

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

**SEARCHING FOR THE ROLE OF ICTs IN DEVELOPMENT: A CASE STUDY OF
A RURAL MULTI-PURPOSE COMMUNITY CENTRE IN THE DWARS RIVER
VALLEY, SOUTH AFRICA**

JONATHAN TRUSLER

MASTERS DISSERTATION
DEPARTMENT OF INFORMATION SYSTEMS,
UNIVERSITY OF CAPE TOWN
16 FEBRUARY 2004

KEYWORDS: IS implementation, ICTs, development, actor networks, socio-technical, developing countries, interpretive, case study, hermeneutics, telecentres, multi-purpose community centres, replication models.

ABSTRACT: This dissertation examines ICTs and their role in development. It explores a single case study of a rural Multi-Purpose Community Centre in South Africa in an attempt to gain a richer understanding of the issues surrounding the implementation of such centres. The study is socio-technical in nature and is based on a framework composed of interpretivism, hermeneutics and the actor-network theory. Key issues explored include: the affect of ICTs on the emergence of a local champion; the struggle of creating active participants in a project of this nature; and the usefulness of replication models in guiding implementations. Three of the key findings and implications of the study are that: 1) the conceptual framework used is particularly suited to studies aimed at gaining a deeper understanding of socio-technical issues within the arena of ICTs for development; 2) there are encouraging signs that ICTs can indeed be of practical use in a variety of situations, particularly in the area of supporting entrepreneurial development projects however, it seems that using advanced technologies may have somewhat undermined the amount of real empowerment and ownership created; and 3) it is important for project managers to combine experiences from previous studies with continuous learning, context-sensitive application methods and an awareness of the moments of translation - there is no fixed 'recipe' for implementing MPCCs.

The financial assistance of the National Research Foundation (NRF) towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at, are those of the author and are not necessarily to be attributed to the NRF.

TABLE OF CONTENTS

<u>ACKNOWLEDGEMENTS</u>	4
<u>CHAPTER ONE</u>	5
<u>1. Introduction</u>	5
<u>1.1. Context</u>	5
<u>1.2. Topic</u>	6
<u>1.3. Contending Perspectives</u>	6
<u>1.4. Necessity for Research</u>	7
<u>1.5. Value of Research</u>	8
<u>1.6. Objectives</u>	8
<u>1.7. Overview of Rest of Dissertation</u>	9
<u>CHAPTER TWO</u>	10
<u>2. Literature Review</u>	10
<u>2.1. The Fields Under Study</u>	10
<u>2.1.1. The Field of Development</u>	10
<u>2.1.2. The Field of Information Systems</u>	11
<u>2.1.3. The Field of Information Communication Technologies for Development</u> ...	12
<u>2.1.4. The Three Stages of Each Field</u>	13
<u>2.2. Examination of Literature</u>	14
<u>2.2.1. The Field of Development</u>	14
<u>2.2.1.1. What is Development?</u>	14
<u>2.2.1.2. The Changing Face of Development</u>	16
<u>2.2.1.3. Further Elaboration of Concepts in Development</u>	19
<u>2.2.1.4. Conclusion</u>	22
<u>2.2.2. The Field of Information Communication Technologies for Development</u> ...	22
<u>-2.2.2.1. The Potentials and the Dangers of Technology for Development</u>	22
<u>2.2.2.2. Development, ICTs and ‘Gaps’</u>	25
<u>2.2.2.3. ICT Initiatives in Development in South Africa</u>	30 ✓
<u>2.2.2.4. The Telecentre Movement</u>	31 ✓
<u>2.3. Summary of The Literature</u>	39
<u>2.4. Area to be Explored</u>	42
<u>CHAPTER THREE</u>	43
<u>3. Research Approach</u>	43
<u>3.1. Context of Approach</u>	43
<u>3.2. Research Theme</u>	43
<u>3.3. Research Objectives</u>	43
<u>3.4. Research Paradigm</u>	44
<u>3.5. Theoretical Perspectives</u>	44
<u>3.6. Method</u>	44
<u>3.7. Site Selection</u>	45
<u>3.8. Data Collection</u>	46
<u>3.9. Data Integrity Issues</u>	47
<u>3.10. Limitations</u>	48
<u>3.11. Conclusion</u>	48
<u>CHAPTER FOUR</u>	49

<u>4. Analysis (Or A Description of the Parts)</u>	49
<u>4.1. Analysis methods</u>	49
<u>4.1.1. Hermeneutic Spiral</u>	49
<u>4.1.2. Actor-Network Theory</u>	50
<u>4.1.3. An Outline of the Process</u>	50
<u>4.2. Analysis</u>	51
<u>4.2.1. A Brief Contextual Overview of the Study</u>	51
<u>4.2.2. Emergent Themes</u>	54
<u>4.2.2.1. Community Dynamics: The Power Game</u>	54
<u>4.2.2.2. The MPCC as a Vehicle for Economic Development</u>	57
<u>4.2.2.3. Computers Essential for Development</u>	58
<u>4.2.2.4. The Internet: Source of all Knowledge</u>	60
<u>4.2.2.5. Funding is the Trigger</u>	61
<u>4.2.2.6. A Confusion of Roles</u>	62
<u>4.2.2.7. The Passive / Active Struggle</u>	64
<u>4.2.3. Conclusion of Analysis</u>	65
<u>CHAPTER FIVE</u>	66
<u>5. Discussion (Or A Description of the Whole)</u>	66
<u>5.1. A Brief Overview of Actor-Network Theory</u>	66
<u>5.1.1. Actor-Network Theory: The Theory that Doesn't Exist</u>	66
<u>5.1.2. Some Terms and Concepts from Actor-Network Theory</u>	67
<u>5.2. Discussion</u>	71
<u>5.2.1. The Death of an Actant: The Pniel Youth Centre</u>	74
<u>5.2.2. The Birth of a New Actant: The DRV MPCC</u>	75
<u>5.2.3. Problematisation (An Introduction)</u>	75
<u>5.2.4. Interessement and Enrolment (Seduction and Success)</u>	77
<u>5.2.5. Mobilisation (What Went Wrong?)</u>	80
<u>5.3. Summary of Discussion</u>	82
<u>5.4. An Afterthought (The Future?)</u>	83
<u>CHAPTER SIX</u>	85
<u>6. Reflections</u>	85
<u>6.1. A Review of the Theory</u>	85
<u>6.2. Reflections on the Approach</u>	86
<u>6.3. Reflections on the Analysis and Discussion</u>	89
<u>6.4. Implications</u>	92
<u>6.5. A Final Note</u>	93
<u>7. Bibliography</u>	94
<u>Appendix 1: The Seven Principles of Interpretive Field Studies</u>	100
<u>Appendix 2: A Sample of Questions Used in the Semi-Structured Interviews</u>	101

ACKNOWLEDGEMENTS

Firstly, thank you to Professor Dewald Roode whose invaluable insight, knowledge, and guidance played such a large part, not just in this dissertation, but also in the rest of my studies. I am eternally indebted for the doors that you opened and perspectives that you revealed.

Secondly, to my supervisor, Dr. Jean-Paul van Belle, who stuck by me despite my tangents and long absences. I sincerely appreciate your advice and continued encouragement.

Then, thank you to all the participants who took part in the study. Thank you for giving up your time and for warmly inviting me to explore your world.

A special thanks to Mr. Uys du Buisson who got me involved with the study and allowed me to learn so much from his vast experience in the arena of MPCCs. I hope the study has also provided you with some ideas for improving future projects.

Once again, I would like to acknowledge the financial assistance of the National Research Foundation (NRF) towards this research. Without this assistance, this research would not have taken place. Opinions expressed and conclusions arrived at, are those of the author and are not necessarily to be attributed to the NRF.

CHAPTER ONE

1. INTRODUCTION

This study investigates the role that information communication technologies (ICTs) play in development. It analyses a specific case of a rural Multi-Purpose Community Centre (MPCC) in order to gain a richer understanding of this complex arena. The study is placed firmly in the socio-technical tradition and adopts the interpretivist paradigm as its theoretical foundation. The following chapter outlines the approach and objectives of the study further.

1.1. CONTEXT

There is an increasing focus on the growing disparity between the involvement of developed and developing societies in the new “information age”. Developed countries seem to be harnessing the information age to revolutionise the way their industries operate. Developing countries, on the other hand, do not seem to have the capabilities to take part in this process.

ICTs are often seen as being the critical link to bridge this gap. One of the initiatives that has been of increasing importance in recent times is that of the telecentre, and the related concept of the MPCC. The South African government is strongly promoting the diffusion of these MPCCs throughout the country, particularly in rural areas. However, successful MPCC initiatives are still few and far between. As Benjamin (2000) notes, “while there is much talk in international conferences of them, there are not many successful [telecentres] in developing countries.” The reasons for the failure of many of these initiatives are still not clear despite a number of research efforts.

A growing strand of literature in the ICTs for Development field refers to the mutual interaction between technology and society. This approach is often referred to as the socio-technical paradigm of technology. This study embraces this school of thought and

actor-network theory is used as a theoretical foundation with which to explore the mutual interaction between people and machines.

1.2. TOPIC

This topic investigated in this study is the role of information and communication technologies (ICTs) and in particular, Multi-Purpose Community Centres (MPCCs) in the socio-economic development of a rural community.

This topic is investigated through an in-depth case study analysis of a single rural telecentre in the Western Cape Province of South Africa. This theme appears to be of great interest in recent literature as there is still no satisfactory understanding of the issues surrounding the implementation and role of ICTs in development situations.

1.3. CONTENDING PERSPECTIVES

The telecentre concept (where an MPCC is a particular type of telecentre) has been around for a relatively short period of time. Consequently, no solid theoretical approaches have been developed for implementing these centres. However, a number of contrasting perspectives have arisen with regards to certain key issues.

The first issue is that of success. At first glance this issue is relatively clear: Has the project achieved its goals? However, as Heeks (2002) points out, there is often considerable subjectivity involved when assessing the success and failure of development projects. Who sets the goals? For whom are the outcomes undesirable? Some authors contend that success should be seen in the light of those who fund or implement the project while other authors prefer to look at success from the perspective of the participants of a project (Whyte 1999).

Another related issue that is not as straightforward as it seems is that of sustainability. Mayanja (2001), for instance, investigates four different dimensions of sustainability. Thus, while some see sustainability as being determined by the financial flows of a

telecentre, others include determinants such as relevancy of services, human resources, and infrastructure.

A further issue is that of funding. One perspective is that all initiatives should be left to the private sector. This school of thought suggests that chances of success are greatest when projects are run on firm business principles. A second perspective is that government should fund the initial start-up phases of initiatives until they can be self-sustainable (Dymond & Oestmann 2002). Finally, some believe that, particularly in rural areas, telecentres are a form of basic service delivery and should, at least be partly funded by government on a permanent basis.

A final issue is the role of telecentres in development. Some authors maintain that the underlying assumption of telecentres is that “appropriate information can contribute significantly to development.” (Roman & Colle 2002: 5) Other authors focus less on the information aspect and more on the enabling aspect of ICTs in their ability to support local development projects.

Thus, it is clear that a number of contending approaches exist within the telecentre movement. The literature review chapter handles these issues in more detail.

1.4. NECESSITY FOR RESEARCH

Significant money is being invested into MPCCs throughout South Africa as a result of the strong governmental support behind the concept. However, as has already been pointed out, there is a high tendency for these projects to fail. There is a considerable lack of understanding when it comes to the role of MPCCs and their implementation in rural communities.

As a result there is a necessity for research which investigates case studies of existing MPCCs in order to produce a richer understanding of these issues. This study

investigates a single critical case of an MPCC and derives insights from the in-depth analysis and discussion of the case.

1.5. VALUE OF RESEARCH

The value of this research lies in the fact that it helps to produce a deeper understanding of the role played by MPCCs and ICTs in development. It provides valuable insights to practitioners wishing to improve implementations. It also serves to extend the understanding of researchers with regard to the mutual interaction of participants and technologies in development situations.

Furthermore, the use of hermeneutics and actor-network theory within the interpretive paradigm provides a valuable framework for studies of socio-technical systems in general and in particular, the arena of ICTs in development. This framework is particularly useful for single case studies in which an in-depth understanding of a particular situation is sought.

1.6. OBJECTIVES

The aim of the dissertation is to investigate the implementation issues of ICTs in development with particular focus on the MPCC initiative. The objectives identified from the literature review are as follows:

1. To analyse the role of ICTs in a rural development situation.
2. To investigate the implementation issues of an MPCC in a rural development situation.
3. To demonstrate the value of applying a framework that combines interpretivism, hermeneutics and actor-network theory to a case study of a socio-technical system.

1.7. OVERVIEW OF REST OF DISSERTATION

Chapter 2 examines the literature applicable to the field under study. It begins by providing a broad theoretical overview of the field of development studies. It then examines the progression of the 'ICTs for Development' field in which ICTs and Development are part of the same trans-disciplinary arena. The final section of the chapter focuses on telecentres and summarises studies that have been conducted in this arena.

Following this, Chapter 3 outlines the research approach followed in the study. It introduces the components of the framework including interpretivism, hermeneutics, and actor-network theory. It also examines the data collection procedure and related issues.

Chapter 4 provides an analysis of the emergent themes of the study. The hermeneutic spiral is used to guide the process of the analysis, as each of the themes is examined individually.

Building on the themes identified in the previous chapter, Chapter 5 uses actor-network theory to provide a discussion of the study as a whole. This discussion provides a useful description of the case which leads to several points of reflection in the concluding chapter.

The dissertation is concluded in Chapter 6, where several points of reflection are discussed. A self-evaluation is also conducted in this chapter discussing the application of the seven principles of interpretivist studies (see Appendix 1). The chapter then concludes with several implications arising from the study.

CHAPTER TWO

2. LITERATURE REVIEW

According to Max-Neef (1991: 15), “there is no longer any beautiful specific problem” when it comes to the field of development. Too often, despite the best intentions, the field is over-simplified into the optimistic equation: capital transfer plus know-how equals swift economic growth (Brown 2002: vii). Unfortunately, this is not the case; instead we find a field which is composed of a complex web of elements and relations that are multi-dimensional, and trans-disciplinary in nature.

The aim of this dissertation is to explore the role that Information Communication Technologies (ICTs) play within the field of development. These two fields: ICTs and development; have both got significant research traditions (where ICTs can be seen as part of the broader information systems field) but they are usually treated as two distinct and separate fields. This chapter will first examine literature in the field of development to gain a broad understanding of this complicated, multi-dimensional research area. The remainder of the chapter will then be devoted to examining the outcomes of research in the field of ‘ICTs for development’, where development and ICTs are treated as part of the same trans-disciplinary field. Within this field we see the emergence of the specific initiative which is the focus of this dissertation – the telecentre.

The purpose of this chapter is threefold. Firstly, it establishes the theory from which the concept of the telecentre has emerged. Secondly, it synthesises the recent studies done in the field of telecentres. Lastly, it outlines the objectives of this study as a result of identified weaknesses in the literature.

2.1. THE FIELDS UNDER STUDY

2.1.1. The Field of Development

The subject of development studies as we know it today emerged shortly after the Second World War in an attempt to address the global inequalities between rich and poor countries. Up until the 1970s theories of development were based mainly on top-down strategies informed by Keynesian growth models (Brohman 1996). As a result of the poor track record of these mainstream theories, the 1970s saw the “birth of an ‘alternative’ trend in development theory” (Hettne 1990: 152). This alternative trend focused on bottom-up participation and more people-centred strategies for development (see Todaro 1989; Max-Neef 1991; Brohman 1996; and Neefjes 2000). Finally, the concept of the ‘social entrepreneur’ has started to emerge as an essential ‘linking’ element in the development process (Dees 1998).

2.1.2. The Field of Information Systems

The literature on the implementation of ICTs in organisations seems to have followed a similar progression to that of development studies. While the timeline seems to have been condensed, we can still make out several distinct stages of progression, which correspond closely to the stages identified in the previous section.

In the information systems literature of the 1980s and early 1990s there was a strong focus on top-down, deterministic implementation methods also known as the ‘organizational imperative’ approach where strategic planning was seen as the key to successful implementations (Da Silva & Magalhaes 1999: 126). Following this a new school of thought emerged, known as ‘social interactionism’ which highlighted the importance of the social context and its dual shaping of and being shaped by technology (see Giddens 1984; Orlikowski 1992 & 1993; and Ciborra 1994). The result of this approach is a bottom-up perspective of information systems implementation. Lastly, a new and relatively unknown approach has emerged. Known as ‘managerial action’, this approach provides a balanced perspective (i.e. neither top-down nor bottom-up, but rather ‘middle-out’) focusing on the importance of the role of managers and ‘champions’

(Rogers 1983) in the implementation process (Du Plooy 1998 and Da Silva & Magalhaes 1999).

From the preceding analysis we can distinguish a parallel evolutionary path that both fields seem to have undergone separately. In both fields there is a progression starting with top-down approaches, then a reactionary response towards bottom-up methods, and finally a middle-of-the-road, balanced middle-out approach.

2.1.3. The Field of Information Communication Technologies for Development

Information technology was introduced into development as early as the 1970s. This introduction was facilitated by international development agencies, such as the UNDP (United Nations Development Program) and World Bank who supported a large number of IT related development projects in the 1970s and 1980s (Berman 1992: 216). Once again we see a familiar progression of initial enthusiasm and optimism leading to top-down strategies of implementation. The ‘forceful’ implementation of IT onto underdeveloped societies has resulted in significant failures (Heeks 2002) and has often led to maldevelopment (Berman 1992; Brohman 1996).

We are starting to see some bottom-up strategies emerge as evidenced by the “growing voice...in the current discussion on ICTs, calling our attention away from the hasty introduction of these technologies, and suggesting the need to examine first and foremost the socio-economic and cultural dimensions, as well as the enabling local environments that facilitate or mitigate against successful application and use of ICTs” (Morales-Gomez & Melesse 1998). However, the literature still does not show a significant trend in this direction. There could be a number of reasons for this of which the most likely reason is the large amount of ‘constraining factors’ (e.g. lack of infrastructure and skills) (Heeks 2002: 7) faced by developing countries which make it very difficult to implement projects in a bottom-up manner.

Finally, the critical importance of a ‘local agent’ or ‘champion’ has emerged as can be seen in examples discussed by Proenza *et al.* (2001) and Roman & Colle (2002). This can be seen to be comparable to the middle-out approaches discussed in the previous two sections.

2.1.4. The Three Stages of Each Field

From the preceding analysis it becomes apparent that each of the fields seem to have evolved through three distinct stages.

Firstly, all three have exhibited initial top-down driven approaches to implementation. This approach is also accompanied by a strong sense of enthusiasm and naïve optimism for the potential of the particular field giving rise to utopian views of future success (Lyon 1988). However in practice the top-down approach often does not result in successful implementations.

Again and again, one finds social engineering blueprints to “do X” being defended on the grounds that the doers should indeed do X. But there seems to be little or no real recognition that if the doers do X only to satisfy conditionalities and thus receive aid, then the motive will falsify the action, the reforms will not be well implemented, and the policy changes will not be sustained. Hence all the arguments about the beneficial nature of doing X miss the point. Paraphrasing Kierkegaard, it is not so much the “what” of reform that counts but the “how” of reform, if the reform is to take root and be sustainable. (Ellerman 2002: 45)

Following the initial enthusiasm there appears to be a reactionary move away from top-down approaches which ignore the “how” of reform. This opposition manifests itself in bottom-up strategies for implementation that focus more on the social context and less on the technical context. This is the common second stage identified in the three fields above. However, this second stage does not appear to be fully formed in the case of the ‘ICT for Development’ field.

Finally, the third stage emerges as a balance between the previous two stages. It is the middle-out approach to implementation which highlights the importance of managers / champions / innovators in the implementation process. These are typically people who

are close enough to the *coal-face* to understand the concerns and needs of the front-line workers / grassroots implementers; while at the same time have the knowledge and experience to recognise the goals and objectives of the top managers / donors. Their strength lies in being able to reconcile these two, often very different, perspectives.

The rest of this chapter takes a more in-depth look at firstly the field of development and secondly at the field of ‘ICTs for Development’.

2.2. EXAMINATION OF LITERATURE

2.2.1. The Field of Development

2.2.1.1. What is Development?

In academic disciplines there is often a lively debate that is conducted with regard to the definition of a term. McNeill (2000: 11) contends that “it would be wrong either to dismiss debate about definitions as meaningless or to believe that it is possible to arrive at some final, uncontested conclusion.” This is particularly true in the field of development which has been characterised by a number of shifts in ideologies (see Figure 1). These constant shifts often fuel the debate around terms as new aspects are introduced and changes in emphasis take place.

