grassroots initiatives of co-creation processes are presented as examples of collaborative and emerging initiatives that unfolded in the time in the underserved communities of Cape Town, South Africa (Figure 1).

Mamas 2.0

Mamas is the term to refer to any woman from her 20s on in the Xhosa tradition. In their communities, they are used to gather in groups to support each other and the most vulnerable (Figure 2).



Figure 2. Informal crèches

After a short exposure to some technologies, some groups decided to engage in a **computer literacy training**. A local organisation known for its work in underserved communities developed a specific curriculum with the support of local cultural facilitators (Figure 3).



Figure 3. Computer training

A video to introduce the reality where the projects developed and unfold is available:

https://archive.org/details/Context_201607

Iqhayiya FM

Twenty-one people involved in the creation of a community radio station, two professional journalists, a web designer and a researcher are the participants of the second case that concretized the idea to support the growth and professionalization of a nascent community radio station (Figure 4) through a website.

Three videos to present the active groups and the processes of co-creation are available:

<https://archive.org/details/MAMAS20>



Figure 4. The community radio station 'on air'.

All the participants are working at the radio on a voluntary basis because they want to do something for their community. The journalists use their **personal phones** for information search (figure 5), simple smartphones where they can access the news in English and translate them in Xhosa, the language spoken by 90% of the population of the surrounding townships.

A **co-design workshop** developed with the support of some external experts when the radio station funders felt the necessity to have an official website where to

introduce themselves, their activities and if possible to use it to put the streaming of the most important live programs (Figure 6).

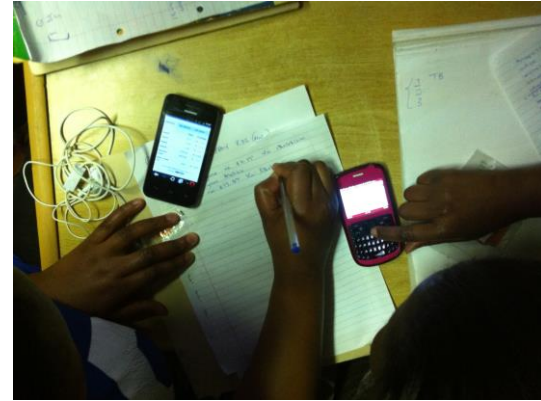


Figure 5. News search on the web with personal phones.



Figure 6. Co-design of the website for the radio station

Best quotes from the workshops:

"Now we can all become journalists", Mama Vuyiswa after the blog session of the computer training.

"'Iqhayiya' derives from the Xhosa language and means Pride and Joy. It was and is created to add an element of positivity in Samora", Tinny from IQFM.

"We are here to stay. Let's put Philippi on the map!", Zed, from Inyanda Youth Network.

Inyanda Youth Network

The third case presents some groups of young artists who collaborated for the creation of an interactive website map where they can showcase their art, sponsor their initiatives and become visible outside their communities.

Youth are active in the **organization of events** for mobilization and to sensitize around social issues (Figure 7). On these occasions they usually showcase sketches of theatre or write lyrics connected with the thematic of interest, like HIV-AIDS, gender based violence and drugs and alcohol abuse (Figure 8).



Figure 7: Social mobilization around health issues.



Figure 8: Edu-tainment activities. Street theatre.

After the **production of a short video** to introduce an artistic collaboration, new ideas emerged about more regular collaborations. Artistic and non.

A series of **co-design workshops** took place to deepen the motivations and desired outcomes of any possible information and communication technology to be developed. The result had been the creation of an **interactive website** to present the individual youth groups and their art and the collaborations between groups. Every group has a space on the site and a link to their Facebook page (that is the one they update quite regularly). The home page of the website is a map that wants to show their presence in a reality still not known and underrepresented.

Acknowledgments

Thank you to all the participants: the Mamas, the Youth, the radio station people and the external professionals involved!

APPENDIX E



UNITED NATIONS
UNIVERSITY
UNU-WIDER

The triple challenge

UNU-WIDER Field Study – Cape Town



Social Mobility
Inclusion
Cooperation

Welcome! Thank you for arriving on time to take part in this experiment. The experiment is divided in two parts. Each part starts with a questionnaire. You will have the opportunity to earn a total amount of 100 rands by answering to two Questionnaires, called A and B, respectively: you will receive 50 rands for completing each questionnaire. After each questionnaire, you will be asked to make a set of choices involving the money you earned. All your answers in the questionnaires and all your decisions will be completely anonymous and all the information we collect will be confidential: no one outside our study team will have access to the information that you provide. The experiment will last approximately one hour and you will receive your payment at the end of the session. Please answer all questions, thinking that there no better or worse answers, because the experiment simply aims to understand how people make decisions.