A further complication arises because the debate around development “falls in the realm between academia and practice...[where] the authority of academia to be the arbiter of the debate is contended” (McNeill 2000: 12). Nevertheless, it is possible to gain a deeper understanding by examining some (academic) efforts to define the term “development”.

1. Jayaweera (1991: 17) defines development as “an inclusive process involving qualitative and structural change, resulting in the improvement of the quality of life of the community as a whole.”
2. Himmelstrand (1993: 27) talks about (African) development as being concerned with “the over-all question of how to improve the capabilities of contemporary

African societies to solve the problems of mass survival, indigenous entrepreneurship, international trade, and democratic self-rule.”

3. Max-Neef's (1991: 8) conception of development is as follows, “[D]evelopment is focused and based on the satisfaction of fundamental human needs, on the generation of growing levels of self-reliance, and on the construction of organic articulations of people with nature and technology, of global processes with local activity, of the personal with the social, of planning with autonomy and of civil society with the state.” (Where articulation refers to the construction of coherent and consistent relations of balanced interdependence among given elements.)
4. If we extend the search for a definition slightly by adding just one word: “sustainable” to create the term “sustainable development” we see a new perspective emerging. The Brundtland Report gives us the ‘standard’ definition where: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland 1987: 8).

Looking at the four definitions above, a number of aspects emerge. Firstly, it becomes apparent that the term development is often used loosely and without any explicit definition. However, it is also apparent that there are a number of interpretations and perspectives from which the term can be viewed.

Secondly, it is not possible to objectively claim with any amount of certainty which is the *best* or *worst* definition. The *best* definition is the one that best fits the context within which it is being used. For example, the Brundtland Report’s broad definition is well-suited to the emergence of a new direction of study in that it is simple and inclusive; while Jayaweera’s more focused definition might better suit community development workers who are involved in actual practice.

Thirdly, further analysis of the definitions leads to the emergence of certain commonalities. The essence of most definitions is the improvement of the *status quo*, or more specifically a better way of life. Thus, implicit in all the definitions is the fact that

there is a gap between what is currently happening and the desired state of affairs according to some stakeholder. Following on from this, most definitions imply some sort of prescription as to how this change of affairs can be accomplished.

Finally, each definition has deep ideological connotations. Max-Neef's definition is built on the fact that fundamental human needs are at the centre of development, while Himmelstrand's definition is more concerned with highlighting the state's role in solving societal problems.

Thus, before a definition can actually be chosen for this (or any study) it is important to establish the fundamental ideological foundations and assumptions upon which the work is based. These are further explored in the following sections.

2.2.1.2. The Changing Face of Development

It has already been noted that the field of development studies has undergone several important ideological shifts. Hyden (1993) contends that these shifts may be viewed as a spiral journey along two axes: (1) *growth-equity*, referring to the economic objectives of development, and (2) *management-participation*, the method of development. This journey is represented graphically in Figure 1 below.

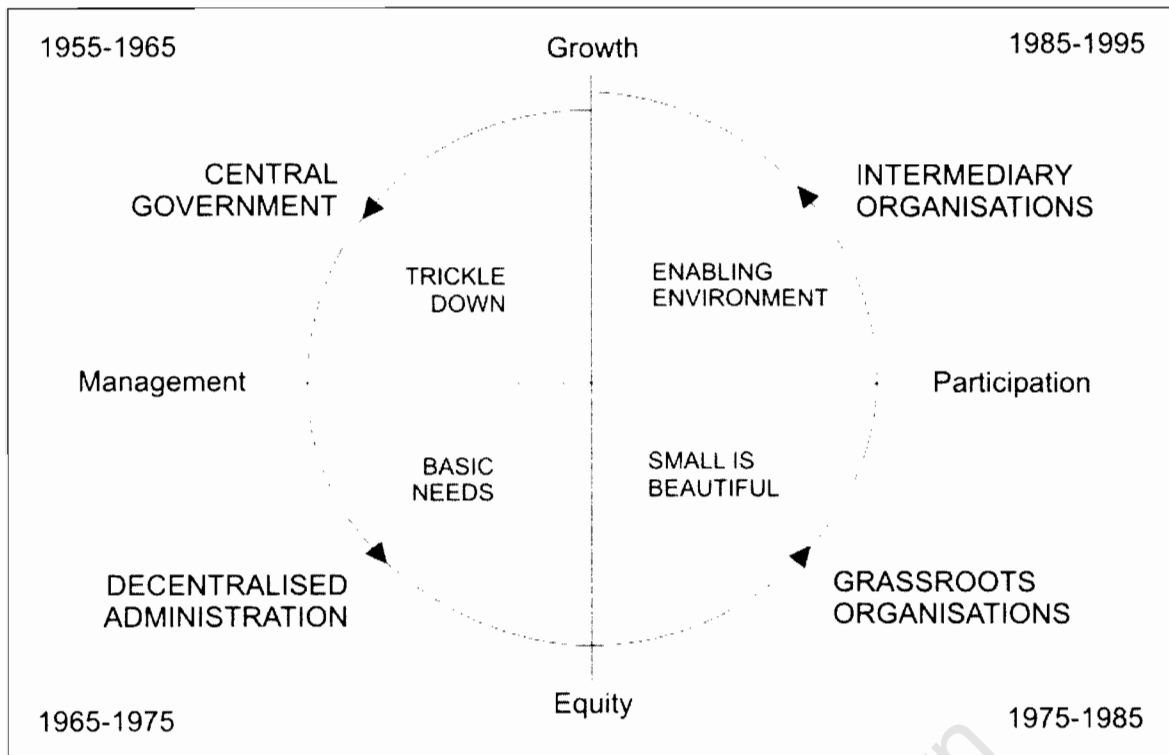


Figure 1: Shifts in Ideological Perspectives on Development

(Source: Hyden 1993)

The ‘trickle down’ phase refers to the early efforts to create top-down programmes that were controlled by the state. “The ideological orientation...shared the optimism of the emerging generation of African political leaders, especially their hope that the state could be used as a means to eradicate poverty and redress imbalances...” (Hyden 1993: 310). According to Brohman (1996), economists played a leading role in the elaboration of development theory during this period. The success of Keynesian economics in the reconstruction of Europe after the Second World War provided the basis for the theory building.

In the late 1960s, “political analysts began to argue that growth without equity was growth without development” (Hyden 1993: 311). Thus the ‘basic needs’ approach emerged as an ideological shift away from strict economic theories towards more people-centred methodologies. Contributions started coming in to the field of development from a variety of other fields, including sociology, anthropology, political science, social psychology, and geography. As a result, the first hybrid theories incorporating elements

from a number of related fields were born (Brohman 1996). The focus of the state was on decentralised local governmental control with integrated development programmes emerging as one of the administrative innovations of this phase (Hyden 1993).

While the first two stages could be seen as a logical progression marked by government control and a focus on economic models, the third stage represented a major break in the ideology of development. People in underdeveloped countries started to realise that public management and economic theories were not able to create tangible results. As Ul Haq (1976: 24-25), a Pakistani economist and World Bank official noted: "In country after country, economic growth is being accompanied by rising disparities...the masses are complaining that development has not touched their ordinary lives. Very often, economic growth has meant very little social justice. It has been accompanied by rising unemployment worsening social services, and increasing absolute and relative poverty." Thus, the 'alternative' trend in development theory began and the emphasis shifted towards more people-centred strategies for development (Hettne 1990). Activists stressed that although basic needs were a good foundation, other more qualitative considerations were also important, such as freedom of expression and self-realisation in work (Brohman 1996). To this foundation we can add Todaro's (1989) three core values of development: life-sustenance (the satisfaction of basic needs); self-esteem (the need for fulfillment); and freedom from servitude (the need to be able to choose from a range of choices). Finally, this ideology also stressed the importance of the informal sector, as many individuals and groups started their own successful ventures without governmental authority (Neefjes 2000).

The fourth stage continued the work done previously in promoting local participation but once again emphasis was placed on economic growth. The key lesson of this stage was that spontaneous local initiatives could flourish and become viable alternatives to the many hybrid solutions that were implemented as a result of foreign assistance; but that this would only happen if support structures, outside of government, were put in place (Hyden 1993).

According to Hyden (1993), the framework discussed above does not take into account the conflicts associated with each shift in phase, but it does recognise that there is accumulated learning, hence the notion of a spiral instead of a circle. Thus, an overview of development theory should note the key lessons from each stage. For example, it could be extrapolated from the framework that we are currently in a fifth stage of development, once again focused on central government management of initiatives and growth, however this does not mean that we should return to an ideology of 'trickle-down' economics. Rather we should build on the past lessons and look for new strategies that improve on what has been done in the past. So a new strategy could incorporate basic needs concepts (from stage two) as well as encouraging local initiatives (from stage three and four) combined with a central government system of 'smart subsidies' to nurture certain key industries.

Hyden (1993) theorises that each 'school' of development theory lasts approximately ten years before it runs its course. "Scholars seem to have an appetite for fresh ideas at such intervals and become increasingly open to new perspectives with a persuasive message" (Hyden 1993: 318).

2.2.1.3. Further Elaboration of Concepts in Development

A Focus on Needs

Max-Neef's (1991) *Human Scale Development* provides a very useful theory in terms of understanding human needs and their role in development (Roode 2003). Max-Neef (1991: 16) provides three postulates which "compel us to rethink the social context of human needs in a radically different way":

1. *Development is about people and not about objects.* Thus, the best development process will be that which allows the greatest improvement in people's quality of life. Furthermore, quality of life depends on the possibilities people have to adequately satisfy their fundamental human needs. This then leads to the second postulate.

2. *Fundamental human needs are finite, few and classifiable.* They are the same in all cultures and in all historical periods. Needs can be grouped according to two categories: existential and axiological.
3. *What is culturally determined are not the fundamental human needs, but the satisfiers for those needs.* Satisfiers are not the available economic goods; they are related instead to everything which contributes to the actualisation of human needs. Satisfiers may include, among other things, forms of organisation, political structures, social practices, attitudes, subjective conditions, values and norms, spaces, and types of behaviour, all of which are in a permanent state of tension between consolidation and change. Economic goods should empower satisfiers to meet human needs.

As an illustrative example the need for affection can be examined. This need is clearly universal, as very few would argue that they do not need any form of affection. The satisfiers of affection could be friendships, sharing, spaces of togetherness and so forth. These are all ways in which the need for affection is actualised (satisfied). If these satisfiers were not present, it is likely that an individual would begin to feel very lonely. Finally, if a lonely individual buys someone a box of chocolates and as a result of the gift experiences friendship then we can say that an economic good (the chocolates), empowered a satisfier (friendship), to meet a need (affection).

Empowerment, Ownership and Participation

The critical issue at the centre of the concepts of empowerment, ownership and participation is that of power (Lopes 2002). The way that power is distributed is an intangible and illusive process that is difficult to perceive, and even more difficult to control.

According to Ribeiro (2002), development creates two kinds of subjects: passive and active. Top-down approaches tend to create passive recipients where the distribution of power is heavily skewed towards the donor / implementer of the development programme. In contrast, bottom-up approaches intend to create active subjects who are

actively involved in the planning, implementation and evaluation of projects. Thus, the intention is to transfer power to the recipients of development. However, a number of authors warn that this does not always occur as planned. For example, Chambers (2001) notes that,

...rather than overhauling their way of operating or redefining the contents of their programmes, most institutions dealing with capacity development have opted for a shortcut: better packaging for existing instruments in order to make them more suitable for a participatory approach. Obstacles in the way of change are rooted in personal and institutional inertia, as well as in issues of control, risk-aversion, extra workload, staff constraints, vested interests and power. Entrenched practices favour top-down, short-term development targets...

Furthermore Ribeiro (2002: 179) notes that,

Participation and partnership become buzzwords that cannot mask the fact that everyone in the development drama knows where ultimate decision-making power is located.

Lopes (2002: 140-144) proposes several key issues to create an equitable distribution of power so that recipients are more likely to be active rather than passive participants in their development. Firstly, he notes ownership is premised in self-esteem and self-confidence which are greatly facilitated by skills enhancement. Secondly, he contends that external input should be balanced by ownership and local contributions. Finally, he recommends that the political dimension must be treated openly and critically as a key component in any developmental initiative.

An analysis of the distribution of power in developmental initiatives should not be confined to a simple two-way process between donors / implementers and recipients. The literature also reveals a third participant in the process – the social entrepreneur.

The Role of the Social Entrepreneur

Several authors have stressed the role of the local agent / broker / champion in development initiatives (Dees 1998; ASHOKA 2000; Cox & Healy 2000 and Ribeiro 2002). As Ribeiro (2002) explains,

‘Brokers’...usually amass a great quantity of power. Such middle-people connect the intersections of different levels of integrations and serve the interests of the groups they intermediate between.

These mediators create power networks of their own (made up of NGOs, consultants, officers of multilateral agencies, union and social movement leaders, etc.) within which much of the technical cooperation actually happens. Many of the results of development projects are related to the nature of the brokerage system and the power effects and distortions it may generate.

According to ASHOKA (2001), an international organisation set up to support social entrepreneurs around the world, “a business entrepreneur may thrive on competition and profit, [but] a social entrepreneur has a different motivation: a commitment to leading through inclusiveness of all actors in society and a dedication to changing the systems and patterns of society.”

Thus, social entrepreneurs (or brokers) should be seen as playing a critical role in the development process and the distribution of power.

2.2.1.4. Conclusion

The preceding analysis has provided a valuable foundation for examining the field of ICT for development. Without a thorough understanding of development, it is impossible to properly understand the role that ICTs can fulfill in this field.

2.2.2. The Field of Information Communication Technologies for Development

2.2.2.1. The Potentials and the Dangers of Technology for Development

The potentials of ICTs in development are well noted. Avgerou (1998) states that, “intuitively most people believe that the diffusion of information and communication technologies leads to economic growth.” Furthermore, Morales-Gomez & Melesse (1998), note,

ICTs are increasingly playing a crucial role in most societies’ capacities to produce, access, adapt, and apply information, and thus offer enormous opportunities for facilitating the transfer and acquisition of knowledge. They present – at least theoretically – a promising potential to lead developing countries into the ‘highways’ of development.

In a similar vein, Moyo (1996) states that,

All indicators show that IT is going to be a major driving force of socio-economic development, and that those not yet participating in the IT revolution should prepare to do so otherwise they will not reap the benefits of being part of the 'global information system'.

As Reichgelt (2000) elaborates, the argument for the potential of the 'information revolution' in developing countries has two sides. First, ICTs can be used to address various problems in developing countries such as:

- Educate people and support lifelong learning;
- Make governments more efficient, accountable, and transparent;
- Increase effectiveness of economic reforms;
- Monitor and protect the environment;
- Reduce information and income inequalities;
- Overcome natural disadvantages;
- Promote small and medium enterprises. (Talero & Gaudette quoted in Reichgelt 2000: 77)

Secondly, Reichgelt (2000) continues, ICTs allow developing countries to diversify into information-intensive industries, where their relative advantage in terms of lower salary costs allows them to compete effectively with more developed countries.

Not all authors are convinced, however, that the 'information society' should be considered the natural consequence of societal progress. Lyon (1988) shows how the discourse around the 'information society' shows many similarities with the concept of a 'utopian society'. The concept of a utopia dates back to the 1600s and centres on a belief in the inevitability of technological progress that eventually solves all problems leading to a world of peace and prosperity for all. This belief contends Lyon (1988: 146), leads to a never-ending cycle where it is always "possible to rectify the less desirable consequences of technological innovation by further applications of technology." Thus, technology eventually becomes the end, and no longer the means of development.

However, as Lyon (1998) notes, it is apparent that in modern times ICTs are frequently widening the gap between already divided social groups and nations. The so-called “information society” has become restricted to a very small minority of people in developed countries. As Menou (1999) points out, “Each week we are told of the Internet revolution with the latest growth figure among the some 160 millions users, while others, like John Daly, remind us that these are only a tiny minority of a few percent of the world population.”

The effect of this utopian view of the ‘information society’ on developing countries can often be detrimental. As Berman (1992: 227) points out:

The expectations of the enthusiasts who proclaim the computer ‘revolution’ are largely idle fantasies that contain little understanding of the social and political factors which shape the character and consequences of computers. Rather than being a solution for Africa’s contemporary economic crisis or an engine of a recharged development process, computerization in African states is likely to reinforce existing distributions of power and wealth, create reified images of society based on quantitative data of dubious value and accuracy, and accentuate the authoritarian relationship between the state and an increasingly marginalized populace.

Thus, there appear to be two opposing views when it comes to the role of ICTs in development. Du Plooy & Roode (1993: 8), based on the work by Postman, refer to the first school of thought as ‘technopoly’, which can be described as the “total submission of all forms of culture, [including] economic development, to the sovereignty of technique and technology.” The second school of thought, at the opposite end of the spectrum, is often referred to as the ‘Luddites’ (see Menou 1999 and Lyon 1998). This school can be defined as those who seek “the preservation of all that is good from the past and the rejection of things that destroy good” (Shallis quoted in Lyon 1998) but are more often seen simply as those who resist the use of technology. Having established the two extremes of the field, we can now examine the third school of thought, which represents a more balanced view.

This third school, which we might collectively term the ‘socio-technical’ approach, has risen to greater prominence in the literature of ICT for development. However, it seems

that this school is still to have a significant impact on practice (see for example Montealegre 1999; Gomez *et al.* 1999; and Heeks 2002). Some of the characteristics of this school of thought are as follows:

- ICTs could become a valuable means for development to take place, but should not be pursued as ends in themselves (Morales-Gomez & Melesse 1998);
- Although ICTs have enabled some newly industrialised countries (NICs) to achieve significant economic development in a short space of time (for example, Singapore) the majority of developing countries have not shown evidence of this ICT-induced economic growth (Avgerou 1998);
- A balance needs to be achieved between the contribution of information systems towards the mission of an organisation and the ethical responsibility to ensure the social acceptability of those systems (Du Plooy & Roode 1993);
- The exploitation of information technology is not something that can necessarily be ‘introduced’ into a national economy. Rather, it is a process which, in the developed countries, have been taking place during the last four decades and is now in a phase of sustained momentum. The quandary of developing countries is that the time to let this process evolve is simply not available (Du Plooy & Roode 1993);
- There is a need to investigate the *mutual adaptation* process of the *information technology* and the *social/organizational* setting (Montealegre 1999).

This ‘socio-technical’ approach to ICT implementation relates very closely to the human-centred, bottom-up approaches to development.

2.2.2.2. Development, ICTs and ‘Gaps’

The Digital Divide

There seems to be a pre-occupation in the current literature of ICTs in development to focus on various ‘gaps’. The first, and by far the most common gap is the so-called, ‘digital divide’ which refers to the “disparities [which] exist in access to and use of information and communications technology between countries and between groups

within countries” (Bridges.org 2001). According to Morales-Gomez & Melesse (1998), the discourse around the digital divide is stimulated by the prevailing perception that ICTs open new opportunities for poor countries to “advance rapidly to modernisation levels of the industrial societies.” From the previous analysis, we can conclude that there is a certain amount of influence from the ‘technopolist’ school of thought in such discourses where ICT is seen as the magic ingredient needed to create advanced societies. While the concept of the digital divide provides an important method for highlighting the disparities of our ‘information society’, it does little to increase our understanding of why these disparities exist.

Dymond & Oestmann (2002) frame the domestic digital divide (i.e. the disparity between groups within a single country) debate along two dimensions which can be labeled separately as *poverty* (the disparity between rich and poor people) and *isolation* (the disparity between urban and rural areas). As a result of these two dimensions they identify two gaps (Figure 2):

1. *The Market Efficiency Gap* refers to the gap that exists as a result of imperfect market conditions. Thus, areas within this gap (along both dimensions) could be met by solely commercial means if market conditions were improved.
2. *The Access Gap* refers to the gap that exists as a result of market limitations. Thus, these areas are politically and socially desirable, but not commercially feasible.

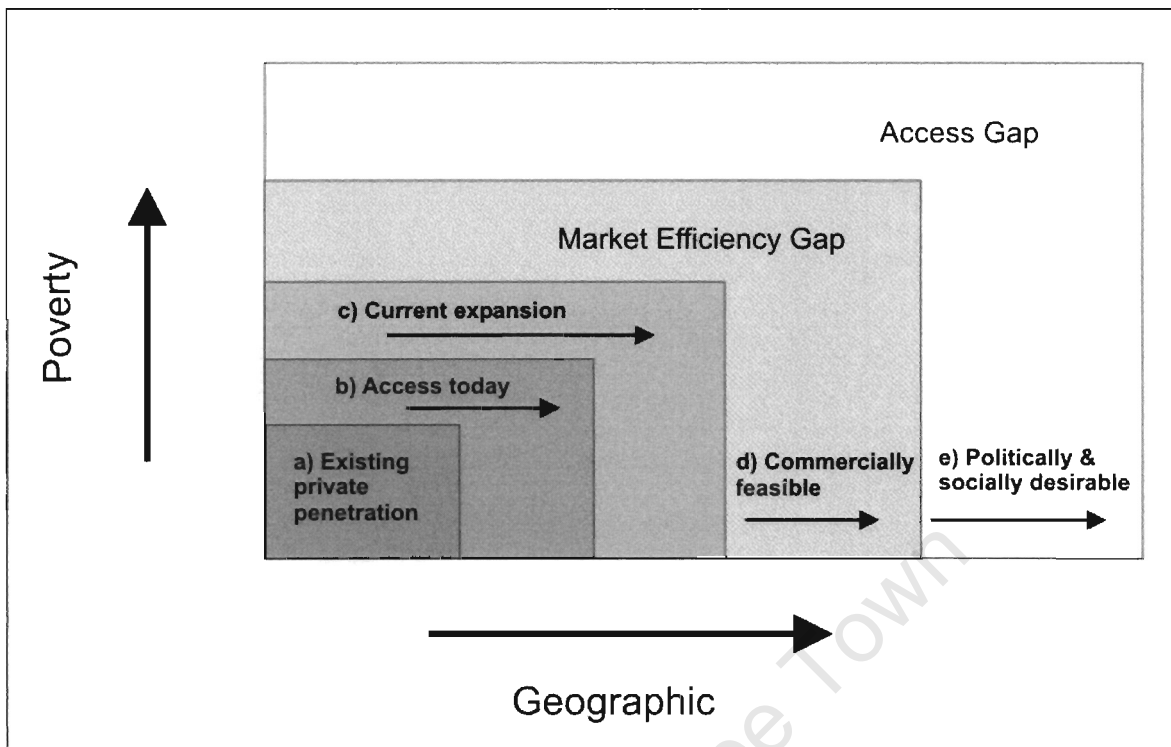


Figure 2: Conceptual Framework of Dimensions and Gaps
(Source: Dymond & Oestmann 2002)

Dymond & Oestmann (2002) argue that profit-led initiatives are the most likely to succeed in the area of ICT for development. They therefore propose that government bridges the digital divide through enabling measures rather than through direct interventions (for example sponsoring state telecentres). They propose firstly, that the market efficiency gap be tackled through market liberalisation and efficient regulation; and secondly that the access gap be addressed through a system of 'smart subsidies' or other similar incentives, aimed at kick-starting commercially driven ICT projects in these isolated areas (see also Proenza *et al.* 2001). An example of this sort of incentive can be seen in the Canadian Government's Community Access Program (CAP) aimed at providing start-up funds for nation-wide, particularly rural, telecentre initiatives (Roman & Colle 2002).

The Design and Reality Gap

Heeks (2002) identifies another gap applicable to the implementation of ICTs in developing countries which he refers to as the *design-reality gap*. This gap refers to the extent to which the design of a particular information system (usually created within the context of the private sector of a developed country) differs from the contextual reality (usually a public sector initiative in a developing country) into which it is being placed. Heeks (2002) contends that when this gap is too great, the project is likely to fail. He gives two methods of closing the gap: 1) the local reality could be changed to make it more closely fit the information systems' design and 2) the design of the 'imported' information system could be changed so that it better matches the organisational reality into which it is being introduced.

Heeks (2002: 10) summarises the reasons for the appearance of this gap as follows:

Gaps will arise especially when designs and dominant design stakeholders are remote (physically or psychologically) from the context of IS implementation and use. This domination comes partly from the economics of innovation and the domination of ICT/IS-related R&D systems by Northern companies and Northern researchers. It comes partly from the economics of business, which sees Northern organisations able to invest more and earlier in new information systems than their Southern counterparts. It comes partly from the economics and politics of aid, which has been dominated by a flow of resources and artefacts from North to South rather than, for instance, from South to South. It even comes partly from cultural attitudes in the South, where belief in the superiority of imported items is sometimes strong. Finally, the whole process has been both strengthened and enabled by globalisation; a Northern project that has carried ideas and systems from North to South.

It is important to note that the design-reality gap is not necessarily a negative thing, *per se*, as the absence of a gap, i.e. where the system exactly matches its environment, would not result in any change. This would defeat the implicit goal of any new implementation.

Heeks (2002) concludes with four recommendations for overcoming the *design-reality* gap in ICT implementation. Firstly, he recommends that implementers consciously "expose organisational realities". This can be seen as a first step to understanding the design-reality gap, and thereby a move towards closing the gap. Secondly, Heeks

proposes that local IS capabilities should be improved thereby increasing the ability of being able to alter the design of the 'imported' system. Thirdly, Heeks recommends educating the 'carriers' of development. These are individuals who have been educated according to traditional Northern curricula, and act as carriers of these Northern innovations and conceptions to their Southern counterparts. If these 'carriers' were trained to be aware of design-reality gaps and given strategies to overcome them, development projects may stand a better chance of success. Lastly, Heeks proposes a critical self-reflection of not only the 'what' of development but also the 'how'. Thus, it is not just the content of projects that are important but the way in which these projects are implemented.

Intermediate Technology

In his groundbreaking book, *Small is Beautiful*, Schumacher (1973: 150) highlights another gap in terms of the level of technology employed.

We can call the indigenous technology of a typical developing country – symbolically speaking – a £1-technology, while that of the developed countries could be called a £1,000-technology. The gap between these two technologies is so enormous that a transition from the one to the other is simply impossible. In fact, the current attempt of the developing countries to infiltrate the £1,000-technology into their economies inevitably kills off the £1-technology at an alarming rate, destroying traditional workplaces much faster than modern workplaces can be created, and thus leaves the poor in a more desperate and helpless position than ever before. If effective help is to be brought to those who need it most, a technology is required which would range in some intermediate position between the £1-technology and the £1,000-technology. Let us call it – again symbolically speaking – a £100-technology.

Schumacher (1973), thus, contends that developing countries need some sort of *intermediate technology*, to help them bridge the gap between primitive and advanced technologies. He goes on to show how an intermediate technology could be of benefit in a number of ways including the following:

- It is more likely to be embraced by participants because intermediate technology is easier to understand, easier to use, and more suited to deal with actual development situations;

- More workplaces can be created with the same limited amount of funding if the technology involved is cheaper;
- If people can afford the technology themselves there will be less reliance on outside funding to ‘trigger’ development.

The doctrine of intermediate technology strongly opposes the concept of ‘leap-frog’ development (see for example Fontaine 1999). According to Schumacher (1973) development should be seen as an essentially evolutionary process which cannot be ‘leap-frogged’.

2.2.2.3. *ICT Initiatives in Development in South Africa*

An examination of the current literature (see for example, Bridges.org 2001; Benjamin 2000; and Burton 2000) dealing with ICT initiatives in developing countries, and particularly in South Africa, reveals three dominant types of initiatives prevalent at the moment. These are:

1. Online information resources (providing relevant content);
2. School computer programmes and distance learning programmes;
3. Telecentres.

Du Plooy (1998) draws attention to the distinction between the *diffusion* and the *infusion* of technology. Rogers (1983) defines *diffusion* as “...the process by which an innovation is communicated through certain channels over time among the members of a social system...” *Infusion* is defined by Du Plooy (1998) as a “process of embedding information technology deeply into the work processes of an organisation.” Using these two concepts it appears that there does appear to be success (albeit limited, and largely governmentally driven) taking place in terms of the *diffusion* of the above-mentioned ICT initiatives, but there is a severe lack of *infusion*. Thus, while we see initiatives becoming more and more wide-spread, the embedding of the processes which they facilitate is not occurring at any significant level (see for example, Bridges.org 2001; Benjamin & Dahms 1999; Benjamin 2000 & 2001; and Burton 2000)

It is clear that while existing telecentre facilities offer a variety of services that are both desired and needed by many communities, these facilities remain under-utilised by the majority of communities in which they are located. Reasons for this range from cost and pricing issues to mere awareness of the facilities (Burton 2000).

2.2.2.4. *The Telecentre Movement*

A Brief Discussion about Definitions

In any discussion about definitions it bears noting that Colle & Roman (1999) identified as many as 30 different terms for what really amounts to one concept: “a physical space that provides public access to ICTs for educational, personal, social, and economic development” (Gomez *et al.* 1999).

Some justification, however, is given to the usage of different names by Proenza *et al.* (2001) who remark that a distinction is made among the following types of telecentres: commercial, franchise, university, school, NGO-sponsored, municipal, and multipurpose (government sponsored).

History

It is well noted that the telecentre movement officially started in Denmark in the 1980s where *telecottages* were set up in response to the increased marginalisation of rural communities (Ernberg 1996; Benjamin 2000; Roman & Colle 2002). From here, it spread to other European countries with a focus of giving more people access to ICTs.

According to Benjamin (2000), the next major development occurred when the International Telecommunication Unit (ITU) issued its report titled, *The Missing Link* (also known as the Maitland Report) which defined the term ‘Universal Access’. The report went on to note the growing disparity between the rich and poor countries of the world in terms of their access to ICTs. In order to address this disparity the report established the objective that “by the early part of the next century virtually the whole of

mankind should be brought within easy reach of a telephone” (ITU quoted in Benjamin 2000).

Thus, impetus was given to pursue the objective of ‘Universal Access’, a more realistic goal than ‘Universal Service’ which is defined as “a telephone in every home” (ITU quoted by Benjamin 2000). It didn’t take long for a number of international development agencies to adopt the idea of telecentres as the latest ‘magic bullet’ for development. Organisations which strongly supported the telecentre concept included the International Development Research Centre (IDRC) in Canada, various United Nations organisations such as UNESCO and the UNDP, the Economic Commission for Africa (ECA), the World Bank and the World Links Organization (Mayanja 2001). It is at this point that the language of ‘technopoly’ raises its ugly head in statements such as this one made by the World Bank (1998), “[telecentres are] a powerful engine of rural development and a preferred instrument in the fight against poverty.”

The preceding analysis on the *Potentials and Dangers of Technology in Development* should sound warning bells when terms such as “powerful engine of rural development” are used. This sort of language leads to top-down approaches because the “solution is the right one.” However, again and again the literature on development and ICTs for development shows that is not so much the ‘what’ that counts but rather the ‘how’ (Ellerman 2002; Heeks 2002).

It is hardly surprising then, that we are left with the current situation, where the literature on telecentres abounds with cases that have failed (see Robinson 1998; Gomez *et al.* 1999; Proenza *et al.* 2001; Benjamin 2001 and Mayanja 2001 among others), and contains only a few, often cited cases that have succeeded (Benjamin 2000).

A Contextual Overview of Telecentre Studies

The following section seeks to synthesise the studies that have been done in the telecentre arena, in order to place this dissertation in a context of existing literature. The table

below, while in no way comprehensive, provides a useful overview of some typical studies conducted in the telecentre arena.

Table 1. Outcomes of Typical Telecentre Studies

Author(s) / Year	Method	Key Outcomes / Findings
Robinson (1998)	Secondary data, personal experience. Socio-political analysis of two failed pilot projects in Mexico.	<ol style="list-style-type: none"> 1. Government did not support information diffusion to the broader society. 2. “[T]elecentres and what they represent will be created by an ongoing struggle of sorts, by innovative coalitions among old actors and new players cobbling together new cost effective agendas, business plans and social benefits in the evolving mosaic of the global digital revolution virtually underway.”
Gomez, R., Hunt, P. & Lamoureux, E. (1999)	Secondary data and literature from IDRC’s research efforts. Synthesis report of global research into telecentres.	<ol style="list-style-type: none"> 1. “[E]merging studies show that many of the claims being made about the potential of ICTs for development are not supported, and point to possible counter-productive effects.” 2. “At issue is not only the appropriateness of ICT application in the development context, and the effect on the political economy of specific cultures. There is also a general lack of recognition of the ‘development opportunity costs’ (i.e. attention, money, and other critical factors that are not applied to secure and develop other resources, such as water, food, land, shelter, skills, other types of media and communication, indigenous knowledge, and ultimately power) of investments in ICTs.”
Whyte (1999)	Secondary data, literature, personal experience. Attempt to develop standard evaluation methods for telecentres.	<ol style="list-style-type: none"> 1. The goal of this study was to design a common framework for the evaluation of the telecentre experience, including the formulation of standard indicators and tools. 2. “[I]t is important to evaluate the experience in community telecentres from the perspectives of the different stakeholders...at three levels: (1) at the local, community level; (2) at the national

		<p>level...and (3) at the international level, where public and private sector donors are becoming more interested in funding telecentre projects.”</p> <p>3. “Traditional evaluation models do not necessarily deal well with adaptive complex systems, which is what human communities and social information systems are.” Therefore a systems-based model is proposed.</p>
Mayanja (2001)	<p>Personal experience with “Multi-purpose Community Telecentres in African countries and selected documents on the subject.”</p> <p>Critical reflection on concepts of telecentre sustainability.</p>	<p>1. “[T]he staff and management of Community Telecentres must take full responsibility for making [sustainability] happen every day throughout the life of the Telecentres. It is not a kind of monster to look for at the end of each month or year.”</p> <p>2. “It will however still be necessary for some time to maintain subsidies and donor support for services that cannot be paid for fully by the community.”</p> <p>3. “Therefore, a typical Telecentre would be faced with sustainability questions on several dimensions including; sustainability of infrastructure, services and relevancy, human resources and finances.”</p>
Benjamin (2001)	<p>Secondary data, personal experience and workshop on USA (Universal Service Agency) telecentres. Collate quantitative data on successes and failures.</p>	<p>1. Of the 65 USA telecentres: 21 (32%) were not operating; 12 (18%) were operating without a phone; 2 (3%) were operating without any computers; and 30 (47%) had both phones and computer working.</p> <p>2. The reasons for failure: 4 burglary / theft; 4 technical problems; 4 managerial weakness; 4 financial problems; 3 community conflict; 1 fire; 1 repossessed.</p> <p>3. Overall, under a third of the centres appear to have a reasonable chance of sustainability.</p> <p>4. “There is a ‘Dig-it-all’ divide – a division between the hype of the technology and how it can be used by people in poverty. While we are learning how to establish centres in rural areas to get this technology out, we have not found how useful these technologies can be in supporting</p>

		<p>development.”</p> <p>5. The real question is how these technologies can increase the capacity and freedom of people to bring about their own development.</p>
<p>Proenza, F.J., Bastidas-Buch, R. & Montero, G. (2001)</p>	<p>Secondary data and personal experiences of centres in Latin America and the Caribbean. Produce design recommendations for future centres.</p>	<p>1. It is not essential that a telecentre be able to pay for itself so long as government is willing and able to shoulder part of its costs. It has been suggested that it is unnecessary for telecentres be self-sustaining if they are purposefully set up not for their own sake, but rather to trigger socioeconomic development based on the knowledge economy.</p> <p>2. Behind every successful telecentre – whatever its type – there is invariably a person - sometimes more than one – who is enthusiastic and personally committed to the success of the venture, acts with considerable independence and is intimately familiar with the locality and community in which the center operates, and is able to articulate the community’s needs and satisfy its demand for services.</p>
<p>Roman & Colle (2002)</p>	<p>Secondary data of case studies and reports “from Australia and South Africa to Hungary and Canada.” Produce ten themes for global telecentre sustainability.</p>	<p>1. Key focus on building awareness, broader benefits thereby creating income and sustainability.</p> <p>2. Importance of Government support is emphasised.</p> <p>3. Strong technoplist view: “[I]nitiatives targeting popular participation in the Information Society should consider planning vigorous campaigns to illustrate the benefits of information as an important resource for daily living...”</p>
<p>Dymond & Oestmann (2001)</p>	<p>Personal experience. Critical analysis of ICTs, poverty alleviation and universal access policies.</p>	<p>1. “[P]olicy makers should focus more on the support of small-scale and self-sustainable telecentre models. These should be ideally run by local entrepreneurs, rather than large-scale multipurpose telecentres which will never be replicated successfully on a broad scale.”</p> <p>2. There is a need for “special finance – such as a Universal Access Fund – to create ‘smart subsidies’.</p>

		They give kick-starts to service provision and ICT projects in areas and communities which either cannot be reached profitably by the market, or in which start-up finance would establish commercially viable or self-sustainable ICT businesses and projects.”
Benjamin, P., Tepani, N., Roberts, S. & Parkinson, S. (2003)	Email survey of 50 SADC (South African Development Community) telecentre initiatives.	<p>1. “This survey presents us with a picture of vibrant organisations creatively harnessing communication technology to address their own environment-specific problems and challenges.”</p> <p>2. The greatest problem identified by 48% of initiatives was funding. No other issue except for government policies accounted for more than 5% of respondents.</p> <p>3. Approximately 30% of respondents felt that equipment was worn or their technology was outdated.</p>

The first factor that becomes apparent from the table above is that very few studies have focused on the in-depth, qualitative issues relating to the implementation of telecentres. There appears to be a significant drive towards synthesising the results of many case studies so that ‘best practices’ can be distilled and applied (with sensitivity towards contextual factors) in future projects. The approaches used in the studies are overwhelmingly positivist in nature and fail to provide a proper understanding of the socio-technical nature of the problem.

Secondly, very few studies really question the suitability of ICTs in development situations. Although Gomez *et al.* (1999) mention the fact that ICTs can actually be detrimental to development projects, this view seems to be outside of mainstream thought, despite the significant number of failures pointed out by authors such as Heeks (2002). The dominating perception seems to be that we “just have to learn to implement the centres better.”

Lastly, few of the studies are undertaken independently. They are usually funded by large international agencies (such as the ITU, or the IDRC) who are seeking to promote their own specific agendas. This often influences the approach and interpretations of the researchers who are employed by the agencies.

The Current Situation in South Africa

Peter Benjamin from Wits University, South Africa has done a lot of work evaluating the successes and failures of telecentres in South Africa. Some of the key lessons that have been learnt and reported by Benjamin & Dahms (1999: 12-13) are summarised below to provide a richer understanding of the current state of telecentres in South Africa.

- Several people have pointed out the anomaly in telecentres – there are a few very well funded big projects that are struggling, while there are several thousand unsupported small micro-enterprises that are flourishing, being run by entrepreneurs (Benjamin 2000). Following on from this it is noted that, “telecentres are not good at providing universal access to telephony. Universal access to telephony is an important goal, and is better met by payphones or micro enterprise Public Call Offices”;
- In South Africa telecentres can be seen as a form of technology transfer from urban areas to disadvantaged areas (both in townships and rural areas). There definitely is a 'technology push' and not a passive 'diffusion' of the idea – the government has a programme of encouraging telecentres, and many agencies, international donors, NGOs and businesses are actively supporting many different telecentres projects;
- There is great pressure on the managers of telecentres: they are effectively in charge of an experiment which is not certain to be successful, they are expected to generate their own funds for at least running costs, while also delivering a social service. How to make the delivery of social services profitable is exactly the problem that states have been attempting to deal with in the last decade of neo-liberalism. Pushing this onto telecentre managers does not solve the problem of governance;
- Telecentres have been seen as a way of providing many people with information literacy skills (such as computer use, web page design, programmers, network engineers and technicians) to develop the economy. Telecentres can partly serve this training role, but not through full individual fees (people will not pay in hope of jobs that do not yet exist). Telecentres will need to be subsidised (by donor, government or potential employer) to do this;
- In South Africa, most telecentres have been 'turn key' projects, with the design and equipment decided upon in Johannesburg or Pretoria and then set up in the chosen site. Mostly the telecentres can be seen as technology transfer at the Application level. Training is provided in how to operate

and repair the system, but very little in how to design and develop the technology. There usually is little choice of what kind of telecentres to have. In most cases local organisations were not involved in any design of their telecentres - it was a 'box that appeared from the sky';

- Most of those involved in telecentres activity frequently stress that telecentres are tools and not ends in themselves. The needs of the community come first, and the telecentres then should work to meet those. However, in practice only those needs that can be addressed by a telecentre are considered. The 'means' are established before the 'ends' are decided. The authors know of no community that was genuinely given the choice of a telecentre or some other project (such as a housing, water, agriculture, health or small business promotion). The choice is usually closer to take-it-or-leave-it. One of the reasons for this is that very few agencies or governments are sufficiently integrated to be able to respond genuinely to the priorities that a community decides upon;
- We do not yet know how to provide access to advanced Information and Communication Technologies on a large scale in countries of the South. Accepting this means the focus should be on experiments and learning, not on mass rollout.