Consent form

Before we begin the experiment it is necessary that we hand out a form titled “Consent to participate in research”. This is a document used by universities to make sure that the questions we make and the activities we perform during the experimental sessions do not hurt the people involved. We request your signature only as a proof that you have received the aforementioned information and you agree to participate in this experiment.

<< Hand out consent form >>

Now one of the experimenters will read the form out loud. Please pay attention and try to follow along.

<< Read consent form >>

Now we ask to please sign the form before proceeding. The people who do not sign the form will not be able to participate in the experiment and earn money. Please ask any questions right now before signing the form. After answering questions, we will collect the signed form.

<< Collect signed forms >>

Part A

We now ask you to complete Questionnaire A. There are no right or wrong answers: we are simply interested in learning about you and your experiences. Each one of you will receive 50 rands for answering all questions. We ask that all of you fill out the questionnaire at the same time. We will read each question out loud and give you the time to answer. You can ask clarifications as we proceed with the questionnaire. We will make sure everyone has answered each question and will assist whoever needs help before proceeding with the help of a few facilitators who speak both English and Xhosa.

<< Hand out Questionnaire A and pens >>

First, note that on the top right-hand corner of the questionnaire, in the space provided next to "ID", there is the identification number you received during registration. Now we will go around the room making sure that everyone has completed the questionnaire. Those who have answered all questions will earn 50 rands.

<< Collect questionnaires and check if they are complete >>

The money you have earned by completing Questionnaire A is yours. Now each of you can decide to take it all and use it as you wish. However, since we know that your group shares common interests and projects, we would like to give you the opportunity to contribute part, all, or none of the money to a common fund that will be used for something that will be beneficial for the whole group: we will call it "public good". You have decide how much you want to contribute to the common fund in four situations that will be described below. After your decisions, only one situation will be selected, and actually implemented, by picking a number at random in front of you.

You will have to decide how much of your 50 rands you want to contribute in any of the following situations below? following:

- 1) The public fund is to be spent for buying or building a public good chosen by the **leader of your group.**
- 2) The public fund is to be spent for buying or building a public good chosen **after an open discussion among you and all the other participants in this session.**
- 3) The public fund will be used for buying or building a public good that will be selected **after asking you and all the other participants in this session to express a secret vote about the preferred public good. Each person's vote has the same weight.**
- 4) The public fund will be used for buying or building a public good that will be selected **after asking you and all the other participants in this session to express a secret vote about the preferred public good. Each person's vote has a weight depending on the contributed amount: the larger the amount you contributed to the public fund, the more your decision counts.**

Now you receive the first "decision sheet" where you have to indicate your choices. In this sheet, we also ask you to make guesses about the choices the other participants in the session made in the previous situations. You have to guess the average contribution your peers made in all the four situations. If your guess is correct, at the end of the experiment you will receive additional 10 rands for each correct guess.

You will now receive the first "guess sheet" where you have to indicate your guesses.

<< Hand out Decision Sheet 1 >>

Now one person will throw the dice in front of you. The number drawn will determine which situation, out of the four described above, will be actually implemented. After the throw, we will announce how much this community devolves for the public good and proceed with the corresponding procedure for selecting the public good.

<< One subject picks up one situation at random. After describing the set of public goods available, the corresponding procedure for selecting it will be implemented >>

Part B

We now ask you to complete Questionnaire B. Again, there are no right or wrong answers: we are simply interested in learning about you and your experiences. Each one of you will receive additional 50 rands for answering all questions. We ask that all of you fill out the questionnaire at the same time. We will read each question out loud and give you the time to answer. You can ask clarifications as we proceed with the questionnaire. We will make sure everyone has answered each question and will assist whoever needs help before proceeding with the help of a few facilitators who speak both English and Xhosa.

<< Hand out questionnaire B >>

Again, on the top left corner you find your ID number. The number should go in the blank space provided next to "ID". Now we will go around the room making sure that everyone has completed the questionnaire. Those who have answered all questions will earn 50 rands.

<< Collect questionnaires and check if they are complete >>

The money you have earned by completing Questionnaire B is yours. You can decide to take it all and use it as you wish. Now we would like to give you the opportunity to contribute part, all, or none of the money to a common fund that will be used for something that will be beneficial for another group among the ones that are taking part in this experiment in this week and that is in a township different from yours. Please note that, symmetrically, another group will be asked to contribute money for your own group, but you will not know about their identity (and they will not know about your identity). This money will be added to the one collected for the group in part A of the experiment. You have to make your decision on how much you want to contribute to the other community fund in three situations that will be described below: only one of them will be picked at random and actually implemented.