While the preceding list shows that many valuable lessons have been learnt, it also highlights how little we really know about the role of telecentres, and more broadly, the role of ICTs in development. It is clear, for a start, that while Peter Benjamin's work on telecentres in South Africa is commendable there is a serious need for more researchers to become active in this area.

The Champion

To conclude this section on telecentres, we return to the concept of a 'champion' or 'broker' that has been mentioned in preceding sections. Two pertinent quotes show the importance of this person when it comes to telecentres:

Finding a 'local champion' is the most important success factor for setting up a new telecentre. (Murray quoted in Benjamin 2000)

Behind every successful telecentre – whatever its type – there is invariably a person – sometimes more than one – who is enthusiastic and personally committed to the success of the venture, acts with considerable independence and is intimately familiar with the locality and community in which the center operates, and is able to articulate the community's needs and satisfy its demand for services. (Proenza *et al.* 2001)

Thus, once again, we see the importance of the middle-out approach. However, despite the acknowledgement of the importance of this ‘middle’ person, there is still a significant lack of understanding as to how this actor appears or can be made to appear. Successful projects seem to have been fortunate enough to have this person on board from the start – but what if there is no local ‘champion’ involved in a project? Can someone be trained to fulfill this role? The concept of the middle-out approach requires further investigation and research if it is to become more than a lucky coincidence in successful projects.

2.3. SUMMARY OF THE LITERATURE

This literature review has provided a broad summary of two fields: that of development and that of ICT for development. A key similarity in the evolutionary path of these two fields was highlighted throughout the chapter: both fields have progressed from early top-down technocratic approaches of implementation to more bottom-up people-centred approaches. A further element of this evolution was the critical role of the innovator / champion / broker / social entrepreneur who could be seen to be using a middle-out approach to development. However, these evolutionary paths and the subsequent approaches although identifiable, often lacked deeper understanding.

In this regard, crucial areas that were exposed as requiring further research were:

- The role that ICTs play in development and particularly, the role that telecentres play in the development of rural communities (supported by Benjamin 2001; Ernberg 1996; and Whyte 1999);
- “The need to examine first and foremost the socio-economic and cultural dimensions, as well as the enabling local environments that facilitate or mitigate against successful application and use of ICTs” (Morales-Gomez & Melesse 1998);
- “The mutual adaptation process of the information technology and the social / organisational setting in which the technology is being implemented” (Montealegre 1999);

- From Table 1 it is apparent that significant work is required to produce theoretical frameworks which can be applied to studies of an interpretive, socio-technical nature.
- There is also a need for practical methods of ensuring that buzzwords such as *empowerment*, *ownership* and *participation* become real concepts deeply affecting implementation methods rather than just reintroducing previously used top-down methods with better packaging (Chambers 2001; Ribeiro 2002).
- The emergence and the role of the local 'champion' in managing a middle-out approach to implementation needs to be understood better. At the moment projects lucky enough to have such an actor are merely the result of fortunate circumstances rather than a planned strategy for success.

The table below summarises the three implementation approaches by providing a description of each, identifying the 'driver' of the approach, and noting the attitudes that can be expected from participants under each approach.

Table 2. Summary of Implementation Approaches

Approach	Description	Driver	Attitude of Participants
Top-down	A deterministic approach where technology is seen as the 'solution' to any development problem. The focus is more on the 'what' than the 'how' of development.	Funder / Executive	Passive
Bottom-up	A socio-technical approach where projects arise from the actual needs of the participants. The focus is more on the 'how' of development.	Participants	Active
Middle-out	A balancing approach where a key actor attempts to reconcile the interests of the various stakeholders involved in a project.	Project Manager > Champion	Passive > Active

As a final summary of the essence of the literature reviewed, these two passages are included:

[P]ostwar development studies have been dominated by 'grand theories.' This has generated increasing tension between the desire to formulate universally valid principles and formal models, and the need to understand the variety of actual experiences and potential alternatives of Third World development (...) [I]t is impossible to draw conclusions from the experiences of particular societies at particular times and expect these findings to be necessarily valid for other cases. Development theories and strategies must come to grips with the many pluralisms of societies that produce important variations across both time and space (Brohman 1996: 324/5).

This world is tired of grand solutions. It is tired of people that know exactly what has to be done. It is fed up with people walking around with a briefcase full of solutions looking for the problems that fit those solutions. I strongly believe that we should start respecting the capacity of reflection and the power of silence a bit more (Max-Neef 1991: 110).

2.4. AREA TO BE EXPLORED

Following from the summary above and the areas that were uncovered as requiring further research; this section outlines the research objectives for the rest of this dissertation. The research approach to be followed as explained in the following chapter is exploratory in nature, following the interpretive paradigm. Thus, there can be no definite statements of hypotheses as would be the case if this was a positivistic study. However, the broad objectives of the dissertation can be outlined as follows:

1. To explore the role of ICTs in a rural development situation.
2. To explore the implementation issues of an MPCC in a rural development situation.
3. To demonstrate the value of applying a framework that combines interpretivism, hermeneutics and actor-network theory to a case study of a socio-technical system.

Finally, it is noted that these three objectives will be explored through an in-depth case study of a single telecentre in a rural area outside of Stellenbosch. Thus, it is not an objective of this study to draw out generalisations which can be applied predictably to other situations in different contexts. However, it is believed that an in-depth exploration of the single case could provide valuable lessons and insights towards gaining a deeper understanding of the two objectives outlined above.

CHAPTER THREE

3. RESEARCH APPROACH

This chapter outlines the research approach followed in this study. The approach is interpretivist and socio-technical in nature. It is extended in practical application by concepts from hermeneutics and actor-network theory as illustrated below. The final part of the chapter explores issues relating to actual data collection and limitations to the research.

3.1. CONTEXT OF APPROACH

The aim of this dissertation is to explore concepts which are embedded in social contexts. In order to do this successfully, the approach that “our knowledge of reality is socially constructed” (Klein & Myers 1999) and it is not possible to accurately predict behaviours or outcomes of social processes by following any natural laws, has been adopted in this study. This is consistent with the outcomes of the literature review conducted in the previous chapter.

3.2. RESEARCH THEME

The theme of the dissertation is to investigate the role that ICTs play in development. This will be done through an in-depth analysis of a single rural telecentre in the Western Cape. This theme appears to be of great interest in recent literature as there is still no satisfactory understanding of the issues surrounding the implementation of ICTs and their useful application in development situations.

3.3. RESEARCH OBJECTIVES

The previous chapter identified areas where research and understanding was lacking. The objectives of this study were drawn from these identified weak areas. They are as follows:

1. To explore the role of ICTs in a rural development situation.

2. To explore the implementation issues of an MPCC in a rural development situation.
3. To demonstrate the value of applying a framework that combines interpretivism, hermeneutics and actor-network theory to a case study of a socio-technical system.

3.4. RESEARCH PARADIGM

As is clear from the definition above, this dissertation falls squarely into the realm of an interpretive study. The principle of hermeneutics and the hermeneutic spiral has been used to inform the way in which the research was conducted and analysed. In addition to this the seven principles (see Appendix 1) outlined by Klein & Myers (1999) were used to continuously reflect, self-evaluate and rethink the concepts being explored so that new insights could emerge at any stage of the research process. These were documented in field notes.

3.5. THEORETICAL PERSPECTIVES

Actor-network theory (ANT) has been adopted as a foundational model to inform and shape the discussion section. ANT is particularly adept at analysing relationships between humans and non-humans, thus it is particularly suited to the objectives of this study. For example, it should provide an excellent framework for analysing the mutual interaction between ICTs and the participants at the centre. The strength of ANT is its ability to handle complex social imbroglios and make sense of these situations (Nandhakumar & Vidgen 2001). It also provides a useful basis for analysing implementation issues around the due process model.

3.6. METHOD

Montealegre (1999) notes that, “the need exists for more case studies, especially of the explanatory type...that can add to our understanding and future investigations of how IT

interacts with social / organisational settings, and with what consequences.” Thus, a case study approach is a suitable, even desirable method for this type of study.

Accordingly, a case study approach was used to collect data for this study. Visits were made to the research site on a regular basis in order to conduct semi-structured interviews with the relevant actors and to gain information. During these visits, time was spent interacting with the actors involved in the study on an informal basis and field notes were taken to record insights gained during this process. Triangulation of sources was sought where possible by collecting a variety of secondary data artifacts, such as reports, business plans, and minutes of meetings.

3.7. SITE SELECTION

The site under study was located in a rural community called Pniel, situated in the Dwars River Valley of the Western Cape. The site was chosen, firstly, because it had all the characteristics of a typical government funded telecentre. It was in an economically disadvantaged rural area. In general the people lacked skills and the capacity to create employment opportunities was limited.

Furthermore, the site was selected because the implementation of the telecentre had already occurred a year ago, thus giving the perfect opportunity to learn lessons from the post-implementation results. This was further strengthened by the fact that the implementation had been conducted by an experienced telecentre and community development consultant who was familiar with current development practices and methodologies.

In addition, the site was within a reasonable traveling distance (70 kilometres) of the researcher's residence in Cape Town. This facilitated regular visits to the site which would have otherwise not been possible.

Finally, permission to use the site as a case study was gained from the project manager of the centre as well as the local municipal authorities. The participants interviewed were selected according to availability at the time that the study took place. Most of the participants at the centre had a secondary level education qualification and very limited previous experience with computers.

3.8. DATA COLLECTION

Data collection was of a qualitative nature in keeping with the general aim of the study to gain a deeper understanding of the social processes involved in ICTs during development. Due to resource and time constraints the author was the sole interviewer and data capturer involved in this study. However, the principle of multiple interpretations and the principle of suspicion (Klein & Myers 1999: Appendix 1) were applied repeatedly to ensure awareness of possible alternative interpretations of data, and to search for biases and distortions which could enter the data.

The interviews were conducted in three stages in order to allow for reflection and learning to take place continuously during the study.

Before the interviews took place the researcher devoted time to becoming familiar with the research setting. Furthermore, participants were introduced to the researcher from the start of the study so that a certain *rapport* could be built up before the interviews took place. Specifically, it was important that the participants did not feel threatened by the researcher and that a certain level of trust was obtained. During this time the researcher also took time to examine various background documents in order to prepare for the first round of interviews. Continuous, careful consideration was given to the principle of interaction between researcher and subjects (see Appendix 1).

The first stage of interviews focused on the actual participants involved in the telecentre. From this stage, themes were distilled which informed the second stage of interviews involving local municipal officials. This stage in turn, informed the third and final stage

involving the implementer, town's municipal official and manager of the centre. The last stage produced valuable insights because it was richly informed by previous work and also because the actors being interviewed were all active participants in the implementation process.

Throughout the three stages of interviews a core set of open questions was used that were based on the emergent themes from the literature review, aspects of actor-network theory, and human scale development. A sample of these questions is provided in Appendix 2.

3.9. DATA INTEGRITY ISSUES

All interviews were fully transcribed from audio tapes made of the sessions. These were assisted by extensive notes that were taken during the interview process. These transcriptions were then used as the basis for the data analysis.

A problem that was experienced was that two of the interviewees were not comfortable answering questions in English – they preferred their home language which was Afrikaans. These interviews were translated by the author during the transcription process. The author is fluent in Afrikaans and translated the interviews with ease; however, it is possible that some of the nuances of the interview could have been lost in the process. There is also a possibility of a certain amount of bias entering the translations, however, this was counteracted by consciously working to translate faithfully exactly what was said and by remaining critically aware of the potential for bias throughout the entire process of translation.

The process could have been improved in its quality if a second researcher was involved to act as a 'watcher' or observer of the processes followed. Unfortunately, this was not possible due to practical resource constraints.

3.10. LIMITATIONS

Firstly, the study was conducted as a once-off review at a specific point in time. Deeper insight might have been gained if the study had included more longitudinal aspects. However, this was not practical in terms of the time available for a Masters Dissertation.

Secondly, as has already been noted, the fact that the author was the sole researcher could cast some doubt on data integrity issues; however it is believed that the process of being critically reflective throughout, somewhat lessened the impact of this limitation.

Lastly, it might be argued that the study could have been improved by combining qualitative and quantitative data to create a more reliable set of data to work from. Once again, capacity constraints are the main factor here. If more researchers were involved in the study this would have been a viable option.

3.11. CONCLUSION

This chapter attempted to outline the theoretical approach and data collection method for this study. This is especially important for exploratory types of investigation (Heeks 2002 and Montealegre 1999). By being explicit about the paradigm, method and theoretical perspectives present as well as the underlying assumptions of the study, a reliable framework is created within which concepts and objectives can be explored.

CHAPTER FOUR

4. ANALYSIS (OR A DESCRIPTION OF THE PARTS)

This chapter analyses the data collected and breaks the issues up into emergent themes. These themes were analysed individually and selected quotes were used from the data to gain an understanding of each theme. This chapter then forms the basis of the next chapter, the discussion.

The themes and discussion aim to provide a deeper understanding of the three objectives identified from the literature review:

1. To explore the role of ICTs in a rural development situation.
2. To explore the implementation issues of an MPCC in a rural development situation.
3. To demonstrate the value of applying a framework that combines interpretivism, hermeneutics and actor-network theory to a case study of a socio-technical system.

4.1. ANALYSIS METHODS

4.1.1. Hermeneutic Spiral

Klein & Myers (1999) present an excellent guide on how to conduct interpretive case studies in information systems. They recommended hermeneutics as a useful form of interpretivist research. The Hermeneutic Spiral can be seen as the overarching principle of hermeneutic interpretivism where:

The movement of understanding is constantly from the whole to the part and back to the whole. Our task is to extend in concentric circles the unity of the understood meaning. The harmony of all the details with the whole is the criterion of correct understanding. The failure to achieve this harmony means that understanding has failed (Gadamer 1976: 117).

This principle, as outlined in the previous chapter forms the basis of the analysis of the data. The interviews, as well as the secondary data sources, are continuously examined

and analysed firstly as separate documents that make sense on their own; and then secondly with respect to how they relate to the other data and the study as a whole.

Practically this is done by producing diagrams of the important issues contained in each piece of data. These diagrams are then consolidated into summary diagrams which represent groups of related data. For instance, the first round of interviews (with the centre participants) is treated as a single grouping of related data artifacts which produce a single summary diagram. Finally, a high-level diagram of the key emergent themes is produced. Throughout this process, an approach of continuous reflection was adopted and the hermeneutic spiral was constantly used to assist the process of learning and analysis.

4.1.2. Actor-Network Theory

Actor-Network Theory (ANT) is used as the theoretical basis for the discussion section in the next chapter. As mentioned in Chapter 3, the strength of ANT is in its ability to describe complex social imbroglios and make sense of these situations (Nandhakumar & Vidgen 2001). ANT is covered in more detail in Chapter 5.

4.1.3. An Outline of the Process

After a brief reflection on the context of the study, the analysis section takes its content from the high-level diagram of emergent themes. Some of these themes are illustrated by specific quotes from the data sources. This further reinforces the principle of the hermeneutic spiral.

The discussion section follows in the next chapter. Chapter five seeks to explore the study as a whole by integrating the themes from this chapter into an actor-network theory description of the study.

4.2. ANALYSIS

4.2.1. A Brief Contextual Overview of the Study

In order to place the emergent themes within a context, the following section provides a brief overview of the case under study: the implementation of a Multi-Purpose Community Centre (MPCC) in the Dwars River Valley (DRV) of the Western Cape of South Africa. The valley is situated in a picturesque mountainous area traditionally known for its wine farms. There are a few large commercial wine farms in the valley, but the majority of the population lives close to the poverty line with high levels of unemployment present.

An MPCC is a specific type of telecentre, or “physical space that provides public access to ICTs for educational, personal, social, and economic development” (Gomez *et al.* 1999). It is difficult to find any consistency in the definitions of the terms used to describe different types of telecentres (see Colle & Roman 1999). For our purposes we will define an MPCC as a “telecentre which has a political motivation to aid in the upliftment of a disadvantaged group.”

The DRV is a name which only came into existence recently in 2000, when the six communities in the valley, were united as a result of smaller local municipalities being absorbed into the overall Stellenbosch Municipality. Thus, six historically distinct communities have recently been grouped together under one municipal area within the valley.

The MPCC under study, the Dwars River Valley MPCC (DRV MPCC), was implemented in 2002 and 2003, after a lengthy implementation process. The process started in 1998, when the *dominant* community within the DRV, Pniel, applied for government funds to start a Youth Centre. When the funds were approved in 2001, the amalgamation of the valley had already taken place, and the concept of the youth centre had evolved into the concept of an MPCC. Thus, what was originally planned to be the Pniel Youth Centre eventually became the DRV MPCC. The DRV MPCC was

implemented with the goal of providing upliftment to the six communities of Kylemore, Johannesdal, Pniel, Lanquedoc, Banghoek, and Groot Drakenstein.

A project manager, with extensive experience in MPCCs, was brought in to manage the implementation process. The implementation was funded by two governmental funds: the Local Economic Development (LED) fund and the Human Settlement and Redevelopment (HSRP) fund.

The MPCC consisted of 10 computers, a printer, and a single dial-up internet connection. Software on the computers included Windows, the Microsoft Office suite, and Microsoft Project. The centre was housed within an existing municipal building in Pniel, also the most central community in the valley, with plans to build a new, separate building by early 2004.

The MPCC business plan was based on a replication model produced by the project manager during pilot projects done in conjunction with the CSIR. The model is based on four core components, supported by ICT, as illustrated in Figure 3 below.

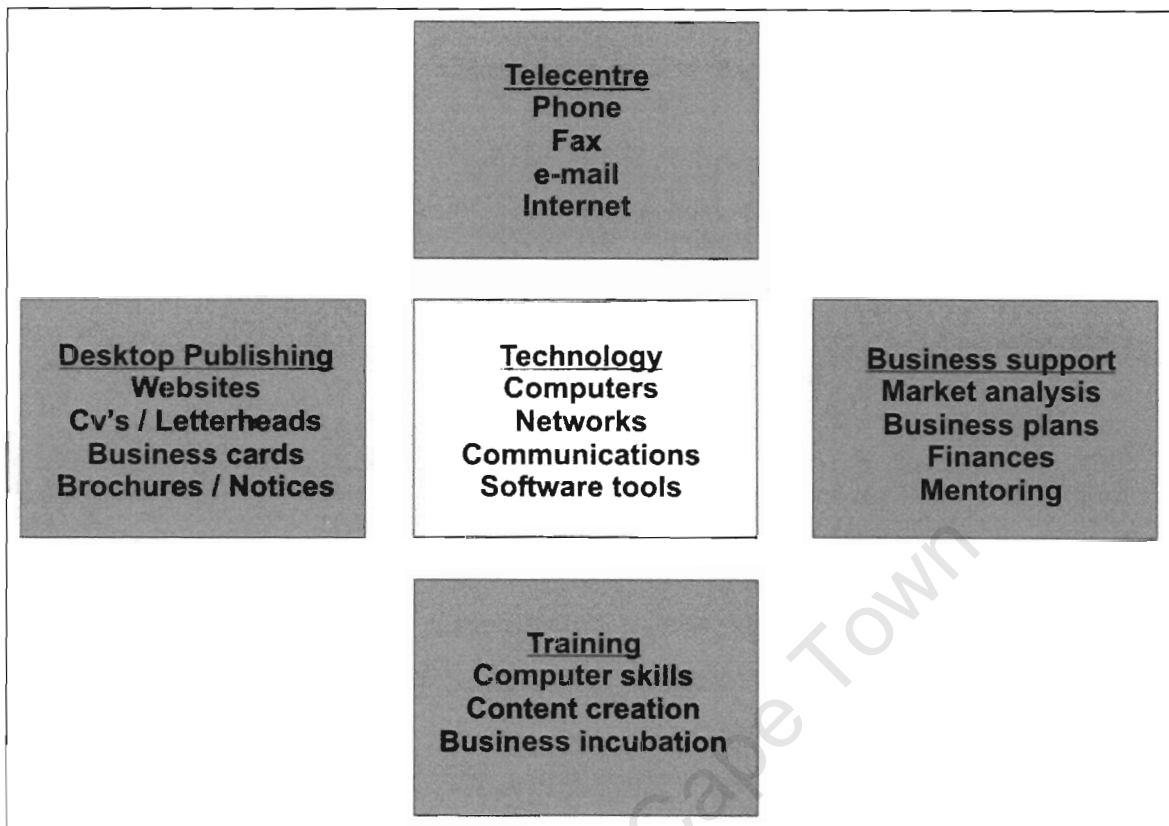


Figure 3: The Components of the MPCC Model
 (Source: Project Management Documentation)

The explicit aim of the MPCC when it was implemented was to foster economic development within the valley by creating spin-off projects that could use the MPCC infrastructure but would be separate entrepreneurial ventures. These ventures would contribute to the sustainability of the MPCC by paying for the services they required such as business support, desktop publishing (DTP) and so forth. The MPCC would also serve as a centre for individuals who needed training, telephony and other services.

The MPCC business plan was built around the centre eventually becoming a self-sustainable entity with the help of initial start-up funding from government. It was estimated that the centre itself could provide enough of an income to support three full-time employees.

In 2002, a committee of twelve community representatives was elected to make decisions regarding the MPCC and its implementation process. The committee was ultimately responsible for the project and consisted of two representatives from each of the six communities.

After an extensive consultation process supervised by the project manager, the committee decided on four focus areas for the valley: tourism, water, housing and agriculture. The tourism project was the most successful resulting in a number of spin-off projects, including a successful business removing alien trees from the river bank.

Currently, the MPCC is in a state of limbo. Originally, the HSRP fund handed over a cheque (well, a symbolic one) amidst much fanfare and publicity to the value of R 1,4 million. This amount was to be used to “create municipal assets”. The committee thought that they could best use the money by creating assets relating to the tourism project, such as mountain huts, fishing spots on the river, and picnic areas. The HSRP however, did not agree – they wanted more tangible assets such as buildings. Eventually, as a result of the disagreement the funding was withdrawn (except for R 560,000 to build a new MPCC building) and overnight the project was stranded. The new building is to be completed within a few months, but the projects and indeed the momentum for the entire initiative seems to have been lost.

In light of this brief overview, the following section attempts to synthesise the emergent themes from the data collected with regards to the implementation of the MPCC.

4.2.2. Emergent Themes

4.2.2.1. Community Dynamics: The Power Game

The most consistent theme which emerged from all three rounds of interviews was the importance of understanding and handling community dynamics.

Firstly, there was an obvious rivalry between the dominant community of the valley, Pniel, and the most isolated, rural community, Groot Drakenstein. This rivalry was aggravated by various factors, including the perception that Pniel was always the beneficiary of upliftment projects. Pniel was already home to the municipal buildings, the post office, the library and the most affluent inhabitants of the valley. So when the MPCC was also situated there, it was understandable that the other communities felt somewhat aggrieved. However, Pniel is situated in the middle of the valley, on the main road making it the most accessible area and therefore the logical place to put an MPCC that is meant to serve the whole valley. As the project manager commented:

Now the problem that you have is that there is one prominent community, Pniel. It's on the main road, it's where the municipal offices are, it's where the more affluent people of the valley live, so they tend to look down their noses at the rest of the valley, make discouraging comments about them, according to where they live. And then the other communities comment on the 'uppitiness' of the people of Pniel.

As a result of this division between the communities, the MPCC ran into a number of problems. Many of the participants commented on people 'boycotting' the centre simply because it was located in Pniel and not in their own community. There is a perception as one of the participants noted that, "Pniel's people don't let people feel at home."

This antagonism towards the centre being located in Pniel led to a number of other difficulties, most notably when it came to community participation in decision making. The project manager illustrates the difficulty with this example:

We went to Groot Drakenstein [to set up a meeting to discuss creating a community trust] and they couldn't give us a date. When they gave us a date, they couldn't give us a venue. So we said well come to Pniel – no they're not coming to Pniel. In the end we said this meeting is for you, we'll be in Pniel. When we got to Pniel, they had shifted it to a venue in Groot Drakenstein, to the barracks there. So we went to the barracks, and then it wasn't our meeting anymore, it was their meeting – an integrated development planning meeting, and we could add our item to the agenda. And it turned into a big argument on the IDP issues, so much so that we never even got into a discussion on the trust.

As a result of these difficulties which were caused by a small minority of people in the Groot Drakenstein community the whole process was almost “derailed”.

It’s hardly surprising then that when asked the question, “How would you go about implementing an MPCC if you were given the job of project manager?” almost all respondents said that community buy-in was the most essential aspect.

Municipal officials, who were responsible for establishing the initial committee, were also unanimous that “community dynamics” was the most difficult aspect when it came to implementing the MPCC. One official went as far as saying, “I can honestly tell you that community – that’s why they call it the Dwars River Valley – they is a bit ‘dwars’. [T]hey try to be difficult and one can say stubborn or arrogant in some ways. (*sic*)”

In addition to these “community dynamics”, there were also other more subtle issues such as mistrust and suspicion that contributed to the community being “wary” of using the MPCC. One suspicious participant commented,

They don’t seem to be using the money for any of the projects but they say there is no money. So the question is, ‘What happened to the money?’ and they won’t tell us...We have asked for the financial statements to be made available to the community but the answer we always get is: ‘Where have you heard of a company making its financial statements available to the public?’

This comment was made despite the repeated claims from a number of centre staff and municipal officials that, “we like to get the information out to the community and so we tell them what is going on – our books are open.”

It is difficult to make sense of these contradictory statements. One explanation is that these contradictions are the result of contrasting perspectives of the same set of facts. Another explanation is simpler: someone is lying. What is clear though is that when it comes to community dynamics there is a definite power struggle between competing interests often resulting in subterfuge and hidden agendas. When these factors are not properly taken into account, events occurring in the social realm very often don’t make sense.

4.2.2.2. *The MPCC as a Vehicle for Economic Development*

From the interviews there was a distinct spectrum of understanding of MPCCs and their role in development between the different groups of actors.

The project manager, as could be expected, was very clear on how the MPCC operated and its role in enabling economic development in the valley. The four components of the MPCC, especially, the training and business advisory components strengthened by adding project management training, would build capacity for spin-off projects which would create economic development within the valley. The MPCC would be self-sustainable and would be able to support three full-time employees on its income.

The perspective of municipal employees with regard to MPCCs was more political in nature. “President Thabo Mbeki himself actually started this initiative of MPCCs way back in 1997,” was one comment substantiating the legitimacy of using MPCCs in communities.

Municipal employees also had a more flexible outlook as to what exactly an MPCC was supposed to be. “The beauty of the MPCC is that it’s a vehicle for the community to drive up to whatever need they require from the municipality.” However, another municipal employee was more displeased by the lack of clarity:

[E]verybody is talking about Multi-Purpose Community Centres, but we’re not sure actually what it should look like, or how the management and operations should work. And I think that’s where [the project manager] actually played a leading role. Because it’s easy to erect a building, but it’s what you do inside the building that counts. So in my opinion I think the word, MPCC is actually a generic term because no-one really knows what an MPCC is. Should it house a Post Office? Is it a payment point for pensioners? Or should it only involve a community centre that is used for different projects in the community?

Overall local municipal employees had a sense that MPCCs had some vague relationship to economic development but the dominant reason for implementing them was political: “It’s being pushed by National and Provincial Government.”

Participants had varying perspectives on what the MPCC was meant to achieve. Some saw it as a means to get cheap (or free) computer training and land a job. Others however, were more philosophical,

[B]efore the MPCC was here, we didn't take notice of anything around us...Now, my eyes have opened. I see quite a lot of things, a lot of opportunities...to explore. Because here was always a river but we didn't take notice of the river. Now we see that we can use it for fishing [as a tourist attraction].

Thus, to some participants the MPCC brought a new perspective, an awareness of entrepreneurial opportunities, that they did not previously possess.

Finally, there was an almost unanimous optimism that the new building would result in increased success for the MPCC. As one participant enthused:

[When we move into the new building,] we will be an MPCC alive! We will have an Internet café. The computer training will be separate and then people can come in from the morning to the afternoon and whenever it suits them. Then we will be separate from the operation – the MPCC team. And we can link better with the tourism team. And we will try to make it then a proper MPCC that everyone will use.

It is important to note that the current location in the municipal building has a number of drawbacks, including limited internet lines, and poor visibility from the outside. The new building (funded by the HSRP) would be on the main road, making it far more visible. It would also have an ISDN line, making internet usage more economical. Even so, most actors saw the new building as the start of the 'proper' and successful MPCC. This implies rather optimistically that all the current problems could somehow be blamed on the drawbacks of the current premises.

4.2.2.3. Computers Essential for Development

When asked about the role computers played in their projects the participants generally focused on the artifacts that could be generated by computers. A typical statement would be, "to be able to...type stuff up on the computer such as business plans and CV's."

Municipal employees saw computers as a completely natural advance to be made on the road of development. Their outlook was somewhat similar to that of a technopolist in that computers are seen as an inevitable progression, that should occur sooner rather than later. There is the perception of an urgent need to make up the 'backlog' as illustrated in this quote from an official:

[I]f you look at industry, if you look at the business world outside, everyone wants you to work on a computer. And that's the way its going unfortunately and there is a big backlog of people not having access to [computers] because of funds and economic problems that they have.

There appears to be a strong movement from the community and the municipality towards pursuing computers as an end in themselves. Another municipal official noted that,

[W]ithin a decade or so, people will mainly focus on computers for doing their work, so technology will play a big part. It's good that you get people involved with computers right from the start and get them acquainted with computers.

This is not surprising considering the big push from the national and provincial government level to involve computers in development projects. As it was pointed out in Chapter 2, it is difficult to dispute the potential that computers could play a significant part in development. However, it is very dangerous pursuing technology as an end in itself, without correctly understanding its effects.

While the participants and municipal officials tended to focus on the artifacts that could be generated by computers, the project manager was more interested in the way that computers got people to think and work in a specific way.

Most of the proposals that we see at community level, are hand-written and they don't deal with the financial aspects properly. You get rough statements of 'We think we need R 200,000' but there is no budget or anything to justify this. With the computers the people were trained to do this properly... [I]t wasn't the case of technology looking for a cause; it was a case of putting technology in there because we need it. It wasn't a direct or indirect objective to get computers

into the community, it was a given that these objectives are only possible with computer technology.

For the project manager then, computers enabled people to think in a more logical, structured manner. Computers are not an end in themselves, but rather a means to aid people to, for example, “deal with financial aspects properly.” The project manager was less focused on the computers producing artifacts and more focused on the processes encouraged by using computers. Put another way, it’s not the project plan that is essential but rather the planning of the project.

4.2.2.4. The Internet: Source of all Knowledge

When asked about the internet, participants were very quick to talk about the “ability to learn” about things on the internet. A typical sequence of questions went as follows:

- Do you use the internet?
- No.
- Would you like to?
- Yes I would like to.
- What would you use it for?
- To learn more about project management because you can do that on the internet.

There seems to be a lack of understanding as to what exactly the internet can and can’t do for people in development situations. There is an over-optimistic attitude that ‘anything you need to know’ can be found on the internet.

The project manager sums up the situation nicely:

People are very glib about what the internet can do for communities, but their perspective is all wrong. You know ‘you can get on the internet and learn’ is a glib statement that a lot of people make. You have to learn first to be able to learn on the internet if at all.... [T]he people in the Dwars River area used email extensively... [T]hey also went into electronic banking quickly, and made payments on a monthly basis to the participants of the projects... Initially, they also used the internet extensively, until they saw the phone bill that came with it, so now they’ve cut down a lot. We taught them to create websites, so they were looking at other websites to get an idea.

Perhaps it is a bit premature to draw any conclusions regarding the use of the internet in the DRV MPCC because the internet has not been easily accessible with only the one line available. This lack of infrastructure has made it unfeasible to use the Internet extensively. However, there are areas such as email and electronic banking which seem to have been taken up quickly and demonstrate that the internet can be used effectively by participants. It is not yet clear if the internet will be very useful as a tool for learning, particularly given the lack of relevant local content available.

4.2.2.5. Funding is the Trigger

Funding was another crucial theme that emerged consistently throughout the interviews. The municipal officials were very much of the opinion that the funding should be once-off to get the project started:

There is a perception of people on the ground level that it is one of the functions of provincial and national government to plough money into projects like this. I see that in a different light. The thing must be sustainable – absolutely – the money that comes from provincial and national government, must be a trigger type of funding...you can't forever pump money into a bottomless pit.

One of the main problems with the funding from the participant's point of view was that R 1,4 million worth of funding was promised to the project by the government HSRP fund. The bulk of this money was later withdrawn leaving only R 560,000 to build the new MPCC building. The project manager described the situation as follows:

Initially, it was very nice, we could jump, in use all the skills, everybody got busy on the development of the valley and got paid out of the funds. We did a hundred and ten different things, all very well, the project management skills came to the fore, the PC skills came out, the business planning skills came out, and everything worked very well, until there was a hiccup with the funding... Overnight we had no funding for the project; we had no means to pay the people who were active in the project. Massive expectations had been created in the process, and we had to motivate why people had to hang on when all of a sudden they weren't getting paid. With the result that most of the people with other obligations went and found other jobs. So we ended up with 6 people remaining, hanging in.

A number of valid reasons were given for the withdrawal of the funding. Firstly, the funding was given on the basis of an older proposal and the scope of the project had changed since that proposal. Secondly, the HSRP fund is set up specifically to fund infrastructure projects where tangible municipal assets are created. In the case of the DRV, the money was being used on more intangible aspects, the so-called 'soft' issues rather than 'hard' projects. However, the project manager was quick to point out that,

It's nobody's fault, government was fully entitled to say that you've changed the scope and we're taking away the funding...problems started before the funding became an issue...the withdrawal of the funding just magnified all of the problems that were already there and were being revealed before the funding issue came.

Thus, we see that although the sudden withdrawal of funding did seem to interrupt the momentum of the project, it can't be blamed as the main reason for the difficulties encountered. The following two themes emerged mainly from the perspective of the project manager, but seem to add significantly to our understanding of the process of implementing ICTs in development projects.

4.2.2.6. A Confusion of Roles

Throughout the project there was continuous uncertainty with regard to responsibilities and roles. There was never a centre manager and so this role was automatically filled by the chairperson of the committee. The municipality already had an official who worked in the valley and his job description was extended to be an 'overseer' of the project. However, none of these people got paid for what they were doing, because, no-one knew who was ultimately responsible. According to one municipal official:

The one thing that we are not sure of is – and province couldn't give us guidance, was the payment of such a centre manager. Would they fund it or would it be the responsibility of the municipality? And they made it clear that it was our responsibility. You see it's a new post and if it's not on your organogram you can't just go and create a new post.

And so the crucial position of centre manager went unfilled. However, the problem went beyond finding funding to pay someone to fill this position – there didn't seem to be any local person capable of filling the position.

And so a lot of responsibility suddenly shifted to the project manager. Although he came from outside the community, he was soon seen as an essential part of the project. There was enormous respect for him from most of the participants as well as from the municipal officials. He was often described as the ‘expert’ but was also seen as a friend of the community. As one participant noted, “[He] can get in his car now and drive down to my sister’s house and he will be welcome.” The following description of his role comes from a municipal employee:

I think [the project manager] was the driver of this whole thing. I’ll tell you why... [H]e saw the potential of the Dwars River Valley itself and he’s been preaching that to the different sides, to the tourism side, to the economic development side, the business sphere, and a lot of things. But a part from that, [he] has a passion for the valley, and that is a driving force in itself... [H]e’s the type of guy that you can go a couple of miles with... [H]e’s committed, apart from you know he gets his salary from here, but apart from that, you know he’s here in the valley trying to trigger this whole thing – to motivate the guys.

However, the strength of the project manager, and his ability to lead, seemed to become a pseudo-satisfier as it nullified the emergence of any strong local project leaders. After all, the explicit role of the project manager was to hand over the project to local people once they had been trained sufficiently to run the centre on their own. One of the participants described the situation well:

[The project manager] was the driver. [He] was the one who stepped on toes. [He] was the one who told you, ‘I want that thing, and I want it now, not yesterday, now!’ He is the one that pulled everything together. If he was not here then everything would fall apart. Not that we are not in control, everyone knows what they have to do in here. But he is the one, not with the ideas, we all have ideas, but he is the one that puts the action to the ideas and makes sure that things get done.

Thus, while the participants were continuously involved in every aspect, they never had to take responsibility for anything because they knew they had the project manager to fall back on. They knew that he would “make sure that things got done.”

The project manager became the central actor responsible for everything from submitting monthly municipal reports on the project, to managing operations, to securing funding

from a number of sources. This leads us on to the final theme, the passive / active struggle.

4.2.2.7. *The Passive / Active Struggle*

The major theme that came out of the reflections of the project manager was the struggle he underwent to get the attitude of the participants to change from being passive to being active. The literature in Chapter 2 points to participants either being active or passive depending on the type of implementation approach they endure. Top-down approaches usually lead to participants being passive, while bottom-up approaches somehow *create* active participants. This does not seem to have been the result achieved in the case under study. Significant time was spent on community facilitation, and participants were given every opportunity to drive the project in a bottom-up manner. Yet, this was not enough to create active participants. The frustration of the project manager is clear when he says,

It just comes out as an attitude where, as a trainer in that situation, I have difficulty with instilling an entrepreneurial spirit because the entrepreneurial spirit just isn't there. You get to the point where you think that it can't be put there, even as much as you try, because you try harder and harder, but maybe somebody is born with entrepreneurial spirit, and you can't put it there through training. People like following instructions. They like the comfort zone of knowing how much they are going to earn for a specific task. They would prefer...somebody else taking responsibility for generating the income and then taking part of that. And that is also the reason for the failure of some of the components of the MPCC, and into the project itself too, where they expected the project manager to maintain the momentum, not realising that the responsibility is actually theirs.

This struggle forms the crux of the issue. Even if everything else went according to plan, this one underlying aspect could have (or would have) caused the project to fail. And according to the project manager, "You can't hope to start addressing social issues of that magnitude in a project of this nature. Where do you start?"

4.2.3. Conclusion of Analysis

This chapter has used interpretive hermeneutics to draw out seven themes the data on the case under study. The focus has been squarely on describing and understanding each of the themes individually within the overall context of the study. The following chapter continues the hermeneutic spiral by using actor-network theory to form a coherent explanation of the whole. After all, “The harmony of all the details with the whole is the criterion of correct understanding” (Gadamer 1976: 117).

University of Cape Town

CHAPTER FIVE

5. DISCUSSION (OR A DESCRIPTION OF THE WHOLE)

This chapter follows on from the themes identified in the previous chapter. Actor-network theory (ANT) is used as a theoretical framework to produce a description of the study as a whole. The description produced should not be seen as a conclusive interpretation of the study, but rather as one useful way of looking at the situation.

5.1. A BRIEF OVERVIEW OF ACTOR-NETWORK THEORY

This first section of this chapter provides the conceptual foundation for the discussion which follows.

5.1.1. Actor-Network Theory: The Theory that Doesn't Exist

ANT presents a significant challenge in its application to any case study. The challenge is this: There is no Actor-Network Theory. There are many accounts of how ANT has been applied, sometimes successfully, to case studies, but there is no real account of what ANT actually is.

This is probably because there is no one person behind ANT. It is the result of significant writings by a number of authors, most notably Law, Callon, Latour, Bowker and Akrich who have their roots in the *Centre de Sociologie de l'Innovation*, Paris. These authors each have their own opinions and perceptions of what ANT is and how it could be applied. Latour for example, has “never used the term actor-network” (Latour 1997) even though he has had a hand in creating a lot of the central concepts upon which the theory is built. He has even talked about recalling ANT completely saying that, “There are four things that do not work with actor-network theory; the word actor, the word network, the word theory and the hyphen! Four nails in the coffin” (Latour 1997: 1). Law (1997b: 4) relates the following story of how the term came into being:

Obviously, the term started in French. I think I remember Michel Callon asking me ‘Comment est-ce qu'on pourrait traduire ‘acteur reseau’ en Anglais?’ Yes, I told him, to talk of the ‘actor-network’ would be fine. And then it seems that the term took on a life of its own...like some kind

of monster, the term 'actor network' grew, and it started, like a theoretical cuckoo, to throw the other terms out of the nest.

This 'monster' has grown to such an extent that it is no longer possible to detect what ANT really is. There is no right way to apply the concepts or the terms. The theory has been dissolved and diluted to the extent that it "no longer exists". This however, does not necessarily mean that it is not a useful theory for analysing case studies. As Law (1997a: 15) notes,

And this is why I would recommend actor-network theory. I would recommend it because it is weak. Because it is in dissolution. Because it has betrayed itself. Because it has turned itself from signal into noise. Because it no longer exists. Because it has dissolved itself into other ways of seeing, of writing, and of doing.