After the end of all the experiments in this week, all the groups involved in the experiments will be ranked according to their degree of generosity they exhibited towards the other group. The three situations differ in what is described below.

- 1) The ranking **will not be made public** at any time: you and all other participants in this session and in other sessions will not know about it.
- 2) The ranking **will be made public** in the final post-experiments event.

3) **Only the most generous group will be celebrated** in the final post-experiments event. The rest of the ranking will not be made public.

You will receive the second “decision sheet” where you have to indicate your choices. In addition, we ask you to make guesses about the choices the other participants in the session made in the previous scenarios. You have to guess the average contribution your peers made in your opinion in all the three situations. If your guess is correct, at the end of the experiment you will receive additional 10 rands for each correct guess.

<< Hand out Decision Sheet 2 >>

This time, you might not all assist to the random draw that will determine which situations will be actually implemented. This is because we need to have only one situation common to all the experimental sessions. Therefore, the random draw is performed in the first experimental session in front of the first group that takes part into the experiment, and reported to participants in the next sessions.

Payments

The experiment is finished. We will proceed with payments. Each participants will receive the amount of money he/she earned in the two questionnaires and did not decide to contribute either to the public fund or to donate to the other group, plus eventual gains deriving from correct guesses.



Consent form to participate in the research

You have been invited to take part in this research project. The researcher will explain the project to you in detail. You should feel free to ask questions. If you have more questions later, Daniela Grieco, the person mainly responsible for this study, will discuss them with you. You must be at least 18 years old to be in this research project.

Description of the project. The project aim at investigating how people make decisions between members of the same group and across groups.

What will be done. If you decide to take part in this study here is what will happen: you will answer to two questionnaires that will allow you to earn money. Then, you will make decisions regarding the possibility to use all, part of none of this money to contribute to a common project for your group or for another group who also takes part in this experiment.

Benefits of this study. Although there will be no direct benefit to you for taking part in this study, the researchers may learn more about the degree of cooperation and cohesion among people living in this area.

Confidentiality. All the information you provide in this study is strictly confidential. None of the information will identify you by name. All records will be included in a dataset in anonymous form.

Decision to quit at any time. The decision to take part in this study is up to you. You do not have to participate. If you decide to take part in the study, you may quit at any time. If you wish to quit for some reason, simply inform the experimenters of your decision.

Rights and Complaints. If you are not satisfied with the way this study is performed, you may discuss your complaints with Daniela Grieco, anonymously, if you choose.

You have read the Consent Form. Your questions have been answered. Your signature on this form means that you understand the information and you agree to participate in this study.

Signature of Participant

Signature of Researcher

Typed name

Typed name

Date

Date

Decision sheet 1

ID number

1) If the public fund is used for a public good that will be selected **by the leader of my group,**

I want to contribute _____ rands.

I guess the average contribution of my peers in this situation is _____ rands.

2) If the public fund is used for a public good that will be selected **after an open discussion among me and all the other participants in this session,**

I want to contribute _____ rands.

I guess the average contribution of my peers in this situation is _____ rands.

3) If the public fund is be used for a public good that will be selected **after asking me and all the other participants in this session to express a secret vote about the preferred public good, where each person's vote has the same weight,**

I want to contribute _____ rands.

I guess the average contribution of my peers in this situation is _____ rands.

4) If the public fund is used for a public good that will be selected **after asking me and all the other participants in this session to express a secret vote about the preferred public good – where each person's vote has a weight depending on the contributed amount: the larger the amount you contributed to the public fund, the more your decision counts,**

I want to contribute _____ rands.

I guess the average contribution of my peers in this situation is _____ rands.

Decision sheet 2

ID number

1) **If the ranking** of generosity of all the groups **is not made public**,

I want to contribute _____ rands to the other group's fund.

I guess the average contribution of my peers in this situation is _____ rands.

2) **If the ranking** of generosity of all the groups **is made public in the final post-experiment event**,

I want to contribute _____ rands to the other group's fund.

I guess the average contribution of my peers in this situation is _____ rands.

3) **If only the most generous group will be celebrated** in the final post-experiments event (while the rest of the ranking will not be made public),

I want to contribute _____ rands to the other group's fund.

I guess the average contribution of my peers in this situation is _____ rands.