So what is the point then? Why use a theory that does not exist (or is at least weak)? The point is that ANT gives us a lens, a vocabulary, a way of seeing that enables rich descriptions. The point is not to find explanations, but rather to describe in detail what has happened (Latour 2002). In line with the interpretive aspirations of this study, ANT allows us to gain a deeper understanding through a in-depth exploration of the case under study. Once again, Law (1997a: 11) tells us that,

[W]e might imagine that, like its objects of study, ANT cannot be told. Cannot be told as a single narrative. As an overall story about the growth of a centred network with its successes and reverses. And instead imagine that it can only - and best - be represented as a set of little stories, stories that are held together (if they are) by ambivalences and oscillations. In which case, as representatives, we might then embrace an art of describing, an art of describing the patterns and textures that form intellectual patchwork.

And so this study in embracing ANT, in its weakness, also embraces the art of describing.

5.1.2. Some Terms and Concepts from Actor-Network Theory

ANT according to Latour (1999) is not really a theory at all. It is either a framework, providing a series of tricks to aid our understanding, or a meta-theory, allowing us to

compare other theories or even eras. In this chapter ANT is used as the former, “a framework providing a series of tricks to aid our understanding.”

The first “trick” that ANT gives us is the ability to be totally neutral with regards to human and non-human actants in a network. According to Latour (1999) the world is often divided into two distinct realms: Nature and Culture (see Figure 4 below). Nature can be seen as the realm of “pure” science where the natural laws govern what is true or false. Culture is the “messy” realm of the social where moral laws of what is right or wrong predominate. Latour (1999) tells us that most modern theories take this “purification” as their starting point and proceed to operate on either side of the divide. ANT, however does not distinguish between these two realms, preferring to view networks as heterogeneous, hybrid networks of actants. Thus, the central concept of ANT is revealed: translation.

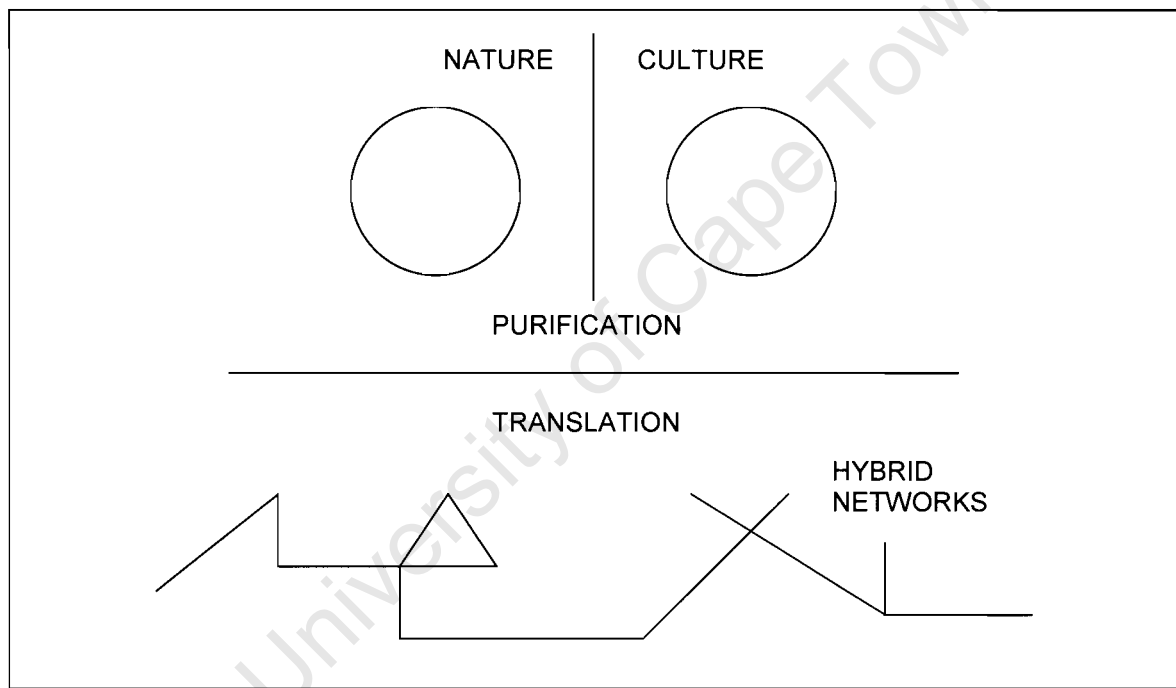


Figure 4: Purification and Translation
 (Source: Underwood 2002)

Thus, one of ANT’s greatest contributions is that it allows us, as researchers, to see the world as we experience it everyday: a combination of the natural and the social. This

“lens” focuses our attention on relationships and underlying mechanisms which affect actants in a network. According to Monteiro (1999),

[A]llowing oneself not to distinguish a priori between social and technical elements of a socio-technical web encourages a detailed description of the concrete mechanisms at work which glue the network together — without being distracted by the means, technical or non-technical, of actually achieving this.

For the sake of clarity the following table summarises the key concepts (or tricks) used in this chapter. Each concept has a summary definition drawn largely from concepts outlined by Callon (1986).

*Table 3. Central Concepts of ANT
(Amended from Atkinson 2002)*

ANT Concept	Summary Definition
Actant / Actor *	“Any element which bends space around itself, makes other elements dependent upon itself and translate their will into the language of its own” (Callon 1986). Common examples of actors include humans, collectivities of humans, texts, graphical representations, machines and technical artifacts. Actors, all of which have interests, try to convince other actors so as to create an alignment of the other actors’ interests with their own interests. When this persuasive process becomes effective, it results in the creation of an actor-network.
Actor-network	“A heterogeneous network of aligned interests.” An actor-network is a dynamic set of relations in which actants continually influence each other.
Agency	The ability to achieve effects in society, the capacity to make a difference, connected to power, different actors have different levels of agency.
Translation	The central concept of ANT. Translation is the creation of an actor-network. This process consists of four major stages: problematisation, intersement, enrolment, and mobilisation. Numerous actors within an organization may be involved in a different process of translation, each with its own unique characteristics and outcomes. For purposes of clarity, it is useful to focus on a single focal actor, from whose vantage point we wish to see the process of translation.
Problematisation	The first moment of translation during which the focal actant defines identities and interests of other actors that are consistent with its own interests. This can also be seen as the moment when the focal actant defines its problems and the roles the other actors should play in order to allow him/her to reach the agreed objectives. However,

	these actors may have different objectives for participating in the network. Thus, it is crucial to formulate an obligatory point of passage (OPP) which allows the actors to recognise that they will reap benefits from their involvement in the collective. (Callon 1986: 205)
Obligatory Point of Passage (OPP)	The OPP, broadly referring to a situation that has to occur in order for all the actors to satisfy the interests that have been attributed to them by the focal actor. The focal actor defines the OPP through which the other actors must pass through and by which the focal actor becomes indispensable. (Callon 1986)
Interessement	The second moment of translation involves the group of actions by which the focal actant attempts to impose and stabilise the identity of the other actors it defines through its problematisation. (Callon 1986) This stage involves strategic compromise, persuasion, and seduction to lock allies into the roles proposed for them.
Enrolment	The moment of translation when actants accept the roles defined for them by the focal actant. "To describe enrolment is thus to describe the group of multilateral negotiations, trials of strength and tricks that accompany the interessements and enable them to succeed" (Callon 1986).
Mobilisation	The final stage of translation involves maintaining commitment to a cause of action and the OPP. It is a process of continually persuading the other actors that their interests are the same as those of the focal actant. The consensus and alliances can be questioned at any moment if the actants feel that "translations became treason" (Callon 1986: 219).
Inscription	A process of creating artefacts that would ensure the protection of an actor's interests (Latour, 1992). Translation cannot be effective if it is not anchored to physical and social displacements.
Betrayal	A situation when actors do not abide by the agreements (translations) achieved by their representatives. (Callon, 1986) "Such betrayal may be by any actant, including the non-human ones, as the meaning here does not necessarily carry any need for intent or malevolence" Atkinson 2002.
Black box	A black box can be seen as a network of tightly linked relationships where many elements are brought together and act as one (Latour 1992). Their method of operation and constituent parts are no longer questioned or tested (Callon & Latour 1981 quoted in Atkinson 2002).
Irreversibility	The degree to which it is subsequently impossible to return to a point where alternative possibilities exist.
Spokesperson	Dealing with humans and non-humans indiscriminately, poses some practical problems. For instance, how does one actually negotiate the interests of a non-human who can't talk? One method of overcoming this problem is by electing a

	spokesperson who negotiates on behalf of certain actants. This could be a spokesperson representing for example, a set of network protocols, but could also be taken in the more conventional sense as a human representing a group of other humans, for example a worker representative.
--	---

* The terms actor and actant are used interchangeably, although the author prefers to use *actant* as it reinforces the idea that these entities can be both human and non-human, whereas *actor* tends to imply humans only.

From Table 1 above, it is possible to draw the tools that will be used in discussing the case. Each term assists in uncovering the methods and manipulations that exist when actor-networks are created. On the basis of ANT described above, an overall description of the case integrating the various themes identified in the previous chapter is discussed in the following paragraphs.

5.2. DISCUSSION

The first stage in many ANT descriptions involves an identification of the network under study. ANT does not prescribe how this network is identified, or at least constrained. By their nature, actor-networks are infinite – each actant is related to many other actants inside and outside of the area of study. This is often used as a criticism of ANT: the researcher has to use their subjective judgment (bias) to determine which actants are to be included and which are to be excluded from the analysis. However, Bijker (1993 quoted in Monteiro 1999) argues that, “it is overly ambitious (or naive) to expect ANT (or any other theoretical framework for that matter) to instruct you how to separate foreground from background.” And so Table 2 is presented below as the result of the author’s subjectivity in separating foreground from background:

Table 4. Actants Involved in the Network in the Case Under Study

Actant	Description
Project manager	The project manager (PM) was the focal actant in the implementation process. He was the ‘expert’ responsible for handling the moments of translation and was the dominant spokesperson of the new MPCC and its related actants. He was an outsider but managed to enroll himself into the community successfully

	at the start of the project.
The Pniel Youth Centre	The original actant that started the process under investigation in 1998. This actant was later rejected because it failed to achieve enrolment into the existing actor-network. It was replaced by another actant – the DRV MPCC
The Dwars River Valley Multi-Purpose Community Centre (DRV MPCC)	The DRV MPCC was the new actant that was eventually successfully enrolled in 2002 after the rejection of the Youth Centre actant. This actant was composed of a number of other actants such as computers, training, internet, and the committee before it became a black box.
MPCC Replication Model	The MPCC replication model was an actant born out of the previous experiences that the PM had in MPCC implementations. It was a (a somewhat context-sensitive) model that inscribed best practices of MPCCs. (see Chapter 4, Figure 5)
Training	The training actant used inscriptions such as training manuals to translate the interests of the various actants so that they were aligned to those of the focal actant. The processes encouraged by this actant were typically rational, Western concepts of computer literacy, project planning, business principles.
Trainees: Staff	A group of actants whose interests had to be closely aligned to those of the focal actant. They were responsible for running the operations of the MPCC. This group can be split into: content creators and business advisors.
Trainees: Entrepreneurs	The actants trained to become entrepreneurs were enrolled through the promise of spin-off projects (such as the tourism project) from the MPCC.
The Woodpeckers	A business that was established by one of the entrepreneurs trained by the centre. The business involved removing alien trees from the valley and selling the wood to nearby manufacturers.
Computers	The computers were seen by the participants and municipal officials as “essential” actants in the development process. Computers carried software: inscriptions enforcing first world business practices and project management principles. Thus, computers were often used to inscribe business principles into artefacts such as business plans and project plans. These inscriptions in turn influenced the way the MPCC and its related projects operated.
Tourism project	The tourism project was a new actant enrolled in the network to further assist aligning the interests of the community with those of the PM. This actant made use of other actants in the collective such as the computers, trainees (entrepreneurs and staff), the internet, and natural resources to achieve its objective.
Internet	The internet was an actant that did not clearly define its interests. There was little alignment between it and the other actants of the system, beyond a few

	minor translations such as email and e-banking.
Committee	The committee was a powerful actant on a local level, as spokesperson of the community, and would sometimes conflict with the interests of the PM. The committee played a significant part in the enrolment of actants into the network.
Chairperson	The chairperson was another actant whose interests were not well-defined. It was not clear what his role was and as a result his agency was somewhat limited.
Local municipality	The local municipality played the role of a passive manager in that they indirectly enforced their interests onto the collective through a number of subtle manipulations.
Researcher	The researcher was enrolled into the collective through an alliance with the PM. This enrolment appeared to be successful with most actants accepting the researcher as an “interested bystander”.
HSRP fund	The governmental Human Settlement and Redevelopment Fund (HSRP) fund was the actant that betrayed the collective through a withdrawal of a large amount of funding.
Community facilitator	The community facilitator (CF) was a social worker who was experienced in handling community facilitation. This actant was an expert in subtle ways of aligning interests in order to expedite the process of problematisation and interessement.
Existing municipal building	The existing municipal building provided the current premises for the MPCC. This actant was seen as undesirable because of its location and this appeared to have a negative influence on the project.
New building	The new building – the result of the remaining funding from the HSRP was seen by many as the “start of the proper MPCC.”
Natural resources	The breath-taking natural resources of the valley included two picturesque mountain ranges and a river ideal for fly-fishing. These had long been used for recreational purposes by the community but had not been considered for the income-generating potential. With the arrival of the MPCC actant and the resulting translations, the interests of the natural resources became more economically oriented towards attracting tourists with the assistance of the tourism project actant.
Community	The community was a group of actants which was very diverse including members of six communities. However, their enrolment can be seen as a common process of translation.
Instigators	The instigators were a minority group from the most isolated of the six

	communities. This group continually “ran interference” on the project and were never successfully enrolled into the collective.
--	---

It has already been noted that for the purposes of clarity it is useful to focus on a single actant, from whose vantage point we wish to see the process of translation. This focal actant, for the purposes of this analysis, is the project manager (PM). The PM, even though he was only enrolled into the project at a later stage, played the most central role in terms of translating the interests of various actants. He was also the dominant spokesperson for the MPCC and its related actants.

We take as our starting point for the discussion the following statement from the PM:

I think the Dwars River Valley had the potential to be a showcase, it still has the potential to be a showcase but maybe there are some underlying difficulties that none of these interventions are addressing, and one should take cognisance of these underlying difficulties that are there, and reveal themselves when you look back at the project.

5.2.1. The Death of an Actant: The Pniel Youth Centre

The process that forms the focus of this study originated in the late 1990s when the community of Pniel decided to apply for funding to build the Pniel Youth Centre. This actant received significant support from the community of Pniel who wanted a “safe place for their youth to be occupied, stay off the streets, and learn new skills.” The problematisation process consisted of various workshops held in the community. From these workshops a funding proposal was drawn up which formed the OPP, thereby consolidating the first moment of translation of the relevant actants’ interests. The document was then sent to the local municipality to undergo the interessement process which would secure the necessary funding.

By the time this document got to the local municipality level two things had happened. Firstly, the discourse around a new actant: the MPCC had started to infiltrate into the planning processes of the municipal officials responsible for development projects in the area. Secondly, the various local municipalities had amalgamated into one overall

municipal office for the area. Suddenly, the Pniel Youth Centre and its OPP (the funding proposal) were no longer aligned to the interests of either the municipality (facing pressure from provincial government to start implementing MPCCs) or the community (now one combined valley instead of six separate communities). Consequently, the process of interessement failed to “impose and stabilise the identity of the other actors it had defined through its problematisation.” And that was the end of the Pniel Youth Centre – rejected by the actor-network before it could become enrolled. A somewhat sombre but relatively painless death.

5.2.2. The Birth of a New Actant: The DRV MPCC

While the local municipality loves to enthuse that it merely “prioritises the needs that the community identifies,” the concept of the MPCC was very much pushed on to the DRV community. As one municipal official remarked, “there was significant pressure from national and provincial government to implement these centres...The concept originated from the President himself.” And so the birth of a new actant (if we go back to Chapter 2 we can trace this birth back to Denmark in the 1980s) occurred: the DRV MPCC. A concept which the majority of the community had not even heard about until, as one participant noted, “I saw an advertisement in the newspaper offering free training.”

5.2.3. Problematisation (An Introduction)

The first moment of translation started before the focal actant, the PM got involved with the process. The municipality realised that a committee would have to be formed that could act as a spokesperson for the whole DRV community. Two representatives from each of the original six communities were enrolled into the committee. It was the role of this committee to oversee the process of introducing the MPCC into the existing actor-network. From that point on all new actants had to “pass through” the committee. Thus, the committee became the first OPP.

At this point in the process the municipal officials realised that neither they, nor the committee had sufficient experience or knowledge to act as the focal actant in the

remaining process of translation. For this reason the PM was brought in as an expert in aligning human and non-human interests with the interests of new MPCC actants. This was an important consideration – the vast experience of the PM in the MPCC arena had led him to experience first hand that implementing MPCCs was far more complex than just a matter of setting up the non-human infrastructure. It was just as important to manage the interests of the humans around the interests of the non-humans.

Once the PM had passed through the first OPP (the committee) and was successfully enrolled into the network, he very quickly set up a new OPP that would allow him to conduct the rest of the translation process in his own manner. This new OPP took the form of the MPCC replication model. The model contained best practices from previous MPCCs that were used to inscribe the operations of the new MPCC (see Chapter 4, Figure 5). It worked very well as an OPP because of its ominous grounding in lessons learnt from scores of previous MPCCs. After all, who could offer any alternative to something with so much research behind it? This new OPP gave the PM justification for almost any decision he wanted to make – he could decide how many actants to include, how to include them, what the interests of the new actant were and so on. Thus, the PM wrested control away from the original OPP, the committee and established his (apparently) firm control over the new OPP and thus, (apparently) over the destiny of the actor-network.

The central tenet of the new OPP was to create an MPCC that would foster local economic development. It was strongly entrepreneurial in nature and stressed the critical importance of the MPCC reaching financial sustainability. Thus, any actants passing through this OPP had to conform to these processes. Their interests had to align with the interests espoused in the OPP on behalf of the new MPCC in order for them to become enrolled into the network. Among other things, the attitudes of the trainees who were to form part of the new actor-network were very important.

The literature (see Chapter 2), often refers to “active participants” as opposed to “passive participants” of development. These terms are really referring to the attitudes of the

participants. The active attitude can be described as being entrepreneurial, passionate, driven, and motivated to achieve. The passive attitude can be described as the opposite: dependent, risk-averse, unimaginative and unmotivated. It is clear that the PM's entrepreneurial-based OPP was very biased towards actants with an active attitude.

5.2.4. Interestement and Enrolment (Seduction and Success)

The process of translation continued under the guidance of the PM. A lesson from previous projects conducted by the PM taught him that “community participation and setting up the correct governance structures [were] important for the overall success of the project.” In line with this a number of community workshops were held to translate the interests of the community around the interests of the MPCC.

To assist in this process the PM enrolled the community facilitator (CF) as an ally. The CF was an excellent “translator” of interests. He was able to conduct a meeting with various community actants and subtly guide the discussion to whatever objective he wanted to reach, without seeming to take any dominant role or stance. He used a variety of techniques to achieve this, including:

1. Listening to community grievances and then subtly introducing ways that these grievances could be addressed with the new MPCC actant (i.e. translating the interests of the existing actants so that they are aligned to the interests of the new actant);
2. Creating excitement by pointing out other actants already aligned to MPCCs, such as the President, other communities, and international agencies (i.e. showing that the MPCC already has powerful actants aligned to it);
3. Subtly introducing the necessary outcomes required early on in the meeting and then waiting for the excited participants to re-introduce these outcomes later as if it was their idea (i.e. a form of seduction and strategy of interestement).

An example of technique 3 is illustrated in this quote from one of the workshops. The outcome that the PM wanted was to have a steering committee elected. The CF noted near the start of the meeting that:

[The PM] and I could stand here and say this is how it must be done. We need a six month time-frame with a steering committee. But we are not going to do that. At the same time we don't want this to stand still. We don't want everyone to wait for everyone else.

After an hour of discussing interests and strategies, a participant in the meeting suggested that a vote should be taken to elect a steering committee. The CF praised the participant for his excellent idea and the vote took place. Mission accomplished!

Thus, with the help of this skillful ally, the translation of interests was very successful. One worked up community member made this comment with regard to the proposed new MPCC at the end of a particularly successful community workshop:

This is not a dream anymore. We need this thing to happen and we are working at it. We don't have a choice anymore. We have to get this to happen.

This quote beautifully illustrates how the particular person aligned her interests with that of the new actant and accepted her role as an actant in the new actor-network. She had been enrolled! However, it is important to note that many of these actants were unemployed and living on the poverty line – in short they were desperate for solutions – and thus, ready to align their interests to any actant that promised this.