Voting sheet

ID number

I would like that the money the whole group invested in the public fund will be used for



Receipt

Name _____

Date _____

Surname _____

I am receiving _____ rands for taking part into the UNU-WIDER project "Social mobility, inclusion, and cooperation".

Signature

ID number

Questionnaire A

Before you fill out the answers, it's important to read the brief instructions at the beginning of each section and details in each question. Make sure to understand the questions.

In the majority of questions you will be given some possible options as answer. Please put a circle around the number corresponding to your answer. If you do not find your answer among the proposed options, you can simply write your answer, in the "Other (specify)" cell. Please write all your answer in CAPITAL LETTERS.

SECTION 1: DEMOGRAPHIC CHARACTERISTICS

We would ask you some information about yourself

Number	QUESTION	ANSWER
1.1	What is your date of birth?	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <input style="width: 20px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 20px; height: 20px; border: 1px solid black;" type="text"/> </div> <div style="text-align: center;">/</div> <div style="text-align: center;"> <input style="width: 20px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 20px; height: 20px; border: 1px solid black;" type="text"/> </div> <div style="text-align: center;">/</div> <div style="text-align: center;"> <input style="width: 20px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 20px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 20px; height: 20px; border: 1px solid black;" type="text"/> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> Day Month Year </div>
1.2	What is your gender?	Male 1 Female 2
1.3	What is your population group?	African 1 Coloured 2 White 3 Indian/Asian 4 Other (Specify) _____ 5

1.4	What is the main language you speak at home?	(Specify) _____																																				
1.5	What is the highest level of schooling that you have completed?	<table> <tr><td>None</td><td>0</td></tr> <tr><td>Grade 1</td><td>1</td></tr> <tr><td>Grade 2</td><td>2</td></tr> <tr><td>Grade 3</td><td>3</td></tr> <tr><td>Grade 4</td><td>4</td></tr> <tr><td>Grade 5</td><td>5</td></tr> <tr><td>Grade 6</td><td>6</td></tr> <tr><td>Grade 7</td><td>7</td></tr> <tr><td>Grade 8</td><td>8</td></tr> <tr><td>Grade 9</td><td>9</td></tr> <tr><td>Grade 10</td><td>10</td></tr> <tr><td>Grade 11</td><td>11</td></tr> <tr><td>Grade 12</td><td>12</td></tr> <tr><td>Grade 13 /Post Matric</td><td>13</td></tr> <tr><td>College</td><td>14</td></tr> <tr><td>Graduate/Post graduate</td><td>15</td></tr> <tr><td>Other</td><td></td></tr> <tr><td>(Specify) _____</td><td>16</td></tr> </table>	None	0	Grade 1	1	Grade 2	2	Grade 3	3	Grade 4	4	Grade 5	5	Grade 6	6	Grade 7	7	Grade 8	8	Grade 9	9	Grade 10	10	Grade 11	11	Grade 12	12	Grade 13 /Post Matric	13	College	14	Graduate/Post graduate	15	Other		(Specify) _____	16
None	0																																					
Grade 1	1																																					
Grade 2	2																																					
Grade 3	3																																					
Grade 4	4																																					
Grade 5	5																																					
Grade 6	6																																					
Grade 7	7																																					
Grade 8	8																																					
Grade 9	9																																					
Grade 10	10																																					
Grade 11	11																																					
Grade 12	12																																					
Grade 13 /Post Matric	13																																					
College	14																																					
Graduate/Post graduate	15																																					
Other																																						
(Specify) _____	16																																					
1.6	Where do you currently live?	<p>(Specify) _____</p> <p>The place you specified is located:</p> <p>In the district of Cape Town 1</p> <p>In another district in South Africa 2</p> <p>Outside South Africa 3</p>																																				

1.7	Were you born in the community where you currently live?	Yes 1 => <i>Go to question 1.10</i> No 2 => <i>Go to question 1.8</i> Don't know where I was born 3 => <i>Go to question 1.9</i>
1.8	Where were you born?	(Specify) _____ The place you specified is located: In another district in South Africa 1 Outside South Africa 2
1.9	When did you move in the community where you currently live?	Year <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
1.10	What is your religion?	None 0 Catholic 1 Islam 2 Hinduism 3 African traditional religion 4 Islam 5 Judaism 6 Other (Specify) _____ 7

SECTION 2: HOUSEHOLD COMPOSITION

We would ask you some information your household and people living with you

Number	QUESTION	ANSWER						
2.1	What is your current marital status?	Single (Never married) 1 Currently Married/Cohabiting 2 Divorced/Separated 3 Widowed 4						
2.2	How many children do you have?	<i>Number of your children currently alive</i> <input type="text"/> <input type="text"/>						
2.3	How many of your children are currently enrolled in schools in the community where you live?	<i>Number of your children currently enrolled within the school community</i> <input type="text"/> <input type="text"/>						
2.4	How many people live in your house, <u>excluding</u> yourself?	<i>Number of cohabitants</i> <input type="text"/> <input type="text"/>						
2.5	For each household member could you please indicate gender, age and the relationship with yourself?	Gender Male – M Female – F	Age in YEARS	Relation with yourself 1 = Wife or Husband 2 = Daughter or Son 3 = Mother or Father 4 = Grandchild 5 = Grandparent 6 = Sister or Brother 7 = Other family member 8 = Non family member				
	1st cohabitant			M	F			
	2nd cohabitant			M	F			
	3rd cohabitant			M	F			
	4rd cohabitant			M	F			

		Hostel 6 Outbuilding 7 Combination of buildings 8 Other (Specify) _____ 9
3.2	Does the household own its dwelling?	Yes 1 No 2
3.3	Has the household taken a mortgage or a loan on its dwelling? If yes of what amount?	Yes 1 <div style="display: flex; justify-content: center; gap: 5px;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/> </div> <i>Amount in Rand</i> No 2
3.4	Does the household have to pay a rent to live in its dwelling? If yes, how much?	Yes 1 <div style="display: flex; justify-content: center; gap: 5px;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/> </div> <i>Amount in Rand</i> No 2
3.5	How many rooms does the dwelling have? <i>(Exclude bathrooms, toilets and passages but include kitchens, lounges, dining rooms and bedrooms)</i>	<i>Number of rooms</i> <input type="text"/> <input type="text"/>
Number	QUESTION	ANSWER
3.6	What kind of toilet does your household have?	None/bush/field 1 Flush toilet inside the dwelling 2 Latrine outside the dwelling 3 Bucket toilet 4 Other

		(Specify) _____ 5																																		
3.7	Is your dwelling connected to an electricity supply?	Yes 1 No 2																																		
3.8	Is your dwelling connected to a water pipeline?	Yes 1 No 2																																		
3.9	Is the household able to get all the water it needs for normal everyday needs and purposes?	Mostly yes 1 Sometimes 2 Mostly no 3																																		
3.10	How many of the following items do your household own?	<table border="1"> <thead> <tr> <th><i>Item</i></th> <th><i>Number of owned items</i></th> </tr> </thead> <tbody> <tr> <td>Motor vehicle, including cars and bakkies</td> <td></td> </tr> <tr> <td>Bicycles</td> <td></td> </tr> <tr> <td>Motorcycle/scooter</td> <td></td> </tr> <tr> <td>Radio</td> <td></td> </tr> <tr> <td>Television</td> <td></td> </tr> <tr> <td>Telephone</td> <td></td> </tr> <tr> <td>Mobile phone</td> <td></td> </tr> <tr> <td>Computer</td> <td></td> </tr> <tr> <td>Electric Stove</td> <td></td> </tr> <tr> <td>Gas Stove</td> <td></td> </tr> <tr> <td>Primus Cooker</td> <td></td> </tr> <tr> <td>Fridge/Refrigerator</td> <td></td> </tr> <tr> <td>Geiser</td> <td></td> </tr> <tr> <td>Electric Kettle</td> <td></td> </tr> <tr> <td>Livestocks</td> <td></td> </tr> <tr> <td>Bank account</td> <td></td> </tr> </tbody> </table>	<i>Item</i>	<i>Number of owned items</i>	Motor vehicle, including cars and bakkies		Bicycles		Motorcycle/scooter		Radio		Television		Telephone		Mobile phone		Computer		Electric Stove		Gas Stove		Primus Cooker		Fridge/Refrigerator		Geiser		Electric Kettle		Livestocks		Bank account	
<i>Item</i>	<i>Number of owned items</i>																																			
Motor vehicle, including cars and bakkies																																				
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Radio																																				
Television																																				
Telephone																																				
Mobile phone																																				
Computer																																				
Electric Stove																																				
Gas Stove																																				
Primus Cooker																																				
Fridge/Refrigerator																																				
Geiser																																				
Electric Kettle																																				
Livestocks																																				
Bank account																																				

ID number

Questionnaire B

As in Questionnaire A, please read the brief instructions at the beginning of each section and details in each question. Make sure to understand the questions. Put a circle around the number corresponding to your answer. If you do not find your answer among the proposed options, you can simply write your answer, in the "Other (specify)" cell. Please write all your answer in CAPITAL LETTERS.