As part of the enrolment process, actants had to pass through the PM's OPP (the model). The non-human actants such as the computers and the internet made it in easily – they were already inscribed into the OPP. The natural resources and the tourism project also had no trouble in passing through the OPP and enrolling themselves thanks to their already closely aligned interests in terms of enabling economic development.

The enrolment of the human actants unfortunately, was not such an easy process. The difficulty was the result of an interesting power-struggle that had arisen. As has already been noted, the OPP required trainees to have a very specific attitude – an active attitude.

In order to find people with (among other criteria) the right attitudes, a recruitment and selection procedure was established. The procedure was conducted by a panel of people from the committee and the PM. A suitability score was produced for each candidate which could be seen as a measure of how closely aligned the interests of the candidate was to the interests of the MPCC (a score of 1 meant the person was an excellent candidate, and a score of 3 meant the person was not suitable for inclusion).

The power-struggle manifested itself between the PM and the committee. The scores were a clear indication of which candidates the PM felt should be included into the collective. The committee on the other hand had other ideas as to which candidates were to be included. The PM described the struggle as follows:

So there were a number of 3s, people who rated 3 in the interview situation, and there was agreement in the interview situation with a panel of 3 or 4 people that this person is out, only to be overruled by...the committee, who decided no the person is back in... You see that a specific person is not suitable, but the management put them in, for whatever reasons, they're family or they like them or whatever... So ok fine, you deal with that person in the training situation.

And so the committee managed to reassert themselves and a tension arose between the original OPP (the committee) and the new OPP (the model). This tension started underlying problems that would surface again later in the process.

The process of enrolment continued through the training of the selected candidates. Trainees would become either MPCC staff (content creators or business advisors) or entrepreneurs. All trainees were taught basic computer skills and were then allowed to specialise in desktop publishing, business advisory, or project management. A large number of candidates were trained because previous projects had shown that betrayal often occurred at this stage: Once people had new skills they were easily co-opted into other competing actor-networks.

During the process of interestment and enrolment, a minority of people from the most isolated community in the valley purposefully did not align their interests with that of the new actant. In the previous chapter the PM described the process of trying to set up a

meeting with these “instigators” but after a number of attempts he achieved nothing. The instigators continuously ran interference on the project and even claimed that those involved were enriching themselves illegally from project funds. Fortunately these instigators did not have enough agency to threaten the new actor-network.

On the whole, the translation process up to this point was successful. A significant sign of this success was the funding of R 1,5 million that was awarded to the project by the HSRP fund. The actants and allies of the actor-network were starting to mobilise and the dream of creating a showcase out of the DRV MPCC seemed to be well on track. However, the PM was not completely convinced. He had begun to sense “underlying problems” with the project. Another actant had begun to make its presence felt. It was neither a human nor a non-human – it was an attitude. More specifically it was the attitude of the trainees (both staff and entrepreneurs) that started to worry the PM. This actant was increasingly distancing itself from the OPP set up by the PM, and thus its interests were no longer being aligned with those of the MPCC and the PM.

5.2.5. Mobilisation (What Went Wrong?)

With the promise of the funding suddenly the actor-network became a black box. It started working and everything seemed to fall into place. The PM describes what happened:

[I]t was very nice, we could jump in and use all the skills, everybody got busy on the development of the valley and got paid out of the funds. We did a hundred and ten different things, all very well, the project management skills came to the fore, the PC skills came out, the business planning skills came out, and everything worked very well...

One of the major beneficiaries of the creation of this MPCC black box was the tourism project actant and the entrepreneurs who were trained in the earlier stages of translation. Suddenly, the natural resources of the valley became enrolled as a fly-fishing destination, mountain walks, and picnic areas. A business (The Woodpeckers) was established to remove alien trees from the valley and then sell off the resultant wood to nearby manufacturers.

Much of this success was enabled by the ICTs within the MPCC. For example, a business plan had to be created to ensure the financial viability of the Woodpeckers. This business plan could have been handwritten, but the computers and their software, helped produce a plan that was more complete, with an extensive budget, project plan (including tasks and human resource requirements) and a strategy for selling the wood to manufacturers. Another example, of the enabling power of ICTs, was the brochure and website produced to market the valley to tourists. Suddenly thanks to ICTs, the chances of enrolling passing tourists into the activities of the valley had increased considerably.

Even though everything was working well, the PM was still heavily involved in driving the project. He had to continuously motivate the actants and ensure that things were done. He started facing an uphill battle, the active / passive struggle mentioned in the previous chapter, a symptom of the underlying problems that had been created in the earlier stages of translation.

Then suddenly a significant betrayal took place which affected the entire actor-network severely. The HSRP fund, which had until then been seen as an ally, turned against the project. The original funding that was promised was reduced by almost a million rand. Once again, the PM describes the situation:

[O]vernight we had no funding for the project, we had no means to pay the people who were active in the project. Massive expectations had been created in the process, and we had to motivate why people had to hang on when all of a sudden they weren't getting paid. With the result that most of the people with other obligations went and found other jobs.

Suddenly the black box was opened, and actants saw that "translations had become treason." The promise of being paid for the work they were doing had disappeared and the security afforded by the funding had been lost. The PM tried various tactics to re-translate the interests of the actants. "We tried...saying: We've created products, take ownership of the products, start marketing the products, but this just didn't happen..." These tactics didn't work because the attitudes of the actants were not aligned to be able to deal with this situation. The actants had been passive all along and had continuously

relied on the PM to lead, guide, and take their risks for them. Is it surprising then, that when the occasion called for them to suddenly be active – they weren't able to?

5.3. SUMMARY OF DISCUSSION

Our starting point for this discussion was the quote from the PM saying that this project had and still has the ability to be a showcase. However, there are underlying difficulties. What are these difficulties?

The first difficulty was the power-struggle between the committee and the PM that manifested itself in the tension between OPPs. This issue really comes down to who should be in control of the project? Clearly, this is a normative question, but it significantly influences the outcome of the project. The result of this first difficulty was that certain people were enrolled into the actor-network without having properly aligned interests. More specifically, the attitudes of some of the actants did not meet the criteria outlined in the PM's OPP. This contributed to the second difficulty outlined below.

The second difficulty was the active / passive struggle. How does one get the attitude of people to be an active one? As the project manager described, it is not an easy process:

It just comes out as an attitude where, as a trainer in that situation, I have difficulty with instilling an entrepreneurial spirit because the entrepreneurial spirit just isn't there. You get to the point where you think that it can't be put there, even as much as you try, because you try harder and harder, but maybe somebody is born with entrepreneurial spirit, and you can't put it there through training. People like following instructions. They like the comfort zone of knowing how much they are going to earn for a specific task. They would prefer...somebody else taking responsibility for generating the income and then taking part of that... [T]hey expected the project manager to maintain the momentum, not realising that the responsibility is actually theirs.

The original goal of the project was for the project manager to hand over the project to the local people once they had been trained. Clearly, if the attitudes of the local people are passive, removing the PM would result in a very unstable network. A possible solution to this problem came from a municipal official who commented that:

One might tend to think that in the case of the Dwars River Valley, you need a local person that is committed, that can drive the process forward, that can interact with different members of the community and is not influenced by the way of thinking of any one group of people.

Having a strong local actant such as the one proposed above, could very well allow the PM to successfully hand over the project. However, this person would have to be supported by a strong actor-network to achieve long-term sustainability. This would involve surrounding the leader with a number of “active” participants.

5.4. AN AFTERTHOUGHT (THE FUTURE?)

The project is currently in a precarious position. The remaining funding from the HSRP is being used to build a new actant – a standalone building to house the DRV MPCC. The construction of this new actant should be finished in early 2004, and many actants have already begun aligning their interests with the promises of the new building. The promises (or future translations) that the building has articulated (through a variety of makeshift spokespersons) are:

1. Increased visibility due to being located on the main road that passes through the valley. This promise aligns well with the interests of centre staff (wanting more people in the community to use the centre); and the tourism project (wanting better access to tourists passing through the valley).
2. Increased access to the internet because of a faster internet connection (possibly an ISDN line). Once again, this promise aligns well with the centre staff (wanting to establish an “internet café” for the community and for tourists visiting the valley).
3. Increased professionalism in terms of staff having offices separate from the operational component of the centre. Perhaps this promise aligns most closely with the egos of the staff wishing to “have their own office.”

It is clear that these promises are inspiring an attitude that everything will come together in the new building. To recall the quote from the previous chapter, “then we will be an MPCC alive! ...a proper MPCC that everyone will use.”

Unfortunately, unlike the events discussed above, this is a future event. It is yet to occur, and as such the outcome is uncertain – unpredictable. Is it possible that the new actant, with all its promises, will be able to change the underlying difficulties described in the previous section? It is not inconceivable, for example, that the increased visibility, increased internet access, and increased professionalism enabled by the new actant, will lead to a change in the attitudes of the centre staff. Suddenly, the staff are inspired to become more active! They introduce new training courses, revive the tourism project, and increase the enrolment of the community. The project becomes a success and a showcase!

Without wanting to be too pessimistic, there is of course, another possibility. The new building could fail to deliver on its promises. The centre staff could continue their pattern of passive participation, perhaps if they're fortunate, with the continued assistance of the PM. This scenario seems to lead inevitably to one conclusion, whether or not it receives further funding, and that is to the sombre and somewhat painful death of the DRV MPCC.

CHAPTER SIX

6. REFLECTIONS

In this concluding chapter of the dissertation, some reflections and implication of the study are presented.

6.1. A REVIEW OF THE THEORY

The literature review of the study provided a broad foundation upon which to build. The section on development studies showed how top-down methods of implementation based on economic theories had gradually given way to more participatory, bottom-up methodologies. Finally, the emerging concept of the social entrepreneur was explored as a possible middle-out approach to implementing development projects.

Then in the second half of the literature review, the field of 'ICTs for Development' was investigated. This field appeared to have undergone a similar evolutionary path to that of development studies. Top-down implementation approaches characterised the early stages of the field. These approaches were based on the ideas of technopoly and the rise of the utopian "information society". ICTs were seen as essential tools for developing countries to "catch up" to developed countries. However, further experience in the field indicated that ICTs could not just be implemented in developing countries without the due consideration of a variety socio-technical factors. This perception led to more bottom-up approaches to ICT-led development projects. These bottom-up approaches stressed the need for investigating the mutual interaction of technical and human actors in the development drama.

The final section of the chapter gave a contextual outline of the telecentre movement, as a specific type of ICT initiative for development. This outline contended that many initiatives in this arena have failed and only a few cases showed preliminary signs of success. Some key lessons from the work of Peter Benjamin in South African telecentres were highlighted.

Finally, the concept of the middle-out person was identified as an important aspect in the literature on telecentres as noted, for example, by Proenza *et al.* (2001),

Behind every successful telecentre – whatever its type – there is invariably a person – sometimes more than one – who is enthusiastic and personally committed to the success of the venture, acts with considerable independence and is intimately familiar with the locality and community in which the centre operates, and is able to articulate the community's needs and satisfy its demand for services.

The above led to the identification of numerous areas requiring further research and this informed the final three objectives for this particular study.

6.2. REFLECTIONS ON THE APPROACH

The aim of this study was to gain a deeper understanding of ICTs and MPCCs in development. The interpretive paradigm was well suited to this aim and led to an exploratory framework within which to explore the concepts and objectives. However, the interpretive paradigm was just the first component of the overall framework constructed.

The interpretive paradigm was extended through the application of hermeneutics. This provided an excellent method, in the hermeneutic spiral, for analysing and drawing out themes from the qualitative data collected. The analysis chapter applied the hermeneutic spiral and identified seven themes. This chapter, thus, formed the *description of the parts*.

The discussion chapter extended the overall framework of the study by applying the actor-network theory (ANT) to aid in a final *description of the whole*. This chapter used the themes identified in the analysis section and integrated them to form a coherent overall picture. The *art of describing* was embraced fully.

The seven principles of Klein & Myers (1999) (see Appendix 1) were applied continuously throughout the study to the extent that they became unconscious processes. For example, the principle of interaction between researcher and subject is not a principle which can be consciously applied at regular intervals. Rather, once the principle was grasped and understood to mean that there is no interaction between researcher and subject which does not in some way influence the outcomes of the study, it became an unconscious process. Thus, the principles were not so much used as steps to “guide” the research but rather as unconscious processes which were always present as “part” of the research. Indeed this seems to be the original intention of Klein & Myers (1999).

Having noted this, however, it is also important to note that some principles were applied more comprehensively than others. The following table serves as a self-evaluation of how each of the principles was applied in the study.

Table 5. Self-Evaluation of the Application of the Seven Principles of Interpretivist Studies

Principle	Depth of Application	Factors Influencing Application
1. The Hermeneutic Spiral	Comprehensive	1. The organisation of the overall framework was deeply informed by this principle. The principle was used both inside the analysis section, as well as a guiding principle in the construction of the study as a whole. 2. The hermeneutic spiral was also used to guide the learning process while conducting the study. Continuous ‘spirals’ over the same data at different times would yield new insights and reflections.
2. The Principle of Contextualisation	Good	1. The principle of contextualisation was well applied by conducting an extensive literature review. Not only was the study placed in the context of other telecentre studies, but also in the context of the broader fields of ‘ICTs for Development’ and so-called ‘pure’ Development studies. 2. The principle could have been used better during the analysis section, by making use of more quantitative data to

		support the qualitative data collected, however, this was not possible due to limitations mentioned in Chapter 3.
3. The Principle of Interaction between Researcher and Subjects	Good	<p>1. This principle was well observed particularly during the early stages of data collection when contact was first established between the researcher and the subjects.</p> <p>2. The researcher is still in contact with several of the subjects in an on-going attempt to find solutions for the situation under study. Thus, the relationship can be seen as a mutually beneficial one.</p> <p>3. It is still not clear, however, what the long-term impact of the interaction is as the time-line of the study was too short to demonstrate any noticeable effect as a result. For instance, the publication of this study could provide several points of reflection for the subjects, who might as a result change significantly the course of the project.</p>
4. The Principle of Abstraction and Generalisation	Good	<p>1. The discussion chapter of this dissertation details a description of a very specific case study. However, the description with the help of ANT provides several points which can be abstracted and generalised (in a non-positivistic manner). This is demonstrated by the reflections presented in this chapter (particularly in the following section), which could be of significant use to practitioners and researchers involved in vastly different cases.</p>
5. The Principle of Dialogical Reasoning	Good	<p>1. The following section provides significant evidence that this principle was applied. For example, the reflection that perhaps ICTs are an inappropriate technology for rural development and could actually lead to a stifling of local champions is against the conventional wisdom of the literature examined.</p>
6. The Principle of Multiple Interpretations	Improvement Needed	<p>1. This principle could have been applied more extensively in the analysis section. Most of the themes identified were looked at from one perspective only.</p> <p>2. This principle could have been applied better with the assistance of a second researcher, or 'watcher'. Once again, due to limitations mentioned in Chapter 3, this was not feasible.</p>
7. The Principle of	Good	<p>1. This principle is related to the one above. However, it is a</p>

Suspicion		<p>more sub-conscious process, especially when dealing with multiple actors each with their own interests and priorities. It becomes impossible not to be suspicious of remarks made, particularly when they are patently driven by an underlying agenda. This principle came to the fore particularly in the analysis and discussion phases.</p>
-----------	--	---

As this was my first attempt at a study of this nature, this evaluation provides significant learning for personal future studies in the interpretive paradigm.

The framework was a major asset in the study. The combination of interpretivism, hermeneutics, and actor-network theory worked well. The complementary nature of the three approaches greatly aided in the exploration, investigation and understanding produced in the study.

In terms of the process itself, it was useful to firstly understand the individual themes separately. Focusing on each theme allowed a deeper understanding of that specific aspect. However, this analysis, although useful, was not complete. The completion of the understanding was accomplished by the ANT description. The discussion gave an understanding of how the themes integrated with one another to form the whole. This integration led to new insights that were not apparent when the themes were examined separately. For instance, the link between the funding issue and the active / passive struggle only became apparent when they were examined together in the discussion.

6.3. REFLECTIONS ON THE ANALYSIS AND DISCUSSION

The analysis and discussion chapters produced a number of important points for reflection. Once again it is important to note, that the aim of the study was not to produce any concrete conclusions. The aim was to explore issues and gain a better understanding of the implementation process through an in-depth description of one particular case study.

The first point for reflection is the role that ICTs played in the drama under study. The study points to a pragmatic view of the role of ICTs in development. It was apparent that *under the right conditions*, the ICTs worked well enough. Participants (even those with relatively little previous computer experience) found it easy to learn to use computers. Of course, significant training was required, but once this was completed, participants were able to produce project plans, budgets, brochures, websites and other artefacts. These artefacts were able to inscribe processes and practices and provided real benefit to a number of situations, including running a business, marketing products, and managing human resources.

However, it was also apparent the use of the ICTs and the related artefacts was strongly enforced by the PM and his 'way of doing things' (the replication model as an OPP). It is not clear that participants in the study were truly empowered by the ICTs or that they took real ownership of the technology. Indeed, the failure to find a local champion significantly undermines the conjecture that empowerment and ownership took place. The current situation where the computers are not being used because there is "no work to be done, since the funding ran out" further enforces this perception.

Returning to the concept of intermediate technology outlined in the literature review chapter, it appears that the attempt to use '£1,000-technology' presented an impossible transition, not in terms of use – but rather in terms of ownership. We could see the computer training conducted by the PM as an attempt to 'leap-frog' certain developmental stages. Intuitively, if we had substituted the £1,000-technology (the MPCC) with a more intermediate technology (say a small-scale hydroponics plant) ownership and empowerment could have been significantly greater. The key question is whether the level of technology was a key factor that stifled the emergence of the local champion and caused people to be passive (rather than active) participants in the project.

If we approach this problem of the active / passive struggle from an ANT perspective, as was done in Chapter 5, we see firstly that the emergence of active participants (and particularly a local champion) was an important consideration for the long-term

sustainability of the actor-network. ANT naturally leads us to the conclusion that the struggle was a result of a failure in translation of the interests of the participants. Participants were under the impression that they would be able to get a stable income from the project. Even though the PM explained that this was not the case – they believed what they wanted to believe. It is also possible that the participants thought they could force their ‘way of doing things’ onto the PM by winning the power struggle between the original OPP (the committee) and the new OPP (the PM’s model).

A further point for reflection is the role of funding in development. The HSRP fund was of the opinion that development could be encouraged by establishing buildings. They refused to fund “soft” issues such as community facilitation, training and support projects. However, it is clear from the ANT discussion that this narrow view is very dangerous. The success of community development projects is dependent on far more than just infrastructure. An actor-network – especially a newly formed one requires significant nurturing in order to increase the strength of its cohesion. This is not to say that community projects necessarily require continuous funding, but rather that they require holistic funding in order to foster their chances for sustainability.

In terms of implementation issues this study provides some important points for reflection. The replication model for instance, provided a useful OPP for the PM to enroll actants into the collective. However, this OPP was subverted somewhat by the power struggle that developed between the committee and the PM. This suggests that there are no guarantees for determining the success of the enrolment process. In actor-networks there is always the risk of subversion and betrayal. Any ‘recipe’, ‘handbook’, or ‘best-practice’ is subject to the almighty ability of humans to undermine what is not in their interests. Thus, the moments of translation are a crucial challenge in any development situation.

Finally, the success or failure of the actor-network under study is even at this stage indeterminate. There is no one factor that could cause the process of translation to succeed or fail. It is not possible to say that if this or that had been done, then the MPCC

would have been a success. The best we can hope for is that continuous learning and the resultant improved understanding of these situations will lead to better chances of success.

6.4. IMPLICATIONS

This study has a number of important implications, not only for researchers, but for practitioners as well.

Firstly, the success of combining the interpretive paradigm, with hermeneutics and the actor-network theory shows a promising combination framework for researchers to build on. The framework is particularly suited to studies aimed at gaining a deeper understanding of socio-technical issues in general and in particular within the arena of ICTs for development.

In terms of ICTs in development, this study shows encouraging signs that ICTs can indeed be of practical use in a variety of situations, particularly in the area of supporting entrepreneurial development projects. However, it seems that using advanced technologies may have somewhat undermined the amount of real empowerment and ownership created.

A final implication of the study is that there is no recipe for implementing MPCCs. A replication model is a useful instrument but should not be seen as a predictor of success. It is important to combine experiences from previous studies with continuous learning, context-sensitive application methods and an awareness of the moments of translation.

Some future areas of research that arise from this study include:

- The area of the active / passive struggle. Is it possible for example, to change the attitudes of participants to being more active in their approach? How could this be done? Should the PM deliberately try to exercise less power and control over the project in order to allow active attitudes to develop? Could a more

intermediate technology have a greater impact in terms of ownership and empowerment of participants?