SECTION 4. EMPLOYMENT AND EARNINGS

We would like to ask you some questions about the work you do and about your earnings. We would ask also some question on your household income

Number	QUESTION	ANSWER
4.1	What is your current main job activity?	Paid employee (private sector) 1 Paid employee (public sector /government) 2 Self-employed with employees 3 Self-employed without employees 4 Housewife /Home - maker 5 Unemployed but looking for a job 6 Student 7 Pensioner , retired, too old to work 8 Ill or disable 9 Other

		(Specify) _____ 10
4.2	Considering your current (last) job, do (did) you work throughout the year, seasonally, or only once in a while?	I never worked 1 => Go to question 4.8 I work(ed) throughout all the year 2 I work(ed) seasonally/part of the year 3 I work(ed) once a while 4
4.3	Considering your current (last) job, in what sector is (was) your <u>main</u> job activity?	Agriculture 1 Fishing 2 Mining and quarrying 3 Manufacturing 4 Building or construction 5 Trade/Retail sale 6 Transport 7 Public sector/government 8 Other services 9 Other (Specify) _____ 10
4.4	Where do (did) you usually work?	(Specify) _____ The place you specified is located: In the district of Cape Town 1 In another district in South Africa 2 Outside South Africa 3
4.5	How are you usually paid for your main work?	Cash only 1 Cash and in kind 2 In kind only 3 Not paid 4

4.6	<p>Last month, how much money (Rands) did you earn from a job?</p>	<p>Not paid 1</p> <p>Less than 1000 2</p> <p>More than 1000 but less than 3000 3</p> <p>More than 3000 but less than 5000 4</p> <p>More than 5000 but less than 10000 5</p> <p>More than 10000 but less than 20000 6</p> <p>More than 20000 . 7</p>
4.7	<p>Do you usually combine the money you earn together with other people?</p> <p><i>More answers allowed.</i></p>	<p>No, with nobody 1</p> <p>With my partner 2</p> <p>With my parents 3</p> <p>With my children 4</p> <p>With my relatives 5</p> <p>With my cohabitants 6</p> <p>With other members of my community 7</p> <p>Other (Specify) _____ 8</p>
4.8	<p>How many of other household members are currently employed?</p>	<p><i>Number of other household members currently employed</i></p> <p style="text-align: right;"><input type="text"/> <input type="text"/></p>
4.9	<p>What was the total income of your household (in Rand) during the last month?</p>	<p>No income 1</p> <p>Less than 2000 2</p> <p>More than 2000 but less than 6000 3</p> <p>More than 6000 but less than 10000 4</p> <p>More than 10000 but less than 20000 5</p> <p>More than 20000 but less than 40000 6</p> <p>More than 40000 . 7</p>
4.10	<p>Does your family save a fraction of its monthly income?</p>	<p>Never 1</p> <p>Seldom /only sometimes 2</p> <p>Often 3</p> <p>Always 4</p>

SECTION 5: BEHAVIOUR and COMMUNITY LIFE

We would like to ask you some questions about the way in which main decisions are taken in your household and the involvement of your household into the community you live

Number	QUESTION	ANSWER
5.1	<p>Considering the following issues related to your household who usually has the final say in deciding?</p>	<p>Final decision maker</p> <p>1 = Myself</p> <p>2 = My spouse</p> <p>3 = My son/sons</p> <p>4 = My parents</p> <p>5 = My grandparents</p> <p>6 = Myself and my spouse together</p> <p>7 = All household members</p> <p>8 = Other (specify)</p>
	Household purchases for daily needs (such as food, clothes...)	<p>1 2 3 4 5 6 7</p> <p>8</p>
	Household large purchases (such as house, car, durable goods, land, etc..) and savings	<p>1 2 3 4 5 6 7</p> <p>8</p>
	Children education/schooling	<p>1 2 3 4 5 6 7</p> <p>8</p>
	Children work activity	<p>1 2 3 4 5 6 7</p> <p>8</p>
	Household's health care	<p>1 2 3 4 5 6 7</p> <p>8</p>
5.2	<p>Do you usually ask other community members opinion before taking decisions?</p>	<p>Never 1</p> <p>Seldom 2</p> <p>Sometimes 3</p> <p>Often 4</p> <p>Always 5</p>

5.3	Do other community members ask your opinion before taking decisions?	Never 1 Seldom 2 Sometimes 3 Often 4 Always 5		
5.4	How often do you chat, talk and spend time together with other people in the community you live?	Never 1 A few times each year 2 A few times each month 3 A few times each week 4 Every day 5		
5.5	What best describes <u>the</u> community where you live?	A family 1 A group of friends 2 Neighbours 3 Strangers 4 Other 5		
5.6	What best describes <u>your</u> closest neighbours?	A family 1 A group of friends 2 A group of people with the same origin of mine 3 Strangers 4 Other 5		
5.7	How much the following issues are a problem to you on a daily basis? <i>Put an "X" in the corresponding cell.</i>	<i>Not a problem</i>	<i>A small problem</i>	<i>A big problem</i>
	Food			
	Energy			
	Hygienic condition			
	Uncooperative neighbours			
	Garbage			
	Lack of transports			

	Poor schools			
	Poor health facilities			
	Lack of other services			
	Lack of safety			
5.8	<p>How much the following issues are a problem to the community where you live on a daily basis?</p> <p><i>Put an "X" in the corresponding cell.</i></p>	Not a problem	A small problem	A big problem
	Food			
	Energy			
	Clean water and hygienic condition			
	Uncooperative neighbours			
	Garbage			
	Lack of transports			
	Poor schools			
	Poor health facilities			
	Lack of other services			
	Lack of safety			
5.9	<p>Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?</p> <p><i>Please provide only one answer.</i></p>	Most people can be trusted		1
		Need to be very careful		2
		Don't know		3
5.10	<p>Here is a list of qualities that children can be encouraged to learn at home.</p> <p>Which, if any, do you consider to be especially important?</p>	Good manners		1
		Determination and perseverance		2
		Hard work		3
		Imagination		4
		Independence		5
		Obedience		6

	<i>Please choose up to five.</i>	Religious faith 7 Feeling of responsibility 8 Thrift, saving money and things 9 Tolerance and respect for others 10 Unselfishness 11
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APPENDIX F



Faculty of Commerce

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UCT Commerce Faculty Office

10 February 2017

Ms Maria Rosa Lorini
Department of Information Systems
University of Cape Town

Dear Ms Lorini

**Project: ICT FOR COLLECTIVE EMPOWERMENT AMONGST URBAN
UNDERSERVED COMMUNITIES.**

Thank you for submitting your study to the Faculty of Commerce Ethics in Research Committee.

It is a pleasure to inform you that the EiRC has **formally approved** the above-mentioned study.

Approval is granted for the period of 12 months. Should you require an extension or make any substantial changes to the research methodology which could affect the experiences of participants, you must submit a revised protocol to the Committee for approval.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Your sincerely

SAMANTHA ALEXANDER
Administrative Assistant
University of Cape Town
Commerce Faculty Office
Room 2.24 | Leslie Commerce Building