- The issue of funding MPCCs. How could funding for MPCC projects be provided in a more holistic manner? Is it reasonable to expect MPCCs to be completely self-sustainable, particularly in rural areas?
- Can ANT and hermeneutics be used in a pro-active manner to inform the planning of an MPCC implementation rather than as a strictly post-implementation review tool?

My personal future areas of research include investigating the merits of attempting to alter the perspective of participants from being passive to being active right from the start of an implementation process; thus investigating methods of behavioural change that attempt to make participants more active in the implementation process. I also wish to explore further, the concepts of Max-Neef's human scale development, in the context of ICT development projects.

6.5. A FINAL NOTE

This study has shown just the tip of the iceberg, in terms of the understanding that we can gain by conducting reflective, in-depth case studies of socio-technical systems. The field of information systems has for a long time been dominated by positivist approaches that have yielded a particularly deterministic perspective on technology and people. Studies such as this one help to swing the pendulum in the opposite direction, in the hope that eventually we will be able to achieve a balance which draws on the best approaches from both perspectives.

7. BIBLIOGRAPHY

- ASHOKA (2000) *What is a Social Entrepreneur?*. Online at http://www.ashoka.org/fellows/social_entrepreneur.cfm. Last accessed 10 February 2004.
- Atkinson, C. J. (2002) *The Multidimensional Systemic Representation of Actor Networks: Modeling Breast Cancer Treatment Decision-Making*. Proceedings of the 35th Hawaii International Conference on System Sciences.
- Avgerou, C. (1998) How can IT Enable Economic Growth in Developing Countries? *Information Technology for Development* (8), 15-28.
- Benjamin, P. (2000) *Telecentre 2000: Literature Review*. Online at <http://www.communitysa.org.za/tele2000.htm>. Last accessed 10 February 2004.
- Benjamin, P. (2001) *Telecentres in South Africa*. Online at <http://www.telecentres.am/references/info/jdc-benjamin.doc>. Last Accessed 10 February 2004.
- Benjamin, P. & Dahms, M. (1999) Socialise the Modem of Production – The Role of Telecentres in Development. In *Telecentre Evaluation, a Global Perspective*. IDRC, Ottawa.
- Benjamin, P., Tepani, N., Roberts, S. & Parkinson, S. (2003) *CINSA ICT Research Report for the SADC Region*. The Community Information Network for Southern Africa.
- Berman, B. J. (1992) The State, Computers, and African Development: The Information Non-Revolution. In Lewis, S. G. & Samoff, J. (1992) Eds., *Microcomputers in African Development: Critical Perspectives*. Westview Press, Colorado, 213-244.
- Biggs, S. D. (1995) *Participatory Technology Development: A Critique of the New Orthodoxy*. AVOCADO Series 06/95. Olive Information Service, Durban.
- Bridges.org (2001) *Spanning the Digital Divide: Understanding and Tackling the Issues*. A Report by Bridges.org. Online at www.bridges.org. Last accessed 10 February 2004.
- Brohman, J. (1996) *Popular Development: Rethinking the Theory and Practice of Development*. Blackwell Publishers, Oxford.
- Brown, M. M. (2002) Foreword. In Fukuda-Parr, S., Lopes, C. & Malik, K. (2002) Eds., *Capacity for Development: New Solutions to Old Problems*. Earthscan Publications, London, vii-viii.
- The Brundtland Report / World Commission on Environment and Development (1987) *Our Common Future*. Oxford University Press, Oxford.
- Burton, P. (2000) *Telecentre 2000: Domestic Case Studies Review and Synthesis Report*. Online at <http://www.communitysa.org.za/tele2000.htm>. Last accessed 10 February 2004.
- Callon, M. (1986) Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay. In Law, J. (1986) Ed., *Power, Action and Belief: A New Sociology of Knowledge?* Routledge, London, 196-233.
- Callon, M. (1997) Actor-Network Theory: The Market Test. In Law, J. & Hassard, J. (1998) Eds., *Actor Network Theory and After*. Blackwell Publishers, Oxford.

- Chambers, R. (2001) *The New Dynamics of Aid: Power, Procedures and Relationships*. Institute of Development Studies, Brighton.
- Chapman, R. & Slaymaker, T. (2002) *ICTs and Rural Development: Review of Literature, Current Interventions and Opportunities for Action (Working Paper 192)*. Overseas Development Institute, London.
- Ciborra, C. U. (1994) The Grassroots of IT and Strategy. In Ciborra, C. U. & Jelassi, T. (Eds.) *Strategic Information Systems*. Wiley, Chichester.
- Community Information Network for Southern Africa / CINSAs (2003) *Regional Conference Report: Dialogue for a Sustainable Network of Community ICT Initiatives*. Johannesburg, South Africa, August 2003.
- Colle, R. D. & Roman, R. (1999) *Communication Centers and Developing Nations*. Online at <http://www.devmedia.org/document/Banga.htm>. Last accessed 10 February 2004.
- Cox, A. & Healey, J. (2000) Eds., *European Development Cooperation and the Poor*. Overseas Development Institute, London.
- Darke, P., Shanks, G., & Broadbent, M. (1998) Successfully Completing Case Study Research: Combining Rigour, Relevance, and Pragmatism. *Information Systems Journal* (8) 273-289.
- Da Silva, R. M. O. & Magalhaes, R. (1999) *The Organizational Implementation of Information Systems: Towards a New Theory*. Unpublished doctoral thesis. London School of Economics. Online at <http://is.lse.ac.uk/research/theses/magalhaes.pdf>. Last accessed 10 February 2004.
- Dees, J. G. (1998) *The Meaning of Social Entrepreneurship*. The Centre for Social Innovation, Stanford Business School. Online at <http://www.gsb.stanford.edu/csi/SEDefinition.html>. Last accessed 10 February 2004.
- Doyal, L. & Gough, I. (1991) *A Theory of Human Need*. Macmillan, London.
- Du Plooy, N. F. (1998) Chapter 6: The Adoption and Use of Information Technology in Organizations. In *An Analysis of the Human Environment for the Adoption and Use of Information Technology*.
- Du Plooy, N. F. & Roode (1993) *Information Technology and Economic Development: Some Ethical Considerations*. Paper presented at the Second International Conference on Development and Future Studies, Perth, Western Australia, December 1993.
- Dymond, A. & Oestmann, S. (2002) *ATPS Special Paper No. 9: Information and Communication Technologies, Poverty Alleviation and Universal Access Policies*. African Technology Policy Studies Network, Nairobi.
- Ellerman, D. (2002) Autonomy-Respecting Assistance: Towards New Strategies for Capacity-Building and Development Assistance. In Fukuda-Parr, S., Lopes, C. & Malik, K. (2002) Eds., *Capacity for Development: New Solutions to Old Problems*. Earthscan Publications, London, 43-60.
- Ernberg, J. (1996) *ITU: Empowering Communities in the Information Society - An International Perspective*. Empowering Communities in the Information Society Conference. South Africa, May 1996.
- Fontaine, M. & Fuchs R. (2000) The Watering Hole: Creating Learning Communities with Computers. *TechKnowLogia* (May / June 2000).

- Fontaine, M. (1999) AMIC@S in Asuncion: Leapfrogging Development. *TechKnowLogia* (Nov / Dec 1999).
- Fuchs, R. (1998) *Little Engines That Did: Case Histories from the Global Telecentre Movement*. International Development Research Centre, Ottawa. Online at <http://www.idrc.ca/acacia/engine/index.html>. Last accessed 10 February 2004.
- Gadamer, H-G. (1976) The Historicity of Understanding. In Connerton, P. (1976) Ed., *Critical Sociology, Selected Readings*. Penguin Books, Harmondsworth, 117-133.
- Giddens, A. (1984) *The Constitution of Society: Outline of the Theory of Structuration*. Polity Press, Cambridge.
- Gomez, R., Hunt, P. & Lamoureux, E. (1999) *Telecentre Evaluation and Research: A Global Perspective*. International Development Research Centre, Ottawa.
- Grobler, M. & Roode, J. D. (1993) *The Emancipating Role of Information Technology in South Africa*. Paper presented at the Second International Conference on Development and Future Studies, Perth, Western Australia, December 1993.
- Heeks, R. (1999a) *Working Paper No. 4: The Tyranny of Participation in Information Systems: Learning from Development Projects*. Development Informatics, Working Paper Series. Institute for Development Policy and Management, Manchester.
- Heeks, R. (1999b) *Working Paper No. 5: Information and Communication Technologies, Poverty and Development*. Development Informatics, Working Paper Series. Institute for Development Policy and Management, Manchester.
- Heeks, R. (2002) *Working Paper No. 11: Failure, Success and Improvisation of Information Systems Projects in Developing Countries*. Development Informatics, Working Paper Series. Institute for Development Policy and Management, Manchester.
- Hettne, B. (1990) *Development Theory and the Three Worlds*. Longman, Essex.
- Himmelstrand, U. (1993) Perspectives, Controversies and Dilemmas in the Study of African Development. In Himmelstrand, U., Kinyanjui, K. & Mburugu, E. (1993) Eds., *African Perspectives on Development: Controversies, Dilemmas and Openings*. Baobab Books, Harare, 16-37.
- Hyden, G. (1993) Changing Ideological and Theoretical Perspectives on Development. In Himmelstrand, U., Kinyanjui, K. & Mburugu, E. (1993) Eds., *African Perspectives on Development: Controversies, Dilemmas and Openings*. Baobab Books, Harare, 308-319.
- The International Development Research Centre (2003) *IRDC Annual Report 2002-2003*. IRDC, Ottawa.
- International Telecommunications Union / ITU (2002) *Executive Summary: World Telecommunication Development Report 2002: Reinventing Telecoms*. Online at <http://www.itu.int/ict>. Last accessed 10 February 2004.
- Jayaweera, N. (1991) *Folk Media and Development Communication: Myths and Realities*. Asian Social Institute, Manila.
- Jones, M. (1999) Structuration Theory. In Currie, W. L. & Galliers, B. (1999) Eds., *Rethinking Management Information Systems*. Oxford University Press, Oxford.
- Klein, H.K. & Myers, M.D. (1999) A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems. *MIS Quarterly* (23:1), 67-94.

- Latour, B. (1992) Where are the Missing Masses, The Sociology of Mundane Artefacts. In Bijkerker, W. E. & Law, J. (1992) Eds., *Shaping Technology/Building Society: Studies in Sociotechnical Change*. MIT Press, Cambridge, 255-258.
- Latour, B. (1997) On Recalling ANT. In Law, J. & Hassard, J. (1998) Eds., *Actor Network Theory and After*. Blackwell Publishers, Oxford.
- Latour, B. (1999) *Pandora's Hope: Essays on the Realities of Science Studies*. Harvard University Press, Cambridge, Massachusetts.
- Latour, B. (2002) *A Prologue in Form of a Dialog Between a Student and His (Somewhat) Socratic Professor*. Online at <http://www.ensmp.fr/~latour/articles/article/090.html>. Last accessed 10 February 2004.
- Law, J. (1992) Notes on the theory of the actor-network: ordering, strategy, and heterogeneity, *Systems Practice*, (5:4), 379 – 393.
- Law, J. (1997a) *Traduction/Trahison: Notes on ANT*. Published by the Department of Sociology, Lancaster University. Online at <http://www.lancaster.ac.uk/sociology/stslaw2.html>. Last accessed 10 February 2004.
- Law, J. (1997b) Topology and the Naming of Complexity. In Law, J. & Hassard, J. (1998) Eds., *Actor Network Theory and After*. Blackwell Publishers, Oxford.
- Linde, A., Linderoth, H. & Raisanen, C. (2003) *An Actor Network Theory Perspective on IT-projects: A Battle of Wills*. Proceedings of the International Workshop on Scandinavian Basis: Action in Language, Organisations and Information Systems (ALOIS 2003), 12-13 March 2003, Linköping, Sweden.
- Lopes, C. (2002) Should We Mind the Gap? In Fukuda-Parr, S., Lopes, C. & Malik, K. (2002) Eds., *Capacity for Development: New Solutions to Old Problems*. Earthscan Publications, London, 122-146.
- Lyon, D. (1988) *The Information Society: Issues and Illusions*. Polity Press, Cambridge.
- Max-Neef, M. (1991) *Human Scale Development: Conception, Application and Further Reflections*. The Apex Press, New York.
- Mayanja, M. (2001) *The African Community Telecentres: In Search of Sustainability*. ICT for Education Programme, World Bank Institute. Online at http://www.developmentgateway.org/download/165918/In_search_of_sust_telecenters_DG.doc. Last accessed 10 February 2004.
- McBride, N. (2000) *Using Actor-Network Theory to Predict the Organisational Success of a Communications Network*. Paper presented at the World Telecommunications Congress, 2000.
- McMaster, T., Vidgen, R.T. & Wastell, D.G. (1999) Networks of Association and Due Process in IS Development. In Larsen, T. J., Levine, L. & De Gross, J. I. (1999) Eds., *Information Systems: Current Issues and Future Changes*. IFIP Press, Latenburg, Austria, 341-357.
- McNeill, D. (2000) The Concept of Sustainable Development. In Lee, K., Holland, A. & McNeill, D. (2000) Eds., *Global Sustainable Development in the 21st Century*. Edinburgh University Press, Edinburgh, 10-30.
- Menou, M. J. (1999) The Impact of the Internet: Some Conceptual and Methodological Issues, or How to Hit a Moving Target behind the Smoke Screen. In Nicholas, D. & Rowlands, I. (1999) Eds., *The Internet: Its Impact and Evaluation*. Proceedings

- of an International Forum held at Cumberland Lodge, Windsor Park, 16-18 July 1999. Aslib, 1999.
- Moyo, L. M. (1996) Information Technology Strategies for Africa's Survival in the Twenty-first Century: IT All Pervasive. *Information Technology for Development* (7), 17-27.
- Montealegre, R. (1999) A Case for More Case Study Research in the Implementation of Information Technology in Less-Developed Countries. *Information Technology for Development* (8:4), 199-207.
- Monteiro, E. (1999) Actor-Network Theory and Information Infrastructure. In Ciborra, C. U. et al. (1999) Eds., *From Control to Adrift: The Dynamics of Corporate Information Infrastructures*. Oxford University Press, Oxford, 71-82.
- Morales-Gomez, D. & Melesse, M. (1998) Utilising Information and Communication Technologies for Development: The Social Dimensions. *Information Technology for Development* (8:1), 3-13.
- Nandhakumar, J. & Vidgen, R. (2001) Due Process and the Introduction of New Technology: The Institution of Video Teleconferencing. In Russo, N. L., Fitzgerald, B. & De Gross, J. I. (2001) Eds., *Realigning Research and Practice in IS Development: The Social and Organisational Perspective*. Kluwer Academic Publishers, Boston.
- Neefjes, K. (2000) People Defining their Environments: A Future of Change. In Lee, K., Holland, A. & McNeill, D. (2000) Eds. *Global Sustainable Development in the 21st Century*. Edinburgh University Press, Edinburgh, 200-220.
- Orlikowski, W. J. (1992) The Duality of Technology: Rethinking the Concept of Technology in Organizations. *Organization Science* (3:3), 398-427.
- Orlikowski, W. J. (1993) CASE Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development. *MIS Quarterly* (September 1993), 309-340.
- Palvia, P., Mao, E., Salam, A. F. & Soliman, K. S. (2003) Management Information Systems Research: What's There in a Methodology? *Communications for the Association of Information Systems* (11, 2003), 289-309.
- Proenza, F.J., Bastidas-Buch, R. & Montero, G. (2001) *Telecentres for Socioeconomic and Rural Development in Latin America and the Caribbean: Investment Opportunities and Design Recommendations*. Information Technology for Development Unit, Washington, D.C. Online at <http://www.iadb.org/regions/itdev/telecenters/index.htm>. Last Accessed 10 February 2004.
- Ribeiro, G.L. (2002) Power, Networks and Ideology in the Field of Development. In Fukuda-Parr, S., Lopes, C. & Malik, K. (Eds.) *Capacity for Development: New Solutions to Old Problems*. Earthscan Publications, London, 169-184.
- Robinson, S. (1998) *Telecentres in Mexico: Learning the Hard Way*. Presentation at the "Partnerships and Participation in Telecommunications for Rural Development: Exploring What Works and Why" Conference at the University of Guelph, Ontario, Canada, 26-27 October, 1998.
- Rogers, E. (1983) *The Diffusion of Innovation*. Free Press, New York.

- Roman, R. & Colle, R. D. (2002) *Working Paper No. 10: Themes and Issues in Telecentre Sustainability*. Development Informatics, Working Paper Series. Institute for Development Policy and Management, Manchester.
- Roode, J. D. (2003) *Presentation: A Framework for Achieving Sustainable Development through ICT Interventions*. University of Cape Town, 23 April 2003.
- Schumacher, E. F. (1973) *Small is Beautiful: A Study of Economics as if People Mattered*. Sphere Books, London.
- Serageldin, I. & Steer, A. (1994) Eds., *Making Development Sustainable: From Concepts to Action*. World Bank, Washington.
- Todaro, M. P. (1989) *Economic Development in the Third World* (4th Edition). Longman, New York.
- Ul Haq, M. (1976) *The Poverty Curtain: Choices for the Third World*. Columbia University Press, New York.
- Underwood, J. (2002) A Theoretical Basis for IS? The Contribution of ANT. *Australian Journal of Information Systems* (9:Special Edition), 86-92.
- United Kingdom Department for International Development / DFID (2002) *The Significance of Information and Communication Technologies for Reducing Poverty*, January 2002.
- Universal Service Agency / USA (2002) *Annual Report 2001-2002*.
- Whitley, E. A. (1999) *Habermas and the Non-Humans: Towards a Critical Theory of the New Collective*. Conference Proceedings of Critical Management Studies, Manchester, July 1999.
- Whyte, A. (1999) *Acacia Research Guidelines for Assessing Community Telecentres*. International Development Research Centre, Ottawa.
- Wongtschowski, M. (2003) *Platforms for Democratic Decision-Making: A Case-Study in the Controversial Field of Policies for Access and Use of Genetic Resources*. Unpublished paper. Wageningen University and Research Centre (WUR), Rural Development Sociology Group. Online at <http://www.bris.ac.uk/sps/papers/stream2/wongtschowski.doc>. Last accessed 10 February 2004.
- World Bank (1998) *Harnessing Information for Development*. World Bank, Washington.

APPENDIX 1: THE SEVEN PRINCIPLES OF INTERPRETIVE FIELD STUDIES

Klein & Myers (1999) proposed seven principles to guide interpretive research using hermeneutics:

1. The Fundamental Principle of the Hermeneutic Circle

Human understanding is achieved by iterating between the considering the independent meaning of parts and the whole that they form.

2. The Principle of Contextualisation

A critical reflection of the social and historical backgrounds of the research setting and how this affects the current situation under investigation.

3. The Principle of Interaction Between the Researchers and Subjects

Requires critical reflection on how the research materials (or “data”) were socially constructed through the interaction between the researchers and participants.

4. The Principle of Abstraction and Generalisation

Relating idiographic details revealed by the data interpretation to theoretical, general concepts that describe the nature of human understanding and social action.

5. The Principle of Dialogical Reasoning

Sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings with subsequent cycles of revision.

6. The Principle of Multiple Interpretations

Sensitivity to possible differences in interpretations among the participants of the same sequence of events under study.

7. The Principle of Suspicion

Sensitivity to possible “biases” and systematic “distortions” in the data collected.

APPENDIX 2: A SAMPLE OF QUESTIONS USED IN THE SEMI-STRUCTURED INTERVIEWS

- When did you first hear about the concept of an MPCC?
- Which projects are you involved with and what do you do in these projects?
- Have you received training from the MPCC? What training?
- How has this training helped with the projects you are involved in?
- Can you describe an incident where the computers helped you a lot with a project?
- Do you plan to use computers more? How? Get more training?
- Are you encouraging your family to use computers? How?
- Have you used the Internet? How? How would you use it if you had more / unlimited access?
- Do you feel that the community is using the MPCC? Why / why not?
- What was the feeling of the community when the MPCC concept was first brought up?
- What is the general feeling of the community now with regards the MPCC?
- Were there any community dynamics with regards to the MPCC?
- Who were the main role players in establishing the MPCC? What were their roles?
- What role do you think government plays in MPCCs?
- What do you know about the funding of the MPCC?
- Do you think the MPCC will be here for a long time to come? What do you think the future holds for the MPCC?
- What was the most difficult / negative aspect of the MPCC?
- What was the most positive aspect?
- If you had to implement an MPCC in a community what process would you follow?
- Is there anything further that you'd like to talk about?