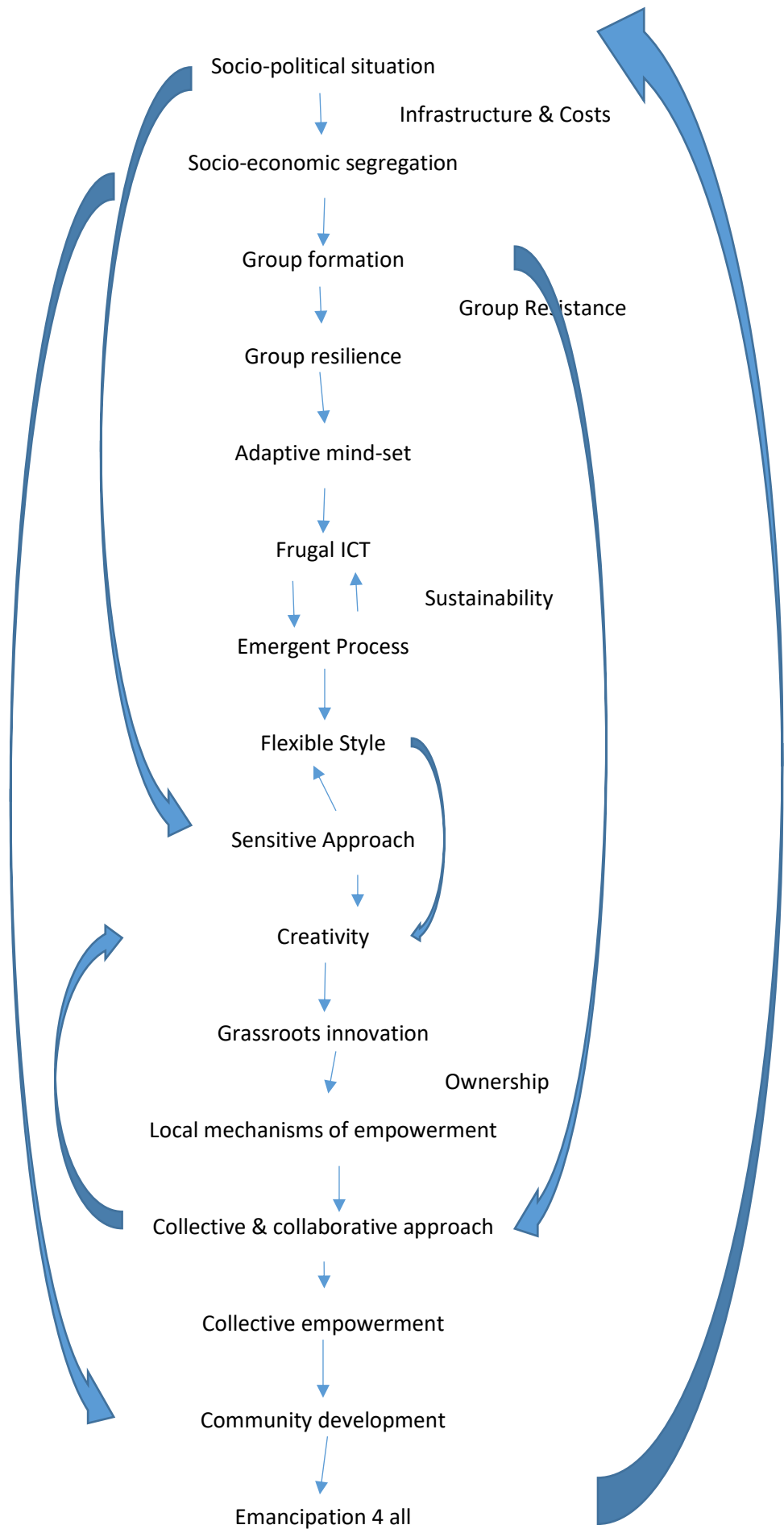
Office Telephone: +27 (0)21 650 2695

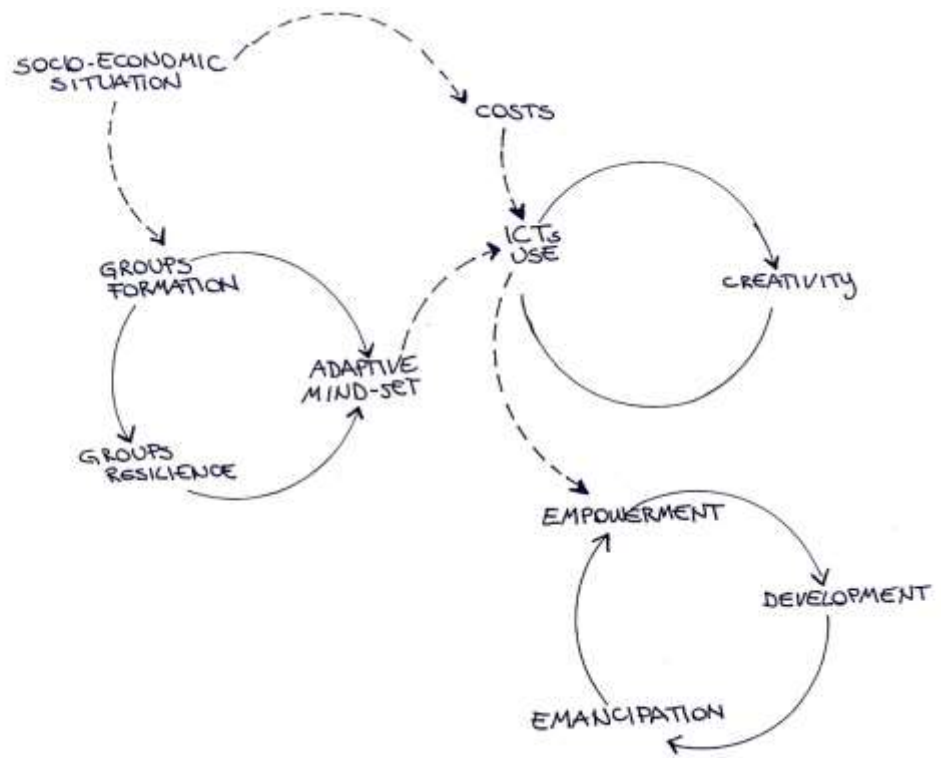
Office Fax: +27 (0)21 650 4369

E-mail: samantha.alexander@uct.ac.za

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APPENDIX G





First Causal Loop Model

